

PRELIMINARY ONSHORE GROUND INVESTIGATION FOR NET ZERO TEESSIDE (NZE) – SOUTH TEES DEVELOPMENT CORPORATION (STDC) ‘MAIN SITE’ AND ONSHORE CO2 EXPORT PIPELINE CORRIDOR



Final Factual Report
(Rev.02)

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Abbreviation	Definition
SNC	Sonic Sampling
RC	Rotary Coring
RO	Rotary Openhole

Text Abbreviations



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.

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

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 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 applicable 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 applicable 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	1.10-5.80 and 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	1 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_m) information for the SPT hammer device used to carry out the test.
- A breakdown of blows for each 75mm penetration interval.
- Rod length (C_R) and energy (C_E) correction ratios.
- Uncorrected 'N' value.

- Corrected 'N₆₀' value that applies the rod (C_R) and energy (C_E) 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



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





Allied Exploration and Geotechnics Limited

Key Sheets



INTRODUCTION

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

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

INFORMATION COMMON TO ALL EXPLORATORY HOLE RECORDS

Status Box

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

Exploratory Hole No

The identity number used throughout the report.

Project

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

Client

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

Location

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

Method (Equipment)

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

Ground Level (m(AOD))

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

Date

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

Sheet

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

Checked By

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

Logged By

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

Contract No.

The Allied Exploration & Geotechnics Limited reference number for the project.



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Key Sheets






INFORMATION RELEVANT TO BOREHOLE AND WINDOW/WINDOWLESS SAMPLE HOLE RECORDS

Sample & Tests Columns

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

Water Column

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

Strata Columns

- Reduced Level The corresponding reduced level of each soil or rock boundary in metres Ordnance Datum.
- Legend A graphical representation of the materials encountered using BS 5930 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.



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Key Sheets



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

KEY SHEETS TABLE 2

- 4 Rock Strength based on assessed field or measured unconfined compressive strength follows the classification scheme given in BS5930 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 broken by heavy hand pressure, can be peeled easily by a pocket knife, crumbles under firm blows with point of geological hammer.	1-5	Very weak (1-5)	Crumbles under firm blows with point of geological hammer. Can be peeled by a pocket knife.
Weak	Thin slabs, corners or edges can be broken off with hand pressure, can be peeled by a pocket knife, shallow indentations made by firm blow with point of geological hammer.	5-12.5	Weak (5-25)	Can be peeled by a pocket knife with difficulty. Shallow indentations made by firm blow with the point of geological hammer.
Moderately Weak	Thin slabs, corners or edges can be broken off with hand pressure, can be scratched with difficulty by pocket knife, hand-held specimen can be broken with single firm blow of geological hammer.	12.5-25		
Medium Strong	Cannot be scraped or peeled with a pocket knife, specimen on a solid surface can be fractured with single firm blow of geological hammer.	25-50	Medium Strong (25-50)	Cannot be scraped with pocket knife. Can be fractured with a single firm blow of geological hammer.
Strong	Specimen requires more than one blow of geological hammer to fracture it.	50-100	Strong (50-100)	Requires more than one blow of geological hammer to fracture.
Very Strong	Specimen requires many blows of geological hammer to fracture it.	100-250	Very Strong (100-250)	Requires many blows of geological hammer to fracture.
Extremely strong	Specimen can only be chipped with geological hammer.	>250	Extremely strong (>250)	Can only be chipped with geological hammer.
Based on BS EN ISO 14689-1 4.2.7, Table 2			Based on BS EN ISO 14689-1:2003 4.2.7, Table 5 (Superseded Version)	

KEY SHEETS TABLE 3

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

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

KEY SHEETS TABLE 4



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Key Sheets



Instrument/Backfill Column

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

Boring Progress and Water Observations Columns

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

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

Chiselling Columns

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

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

Water Added Columns

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

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

General Remarks

Any remarks believed to be relevant to the exploratory hole.

INFORMATION RELEVANT TO PIT/TRENCH RECORDS

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

Plan

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

Groundwater

Notes on water bearing horizons.

Stability

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

General Remarks

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

Additional Information

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



Allied Exploration and Geotechnics Limited

Key Sheets



Underground Services

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

INFORMATION RELEVANT TO DRILLHOLE RECORDS AND ROTARY CONTINUATION

Run Details Columns

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

Strata Columns

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

Discontinuities Detail	Information on core discontinuities, localised variations in weathering, lithology, strength and structure follows recommendations outlined in BS5930.
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.
Water Remarks	Any remarks believed to be relevant to the water e.g. Artesian.

Standard Penetration Test

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

Flush

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

General Remarks

Any remarks believed to be relevant to the exploratory hole.



Allied Exploration and Geotechnics Limited

Key Sheets



SAMPLES

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

IN-SITU TESTS

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

ROCK QUALITY AND CORE RECOVERY

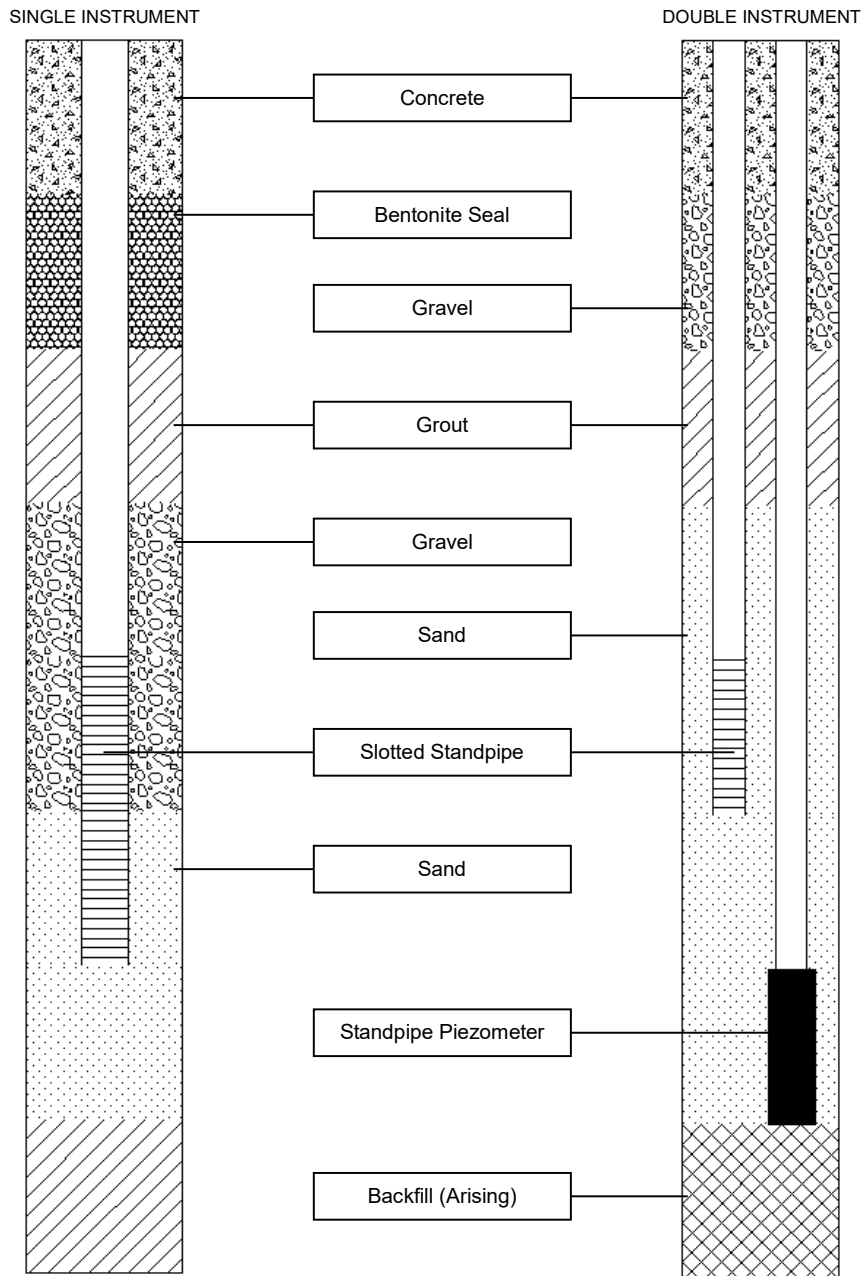
TCR	Total Core Recovery - the length of the recovered core expressed as a percentage of the length of core run.
SCR	Solid Core Recovery - the sum length of all core pieces that are recovered with at least one full diameter, expressed as a percentage of the length of core run.
RQD	Rock Quality Designation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



Allied Exploration and Geotechnics Limited Key Sheets



Symbols and Abbreviations: Explanation of Instrumentation Legends Used





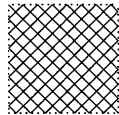
Allied Exploration and Geotechnics Limited

Key Sheets

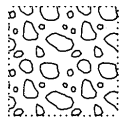


Symbols and Abbreviations: Explanation of Legends Used

Soils	Rocks		
	<i>Sedimentary</i>	<i>Metamorphic</i>	<i>Igneous</i>



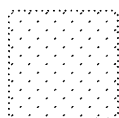
Made Ground



Cobbles and Boulders



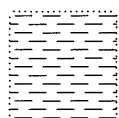
Gravel



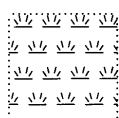
Sand



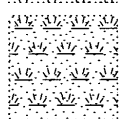
Silt



Clay

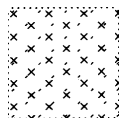


Peat

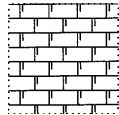


Topsoil

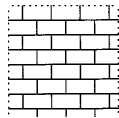
Note: Composite soil types will be signified by combined symbols e.g.



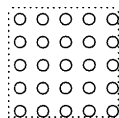
Silty Sand



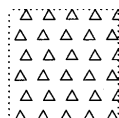
Chalk



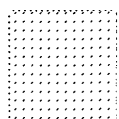
Limestone



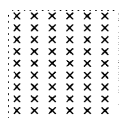
Conglomerate



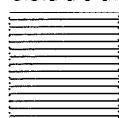
Breccia



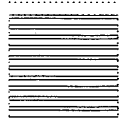
Sandstone



Siltstone



Mudstone



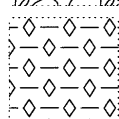
Shale



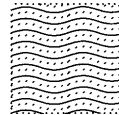
Coal



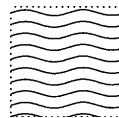
Pyroclastic (Volcanic Ash)



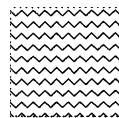
Gypsum



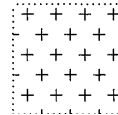
Coarse Grained



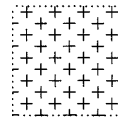
Medium Grained



Fine Grained



Coarse Grained



Medium Grained



Fine Grained




Exploratory Hole Location Plan

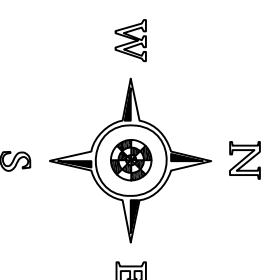




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KEY:

-  SONIC CORE HOLE
-  TRIAL PIT
-  INSPECTION PIT



Base Plan Supplied by Consulting Engineer

Drawing Title:

ENC 01 : Exploratory Hole Location Plan

Drawing No.:

AEG4339101

Contract Title:

Preliminary Onshore Ground Investigation for Net Zero Teesside (NZT) -
 South T-ras Development Corporation (STDC)
 Main Site and Onshore CO2 Export Pipeline Corridor

Client:

AECOM
 Algalie Tower, 2 Leman Street
 London, E1 8FA

Consultant:

AECOM
 First Floor One Tithly Gardens, Quayside,
 Newcastle upon Tyne, NE1 2HF

Contract No.:

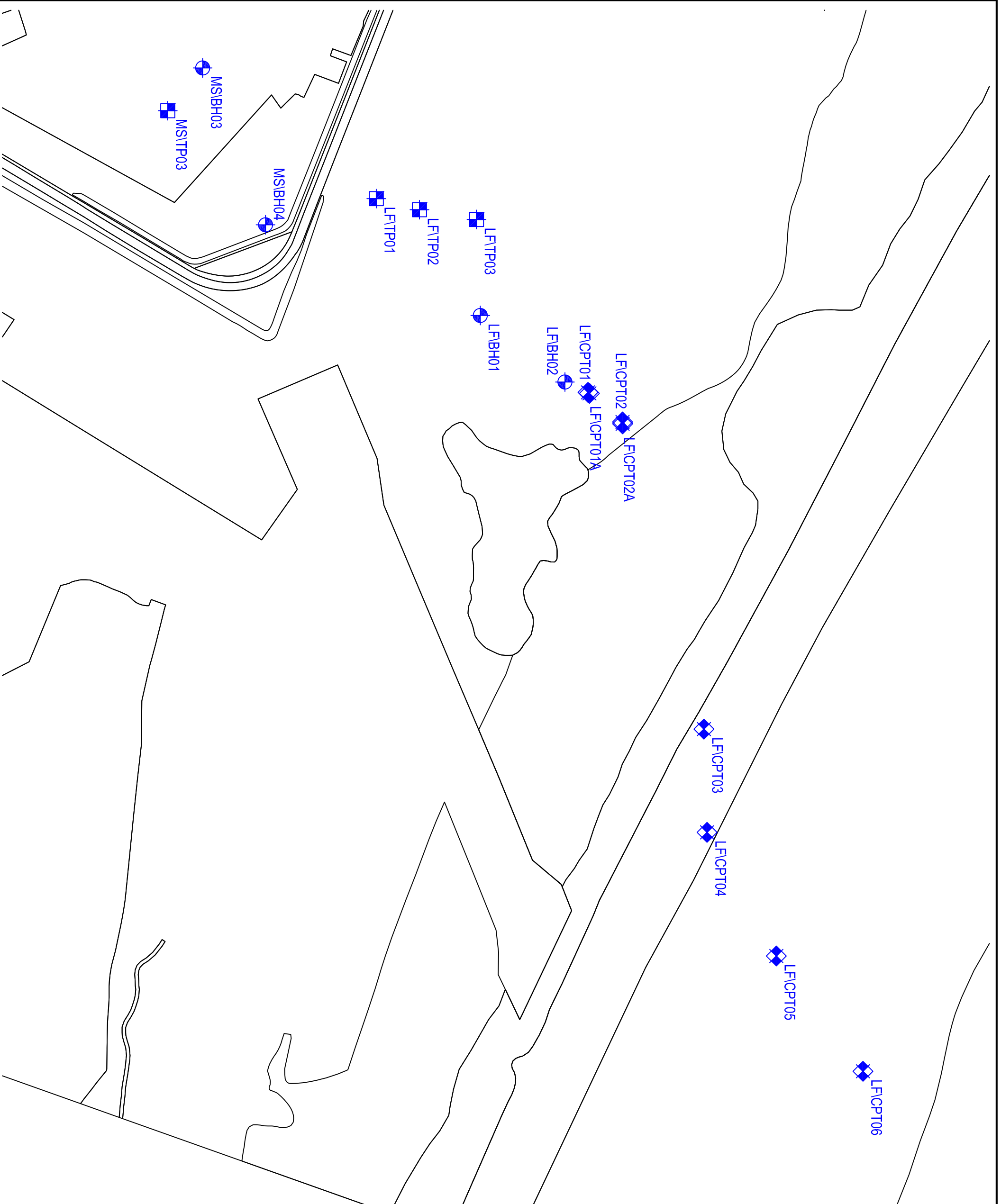
4339

Scale:

1:2500 @ A3

Date:




05/08/2021

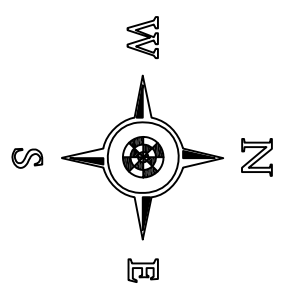




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KEY:

-  SONIC CORE HOLE
-  TRIAL PIT
-  INSPECTION PIT



Base Plan Supplied by Consulting Engineer

Drawing Title: ENC 01 : Exploratory Hole Location Plan

Drawing No.: AEG14339102

Contract Title: Preliminary Onshore Ground Investigation for Net Zero Teesside (NZT) - South Teas Development Corporation (STDC)

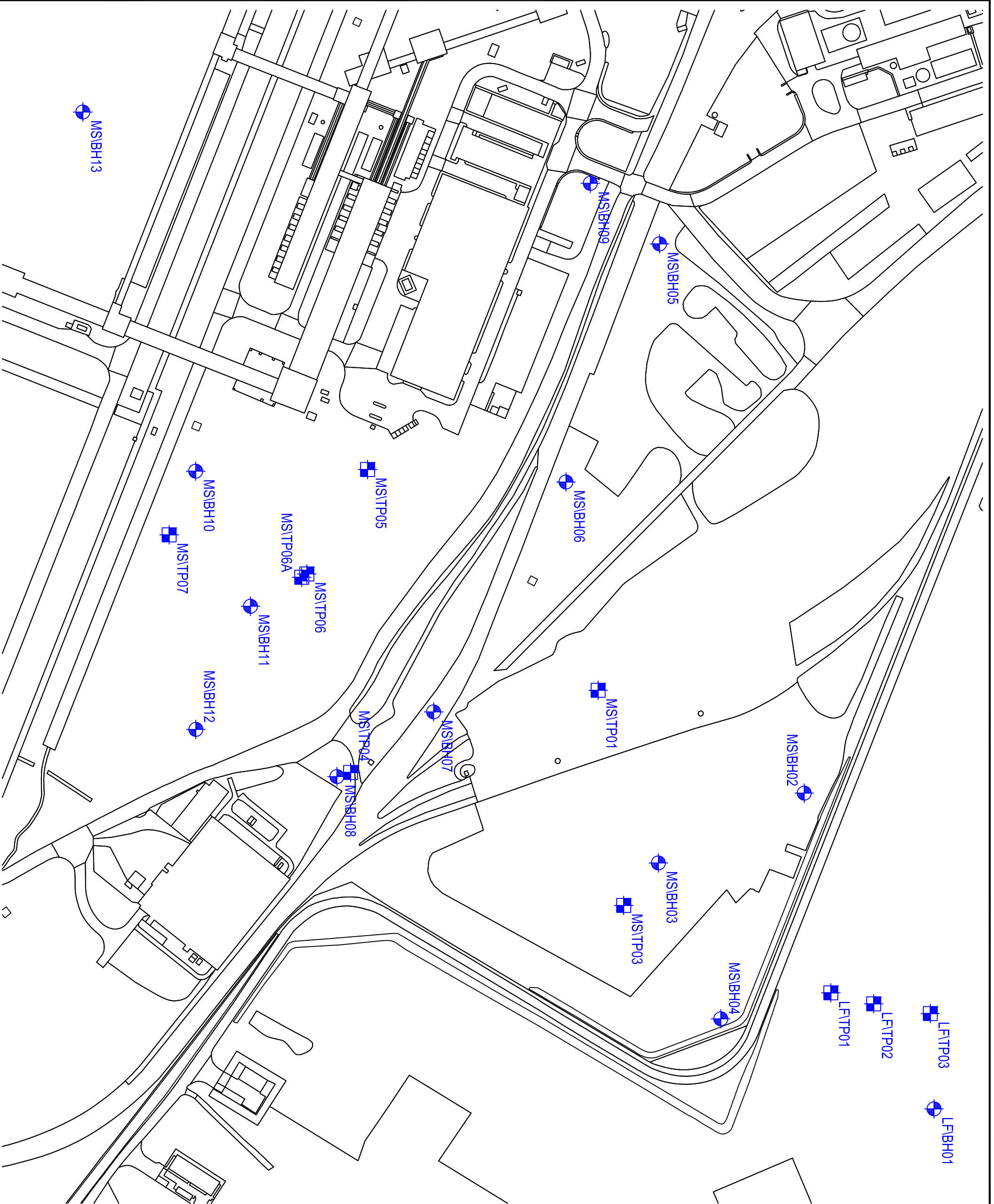
Client: Main Site and Onshore CO2 Export Pipeline Corridor

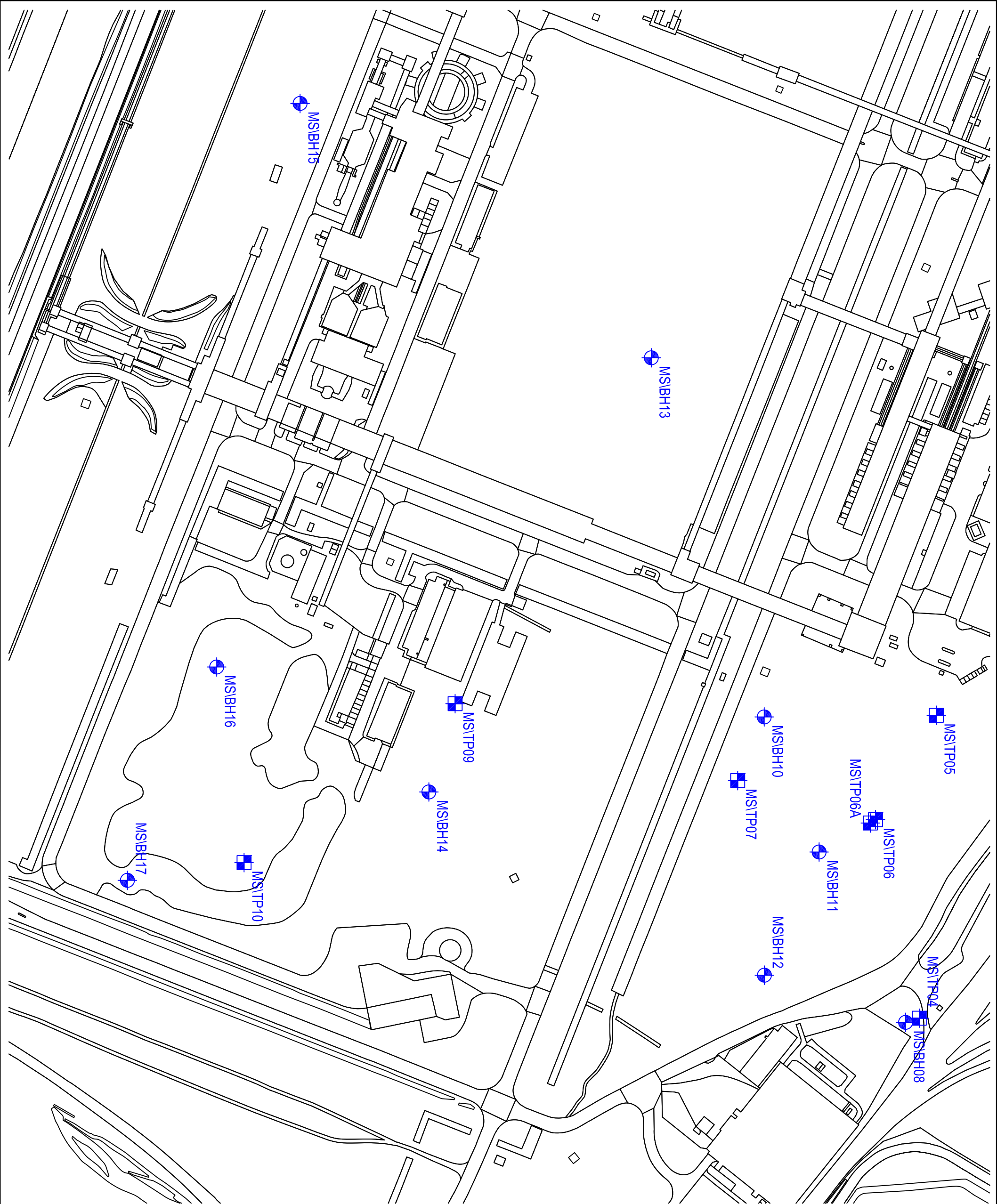
Client: AECOM
 Algate Tower, 2 Leman Street
 London, E1 8FA

Contract No.: 4339




Scale: 1:2500 @ A3

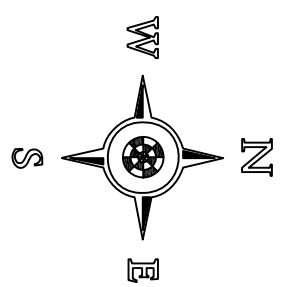
Date: 05/08/2021





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- KEY:**
-  SONIC CORE HOLE
 -  TRIAL PIT
 -  INSPECTION PIT



Base Plan Supplied by Consulting Engineer

Drawing Title: ENC 01 : Exploratory Hole Location Plan

Drawing No.: AEG433903

Contract Title:
 Preliminary Onshore Ground Investigation for Net Zero Teesside (NZT) -
 South Teas Development Corporation (STDC)
 Main Site and Onshore CO2 Export Pipeline Corridor

Client:
 AECOM
 Algalie Tower, 2 Leman Street,
 London, E1 8FA

Consultant:
 AECOM
 First Floor, One Tilly Gardens, Quayside,
 Newcastle upon Tyne, NE1 2HF

Contract No.: 4339

Scale: 1:2500 @ A3

Date: 05/08/2021

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 Investigation for NZT		Exploratory Hole No. LFBH01	
Client: AECOM		Location: North-west of Redcar, North Yorkshire E:457474.053 N:525776.345	
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Comacchio GEO 205)		Ground Level (m): 7.277	Start Date: 22/06/2021
		Sheet: 1 of 3	

SAMPLES & TESTS			STRATA					Instrument/ Backfill
Depth	Type No	Test Result	Water	Reduced Level	Legend	Depth (Thickness)	Description	
0.30	ES1 ^(SL1)				[Cross-hatched pattern]	1.20	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%).)	
0.30-1.20	SL1 ^(SS)							
0.30-1.20	B8 ^(SL1)							
0.30	PID	<0.1ppm						
0.50	ES2 ^(SL1)							
0.50	PID	<0.1ppm						
1.00	ES3 ^(SL1)			6.08		1.20		
1.00	J7 ^(SL1)							
1.00	PID	0.1ppm						
1.20-2.70	SL2 ^(SS)							
1.20-2.10	B10 ^(SL2)							
1.20	S	N20						
1.50	J9 ^(SL2)							
1.50	PID	<0.1ppm						
2.00	ES4 ^(SL2)							
2.00	PID	<0.1ppm						
2.10-2.70	B12 ^(SL2)							
2.50	J11 ^(SL2)			4.58	2.70			
2.50	PID	<0.1ppm						
2.70-4.20	SL3 ^(SS)							
2.70	S	50/70mm						
3.00	PID	<0.1ppm						
3.40	J13 ^(SL3)							
3.40-3.65	B14 ^(SL3)							
3.50	PID	<0.1ppm						
3.65-4.70	B16 ^(SL3)							
4.00	ES6 ^(SL3)							
4.00	J15 ^(SL3)							
4.00	PID	<0.1ppm						
4.20-5.70	SL4 ^(SS)							
4.20	S	N31						
4.50	J17 ^(SL4)							
5.00	PID	<0.1ppm						
5.70-7.20	SL5 ^(SS)							
5.70-6.45	B18 ^(SL5)							
5.70	S	50/180mm						
6.00	J19 ^(SL5)							
6.00	PID	<0.1ppm						
6.45-7.20	B21 ^(SL5)							
6.50	J20 ^(SL5)							
7.00	J22 ^(SL5)							
7.00	PID	<0.1ppm						
7.20-8.70	SL6 ^(SS)							
7.20-7.95	B23 ^(SL6)							
7.20	S	3/325mm						
7.50	J24 ^(SL6)							
				0.08	7.20			
							Very loose yellow brown SAND with occasional fragments of bivalve shell. Sand is coarse. (Tidal Flat Deposits).	

Boring Progress and Water Observations					Liner Sample Information				General Remarks
Date	Depth	Casing	Casing Dia (mm)	Water Standing	From - To	Internal Dia (mm)	Recovery (%)	Subsampled	
22/06/2021	0.00	0.00	178		0.30 - 1.20	178	100	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.
					1.20 - 2.70	178	100	Yes	
					2.70 - 4.20	178	100	Yes	
					4.20 - 5.70	178	100	Yes	
					5.70 - 7.20	178	100	Yes	
					7.20 - 8.70	178	100	Yes	

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



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SONIC SAMPLE HOLE RECORD

Status:-
FINAL

Project: Preliminary Onshore Ground Investigation for NZT		Exploratory Hole No. LF1BH01	
Client: AECOM		Location: North-west of Redcar, North Yorkshire E:457474.053 N:525776.345	
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Comacchio GEO 205)		Ground Level (m): 7.277	Start Date: 22/06/2021
		Sheet: 2 of 3	

SAMPLES & TESTS			STRATA					Instrument/ Backfill
Depth	Type No	Test Result	Water	Reduced Level	Legend	Depth (Thickness)	Description	
7.95-8.70 8.00 8.00	B25 _(SL6) J26 _(SL6) PID	<0.1ppm				(2.10)	Very loose yellow brown SAND with occasional fragments of bivalve shell. Sand is coarse. (Tidal Flat Deposits). <i>(continued)</i>	
8.50 8.70-10.20 8.70-9.30 8.70 9.00 9.00	J27 _(SL6) SL7 _(SS) B28 _(SL7) S J29 _(SL7) PID	N6 <0.1ppm		-2.02		9.30	at c.8.70m BGL ... slightly silty. at c.9.00m BGL ... loose.	
9.50-10.20 9.50	B30 _(SL7) J31 _(SL7)					(7.90)	Yellow brown occasionally multicolored slightly gravelly SAND with frequent fragments of shell and 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 10.20-11.70 10.20 10.50	J32 _(SL7) PID SL8 _(SS) B33 _(SL8) S J34 _(SL8)	<0.1ppm N14 <0.1ppm		-2.92		10.20	Medium dense yellow brown slightly silty slightly gravelly SAND 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. (Tidal Flat Deposits).	
11.00 11.00	J35 _(SL8) PID	<0.1ppm					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 12.00 12.00	SL9 _(SS) B36 _(SL9) S J37 _(SL9) PID	N3 <0.1ppm					at c.11.70m BGL ... very loose.	
12.45-13.20 12.50	B38 _(SL9) J39 _(SL9)							
13.00 13.00 13.20-14.70 13.20-13.95 13.20 13.50	J40 _(SL9) PID SL10 _(SS) B41 _(SL10) S J42 _(SL10)	<0.1ppm N24 <0.1ppm				(5.90)		
13.95-14.70 14.00 14.00	B43 _(SL10) J44 _(SL10) PID	<0.1ppm						
14.50 14.70-16.20 14.70-15.45 14.70 15.00 15.00	J45 _(SL10) SL11 _(SS) B46 _(SL11) S J47 _(SL11) PID	N17 <0.1ppm						
15.45-16.20 15.50	B48 _(SL11) J49 _(SL11)							

Boring Progress and Water Observations					Liner Sample Information				General Remarks
Date	Depth	Casing	Casing Dia (mm)	Water Standing	From - To	Internal Dia (mm)	Recovery (%)	Subsampled	
22/06/2021	8.70	8.70	178		8.70 - 10.20	178	100	Yes	
23/06/2021	8.70	8.70	178	6.30	10.20 - 11.70	178	100	Yes	
					11.70 - 13.20	178	100	Yes	
					13.20 - 14.70	178	100	Yes	
					14.70 - 16.20	178	100	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.

All dimensions in metres Scale 1:50.00	For explanation of symbols and abbreviations see Key Sheets	Checked by: <i>K.W.</i>	Logged by: R. Clarke	Contract No. 4339
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SONIC SAMPLE HOLE RECORD

Status:-
FINAL

Project: Preliminary Onshore Ground Investigation for NZT		Exploratory Hole No. LF1BH01	
Client: AECOM		Location: North-west of Redcar, North Yorkshire E:457474.053 N:525776.345	
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Comacchio GEO 205)		Ground Level (m): 7.277	Start Date: 22/06/2021
		Sheet: 3 of 3	

SAMPLES & TESTS			STRATA					Instrument/ Backfill
Depth	Type No	Test Result	Water	Reduced Level	Legend	Depth (Thickness)	Description	
16.00	J50 _(SL11)	<0.1ppm		8.82		16.10	(1) CLAY. Boring complete at 16.20m BGL - continued by rotary drilling.	
16.00	PID			8.92		16.20		

Boring Progress and Water Observations					Liner Sample Information				General Remarks
Date	Depth	Casing	Casing Dia (mm)	Water Standing	From - To	Internal Dia (mm)	Recovery (%)	Subsampled	
23/06/2021	16.20	16.20	178	9.40					(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.

All dimensions in metres Scale 1:50.00	For explanation of symbols and abbreviations see Key Sheets	Checked by: <i>K.W.</i>	Logged by: R. Clarke	Contract No. 4339
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DRILLHOLE RECORD

Status:-
FINAL

Project: Preliminary Onshore Ground Investigation for NZT		Exploratory Hole No. LF1BH01	
Client: AECOM	Location: North-west of Redcar, North Yorkshire E:457474.053 N:525776.345		
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Comacchio GEO 205)	Ground Level (m): 7.277	Start Date: 22/06/2021	Sheet: 1 of 18

RUN DETAILS			STRATA					Instrument/ Backfill	
Depth & (Core Ø)	TCR (SCR) RQD	Fracture Index	Water	Reduced Level	Legend	Depth (Thickness)	Description		
							Discontinuity Detail		Main
		RO		-8.92		16.20	16.20-16.75m ... rotary openhole drilling.	(1) CLAY.	
16.75	68	SOIL		-9.47		16.75	16.75-28.65m ... soil. 16.75m ... J51 16.75m ... B52	Soft to firm thinly laminated dark 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. (Tidal Flat/Glacial Deposits).	
17.60	93					17.50m ... J53 17.50m ... U54		17.60m ... medium strength. Clay is of high plasticity.	
19.10	100			-11.82		19.10	19.20m ... J55 19.20m ... B56	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).	
						20.00m ... J57 20.00m ... B58			

Drilling Progress and Water Observations				Standard Penetration Test			Flush			General Remarks
Date	Depth	Casing	Water Standing	Depth	Type	Result	From - To	Type	Returns (%)	
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	(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.

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

Status:-
FINAL

Project: Preliminary Onshore Ground Investigation for NZT		Exploratory Hole No. LF1BH01	
Client: AECOM		Location: North-west of Redcar, North Yorkshire E:457474.053 N:525776.345	
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Comacchio GEO 205)		Ground Level (m): 7.277	Start Date: 22/06/2021
		Sheet: 2 of 18	

RUN DETAILS				STRATA				Instrument/ Backfill	
Depth & (Core Ø)	TCR (SCR) RQD	Fracture Index	Water	Reduced Level	Legend	Depth (Thickness)	Description		
							Discontinuity Detail		Main
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)		
22.10	100					21.20m ... J61 21.20m ... B62	20.75m ... very high strength. Clay is of intermediate plasticity.		
23.60	100					22.60m ... B64 22.70m ... U63	22.70m ... clay is of intermediate plasticity.		
						23.20m ... B66 23.30m ... J65			
						23.60m ... B68 23.70m ... J67			

Drilling Progress and Water Observations				Standard Penetration Test			Flush			General Remarks
Date	Depth	Casing	Water Standing	Depth	Type	Result	From - To	Type	Returns (%)	
				22.10	S	N21	20.60 - 22.10	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 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.
							22.10 - 23.60	Water	100	
							23.60 - 25.10	Water	100	

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

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Project: Preliminary Onshore Ground Investigation for NZT		Exploratory Hole No. LF1BH01	
Client: AECOM		Location: North-west of Redcar, North Yorkshire E:457474.053 N:525776.345	
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Comacchio GEO 205)		Ground Level (m): 7.277	Start Date: 22/06/2021
		Sheet: 3 of 18	

RUN DETAILS			STRATA					Instrument/ Backfill	
Depth & (Core Ø)	TCR (SCR) RQD	Fracture Index	Water	Reduced Level	Legend	Depth (Thickness)	Description		
							Discontinuity Detail		Main
25.10	93			-17.22		24.20m ... B70			
						24.30m ... J69			
26.60	70			-18.52		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).		
						25.20m ... J71			
28.10	100					26.00m ... J73	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).		
						26.00m ... U74			
						26.60m ... B76	26.60m ... high strength. Clay is of intermediate plasticity.		
						26.70m ... J75			
						27.20m ... J77			
						27.20m ... B78			
						28.10m ... ES79			

Drilling Progress and Water Observations				Standard Penetration Test			Flush			General Remarks
Date	Depth	Casing	Water Standing	Depth	Type	Result	From - To	Type	Returns (%)	
24/06/2021	25.10	25.10	0.00	25.10	S	N11	25.10 - 26.60	Water	100	
25/06/2021	25.10	25.10	3.11	28.10	C	50/41mm	26.60 - 28.10	Water	100	
							28.10 - 29.60	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 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.

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

Status:-
FINAL

Project: Preliminary Onshore Ground Investigation for NZT		Exploratory Hole No. LF1BH01	
Client: AECOM		Location: North-west of Redcar, North Yorkshire E:457474.053 N:525776.345	
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Comacchio GEO 205)		Ground Level (m): 7.277	Start Date: 22/06/2021
		Sheet: 4 of 18	

RUN DETAILS			STRATA					Instrument/ Backfill	
Depth & (Core Ø)	TCR (SCR) RQD	Fracture Index	Water	Reduced Level	Legend	Depth (Thickness)	Description		
							Discontinuity Detail		Main
29.60	(41) 21	NI		-21.37		28.65	28.10m ... ES(M)82	28.20m ... clay is of low plasticity.	
	28.20m ... J80								
	28.65m ... ES81								
31.10	100 (100) 65	6		-21.67		28.95	28.65-28.95m ... non-intact.	Very weak black brown MUDSTONE residual. (Recovered as clayey sand and gravel. Gravel is subangular to angular and includes mudstone). (Redcar Mudstone Formation). Weak thinly laminated brown and black MUDSTONE partially weathered with occasional fossilised remains (2-40mm in size)). (Redcar Mudstone Formation).	
	28.95-32.60m ... subhorizontal (5-25 degrees) closely spaced planar to undulating smooth open and tight infilled (clay) discontinuities.								

Drilling Progress and Water Observations				Standard Penetration Test			Flush			General Remarks
Date	Depth	Casing	Water Standing	Depth	Type	Result	From - To	Type	Returns (%)	
							29.60 - 31.10	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 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.
							31.10 - 32.60	Water	100	

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

Status:-
FINAL

Project: Preliminary Onshore Ground Investigation for NZT		Exploratory Hole No. LFBH01	
Client: AECOM		Location: North-west of Redcar, North Yorkshire E:457474.053 N:525776.345	
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Comacchio GEO 205)		Ground Level (m): 7.277	Start Date: 22/06/2021
		Sheet: 5 of 18	

RUN DETAILS				STRATA				Instrument/ Backfill	
Depth & (Core Ø)	TCR (SCR) RQD	Fracture Index	Water	Reduced Level	Legend	Depth (Thickness)	Description		
							Discontinuity Detail		Main
32.60				-25.32		32.60	Weak thinly laminated brown and black MUDSTONE partially weathered with occasional fossilised remains (2-40mm in size). (Redcar Mudstone Formation). <i>(continued)</i>		
32.80 (102mm)	100 (100) 0	15				32.80-32.80m ... subhorizontal (5-25 degrees) very closely spaced smooth planar open infilled (clay) discontinuities.	Weak thinly laminated grey brown MUDSTONE partially weathered. (Redcar Mudstone Formation).		
33.80 (102mm)	30 (30) 12	16				32.80-33.10m ... subhorizontal (5-25 degrees) very closely spaced smooth planar open and tight infilled (clay) discontinuities.			
		NR				33.10-34.00m ... no recovery.			
35.30 (102mm)	87 (87) 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 ... moderately weak.		
	97 (97) 62					(6.00)			

Drilling Progress and Water Observations				Standard Penetration Test			Flush			General Remarks
Date	Depth	Casing	Water Standing	Depth	Type	Result	From - To	Type	Returns (%)	
25/06/2021	32.60	32.60	0.00				32.60 - 32.80	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 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.
30/06/2021	32.60	32.60	0.00				32.80 - 33.80	Water	100	
							33.80 - 35.30	Water	100	
							35.30 - 36.80	Water	100	

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

Status:-
FINAL

Project: Preliminary Onshore Ground Investigation for NZT			Exploratory Hole No. LF1BH01	
Client: AECOM		Location: North-west of Redcar, North Yorkshire E:457474.053 N:525776.345		
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Comacchio GEO 205)		Ground Level (m): 7.277	Start Date: 22/06/2021	Sheet: 6 of 18

RUN DETAILS			STRATA					Instrument/ Backfill	
Depth & (Core Ø)	TCR (SCR) RQD	Fracture Index	Water	Reduced Level	Legend	Depth (Thickness)	Description		
							Discontinuity Detail		Main
36.80	93 (68) 51	NR 12						Weak thinly laminated grey brown MUDSTONE partially weathered. (Redcar Mudstone Formation). (continued)	
38.30	100 (63) 63			-31.32		38.60	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.		
								Complete at 38.60m BGL.	

Drilling Progress and Water Observations				Standard Penetration Test			Flush			General Remarks
Date	Depth	Casing	Water Standing	Depth	Type	Result	From - To	Type	Returns (%)	
30/06/2021	36.80	36.80	0.00				36.50 - 38.30	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 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.
01/07/2021	36.80	36.80	0.00				38.30 - 38.60	Water	100	
01/07/2021	38.60	38.60	0.00							

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

Status:-
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Client: AECOM	Location: North-west of Redcar, North Yorkshire E:457474.053 N:525776.345		
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Comacchio GEO 205)	Ground Level (m): 7.277	Start Date: 22/06/2021	Sheet: 7 of 18

Figure LFBH01.1
LFBH01 0.30-1.20m BGL



Figure LFBH01.2
LFBH01 1.20-2.70m BGL





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Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Comacchio GEO 205)	Ground Level (m): 7.277	Start Date: 22/06/2021	Sheet: 8 of 18

Figure LFBH01.3
LFBH01 2.70-3.20m BGL



Figure LFBH01.4
LFBH01 3.20-4.70m BGL





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DRILLHOLE RECORD

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Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Comacchio GEO 205)	Ground Level (m): 7.277	Start Date: 22/06/2021	Sheet: 9 of 18

Figure LF1BH01.5
LF1BH01 5.70-7.20m BGL



Figure LF1BH01.6
LF1BH01 7.20-8.70m BGL





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DRILLHOLE RECORD

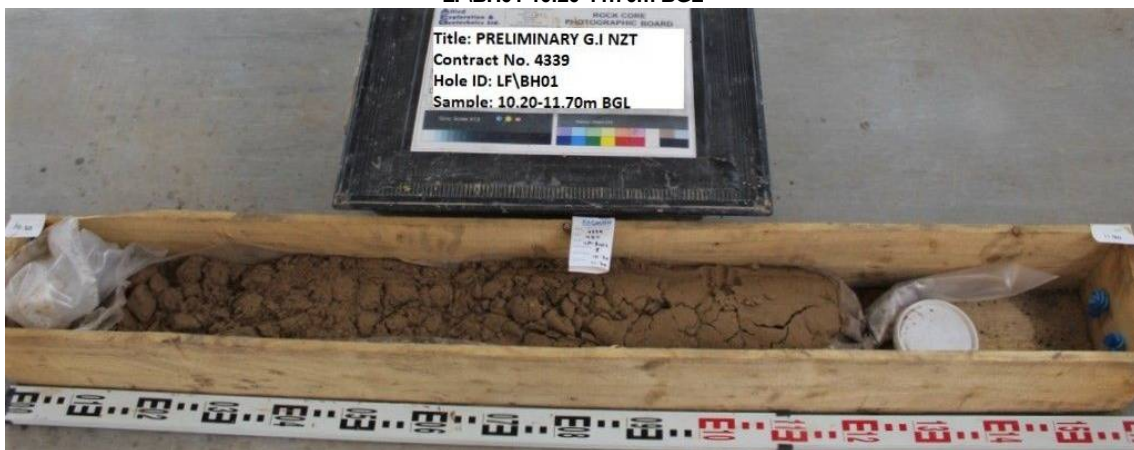
Status:-
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Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Comacchio GEO 205)	Ground Level (m): 7.277	Start Date: 22/06/2021	Sheet: 10 of 18

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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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

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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

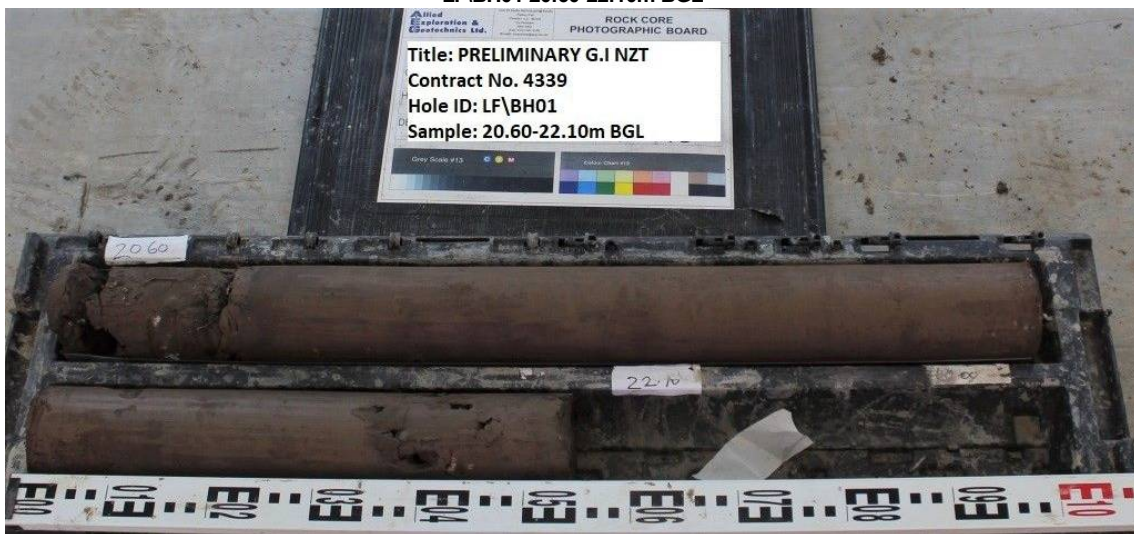
Status:-
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Project: Preliminary Onshore Ground Investigation for NZT			Exploratory Hole No. LF\BH01
Client: AECOM	Location: North-west of Redcar, North Yorkshire E:457474.053 N:525776.345		
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Comacchio GEO 205)	Ground 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

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Client: AECOM	Location: North-west of Redcar, North Yorkshire E:457474.053 N:525776.345		
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Comacchio GEO 205)	Ground Level (m): 7.277	Start Date: 22/06/2021	Sheet: 14 of 18

Figure LF\BH01.15
LF\BH01 22.10-23.60m BGL



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





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DRILLHOLE RECORD

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Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Comacchio GEO 205)	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:-
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Client: AECOM	Location: North-west of Redcar, North Yorkshire E:457474.053 N:525776.345		
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Comacchio GEO 205)	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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Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Comacchio GEO 205)	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



Figure LF\BH01.22
LF\BH01 32.60-35.30m BGL





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DRILLHOLE RECORD

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Client: AECOM	Location: North-west of Redcar, North Yorkshire E:457474.053 N:525776.345		
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Comacchio GEO 205)	Ground Level (m): 7.277	Start Date: 22/06/2021	Sheet: 18 of 18

Figure LF\BH01.23
LF\BH01 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 Investigation for NZT		Exploratory Hole No. LFBH02	
Client: AECOM		Location: North-west of Redcar, North Yorkshire E:457520.508 N:525835.382	
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Comacchio GEO 205)		Ground Level (m): 6.326	Start Date: 22/06/2021
		Sheet: 1 of 3	

SAMPLES & TESTS			STRATA				Instrument/ Backfill	
Depth	Type No	Test Result	Water	Reduced Level	Legend	Depth (Thickness)		Description
0.30	ES1			5.93	(0.40)	0.40	(1) MADE GROUND (Soil, slag fill).	
0.30	PID	<0.1ppm						
0.40-0.85	B5 _(SL1)							
0.42-1.20	SL1 _(SS)			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 (50-75%). (Driller notes boulders).	
0.50	ES2 _(SL1)							
0.50	J4 _(SL1)							
0.50	PID	<0.1ppm		5.13		1.20		
1.00	ES3 _(SL1)							
1.00	J6 _(SL1)							
1.00	PID	<0.1ppm						
1.20-2.70	SL2 _(SS)							
1.20-1.95	B7 _(SL2)							
1.20	S	N6				1.50	MADE GROUND (Yellow brown sand. Sand is fine to medium). at c.1.20m BGL ... loose.	
1.50	J8 _(SL2)							
1.50	PID	<0.1ppm						
1.95-2.70	B9 _(SL2)							
2.00	J10 _(SL2)							
2.00	PID	<0.1ppm						
2.50	J11 _(SL2)			3.63		2.70		
2.70-4.20	SL3 _(SS)							
2.70-4.20	B12 _(SL3)							
2.70	S	50/150mm						
2.70	PID	<0.1ppm						
3.00	J13 _(SL3)							
3.00	PID	<0.1ppm				1.50	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 vesicular (100%). at c.2.70m BGL ... very dense. between c.2.70-4.20m BGL ... mild to moderate hydrogen sulphide odour noted.	
3.50	PID	<0.1ppm						
4.00	PID	<0.1ppm		2.13		4.20		
4.20-5.70	SL4 _(SS)							
4.20-4.95	B14 _(SL4)							
4.20	S	N18					Medium dense to dense yellow brown SAND with occasional fragments of shell (bivalve). Sand is fine to coarse. (Tidal Flat Deposits).	
4.50	J15 _(SL4)							
4.50	PID	<0.1ppm						
4.95-5.70	B17 _(SL4)							
5.00	J16 _(SL4)							
5.50	J18 _(SL4)							
5.50	PID	<0.1ppm						
5.70-7.20	SL5 _(SS)							
5.70	S	N48						
6.20	J19 _(SL5)							
6.20-7.20	B20 _(SL5)							
6.50	PID	<0.1ppm				4.50		
7.00	J21 _(SL5)							
7.20-8.70	SL6 _(SS)							
7.20-7.95	B22 _(SL6)							
7.20	S	40/235mm						
7.50	J23 _(SL6)							
7.50	PID	<0.1ppm						

Boring Progress and Water Observations					Liner Sample Information				General Remarks
Date	Depth	Casing	Casing Dia (mm)	Water Standing	From - To	Internal Dia (mm)	Recovery (%)	Subsampled	
22/06/2021	0.00	0.00	178		0.42 - 1.20	178	100	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.
22/06/2021	4.20	4.20	178	Dry	1.20 - 2.70	178	100	Yes	
23/06/2021	4.20	4.20	178	Dry	2.70 - 4.20	178	53	Yes	
					4.20 - 5.70	178	100	Yes	
					5.70 - 7.20	178	100	Yes	
					7.20 - 8.70	178	100	Yes	

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

Status:-
FINAL

Project: Preliminary Onshore Ground Investigation for NZT		Exploratory Hole No. LFBH02	
Client: AECOM		Location: North-west of Redcar, North Yorkshire E:457520.508 N:525835.382	
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Comacchio GEO 205)		Ground Level (m): 6.326	Start Date: 22/06/2021
		Sheet: 2 of 3	

SAMPLES & TESTS			STRATA					Instrument/ Backfill
Depth	Type No	Test Result	Water	Reduced Level	Legend	Depth (Thickness)	Description	
7.95-8.70 8.00	B24 _(SL6) J25 _(SL6)						Medium dense to dense yellow brown SAND with occasional fragments of shell (bivalve). Sand is fine to coarse. (Tidal Flat Deposits). <i>(continued)</i>	
8.50	J26 _(SL6)			-2.37		8.70		
8.70-10.20 8.70-8.90	SL7 _(SS) ES27 _(SL7)	N13					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).	
8.70	S	<0.1ppm						
8.70	PID							
9.00	J28 _(SL7)					(1.50)		
9.00-9.45	B29 _(SL7)							
9.45-10.20	B31 _(SL7)							
9.50	J30 _(SL7)							
10.00	J32 _(SL7)	<0.1ppm		-3.87		10.20		
10.00	PID							
10.20-11.70	SL8 _(SS)	N14					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).	
10.20-10.95	B33 _(SL8)							
10.20	S							
10.50	J34 _(SL8)							
10.95-11.70	B35 _(SL8)	<0.1ppm					between c.11.40-11.70m BGL ... yellow dark brown..	
11.00	J36 _(SL8)							
11.00	PID							
11.50	J37 _(SL8)							
11.70-13.20	SL9 _(SS)	N23						
11.70-12.45	B38 _(SL9)							
11.70	S	<0.1ppm						
12.00	J39 _(SL9)					(4.50)		
12.00	PID							
12.45-13.20	B40 _(SL9)						at c.12.45m ... slightly silty sand.	
12.50	J41 _(SL9)							
13.00	J42 _(SL9)	<0.1ppm						
13.00	PID							
13.20-14.70	SL10 _(SS)	N15						
13.20-13.95	B43 _(SL10)							
13.20	S							
13.50	J44 _(SL10)							
13.95-14.70	B45 _(SL10)							
14.00	J46 _(SL10)							
14.50	J47 _(SL10)			-8.37		14.70		
14.70-16.20	SL11 _(SS)	N5					Very soft dark brown silty CLAY with occasional shell fragments (bivalves). (Tidal Flat Deposits).	
14.70-15.00	ES48 _(S11)	<0.1ppm						
14.70-15.45	B49 _(S11)							
14.70	J48A _(SL11)							
14.70	S	<0.1ppm						
14.70	PID							
15.00	PID							
15.45	J50 _(SL11)					(1.95)		
15.45-16.20	B51 _(S11)							

Boring Progress and Water Observations					Liner Sample Information				General Remarks
Date	Depth	Casing	Casing Dia (mm)	Water Standing	From - To	Internal Dia (mm)	Recovery (%)	Subsampled	
23/06/2021	10.20	10.20	178	3.00	8.70 - 10.20	178	100	Yes	
24/06/2021	10.20	10.20	178	3.00	10.20 - 11.70	178	100	Yes	
					11.70 - 13.20	178	100	Yes	
					13.20 - 14.70	178	100	Yes	
					14.70 - 16.20	178	100	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.

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

Status:-
FINAL

Project: Preliminary Onshore Ground Investigation for NZT		Exploratory Hole No. LF1BH02	
Client: AECOM		Location: North-west of Redcar, North Yorkshire E:457520.508 N:525835.382	
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Comacchio GEO 205)		Ground Level (m): 6.326	Start Date: 22/06/2021
		Sheet: 3 of 3	

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

Boring Progress and Water Observations					Liner Sample Information				General Remarks
Date	Depth	Casing	Casing Dia (mm)	Water Standing	From - To	Internal Dia (mm)	Recovery (%)	Subsampled	
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.

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

Status:-
FINAL

Project: Preliminary Onshore Ground Investigation for NZT		Exploratory Hole No. LF1BH02	
Client: AECOM		Location: North-west of Redcar, North Yorkshire E:457520.508 N:525835.382	
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Comacchio GEO 205)		Ground Level (m): 6.326	Start Date: 22/06/2021
		Sheet: 1 of 18	

RUN DETAILS			STRATA				Instrument/ Backfill		
Depth & (Core Ø)	TCR (SCR) RQD	Fracture Index	Water	Reduced Level	Legend	Depth (Thickness)		Description	
								Discontinuity Detail	Main
16.65 (102mm)	0	SOIL		-10.33		16.65 (0.75)	16.65-27.40m ... soil.	Very soft dark brown silty CLAY with shell fragments (bivalves). (Tidal Flat Deposits).	
17.40 (102mm)	95			-11.07		17.40 (1.30)	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.	
18.40 (102mm)	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 (102mm)	93						19.40m ... J59 19.40m ... B60		

Drilling Progress and Water Observations				Standard Penetration Test			Flush			General Remarks
Date	Depth	Casing	Water Standing	Depth	Type	Result	From - To	Type	Returns (%)	
02/07/2021	16.65	16.20	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	For explanation of symbols and abbreviations see Key Sheets	Checked by: <i>K.W.</i>	Logged by: M.B/R.C	Contract No. 4339
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DRILLHOLE RECORD

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Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Comacchio GEO 205)		Ground Level (m): 6.326	Start Date: 22/06/2021
		Sheet: 2 of 18	

RUN DETAILS				STRATA					Instrument/ Backfill
Depth & (Core Ø)	TCR (SCR) RQD	Fracture Index	Water	Reduced Level	Legend	Depth (Thickness)	Description		
							Discontinuity Detail	Main	
21.40	53					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.	
22.90	53				21.50m ... J63 21.50m ... B64 (6.30) 22.40m ... B66 22.50m ... J65				
24.40	93					24.40m ... B68 24.50m ... J67	24.20-24.40m ... 1 No. cobble subangular to subrounded of mudstone.		

Drilling Progress and Water Observations				Standard Penetration Test			Flush			General Remarks
Date	Depth	Casing	Water Standing	Depth	Type	Result	From - To	Type	Returns (%)	
02/07/2021	24.40	24.40	0.00	22.90	S	N15	21.40 - 22.90	Water	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.
05/07/2021	24.40	24.40	3.14				22.90 - 24.40	Water	100	
							24.40 - 25.90	Water	100	

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DRILLHOLE RECORD

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Client: AECOM		Location: North-west of Redcar, North Yorkshire E:457520.508 N:525835.382			
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Comacchio GEO 205)		Ground Level (m): 6.326	Start Date: 22/06/2021	Sheet: 3 of 18	

RUN DETAILS				STRATA						Instrument/ Backfill
Depth & (Core Ø)	TCR (SCR) RQD	Fracture Index	Water	Reduced Level	Legend	Depth (Thickness)	Description			
							Discontinuity Detail	Main		
25.90				-18.67	(0.90)	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.		
27.40	100			-19.57	(1.50)	25.90	26.00m ... J73 26.00m ... B74 26.50m ... U75 27.00m ... J76 27.00m ... B78	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). 26.50m ... very high strength. Clay is of low plasticity.		
27.40	83 (40) 19	NR		-21.07	(0.34)	27.40	27.40-27.74m ... no recovery.	(1) MUDSTONE. (Redcar Mudstone Formation).		
27.40	6			-21.41	(0.34)	27.74	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 Progress and Water Observations				Standard Penetration Test			Flush			General Remarks
Date	Depth	Casing	Water Standing	Depth	Type	Result	From - To	Type	Returns (%)	
							25.90 - 27.40	Water	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.
							27.40 - 28.80	Water	100	

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DRILLHOLE RECORD

Status:-
FINAL

Project: Preliminary Onshore Ground Investigation for NZT		Exploratory Hole No. LF1BH02	
Client: AECOM		Location: North-west of Redcar, North Yorkshire E:457520.508 N:525835.382	
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Comacchio GEO 205)		Ground Level (m): 6.326	Start Date: 22/06/2021
		Sheet: 4 of 18	

RUN DETAILS			STRATA					Instrument/ Backfill	
Depth & (Core Ø)	TCR (SCR) RQD	Fracture Index	Water	Reduced Level	Legend	Depth (Thickness)	Description		
							Discontinuity Detail		Main
28.80		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). (Redcar Mudstone Formation). (continued)		
	100 (88) 73					29.00-37.70m ... subhorizontal to subvertical (5-85 degrees) closely spaced planar to undulating smooth tight to open infilled (clay) discontinuities.			
30.30		10							
	100 (77) 42								
31.80									
	100 (81) 56								

Drilling Progress and Water Observations				Standard Penetration Test			Flush			General Remarks
Date	Depth	Casing	Water Standing	Depth	Type	Result	From - To	Type	Returns (%)	
							28.80 - 30.30	Water	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.
							30.30 - 31.80	Water	100	
							31.80 - 33.20	Water	100	

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DRILLHOLE RECORD

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Project: Preliminary Onshore Ground Investigation for NZT			Exploratory Hole No. LF1BH02		
Client: AECOM		Location: North-west of Redcar, North Yorkshire E:457520.508 N:525835.382			
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Comacchio GEO 205)		Ground Level (m): 6.326	Start Date: 22/06/2021	Sheet: 5 of 18	

RUN DETAILS			STRATA					Instrument/ Backfill	
Depth & (Core Ø)	TCR (SCR) RQD	Fracture Index	Water	Reduced Level	Legend	Depth (Thickness)	Description		
							Discontinuity Detail		Main
33.20	(102mm)	100 (80) 34				(9.96)		Weak, in places very weak, thinly laminated blue grey MUDSTONE partially weathered with occasional fossilised remains (2-40mm in size). (Redcar Mudstone Formation). (continued)	
33.90	(102mm)	100 (100) 65							
34.30	(102mm)	100 (100) 83							
34.70	(102mm)	100 (100) 54							
35.50	(102mm)	100 (100) 51							
36.15	(102mm)	100 (100) 40							

Drilling Progress and Water Observations				Standard Penetration Test			Flush			General Remarks
Date	Depth	Casing	Water Standing	Depth	Type	Result	From - To	Type	Returns (%)	
05/07/2021	33.20	33.20	0.00				33.20 - 33.90	Water	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.
06/07/2021	33.20	33.20	4.17				33.90 - 34.30	Water	100	
							34.30 - 34.70	Water	100	
							34.70 - 35.50	Water	100	
							35.50 - 36.15	Water	100	
							36.15 - 37.00	Water	100	

All dimensions in metres Scale 1:25.00	For explanation of symbols and abbreviations see Key Sheets	Checked by: <i>K.W.</i>	Logged by: M.B/R.C	Contract No. 4339
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DRILLHOLE RECORD

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Client: AECOM		Location: North-west of Redcar, North Yorkshire E:457520.508 N:525835.382	
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Comacchio GEO 205)		Ground Level (m): 6.326	Start Date: 22/06/2021
		Sheet: 6 of 18	

RUN DETAILS				STRATA					Instrument/ Backfill
Depth & (Core Ø)	TCR (SCR) RQD	Fracture Index	Water	Reduced Level	Legend	Depth (Thickness)	Description		
							Discontinuity Detail	Main	
37.00	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)	
(102mm)								Complete at 37.70m BGL.	

Drilling Progress and Water Observations				Standard Penetration Test			Flush			General Remarks
Date	Depth	Casing	Water Standing	Depth	Type	Result	From - To	Type	Returns (%)	
06/07/2021	37.70	37.70	0.00				37.00 - 37.70	Water	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	For explanation of symbols and abbreviations see Key Sheets	Checked by: <i>K.W.</i>	Logged by: M.B/R.C	Contract No. 4339
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DRILLHOLE RECORD

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Client: AECOM	Location: North-west of Redcar, North Yorkshire E:457520.508 N:525835.382		
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Comacchio GEO 205)	Ground Level (m): 6.326	Start Date: 22/06/2021	Sheet: 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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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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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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Status:-
FINAL

Project: Preliminary Onshore Ground Investigation for NZT			Exploratory Hole No. LF\BH02
Client: AECOM	Location: North-west of Redcar, North Yorkshire E:457520.508 N:525835.382		
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

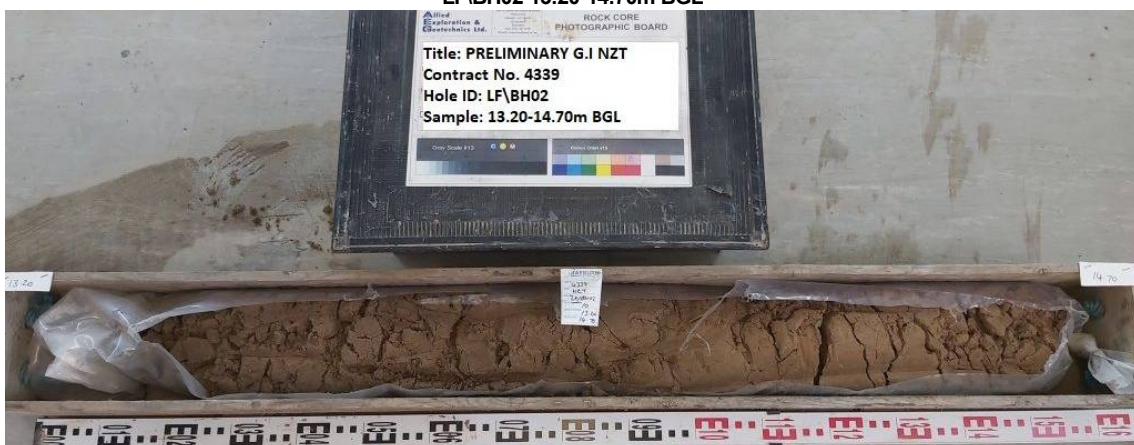
Status:-
FINAL

Project: Preliminary Onshore Ground Investigation for NZT			Exploratory Hole No. LFBH02
Client: AECOM	Location: North-west of Redcar, North Yorkshire E:457520.508 N:525835.382		
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 LFBH02.9
LFBH02 11.70-13.20m BGL



Figure LFBH02.10
LFBH02 13.20-14.70m BGL





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DRILLHOLE RECORD

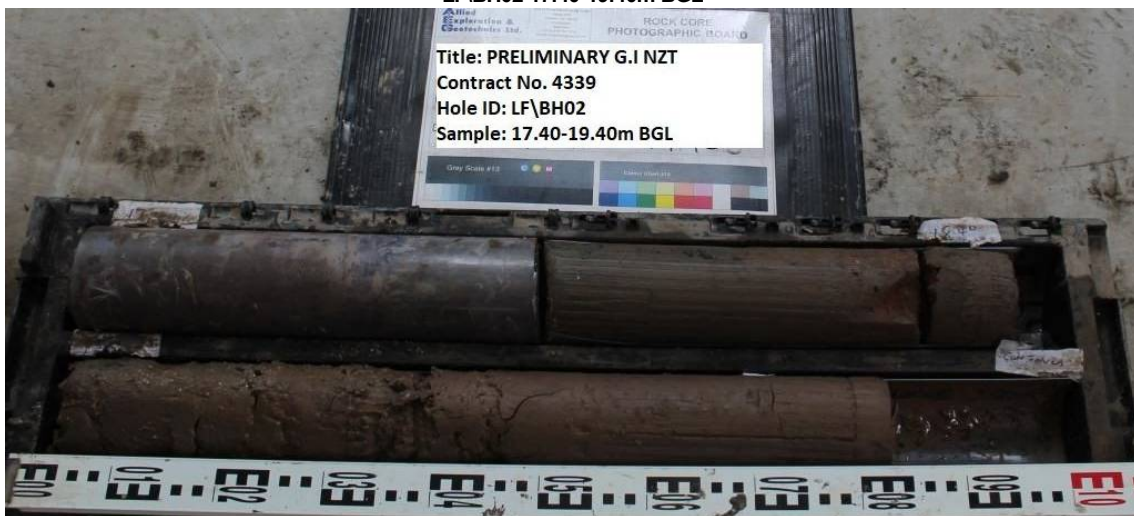
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Figure LF\BH02.11
LF\BH02 14.70-16.20m BGL



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





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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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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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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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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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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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Figure LF\BH02.23
LF\BH02 36.15-37.70m BGL



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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 Yorkshire E:457252.259 N:525685.159	
Method (Equipment): Sonic/Openhole/Coring (Boart Longyear LS250/Boart Longyear DB520)		Ground Level (m): 4.818	Start Date: 25/06/2021
		Sheet: 1 of 2	

SAMPLES & TESTS			STRATA				Instrument/ Backfill
Depth	Type No	Test Result	Water	Reduced Level	Legend	Depth (Thickness)	
0.05-1.20 0.05-0.90 0.30 0.30 0.50 0.50 0.50	SL1 _(SS) B5 _(SL1) ES1 _(SL1) PID ES2 _(SL1) J6 _(SL1) PID	0.1ppm 0.1ppm				(0.90) 3.92 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%)).
0.90-1.20 1.00 1.00 1.00	B7 _(SL1) ES3 _(SL1) J8 _(SL1) PID	<0.1ppm				3.62 1.20 (0.40)	MADE GROUND (Yellow brown sand. Sand is fine to coarse).
1.20-2.70 1.20-1.60 1.20 1.50	SL2 _(SS) B9 _(SL2) S PID	50/285mm <0.1ppm				3.22 1.60 (0.65)	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 are subrounded and include slag. Slag is vesicular (100%)).
1.60-2.25 2.00 2.00	B11 _(SL2) ES4 _(SL2) J10 _(SL2) PID	<0.1ppm				2.57 2.25	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%)).
2.25-2.70 2.25 2.50	ES13 _(SL2) PID J12 _(SL2) SL3 _(SS)	<0.1ppm				(1.15)	MADE GROUND (Dark blue silty sand with occasional fragments of shell (bivalves). Sand is fine to coarse. Mild hydrocarbon odour). at c.2.70m BGL ... dense. between c.2.70-3.40m BGL ... dark blue brown.
2.70-3.40 2.70 3.00 3.00	B14 _(SL3) S J15 _(SL3) PID	N32 <0.1ppm				1.42 3.40	Dense yellow brown SAND with occasional fragments of shell. Sand is fine to coarse. (Tidal Flat Deposits).
3.40-4.20 3.40 3.50	B16 _(SL3) PID J17 _(SL3)	<0.1ppm					
4.00 4.00	J18 _(SL3) PID	<0.1ppm					
4.20-5.70 4.20-4.95 4.20 4.50	SL4 _(SS) B19 _(SL4) S J20 _(SL4)	N41					
4.95-5.70 5.00 5.00	B21 _(SL4) J22 _(SL4) PID	<0.1ppm					
5.50	J23 _(SL4)						
5.70-7.20 5.70-6.35 5.70	SL5 _(SS) B24 _(SL5) S	N32					
6.00 6.00	J25 _(SL5) PID	<0.1ppm					
6.35-6.75 6.50	B26 _(SL5) J27 _(SL5)						between c.6.35-6.75m BGL ... with frequent shell fragments (approximately 50% is fragments of shell).
6.75-7.20	B28 _(SL5)						
7.00 7.00	J29 PID	<0.1ppm				(7.70)	
7.20-8.70 7.20-7.95 7.20 7.50	SL6 _(SS) B30 _(SL6) S J31 _(SL6)	N41					at c.7.40m BGL ... 1 No. cobble of subangular grey limestone.

Boring Progress and Water Observations					Liner Sample Information				General Remarks
Date	Depth	Casing	Casing Dia (mm)	Water Standing	From - To	Internal Dia (mm)	Recovery (%)	Subsampled	
25/06/2021	0.00	0.00	178		0.05 - 1.20	178	100	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.
					1.20 - 2.70	178	100	Yes	
					2.70 - 4.20	178	100	Yes	
					4.20 - 5.70	178	100	Yes	
					5.70 - 7.20	178	100	Yes	
					7.20 - 8.70	178	100	Yes	

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

Status:-
FINAL

Project: Preliminary Onshore Ground Investigation for NZT		Exploratory Hole No. MS1BH02	
Client: AECOM		Location: North-west of Redcar, North Yorkshire E:457252.259 N:525685.159	
Method (Equipment): Sonic/Openhole/Coring (Boart Longyear LS250/Boart Longyear DB520)		Ground Level (m): 4.818	Start Date: 25/06/2021
		Sheet: 2 of 2	

SAMPLES & TESTS			STRATA					Instrument/ Backfill
Depth	Type No	Test Result	Water	Reduced Level	Legend	Depth (Thickness)	Description	
7.95-8.70 8.00 8.00	B32 _(SL6) J33 _(SL6) 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	J34 _(SL6) SL7 _(SS) B35 _(SL7) S J36 _(SL7) PID	N43 <0.1ppm					between c.9.60-11.10m BGL ... slightly saturated.	
9.45-10.20 9.50	B37 _(SL7) J38 _(SL7)						at c.10.40m BGL ... slightly silty sand.	
10.20-11.70 10.20-10.40 10.20 10.20 10.40-11.10 10.50 11.00	SL8 _(SS) ES39 _(SL8) S PID B41 _(SL8) J40 _(SL8) J42 _(SL8)	N43 <0.1ppm		-6.28		11.10	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.	
11.20-11.40 11.20 11.20 11.40-11.70 11.50 11.70-12.15	ES43 _(SL8) ES44 _(SL8) PID B45 _(SL8) J46 _(SL8) UT1	<0.1ppm (27)		-7.33		12.15	<i>Boring complete at 12.15m BGL - continued by rotary drilling.</i>	

Boring Progress and Water Observations					Liner Sample Information				General Remarks
Date	Depth	Casing	Casing Dia (mm)	Water Standing	From - To	Internal Dia (mm)	Recovery (%)	Subsampled	
25/06/2021	8.70	8.70	178	4.20	8.70 - 10.20	178	100	Yes	
28/06/2021	8.70	8.70	178	3.00	10.20 - 11.70	178	100	Yes	
28/06/2021	12.15	11.70	178		11.70 - 12.15	116	89	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.

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

Status:-
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Method (Equipment): Sonic/Openhole/Coring (Boart Longyear LS250/Boart Longyear DB520)		Ground Level (m): 4.818	Start Date: 25/06/2021
		Sheet: 1 of 14	

RUN DETAILS			STRATA				Instrument/ Backfill		
Depth & (Core Ø)	TCR (SCR) RQD	Fracture Index	Water	Reduced Level	Legend	Depth (Thickness)		Description	
								Discontinuity Detail	Main
12.70		RO		-7.33		12.15	12.15-12.70m ... rotary openhole drilling.	Soft dark brown slightly sandy silty CLAY. (Tidal Flat Deposits).	
13.00 (102mm)	33	SOIL				(1.45)	12.70-24.00m ... soil.		
	100						13.00m ... B48 13.10m ... J47	13.00m ... clay is of low to intermediate plasticity.	
				-8.78		13.60	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						(2.20)	15.00m ... ES55 15.00m ... ES(M)56 15.10m ... J51 15.10m ... B52	15.10m ... clay is of high plasticity.	
	100						15.80m ... B54 15.90m ... J53		
16.00				-10.98		15.80	16.00m ... J1 16.00m ... ES57		

Drilling Progress and Water Observations				Standard Penetration Test			Flush			General Remarks
Date	Depth	Casing	Water Standing	Depth	Type	Result	From - To	Type	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	(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	For explanation of symbols and abbreviations see Key Sheets	Checked by: <i>K.W.</i>	Logged by: M.B/R.C	Contract No. 4339
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		Sheet: 2 of 14	

RUN DETAILS				STRATA				Instrument/ Backfill	
Depth & (Core Ø)	TCR (SCR) RQD	Fracture Index	Water	Reduced Level	Legend	Depth (Thickness)	Description		
							Discontinuity Detail		Main
17.50	93					16.00m ... ES(M)58 16.10m ... J59 16.10m ... B60 16.85m ... B62 17.00m ... J61 17.50m ... B64 17.60m ... J63 (4.20) 18.10m ... J65 18.25m ... B66 19.00m ... J2 19.00m ... B68 19.10m ... J67	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)		
19.00	100			-15.18		20.00 20.00m ... B70	20.00m ... clay is of intermediate plasticity.		

Drilling Progress and Water Observations				Standard Penetration Test			Flush			General Remarks
Date	Depth	Casing	Water Standing	Depth	Type	Result	From - To	Type	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, 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.

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		Sheet: 3 of 14	

RUN DETAILS			STRATA					Instrument/ Backfill	
Depth & (Core Ø)	TCR (SCR) RQD	Fracture Index	Water	Reduced Level	Legend	Depth (Thickness)	Description		
							Discontinuity Detail		Main
20.50	93				(1.80)	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)						21.25m ... U72	21.25m ... clay is of intermediate plasticity.		
22.00	100			-16.98		21.80m ... J73 22.00m ... J3 22.00m ... ES74 22.20m ... B75 22.50m ... J76	Firm red brown slightly sandy slightly gravelly CLAY. Gravel is fine to coarse subrounded to subangular and includes sandstone, limestone and mudstone. (Glacial Till). 22.20m ... clay is of intermediate plasticity. from 22.50m ... stiff.		
(102mm)					(2.08)	23.00m ... U77	23.00m ... very high strength. Clay is of intermediate plasticity.		
23.50	31 (0) 0					23.50m ... ES78			
				-19.06		23.88	(1) Red brown gravelly CLAY. (Glacial Till).		
		NR		-19.18		24.00			
						24.00-26.00m ... no recovery.			

Drilling Progress and Water Observations				Standard Penetration Test			Flush			General Remarks
Date	Depth	Casing	Water Standing	Depth	Type	Result	From - To	Type	Returns (%)	
29/06/2021	23.50	23.50	0.00	22.00	S	N26	20.50 - 22.00	Water	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.
30/06/2021	23.50	23.50	7.20				22.00 - 23.50	Water	100	
							23.50 - 24.80	Water	100	

All dimensions in metres Scale 1:25.00	For explanation of symbols and abbreviations see Key Sheets	Checked by: <i>K.W.</i>	Logged by: M.B/R.C	Contract No. 4339
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Method (Equipment): Sonic/Openhole/Coring (Boart Longyear LS250/Boart Longyear DB520)		Ground Level (m): 4.818	Start Date: 25/06/2021
		Sheet: 4 of 14	

RUN DETAILS				STRATA				Instrument/ Backfill	
Depth & (Core Ø)	TCR (SCR) RQD	Fracture Index	Water	Reduced Level	Legend	Depth (Thickness)	Description		
							Discontinuity Detail		Main
24.80	0 (0) 0						(1) Grey MUDSTONE. (Driller describes as 'very weak with hard bands'). (Redcar Mudstone Deposits). (continued)		
25.30	0 (0) 0					(2.00)			
25.80	0 (0) 0								
26.30	60	10		-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 laminating black grey MUDSTONE partly weathered with occasional fossilised remains (2mm-40mm in size). (Redcar Mudstone Formation).	
26.80	100	8					26.30-26.80m ... horizontal (0-5 degrees) closely spaced planar to undulating rough and smooth open infilled (clayey gravel) discontinuities.		
27.40	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.		
28.10	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.		
	100	10							

Drilling Progress and Water Observations				Standard Penetration Test			Flush			General Remarks
Date	Depth	Casing	Water Standing	Depth	Type	Result	From - To	Type	Returns (%)	
30/06/2021	26.80	26.80	0.00	24.80	C	N37	24.80 - 25.30	Water	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.
01/07/2021	26.80	26.80	0.00	25.80	C	50/82mm	25.30 - 25.80	Water	100	
				26.30	C	50/8mm	25.80 - 26.30	Water	100	
							26.30 - 26.80	Water	100	
							26.80 - 27.40	Water	100	
							27.40 - 28.10	Water	100	
							28.10 - 29.00	Water	100	

All dimensions in metres Scale 1:25.00	For explanation of symbols and abbreviations see Key Sheets	Checked by: <i>K.W.</i>	Logged by: M.B/R.C	Contract No. 4339
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DRILLHOLE RECORD

Status:-
FINAL

Project: Preliminary Onshore Ground Investigation for NZT		Exploratory Hole No. MS1BH02	
Client: AECOM		Location: North-west of Redcar, North Yorkshire E:457252.259 N:525685.159	
Method (Equipment): Sonic/Openhole/Coring (Boart Longyear LS250/Boart Longyear DB520)		Ground Level (m): 4.818	Start Date: 25/06/2021
		Sheet: 5 of 14	

RUN DETAILS				STRATA					Instrument/ Backfill
Depth & (Core Ø)	TCR (SCR) RQD	Fracture Index	Water	Reduced Level	Legend	Depth (Thickness)	Description		
							Discontinuity Detail	Main	
(102mm)	(100) 83			-24.18		29.00	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.	
								Complete at 29.00m BGL.	

Drilling Progress and Water Observations				Standard Penetration Test			Flush			General Remarks
Date	Depth	Casing	Water Standing	Depth	Type	Result	From - To	Type	Returns (%)	
01/07/2021	29.00	29.00	0.00							(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	For explanation of symbols and abbreviations see Key Sheets	Checked by: <i>K.W.</i>	Logged by: M.B/R.C	Contract No. 4339
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DRILLHOLE RECORD

Status:-
FINAL

Project: Preliminary Onshore Ground Investigation for NZT			Exploratory Hole No. MS\BH02
Client: AECOM	Location: North-west of Redcar, North Yorkshire E:457252.259 N:525685.159		
Method (Equipment): Sonic/Openhole/Coring (Boart Longyear LS250/Boart Longyear DB520)	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





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DRILLHOLE RECORD

Status:-

FINAL

Project: Preliminary Onshore Ground Investigation for NZT			Exploratory Hole No. MS\BH02
Client: AECOM	Location: North-west of Redcar, North Yorkshire E:457252.259 N:525685.159		
Method (Equipment): Sonic/Openhole/Coring (Boart Longyear LS250/Boart Longyear DB520)	Ground Level (m): 4.818	Start Date: 25/06/2021	Sheet: 7 of 14

**Figure MS\BH02.3
MS\BH02 2.70-4.20m BGL**



**Figure MS\BH02.4
MS\BH02 4.20-5.70m BGL**





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DRILLHOLE RECORD

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Project: Preliminary Onshore Ground Investigation for NZT			Exploratory Hole No. MS\BH02
Client: AECOM	Location: North-west of Redcar, North Yorkshire E:457252.259 N:525685.159		
Method (Equipment): Sonic/Openhole/Coring (Boart Longyear LS250/Boart Longyear DB520)	Ground Level (m): 4.818	Start Date: 25/06/2021	Sheet: 8 of 14

Figure MS\BH02.5
MS\BH02 5.70-7.20m BGL



Figure MS\BH02.6
MS\BH02 7.20-8.70m BGL





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DRILLHOLE RECORD

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Client: AECOM	Location: North-west of Redcar, North Yorkshire E:457252.259 N:525685.159		
Method (Equipment): Sonic/Openhole/Coring (Boart Longyear LS250/Boart Longyear DB520)	Ground Level (m): 4.818	Start Date: 25/06/2021	Sheet: 9 of 14

Figure MS\BH02.7
MS\BH02 8.70-10.20m BGL



Figure MS\BH02.8
MS\BH02 10.20-11.70m BGL





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DRILLHOLE RECORD

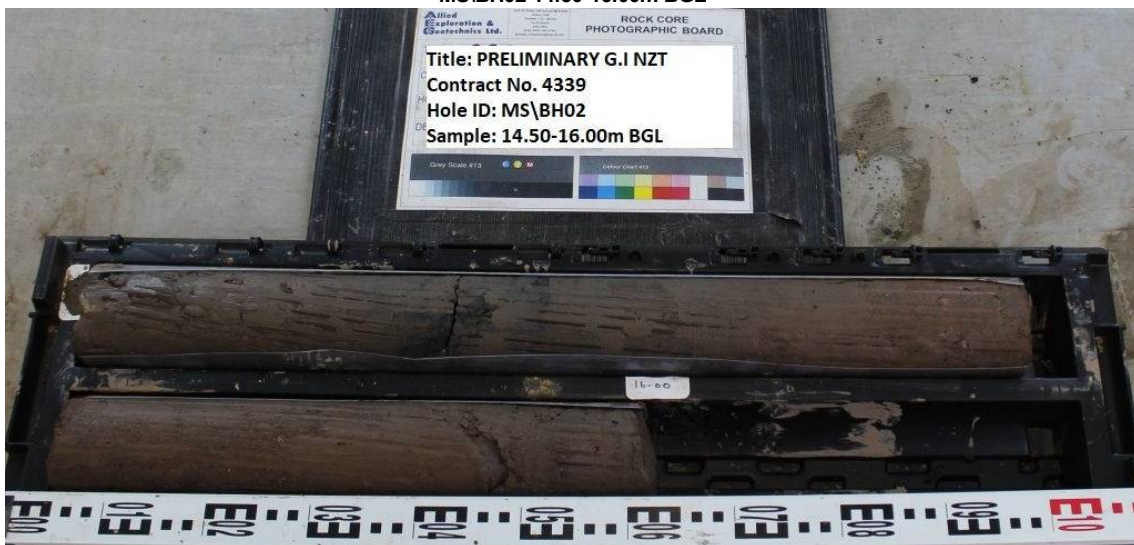
Status:-
FINAL

Project: Preliminary Onshore Ground Investigation for NZT			Exploratory Hole No. MS\BH02
Client: AECOM	Location: North-west of Redcar, North Yorkshire E:457252.259 N:525685.159		
Method (Equipment): Sonic/Openhole/Coring (Boart Longyear LS250/Boart Longyear DB520)	Ground Level (m): 4.818	Start Date: 25/06/2021	Sheet: 10 of 14

Figure MS\BH02.9
MS\BH02 12.70-14.50m BGL



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





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DRILLHOLE RECORD

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Project: Preliminary Onshore Ground Investigation for NZT			Exploratory Hole No. MS\BH02
Client: AECOM	Location: North-west of Redcar, North Yorkshire E:457252.259 N:525685.159		
Method (Equipment): Sonic/Openhole/Coring (Boart Longyear LS250/Boart Longyear DB520)	Ground Level (m): 4.818	Start Date: 25/06/2021	Sheet: 11 of 14

Figure MS\BH02.11
MS\BH02 16.00-17.50m BGL



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





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Client: AECOM	Location: North-west of Redcar, North Yorkshire E:457252.259 N:525685.159		
Method (Equipment): Sonic/Openhole/Coring (Boart Longyear LS250/Boart Longyear DB520)	Ground Level (m): 4.818	Start Date: 25/06/2021	Sheet: 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:-
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Project: Preliminary Onshore Ground Investigation for NZT			Exploratory Hole No. MS\BH02
Client: AECOM	Location: North-west of Redcar, North Yorkshire E:457252.259 N:525685.159		
Method (Equipment): Sonic/Openhole/Coring (Boart Longyear LS250/Boart Longyear DB520)	Ground Level (m): 4.818	Start Date: 25/06/2021	Sheet: 13 of 14

Figure MS\BH02.15
MS\BH02 23.50-26.80m BGL



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





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DRILLHOLE RECORD

Status:-
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Project: Preliminary Onshore Ground Investigation for NZT			Exploratory Hole No. MS\BH02
Client: AECOM	Location: North-west of Redcar, North Yorkshire E:457252.259 N:525685.159		
Method (Equipment): Sonic/Openhole/Coring (Boart Longyear LS250/Boart Longyear DB520)	Ground Level (m): 4.818	Start Date: 25/06/2021	Sheet: 14 of 14

Figure MS\BH02.17
MS\BH02 28.10-29.00m BGL



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SONIC SAMPLE HOLE RECORD

Status:-

FINAL

Project: Preliminary Onshore Ground Investigation for NZT		Exploratory Hole No.	
Client: AECOM		MS1BH03	
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Boart Longyear DB520)		Location: North-west of Redcar, North Yorkshire E:457301.31 N:525582.70	Start Date: 22/06/2021
		Ground Level (m): 4.67	Sheet: 1 of 2

SAMPLES & TESTS			STRATA					Instrument/ Backfill
Depth	Type No	Test Result	Water	Reduced Level	Legend	Depth (Thickness)	Description	
0.10-1.20	SL1 ^(SS)				[0.55]		MADE GROUND (Black slightly silty 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%).	[0.55]
0.10-0.55	B7 ^(SL1)			4.12	[0.80]			
0.30	ES1	<0.1ppm			[1.35]		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).	[1.35]
0.30	J6 ^(SL1)				[1.75]			
0.50	PID	<0.1ppm			[2.80]		Dense to very dense yellow brown SAND with occasional fragments of shell. Sand is fine to coarse. (Engineer notes locally saturated).	[2.80]
0.50	ES2	<0.1ppm			[6.55]			
0.50	PID	<0.1ppm					at c.6.45m BGL ... slightly silty sand.	[6.55]
0.55-1.20	B9 ^(SL1)			3.32				
1.00	ES3							
1.00	J8 ^(SL1)							
1.00	PID	0.1ppm						
1.20-2.70	SL2 ^(SS)			2.92				
1.20	S	N30						
1.35-1.75	B11 ^(SL2)							
1.50	J10 ^(SL2)							
1.50	PID	<0.1ppm						
1.75-2.70	B13 ^(SL2)							
1.77-28.50	EW100D							
1.89-2.70	EW100S							
2.00	ES4							
2.00	J12 ^(SL2)			1.87				
2.00	PID	0.3ppm						
2.50	ES5							
2.50	PID	<0.1ppm						
2.70-4.20	SL3 ^(SS)							
2.70	S	56/220mm						
2.80-3.45	B16 ^(SL3)							
3.00-3.30	ES14							
3.00	J15 ^(SL3)							
3.00	PID	<0.1ppm						
3.45-4.20	B18 ^(SL3)							
3.50	J17 ^(SL3)							
4.00	J19 ^(SL3)							
4.20-5.70	SL4 ^(SS)							
4.20-4.95	B20 ^(SL4)							
4.20	S	N51						
4.50	J21 ^(SL4)							
4.50	PID	<0.1ppm						
4.95-5.70	B22 ^(SL4)							
5.00	J23 ^(SL4)							
5.50	J24 ^(SL4)							
5.50	PID	<0.1ppm						
5.70-7.20	SL5 ^(SS)							
5.70-6.45	B25 ^(SL5)							
5.70	S	50/290mm						
6.00	J26 ^(SL5)							
6.45-7.20	B27 ^(SL5)							
6.50	J28 ^(SL5)							
6.50	PID	<0.1ppm						
7.00	J29 ^(SL5)							
7.20-8.70	SL6 ^(SS)							
7.20-7.95	B30 ^(SL6)							
7.20	S	N43						
7.50	J31 ^(SL6)							
7.50	PID	<0.1ppm						

Boring Progress and Water Observations					Liner Sample Information				General Remarks
Date	Depth	Casing	Casing Dia (mm)	Water Standing	From - To	Internal Dia (mm)	Recovery (%)	Subsampled	
22/06/2021	0.00	0.00	178		0.10 - 1.20	178	100	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.
22/06/2021	2.70	2.70	178	2.50	1.20 - 2.70	178	100	Yes	
23/06/2021	2.70	2.70	178	1.70	2.70 - 4.20	178	100	Yes	
					4.20 - 5.70	178	100	Yes	
					5.70 - 7.20	178	100	Yes	
					7.20 - 8.70	178	100	Yes	

All dimensions in metres Scale 1:50.00	For explanation of symbols and abbreviations see Key Sheets	Checked by: <i>K.W.</i>	Logged by: M.B/R.C	Contract No. 4339
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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 Yorkshire E:457301.31 N:525582.70	
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Boart Longyear DB520)		Ground Level (m): 4.67	Start Date: 22/06/2021
		Sheet: 2 of 2	

SAMPLES & TESTS			STRATA					Instrument/ Backfill
Depth	Type No	Test Result	Water	Reduced Level	Legend	Depth (Thickness)	Description	
7.95-8.70 8.00	B32 ^(SL6) J33 ^(SL6)						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). <i>(continued)</i>	
8.50 8.50	J34 ^(SL6) PID	<0.1ppm						
8.70-10.20 8.70-9.35 8.70 9.00	SL7 ^(SS) B35 ^(SL7) S J36 ^(SL7)	N35		-4.68		9.35		
9.35-10.20 9.50 9.50-9.80 9.50	B37 ^(SL7) J38 ^(SL7) ES39 ^(SL7) 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).	
10.00 10.20-11.70 10.20 10.20	J40 ^(SL7) SL8 ^(SS) J41 ^(SL8) S	N4		-5.83		10.50	at c. 10.20m BGL ... very loose.	
10.50-11.00 10.50 10.50	B42 ^(SL8) J43 ^(SL8) PID	<0.1ppm		-6.33		(0.50) 11.00	Very soft dark brown slightly sandy CLAY with occasional fragments of shell. (Tidal Flat Deposits).	
11.00-11.20 11.00 11.20-11.20 11.20	ES44 ^(SL8) PID ES45 ES(M)45 ^(SL8) PID	<0.1ppm				(1.25)	at c. 10.50m BGL ... clay is of low plasticity. Soft thinly laminated dark brown sandy silty CLAY. (Tidal Flat Deposits).	
11.30-11.70 11.50 11.70-12.15 12.00	B47 ^(SL8) J46 ^(SL8) UT1 PID	(25) <0.1ppm		-7.58		12.25	at c. 11.70m BGL ... clay is of low plasticity.	
Boring complete at 12.25m BGL - continued by rotary drilling.								

Boring Progress and Water Observations					Liner Sample Information				General Remarks
Date	Depth	Casing	Casing Dia (mm)	Water Standing	From - To	Internal Dia (mm)	Recovery (%)	Subsampled	
23/06/2021	12.25	11.70	178		8.70 - 10.20	178	100	Yes	
					10.20 - 11.70	178	100	Yes	
					11.70 - 12.15	116	67	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 Scale 1:50.00	For explanation of symbols and abbreviations see Key Sheets	Checked by: <i>K.W.</i>	Logged by: M.B/R.C	Contract No. 4339
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DRILLHOLE RECORD

Status:-
FINAL

Project: Preliminary Onshore Ground Investigation for NZT		Exploratory Hole No. MS1BH03	
Client: AECOM		Location: North-west of Redcar, North Yorkshire E:457301.314 N:525582.699	
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Boart Longyear DB520)		Ground Level (m): 4.672	Start Date: 22/06/2021
		Sheet: 1 of 14	

RUN DETAILS			STRATA				Instrument/ Backfill
Depth & (Core Ø)	TCR (SCR) RQD	Fracture Index	Reduced Level	Legend	Depth (Thickness)	Description	
					Discontinuity Detail		Main
		RO	-7.58		12.25	12.25-12.70m ... rotary openhole.	Soft thinly laminated dark brown very silty sandy CLAY. (Tidal Flat Deposits).
12.70	(102mm)	83			(0.75)	12.70-23.50m ... soil.	
13.00	(102mm)	0	-8.33		13.00	12.80m ... J48	12.80m ... clay is of low plasticity.
13.50	(102mm)	0			(1.00)		(1) Brown SILT/CLAY. (Driller describes as 'very soft'). (Tidal Flat Deposits).
14.00	(102mm)	100	-9.33		14.00	14.00m ... J49 14.00m ... ES50 14.10m ... ES(M)51	Firm thinly laminated dark brown slightly sandy silty CLAY. (Driller notes red sand bands). (Tidal Flat/Glacial Deposits).
14.50	(102mm)	100			(1.00)	14.50m ... J1 14.50m ... B54 14.60m ... J53	14.50m ... clay is of high plasticity with occasional pockets of peat.
16.00	(102mm)	100	-10.33		15.00	15.00m ... B56 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.
						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				Standard Penetration Test			Flush			General Remarks
Date	Depth	Casing	Water Standing	Depth	Type	Result	From - To	Type	Returns (%)	
24/06/2021	12.25	11.70	3.69	14.50	S	N6	12.70 - 13.00	Water	100	(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.
							13.00 - 13.50	Water	100	
							13.50 - 14.00	Water	100	
							14.00 - 14.50	Water	100	
							14.50 - 16.00	Water	100	
							16.00 - 17.50	Water	100	

All dimensions in metres Scale 1:25.00	For explanation of symbols and abbreviations see Key Sheets	Checked by: <i>K.W.</i>	Logged by: M.B/R.C	Contract No. 4339
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DRILLHOLE RECORD

Status:-
FINAL

Project: Preliminary Onshore Ground Investigation for NZT		Exploratory Hole No. MS1BH03
Client: AECOM	Location: North-west of Redcar, North Yorkshire E:457301.314 N:525582.699	
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Boart Longyear DB520)	Ground Level (m): 4.672	Start Date: 22/06/2021
		Sheet: 2 of 14

RUN DETAILS				STRATA				Instrument/ Backfill	
Depth & (Core Ø)	TCR (SCR) RQD	Fracture Index	Water	Reduced Level	Legend	Depth (Thickness)	Description		
							Discontinuity Detail		Main
(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					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)					(8.75)	19.90m ... J71 19.90m ... B72 19.90m ... ES(M)73			

Drilling Progress and Water Observations				Standard Penetration Test			Flush			General Remarks
Date	Depth	Casing	Water Standing	Depth	Type	Result	From - To	Type	Returns (%)	
				17.50	S	N16	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) 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 Scale 1:25.00	For explanation of symbols and abbreviations see Key Sheets	Checked by: <i>K.W.</i>	Logged by: M.B/R.C	Contract No. 4339
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DRILLHOLE RECORD

Status:-
FINAL

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Client: AECOM	Location: North-west of Redcar, North Yorkshire E:457301.314 N:525582.699	
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Boart Longyear DB520)	Ground Level (m): 4.672	Start Date: 22/06/2021 Sheet: 3 of 14

RUN DETAILS			STRATA					Instrument/ Backfill	
Depth & (Core Ø)	TCR (SCR) RQD	Fracture Index	Water	Reduced Level	Legend	Depth (Thickness)	Description		
							Discontinuity Detail		Main
20.50	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)		
(102mm)						21.20m ... J76 21.20m ... B77	21.20m ... clay is of low plasticity.		
22.00	100					22.10m ... J78 22.10m ... B79			
(102mm)						22.90m ... J80 22.90m ... B81	22.90m ... clay is of high plasticity.		
23.50	100 (39) 7					23.40m ... ES82 23.50m ... J4	23.50m ... clay is of low plasticity.		
		12		-19.08		23.75	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.		
		NI					24.15-24.50m ... non-intact.		

Drilling Progress and Water Observations				Standard Penetration Test			Flush			General Remarks
Date	Depth	Casing	Water Standing	Depth	Type	Result	From - To	Type	Returns (%)	
24/06/2021	22.00	22.00	0.00	20.50	S	N13	20.50 - 22.00	Water	100	(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.
25/06/2021	22.00	22.00	0.00	23.50	S	N41	22.00 - 23.50	Water	100	
							23.50 - 25.00	Water	100	

All dimensions in metres Scale 1:25.00	For explanation of symbols and abbreviations see Key Sheets	Checked by: <i>K.W.</i>	Logged by: M.B/R.C	Contract No. 4339
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DRILLHOLE RECORD

Status:-
FINAL

Project: Preliminary Onshore Ground Investigation for NZT		Exploratory Hole No. MS1BH03	
Client: AECOM		Location: North-west of Redcar, North Yorkshire E:457301.314 N:525582.699	
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Boart Longyear DB520)		Ground Level (m): 4.672	Start Date: 22/06/2021
		Sheet: 4 of 14	

RUN DETAILS			STRATA					Instrument/ Backfill	
Depth & (Core Ø)	TCR (SCR) RQD	Fracture Index	Water	Reduced Level	Legend	Depth (Thickness)	Description		
							Discontinuity Detail		Main
25.00	(102mm)	12						Weak thinly laminated dark grey MUDSTONE partially to distinctly weathered with numerous fossilised remains (2-40mm in size). (Redcar Mudstone Formation). (continued)	
		NI							
26.50	(102mm)	8						24.50-24.80m ... 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. 24.80-25.00m ... non-intact. 25.00-26.30m ... subhorizontal (5-25 degrees) closely spaced planar to undulating smooth open and tight clean discontinuities. 26.20m ... moderately weak.	
		NR							
28.00	(102mm)	2						26.30-26.50m ... no recovery. 26.50-27.05m ... horizontal (0-5 degrees) medium spaced planar to undulating smooth open clean discontinuities. 27.05-28.00m ... subhorizontal (5-25 degrees) closely spaced smooth planar open clean discontinuities.	
		6							
		7						28.00-29.10m ... subhorizontal (5-25 degrees) closely spaced smooth planar open and tight clean discontinuities.	

Drilling Progress and Water Observations				Standard Penetration Test			Flush			General Remarks
Date	Depth	Casing	Water Standing	Depth	Type	Result	From - To	Type	Returns (%)	
25/06/2021	26.50	26.50	0.00				25.00 - 26.50	Water	100	
28/06/2021	26.50	26.50	0.00				26.50 - 28.00	Water	100	
							28.00 - 29.10	Water	100	

(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 Scale 1:25.00	For explanation of symbols and abbreviations see Key Sheets	Checked by: <i>K.W.</i>	Logged by: M.B/R.C	Contract No. 4339
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DRILLHOLE RECORD

Status:-
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Project: Preliminary Onshore Ground Investigation for NZT		Exploratory Hole No. MS1BH03	
Client: AECOM		Location: North-west of Redcar, North Yorkshire E:457301.314 N:525582.699	
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Boart Longyear DB520)		Ground Level (m): 4.672	Start Date: 22/06/2021
		Sheet: 5 of 14	

RUN DETAILS				STRATA				Instrument/ Backfill	
Depth & (Core Ø)	TCR (SCR) RQD	Fracture Index	Water	Reduced Level	Legend	Depth (Thickness)	Description		
							Discontinuity Detail		Main
(102mm)				-24.43		29.10		Weak thinly laminated dark grey MUDSTONE partially to distinctly weathered with numerous fossilised remains (2-40mm in size). (Redcar Mudstone Formation). (continued)	
								Complete at 29.10m BGL.	

Drilling Progress and Water Observations				Standard Penetration Test			Flush			General Remarks
Date	Depth	Casing	Water Standing	Depth	Type	Result	From - To	Type	Returns (%)	
28/06/2021	29.10	29.10	0.00							(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 Scale 1:25.00	For explanation of symbols and abbreviations see Key Sheets	Checked by: <i>K.W.</i>	Logged by: M.B/R.C	Contract No. 4339
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DRILLHOLE RECORD

Status:-
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Client: AECOM	Location: North-west of Redcar, North Yorkshire E:457301.314 N:525582.699		
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Boart Longyear DB520)	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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Client: AECOM	Location: North-west of Redcar, North Yorkshire E:457301.314 N:525582.699		
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Boart Longyear DB520)	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

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Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Boart Longyear DB520)	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:-
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Client: AECOM	Location: North-west of Redcar, North Yorkshire E:457301.314 N:525582.699		
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Boart Longyear DB520)	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:-
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Project: Preliminary Onshore Ground Investigation for NZT			Exploratory Hole No. MS\BH03
Client: AECOM	Location: North-west of Redcar, North Yorkshire E:457301.314 N:525582.699		
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Boart Longyear DB520)	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

Status:-
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Client: AECOM	Location: North-west of Redcar, North Yorkshire E:457301.314 N:525582.699		
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Boart Longyear DB520)	Ground Level (m): 4.672	Start Date: 22/06/2021	Sheet: 11 of 14

Figure MS\BH03.11
MS\BH03 17.50-19.00m BGL



Figure MS\BH03.12
MS\BH03 19.00-20.50m BGL





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DRILLHOLE RECORD

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Client: AECOM	Location: North-west of Redcar, North Yorkshire E:457301.314 N:525582.699		
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Boart Longyear DB520)	Ground Level (m): 4.672	Start Date: 22/06/2021	Sheet: 12 of 14

Figure MS\BH03.13
MS\BH03 20.50-22.00m BGL



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





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DRILLHOLE RECORD

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Client: AECOM	Location: North-west of Redcar, North Yorkshire E:457301.314 N:525582.699		
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Boart Longyear DB520)	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

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Client: AECOM	Location: North-west of Redcar, North Yorkshire E:457301.314 N:525582.699		
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Boart Longyear DB520)	Ground Level (m): 4.672	Start Date: 22/06/2021	Sheet: 14 of 14

Figure MS\BH03.17
MS\BH03 26.50-28.00m BGL



Figure MS\BH03.18
MS\BH03 28.00-29.10m BGL



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SONIC SAMPLE HOLE RECORD

Status:-
FINAL

Project: Preliminary Onshore Ground Investigation for NZT			Exploratory Hole No. MS1BH04		
Client: AECOM		Location: North-west of Redcar, North Yorkshire E:457410.778 N:525626.536			MS1BH04
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Comacchio GEO 205)		Ground Level (m): 5.006	Start Date: 17/05/2021	Sheet: 1 of 2	

SAMPLES & TESTS			STRATA					
Depth	Type No	Test Result	Water	Reduced Level	Legend	Depth (Thickness)	Description	Instrument/ Backfill
0.30	ES1	<0.1ppm				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%)).	
0.30	PID	<0.1ppm				0.90		
0.43-1.20	SL1 _(SL1)			4.11		0.90	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).	
0.43	J4 _(SL1)							
0.43-0.90	B5 _(SL1)							
0.50	ES2	<0.1ppm						
0.50	PID	<0.1ppm						
0.90	U6 _(SL1)							
1.00	ES3	<0.1ppm						
1.00	PID	<0.1ppm						
1.20-2.70	SL2 _(SS)							
1.20	J7 _(SL2)							
1.20-1.95	B8 _(SL2)							
1.20	S	N8						
1.95	J9 _(SL2)							
1.95-2.70	B10 _(SL2)							
2.00	PID	<0.1ppm						
2.70-4.20	SL3 _(SS)						at c.2.70m BGL ... medium dense gravelly sand.	
2.70	J11 _(SL3)							
2.70-3.45	B12 _(SL3)							
2.70	S	N29						
3.00	PID	<0.1ppm						
3.45	J13 _(SL3)							
3.45-4.20	B14 _(SL3)							
4.00	PID	<0.1ppm						
4.20-5.70	SL4 _(SS)						at c.4.20m BGL ... dense.	
4.20	J15 _(SL4)							
4.20-4.95	B16 _(SL4)							
4.20	S	N44						
4.95	J17 _(SL4)						at c.4.95m BGL ... sand.	
4.95-5.70	B18 _(SL4)							
5.00	PID	<0.1ppm						
5.70-7.20	SL5 _(SS)						at c.5.70m BGL ... dense.	
5.70	J19 _(SL5)							
5.70-6.45	B20 _(SL5)							
5.70	S	N41						
6.00	PID	<0.1ppm						
6.45	J21 _(SL5)							
6.45-7.20	B22 _(SL5)					11.80		
7.00	PID	<0.1ppm						
7.20-8.70	SL6 _(SS)						at c.7.20m BGL ... very dense.	
7.20	J23 _(SL6)							
7.20-7.95	B24 _(SL6)							
7.20	S	50/250mm						

Boring Progress and Water Observations					Liner Sample Information				General Remarks
Date	Depth	Casing	Casing Dia (mm)	Water Standing	From - To	Internal Dia (mm)	Recovery (%)	Subsampled	
17/06/2021	0.00	0.00	178		0.43 - 1.20	178	100	Yes	
17/06/2021	2.70	2.70	178	Dry	1.20 - 2.70	178	100	Yes	
18/06/2021	2.70	2.70	178	Dry	2.70 - 4.20	178	100	Yes	
					4.20 - 5.70	178	100	Yes	
					5.70 - 7.20	178	100	Yes	
					7.20 - 8.70	178	100	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 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.

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

Status:-
FINAL

Project: Preliminary Onshore Ground Investigation for NZT		Exploratory Hole No. MS1BH04	
Client: AECOM		Location: North-west of Redcar, North Yorkshire E:457410.778 N:525626.536	
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Comacchio GEO 205)		Ground Level (m): 5.006	Start Date: 17/05/2021
		Sheet: 2 of 2	

SAMPLES & TESTS			STRATA					Instrument/ Backfill		
Depth	Type No	Test Result	Water	Reduced Level	Legend	Depth (Thickness)	Description			
7.95 7.95-8.70 8.00	J25 _(SL6) B26 _(SL6) PID	<0.1ppm					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). <i>(continued)</i> at c.8.70m BGL ... very dense.			
8.70-10.20 8.70 8.70-9.45 8.70 9.00	SL7 _(SS) J27 _(SL7) B28 _(SL7) S PID	N51 <0.1ppm					at c.10.20m BGL ... medium dense.			
9.45 9.45-10.20	J29 _(SL7) B30 _(SL7)									
10.00 10.20	PID S	<0.1ppm N25								
11.00	PID	<0.1ppm								
11.70-13.20 11.70 11.70-12.70 11.70 12.00	SL8 _(SS) J35 _(SL8) B36 _(SL8) S PID	N3 <0.1ppm					at c.11.70m BGL ... slightly sandy clay.			
12.70 12.70-13.20 13.00 13.20-13.65	J37 _(SL8) B38 _(SL8) PID UT8	<0.1ppm (25)		-7.69			12.70		Soft to firm dark brown slightly sandy CLAY/SILT. Sand is fine to coarse. (Driller notes sandy bands). (Tidal Flat Deposits). at c.13.20m BGL ... silt of low plasticity.	
				-8.75			13.75		<i>Boring complete at 13.75m BGL - continued by rotary drilling.</i>	

Boring Progress and Water Observations					Liner Sample Information				General Remarks
Date	Depth	Casing	Casing Dia (mm)	Water Standing	From - To	Internal Dia (mm)	Recovery (%)	Subsampled	
18/06/2021	10.20	10.20	178	4.90	8.70 - 10.20	178	100	Yes	
21/06/2021	10.20	10.20	178	4.10	11.70 - 13.20	178	100	Yes	
21/06/2021	13.75	13.75	178	3.50	13.20 - 13.65	178	100	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.

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

Status:-
FINAL

Project: Preliminary Onshore Ground Investigation for NZT		Exploratory Hole No. MS1BH04	
Client: AECOM		Location: North-west of Redcar, North Yorkshire E:457410.778 N:525626.536	
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Comacchio GEO 205)		Ground Level (m): 5.006	Start Date: 17/05/2021
		Sheet: 1 of 14	

RUN DETAILS			STRATA					Instrument/ Backfill	
Depth & (Core Ø)	TCR (SCR) RQD	Fracture Index	Water	Reduced Level	Legend	Depth (Thickness)	Description		
							Discontinuity Detail		Main
13.75 (102mm)	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 (102mm)	100			-9.49		14.50 (0.80)	14.50m ... J39 14.50m ... B40 14.85m ... U41	Firm thinly laminated 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 Deposits). 14.85m ... clay is of high plasticity.	
15.30 (102mm)	100			-10.29		15.30	15.30m ... J42 15.30m ... B43 16.30m ... U44	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. 16.30m ... very high strength. Clay is of intermediate plasticity.	
16.80 (102mm)	100					(3.50)	16.75m ... J45 16.80m ... B46		
17.50 (102mm)	100								

Drilling Progress and Water Observations				Standard Penetration Test			Flush			General Remarks
Date	Depth	Casing	Water Standing	Depth	Type	Result	From - To	Type	Returns (%)	
21/06/2021	13.75	13.75	2.11	14.50	S	N9	13.75 - 14.50	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 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.
							14.50 - 15.30	Water	100	
							15.30 - 16.80	Water	100	
							16.80 - 17.50	Water	100	
							17.50 - 17.80	Water	100	

All dimensions in metres Scale 1:25.00	For explanation of symbols and abbreviations see Key Sheets	Checked by: <i>K.W.</i>	Logged by: G.T/R.C	Contract No. 4339
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DRILLHOLE RECORD

Status:-
FINAL

Project: Preliminary Onshore Ground Investigation for NZT		Exploratory Hole No. MS1BH04	
Client: AECOM	Location: North-west of Redcar, North Yorkshire E:457410.778 N:525626.536		Sheet: 2 of 14
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Comacchio GEO 205)	Ground Level (m): 5.006	Start Date: 17/05/2021	

RUN DETAILS				STRATA					Instrument/ Backfill
Depth & (Core Ø)	TCR (SCR) RQD	Fracture Index	Water	Reduced Level	Legend	Depth (Thickness)	Description		
							Discontinuity Detail	Main	
17.80	100					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.	
18.80	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	86					19.80m ... ES(M)52			
20.50	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 Progress and Water Observations				Standard Penetration Test			Flush			General Remarks
Date	Depth	Casing	Water Standing	Depth	Type	Result	From - To	Type	Returns (%)	
21/06/2021	20.50	20.50	0.00	17.80	S	N17	17.80 - 18.80	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 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.
22/06/2021	20.50	20.50	4.09	20.50	S	N15	18.80 - 19.80	Water	100	
							19.80 - 20.50	Water	100	
							20.50 - 21.50	Water	100	
							21.50 - 22.30	Water	100	

All dimensions in metres Scale 1:25.00	For explanation of symbols and abbreviations see Key Sheets	Checked by: <i>K.W.</i>	Logged by: G.T/R.C	Contract No. 4339
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DRILLHOLE RECORD

Status:-
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Project: Preliminary Onshore Ground Investigation for NZT		Exploratory Hole No. MS1BH04	
Client: AECOM		Location: North-west of Redcar, North Yorkshire E:457410.778 N:525626.536	
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Comacchio GEO 205)		Ground Level (m): 5.006	Start Date: 17/05/2021
		Sheet: 3 of 14	

RUN DETAILS				STRATA				Instrument/ Backfill	
Depth & (Core Ø)	TCR (SCR) RQD	Fracture Index	Water	Reduced Level	Legend	Depth (Thickness)	Description		
							Discontinuity Detail		Main
22.30	100			-17.29		22.30 ... J57 22.30 ... B59 22.30 ... ES58	Stiff thickly laminated red brown slightly sandy CLAY. Sand is fine to coarse. (Glacial Deposits). (continued)		
23.80	100 (11) 0					23.30 ... J60 23.80 ... J61 23.80 ... B62	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).		
25.30	100 (100) 0	8		-19.99		24.80 ... ES63 24.80 ... ES(M)64 25.00-25.30m ... non-intact.	23.80m ... clay is of low to intermediate plasticity.		
						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 Progress and Water Observations				Standard Penetration Test			Flush			General Remarks
Date	Depth	Casing	Water Standing	Depth	Type	Result	From - To	Type	Returns (%)	
				23.80	S	50/11mm	22.30 - 23.80	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 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.
							23.80 - 25.30	Water	100	
							25.30 - 26.80	Water	100	

All dimensions in metres Scale 1:25.00	For explanation of symbols and abbreviations see Key Sheets	Checked by: <i>K.W.</i>	Logged by: G.T/R.C	Contract No. 4339
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DRILLHOLE RECORD

Status:-
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Project: Preliminary Onshore Ground Investigation for NZT			Exploratory Hole No. MS1BH04		
Client: AECOM		Location: North-west of Redcar, North Yorkshire E:457410.778 N:525626.536			
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Comacchio GEO 205)		Ground Level (m): 5.006	Start Date: 17/05/2021	Sheet: 4 of 14	

RUN DETAILS			STRATA					Instrument/ Backfill	
Depth & (Core Ø)	TCR (SCR) RQD	Fracture Index	Water	Reduced Level	Legend	Depth (Thickness)	Description		
							Discontinuity Detail		Main
26.80								Weak thinly bedded dark grey MUDSTONE partially weathered, in places, distinctly weathered with occasional fossilised remains (2-40mm in size). (Redcar Mudstone Formation). (continued)	
28.30	100 (27) 0	9				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.	(5.00)		
	100 (90) 24	8				28.30-30.00m ... subhorizontal (5-25 degrees) closely spaced smooth planar to undulating smooth open and tight clean and infilled (clay) discontinuities.			

Drilling Progress and Water Observations				Standard Penetration Test			Flush			General Remarks
Date	Depth	Casing	Water Standing	Depth	Type	Result	From - To	Type	Returns (%)	
							26.80 - 28.30	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 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.
							28.30 - 29.80	Water	100	

All dimensions in metres Scale 1:25.00	For explanation of symbols and abbreviations see Key Sheets	Checked by: <i>K.W.</i>	Logged by: G.T/R.C	Contract No. 4339
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Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Comacchio GEO 205)		Ground Level (m): 5.006	Start Date: 17/05/2021	Sheet: 5 of 14

RUN DETAILS				STRATA					Instrument/ Backfill
Depth & (Core Ø)	TCR (SCR) RQD	Fracture Index	Water	Reduced Level	Legend	Depth (Thickness)	Description		
							Discontinuity Detail	Main	
29.80 (102mm)	100 (100) 0			-24.99		30.00			
							Complete at 30.00m BGL.		

Drilling Progress and Water Observations				Standard Penetration Test			Flush			General Remarks
Date	Depth	Casing	Water Standing	Depth	Type	Result	From - To	Type	Returns (%)	
22/06/2021	30.00	30.00	0.00				29.80 - 30.00	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 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.

All dimensions in metres Scale 1:25.00	For explanation of symbols and abbreviations see Key Sheets	Checked by: <i>K.W.</i>	Logged by: G.T/R.C	Contract No. 4339
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DRILLHOLE RECORD

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Client: AECOM	Location: North-west of Redcar, North Yorkshire E:457410.778 N:525626.536		
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Comacchio GEO 205)	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

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Client: AECOM	Location: North-west of Redcar, North Yorkshire E:457410.778 N:525626.536		
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Comacchio GEO 205)	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

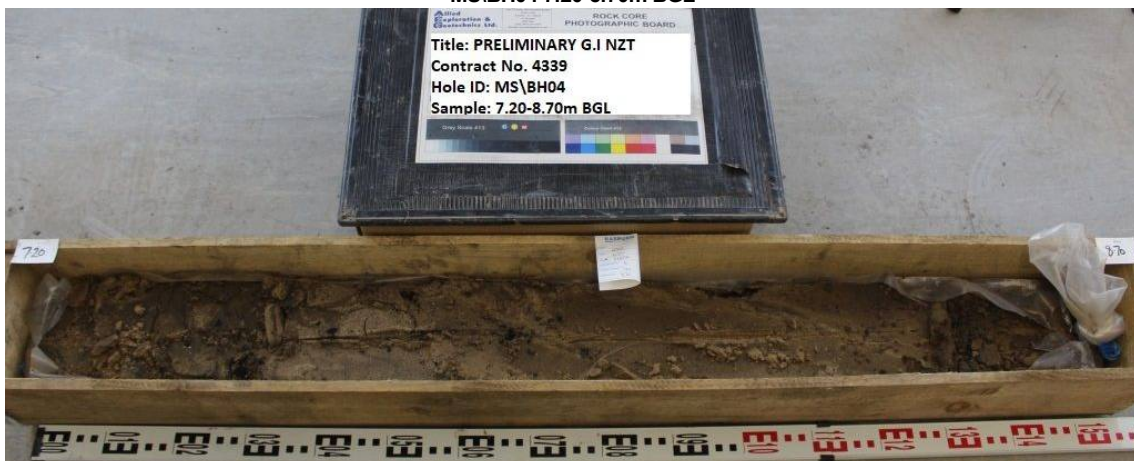
Status:-
FINAL

Project: Preliminary Onshore Ground Investigation for NZT			Exploratory Hole No. MS\BH04
Client: AECOM	Location: North-west of Redcar, North Yorkshire E:457410.778 N:525626.536		
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Comacchio GEO 205)	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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Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Comacchio GEO 205)	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

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

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

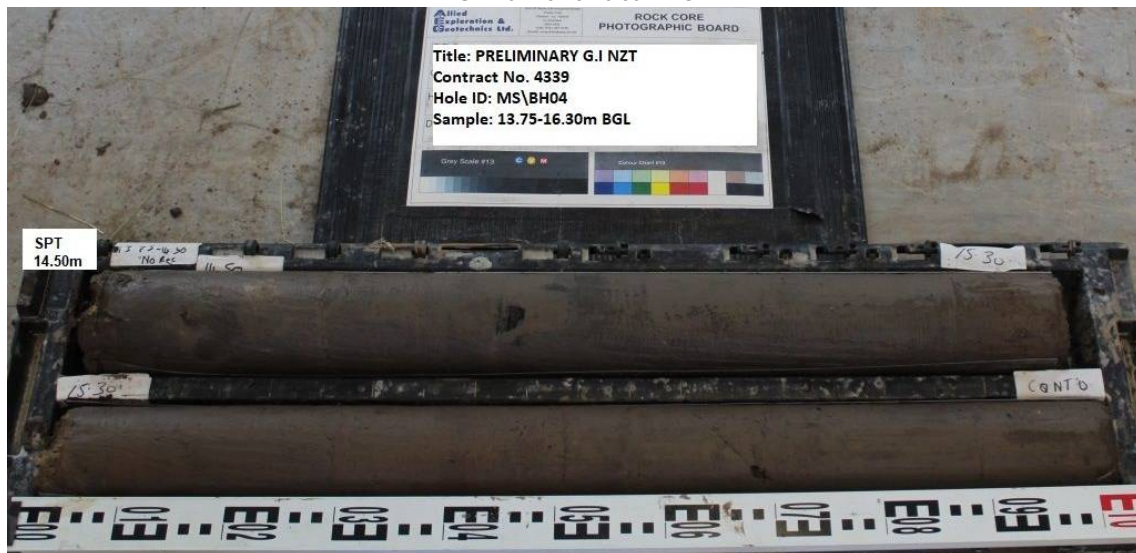


Figure MS\BH04.10
MS\BH04 16.30-17.50m BGL





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Client: AECOM	Location: North-west of Redcar, North Yorkshire E:457410.778 N:525626.536		
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Comacchio GEO 205)	Ground Level (m): 5.006	Start Date: 17/05/2021	Sheet: 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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Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Comacchio GEO 205)	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



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





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DRILLHOLE RECORD

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Client: AECOM	Location: North-west of Redcar, North Yorkshire E:457410.778 N:525626.536		
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Comacchio GEO 205)	Ground Level (m): 5.006	Start Date: 17/05/2021	Sheet: 13 of 14

Figure MS\BH04.15
MS\BH04 23.80-25.30m BGL



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





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Client: AECOM	Location: North-west of Redcar, North Yorkshire E:457410.778 N:525626.536		
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Comacchio GEO 205)	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



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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 Yorkshire E:456866.530 N:525583.502	
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Boart Longyear DB520)		Ground Level (m): 7.484	Start Date: 16/06/2021
		Sheet: 1 of 2	

SAMPLES & TESTS			STRATA					Instrument/ Backfill	
Depth	Type No	Test Result	Water	Reduced Level	Legend	Depth (Thickness)	Description		
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).		
0.60-1.20 0.60	ES2 PID	<0.1ppm							
1.20-2.70 1.20	SL2 S	50/0mm					(2.70)		
2.70-4.20 2.70	SL3 _(SS)			4.68			2.80		at c.2.70m BGL ... very dense/possible obstruction.
2.70-4.20 2.70	J5 _(SL3) B6 _(SL3) 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	ES3 PID	<0.1ppm		3.08			4.40		
4.20-5.70 4.20	SL4 _(SS) J7 _(SL4)								Medium dense grey silty SAND. Sand is fine to medium. (Tidal Flat Deposits).
4.20-4.80 4.20	B8 _(SL4) S	N24							at c.4.80m BGL ... brown.
4.40 4.40	ES4 PID	<0.1ppm							
4.80 4.80-5.70	J9 _(SL4) B10 _(SL4)								
5.70-7.20 5.70	SL5 _(SS) J11 _(SL5) B12 _(SL5) S	N19				(2.80)	at c.5.70m BGL ... brown grey sand with occasional pockets of organic clay.		
6.45 6.45-7.20	J13 _(SL5) B14 _(SL5)								
7.20-8.70 7.20	SL6 _(SS) J15 _(SL6) B16 _(SL6) S	50/250mm		0.28		7.20	at c.7.00m BGL ... brown.		
7.20-7.95 7.20 7.30	PID	<0.1ppm					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).		

Boring Progress and Water Observations					Liner Sample Information				General Remarks
Date	Depth	Casing	Casing Dia (mm)	Water Standing	From - To	Internal Dia (mm)	Recovery (%)	Subsampled	
16/06/2021	0.00	0.00	178		0.12 - 1.20	178	100	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 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.
					1.20 - 2.70	178	100	No	
					2.70 - 4.20	178	60	Yes	
					4.20 - 5.70	178	100	Yes	
					5.70 - 7.20	178	100	Yes	
					7.20 - 8.70	178	100	Yes	

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

Status:-
FINAL

Project: Preliminary Onshore Ground Investigation for NZT			Exploratory Hole No. MS1BH05		
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 DB520)		Ground Level (m): 7.484	Start Date: 16/06/2021	Sheet: 2 of 2	

SAMPLES & TESTS			STRATA					Instrument/Backfill
Depth	Type No	Test Result	Water	Reduced Level	Legend	Depth (Thickness)	Description	
7.95-8.70	J17 ^(SL6) B18 ^(SL6) PID	<0.1ppm			x o		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)	
8.70-10.20	SL7 ^(SS) J19 ^(SL7) B20 ^(SL7) S	N48			x o			
9.30-9.45	PID	<0.1ppm			x o	(4.50)		
9.45-10.20	J21 ^(SL7) B22 ^(SL7)				x o			
10.20-10.95	SL8 ^(SS) J23 ^(SL8) B24 ^(SL8) S	N49			x o			
10.95-11.70	J25 ^(SL8) B26 ^(SL8)	<0.1ppm			x o			
11.70-12.45	SL9 ^(SS) J27 ^(SL9) B28 ^(SL9) S	50/157mm		-4.22	x o	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).	
12.45-13.20	PID	<0.1ppm			x o			
13.20-13.95	J29 ^(SL9) B30 ^(SL9)				x o	(2.25)		
13.20-14.70	SL10 ^(SS) J31 ^(SL10) B32 ^(SL10) S	N32			x o			
13.95-14.70	J33 ^(SL10) B34 ^(SL10)	<0.1ppm		-6.47	x o	13.95	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).	
14.30-14.70	PID	<0.1ppm			x o	(0.75)	13.95m ... clay is of high plasticity. Boring complete at 14.70m BGL - continued by rotary drilling.	
				-7.22	x o	14.70		

Boring Progress and Water Observations					Liner Sample Information				General Remarks
Date	Depth	Casing	Casing Dia (mm)	Water Standing	From - To	Internal Dia (mm)	Recovery (%)	Subsampled	
16/06/2021	11.70	11.70	178		8.70 - 10.20	178	100	Yes	
17/06/2021	11.70	11.70	178	8.40	10.20 - 11.70	178	100	Yes	
17/06/2021	14.70	14.70	178	4.20	11.70 - 13.20	178	100	Yes	
					13.20 - 14.70	178	100	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 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.

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

Status:-
FINAL

Project: Preliminary Onshore Ground Investigation for NZT		Exploratory Hole No. MS1BH05	
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 DB520)		Ground Level (m): 7.484	Start Date: 16/06/2021
		Sheet: 1 of 15	

RUN DETAILS			STRATA				Instrument/ Backfill		
Depth & (Core Ø)	TCR (SCR) RQD	Fracture Index	Water	Reduced Level	Legend	Depth (Thickness)		Description	
								Discontinuity Detail	Main
15.00		RO		-7.22		14.70-15.00m ... rotary openhole drilling. (0.30)	(1) Brown gravelly CLAY. (Driller describes as 'stiff'). (Glacial Deposits).		
15.80	38	SOIL		-7.52		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.		
16.30	70					15.80m ... J1 16.00-16.40m ... U1	16.00m ... high strength. Clay is of intermediate plasticity.		
16.80	0					16.80m ... J2 (3.30)			
17.30	100					17.30m ... ES37			
17.80	70					17.80m ... J38			
18.30	80					18.00-18.30m ... U2			
	0			-10.82		18.30m ... J3	18.30m ... clay is of high plasticity.		

Drilling Progress and Water Observations				Standard Penetration Test			Flush			General Remarks
Date	Depth	Casing	Water Standing	Depth	Type	Result	From - To	Type	Returns (%)	
18/06/2021	14.70	14.70	4.71	15.80	S	N21	14.70 - 15.00	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 6.50-12.50m 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.
18/06/2021	15.00	15.00	4.71	16.80	S	N17	15.00 - 15.80	Water	50	
21/06/2021	15.00	15.00	0.00	18.30	S	N17	15.80 - 16.30	Water	50	
							16.30 - 16.80	Water	50	
							16.80 - 17.30	Water	60	
							17.30 - 17.80	Water	60	
							17.80 - 18.30	Water	50	
							18.30 - 18.80	Water	50	

All dimensions in metres Scale 1:25.00	For explanation of symbols and abbreviations see Key Sheets	Checked by: <i>K.W.</i>	Logged by: G.T/R.C	Contract No. 4339
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DRILLHOLE RECORD

Status:-
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Project: Preliminary Onshore Ground Investigation for NZT		Exploratory Hole No. MS1BH05	
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 DB520)		Ground Level (m): 7.484	Start Date: 16/06/2021
		Sheet: 2 of 15	

RUN DETAILS			STRATA					Instrument/ Backfill	
Depth & (Core Ø)	TCR (SCR) RQD	Fracture Index	Water	Reduced Level	Legend	Depth (Thickness)	Description		
							Discontinuity Detail		Main
18.80	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)	
19.30	100					19.30m ... J39 19.30m ... B40		19.30-19.80m ... driller notes loss of flush to 50% returns.	
19.80	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			-13.12		20.60		Extremely weak thinly laminated grey MUDSTONE distinctly weathered to destructured. (Redcar Mudstone Formation).	
21.50	100 (0) 0	NI				20.60-23.50m ... non-intact.			
22.00	100 (0) 0								

Drilling Progress and Water Observations				Standard Penetration Test			Flush			General Remarks
Date	Depth	Casing	Water Standing	Depth	Type	Result	From - To	Type	Returns (%)	
				19.30	S	N13	18.80 - 19.30	Water	50	(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 6.50-12.50m 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.
				21.50	C	50/159mm	19.30 - 19.80	Water	50	
							19.80 - 20.30	Water	70	
							20.30 - 21.50	Water	100	
							21.50 - 22.00	Water	100	
							22.00 - 23.00	Water	100	

All dimensions in metres Scale 1:25.00	For explanation of symbols and abbreviations see Key Sheets	Checked by: <i>K.W.</i>	Logged by: G.T/R.C	Contract No. 4339
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DRILLHOLE RECORD

Status:-
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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 DB520)		Ground Level (m): 7.484	Start Date: 16/06/2021
		Sheet: 3 of 15	

RUN DETAILS				STRATA				Instrument/ Backfill	
Depth & (Core Ø)	TCR (SCR) RQD	Fracture Index	Water	Reduced Level	Legend	Depth (Thickness)	Description		
							Discontinuity Detail		Main
23.00								Extremely weak thinly laminated grey MUDSTONE distinctly weathered to destructured. (Redcar Mudstone Formation). (continued)	
(102mm)	100 (0) 0								
23.50				-16.02		23.50	23.50-26.00m ... non-intact.	Extremely weak thinly laminated dark grey MUDSTONE distinctly weathered to destructured. (Redcar Mudstone Deposits).	
(102mm)	100 (0) 0	NI				(2.50)			
25.00									
(102mm)	100 (0) 0								
26.00				-18.52		26.00	26.00-26.60m ... non-intact.	Extremely weak to very weak thinly laminated MUDSTONE partially weathered to distinctly weathered. (Redcar Mudstone Formation).	
(102mm)	100 (0) 0	NI							
26.50							26.60-27.60m ... horizontal to subhorizontal (0-5)		
(102mm)	100 (0) 0	15							

Drilling Progress and Water Observations				Standard Penetration Test			Flush			General Remarks
Date	Depth	Casing	Water Standing	Depth	Type	Result	From - To	Type	Returns (%)	
21/06/2021	26.00	26.00	0.00				23.00 - 23.50	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 6.50-12.50m 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.
22/06/2021	26.00	26.00	4.27				23.50 - 25.00	Water	100	
							25.00 - 26.00	Water	100	
							26.00 - 26.50	Water	100	
							26.50 - 28.00	Water	100	

All dimensions in metres Scale 1:25.00	For explanation of symbols and abbreviations see Key Sheets	Checked by: <i>K.W.</i>	Logged by: G.T/R.C	Contract No. 4339
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DRILLHOLE RECORD

Status:-
FINAL

Project: Preliminary Onshore Ground Investigation for NZT		Exploratory Hole No. MS1BH05	
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 DB520)	Ground Level (m): 7.484	Start Date: 16/06/2021	Sheet: 4 of 15

RUN DETAILS			STRATA					Instrument/ Backfill	
Depth & (Core Ø)	TCR (SCR) RQD	Fracture Index	Water	Reduced Level	Legend	Depth (Thickness)	Description		
							Discontinuity Detail		Main
28.00	(102mm)	10				(3.90)	degrees) closely to very closely spaced planar to undulating smooth and rough open to wide infilled (fine to coarse gravel) discontinuities.	Extremely weak to very weak thinly laminated MUDSTONE partially weathered to distinctly weathered. (Redcar Mudstone Formation). (continued)	
		NI					27.60-28.00m ... horizontal to subhorizontal (0-25 degrees) closely spaced planar to undulating smooth open and tight infilled (clay) discontinuities.		
29.50	(102mm)	19					28.00-28.70m ... non-intact.	29.50-29.90m ... distinctly weathered to destructured.	
		NI					28.70-29.50m ... subhorizontal (5-25 degrees) very closely spaced planar to undulating smooth open and tight smooth infilled (clay) discontinuities.		
	(102mm)	22				(1.00)	29.90-30.50m ... non-intact.	Extremely weak to weak thinly laminated light grey MUDSTONE distinctly weathered to destructured. (Redcar Mudstone Formation).	
		NI					30.50-30.90m ... subhorizontal (5-25 degrees) very closely spaced planar to undulating smooth open and tight infilled (clay) discontinuities.		

Drilling Progress and Water Observations				Standard Penetration Test			Flush			General Remarks
Date	Depth	Casing	Water Standing	Depth	Type	Result	From - To	Type	Returns (%)	
							28.00 - 29.50	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 6.50-12.50m 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.
							29.50 - 31.00	Water	100	

All dimensions in metres Scale 1:25.00	For explanation of symbols and abbreviations see Key Sheets	Checked by: <i>K.W.</i>	Logged by: G.T/R.C	Contract No. 4339
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DRILLHOLE RECORD

Status:-
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Project: Preliminary Onshore Ground Investigation for NZT		Exploratory Hole No. MS1BH05	
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 DB520)		Ground Level (m): 7.484	Start Date: 16/06/2021
		Sheet: 5 of 15	

RUN DETAILS				STRATA				Instrument/ Backfill	
Depth & (Core Ø)	TCR (SCR) RQD	Fracture Index	Water	Reduced Level	Legend	Depth (Thickness)	Description		
							Discontinuity Detail		Main
				-23.42		30.90			
		NI		-23.52		31.00	30.90-31.00m ... non-intact.	Extremely weak to weak thinly laminated light grey MUDSTONE partially to distinctly weathered. (Redcar Mudstone Formation). Complete at 31.00m BGL.	

Drilling Progress and Water Observations				Standard Penetration Test			Flush			General Remarks
Date	Depth	Casing	Water Standing	Depth	Type	Result	From - To	Type	Returns (%)	
22/06/2021	31.00	31.00	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 6.50-12.50m 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.

All dimensions in metres Scale 1:25.00	For explanation of symbols and abbreviations see Key Sheets	Checked by: <i>K.W.</i>	Logged by: G.T/R.C	Contract No. 4339
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DRILLHOLE RECORD

Status:-

FINAL

Project: Preliminary Onshore Ground Investigation for NZT			Exploratory Hole No. MS\BH05
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 DB520)	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

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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 DB520)	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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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 DB520)	Ground Level (m): 7.484	Start Date: 16/06/2021	Sheet: 8 of 15

Figure MS\BH05.5
MS\BH05 5.70-7.20m BGL



Figure MS\BH05.6
MS\BH05 7.20-8.70m BGL





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DRILLHOLE RECORD

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Client: AECOM	Location: North-west of Redcar, North Yorkshire E:456866.530 N:525583.502		
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Figure MS\BH05.7
MS\BH05 8.70-10.20m BGL



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





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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 DB520)	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**



**Figure MS\BH05.10
MS\BH05 13.20-14.70m BGL**





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DRILLHOLE RECORD

Status:-
FINAL

Project: Preliminary Onshore Ground Investigation for NZT			Exploratory Hole No. MS\BH05
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 DB520)	Ground Level (m): 7.484	Start Date: 16/06/2021	Sheet: 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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DRILLHOLE RECORD

Status:-
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Project: Preliminary Onshore Ground Investigation for NZT			Exploratory Hole No. MS\BH05
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 DB520)	Ground Level (m): 7.484	Start Date: 16/06/2021	Sheet: 12 of 15

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

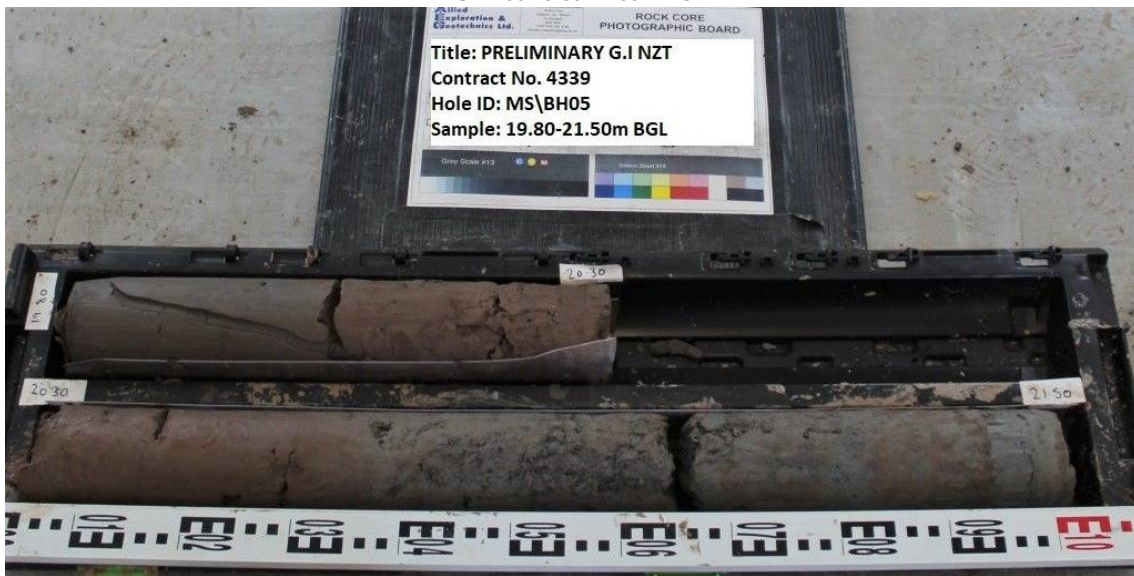


Figure MS\BH05.14
MS\BH05 21.50-23.00m BGL





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Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Boart Longyear DB520)	Ground Level (m): 7.484	Start Date: 16/06/2021	Sheet: 13 of 15

Figure MS\BH05.15
MS\BH05 23.00-24.90m BGL



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





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Figure MS\BH05.17
MS\BH05 26.50-28.00m BGL



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





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DRILLHOLE RECORD

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Project: Preliminary Onshore Ground Investigation for NZT			Exploratory Hole No. MS\BH05
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 DB520)	Ground Level (m): 7.484	Start Date: 16/06/2021	Sheet: 15 of 15

Figure MS\BH05.19
MS\BH05 29.50-31.00m BGL



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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 Yorkshire E:457033.748 N:525517.758	
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Boart Longyear DB520)		Ground Level (m): 7.976	Start Date: 24/05/2021
		Sheet: 1 of 3	

SAMPLES & TESTS			STRATA				Instrument/ Backfill	
Depth	Type No	Test Result	Water	Reduced Level	Legend	Depth (Thickness)		Description
0.18	J1			7.93		0.05	MADE GROUND (Grass over soft dark brown clayey topsoil).	
0.20-1.20	SL1 ^(SS)			7.80		0.18	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%)).	
0.20-0.90	B30 ^(SL1)					(0.72)		
0.50	ES1 ^(SL1)							
0.50	J9 ^(SL1)							
0.50	PID	<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%)).	
0.90-1.20	B31 ^(SL1)							
1.00	ES2 ^(SL1)							
1.00	J10 ^(SL1)							
1.00	PID	<0.1ppm						
1.20-2.70	SL2 ^(SS)							
1.20-1.90	B32 ^(SL2)					(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).	
1.20	S	50/90mm						
1.50	ES3 ^(SL2)							
1.50	J11 ^(SL2)							
1.50	PID	<0.1ppm						
1.90-2.70	B33 ^(SL2)							
2.00	PID	<0.1ppm						
2.30	J12 ^(SL2)							
2.50	ES4 ^(SL2)			5.28		2.70	MADE GROUND (Pink brown clayey very sandy gravel with low cobble content. Gravel is fine to coarse angular to subangular and includes vesicular slag and ash. Cobbles are angular and include vesicular slag (50-75%) at c.1.20m BGL ... very dense.	
2.50	PID	<0.1ppm						
2.70-4.20	SL3 ^(SS)							
2.70-4.20	B34 ^(SL3)							
2.70	S	N21						
3.00	ES5 ^(SL3)							
3.00	J13 ^(SL3)					(1.70)	MADE GROUND (Pink brown clayey very sandy gravel with low cobble content. Gravel is fine to coarse angular to subangular and includes vesicular slag and ash. Cobbles are angular and include vesicular slag (50-75%) at c.2.70m BGL ... medium dense.	
3.00	PID	<0.1ppm						
3.20	ES6 ^(SL3)							
3.20	PID	<0.1ppm						
3.70	PID	<0.1ppm						
4.00	J14 ^(SL3)							
4.20-5.70	SL4 ^(SS)			3.58		4.40	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%) at c.4.20m BGL ... medium dense.	
4.20-5.20	B35 ^(SL4)							
4.20	S	N13						
4.50	ES7 ^(SL4)							
4.50	PID	<0.1ppm				(0.90)	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%)).	
4.90	J15 ^(SL4)							
5.30	ES8 ^(SL4)			2.68		5.30	Dark grey black silty SAND. Sand is fine to coarse. (Tidal Flat Deposits).	
5.30	PID	<0.1ppm				(0.40)		
5.40	J16 ^(SL4)			2.28		5.70	Medium dense dark brown grey slightly silty SAND with rare fragments of shell. Sand is fine to medium. (Tidal Flat Deposits).	
5.40-5.70	B36 ^(SL4)							
5.70-7.20	SL5 ^(SS)							
5.70	J17 ^(SL5)							
5.70-6.45	B35 ^(SL5)							
5.70	S	N27						
5.70	PID	0.5ppm						
6.30	PID	<0.1ppm						
6.45	J18 ^(SL5)							
6.45-7.20	B37 ^(SL5)							
6.70	PID	<0.1ppm						
7.20-8.70	SL6 ^(SS)							
7.20	J19 ^(SL6)							
7.20-7.95	B38 ^(SL6)							
7.20	S	N24						
7.30	PID	<0.1ppm						
7.70	PID	<0.1ppm						

Boring Progress and Water Observations					Liner Sample Information				General Remarks
Date	Depth	Casing	Casing Dia (mm)	Water Standing	From - To	Internal Dia (mm)	Recovery (%)	Subsampled	
24/05/2021	0.00	0.00	178		0.20 - 1.20	178	100	Yes	
24/05/2021	5.70	5.70	178	Damp	1.20 - 2.70	178	100	Yes	
25/05/2021	5.70	5.70	178	Dry	2.70 - 4.20	178	100	Yes	
					4.20 - 5.70	178	100	Yes	
					5.70 - 7.20	178	100	Yes	
					7.20 - 8.70	178	100	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.

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

Status:-
FINAL

Project: Preliminary Onshore Ground Investigation for NZT		Exploratory Hole No. MS1BH06	
Client: AECOM		Location: North-west of Redcar, North Yorkshire E:457033.748 N:525517.758	
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Boart Longyear DB520)		Ground Level (m): 7.976	Start Date: 24/05/2021
		Sheet: 2 of 3	

SAMPLES & TESTS			STRATA				Instrument/ Backfill
Depth	Type No	Test Result	Water	Reduced Level	Legend	Depth (Thickness)	
7.95-8.70	J20 ^(SL6) B39 ^(SL6) PID	<0.1ppm			x		Medium dense dark brown grey slightly silty SAND with rare fragments of shell. Sand is fine to medium. (Tidal Flat Deposits). <i>(continued)</i>
8.70-10.20	SL7 ^(SS) J21 ^(SL7) B40 ^(SL7) S PID	N17 <0.1ppm			x	(6.00)	at c.8.70m BGL ... sand.
10.20-11.70	SL8 ^(SS) J23 ^(SL8) B42 ^(SL8) S PID	N29 <0.1ppm			x		
11.70-13.20	SL9 ^(SS) J25 ^(SL9) B44 ^(SL9) S PID	N51 2.6ppm <0.1ppm		-3.72	x	11.70	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	SL10 ^(SS) S	50/280mm		-5.22	x	13.20	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. (Tidal Flat Deposits).
14.70-16.20	J28 ^(SL10) PID	<0.1ppm		-5.92	x	13.90	Soft thinly laminated grey brown sandy silty CLAY with occasional fragments of shell and traces of organic material. (Tidal Flat Deposits). 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	J29 ^(SL10) SL11 S PID	N0 <0.1ppm			x	(2.30)	

Boring Progress and Water Observations					Liner Sample Information				General Remarks
Date	Depth	Casing	Casing Dia (mm)	Water Standing	From - To	Internal Dia (mm)	Recovery (%)	Subsampled	
25/05/2021	14.70	14.70	178		8.70 - 10.20	178	100	Yes	
27/05/2021	14.70	14.70	178	4.00	10.20 - 11.70	178	100	Yes	
					11.70 - 13.20	178	100	Yes	
					13.20 - 14.70	178	100	Yes	
					14.70 - 16.20	178	100	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.

All dimensions in metres Scale 1:50.00	For explanation of symbols and abbreviations see Key Sheets	Checked by: <i>K.W.</i>	Logged by: G.T/R.C	Contract No. 4339
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		Sheet: 3 of 3	

SAMPLES & TESTS			STRATA				Instrument/ Backfill	
Depth	Type No	Test Result	Water	Reduced Level	Legend	Depth (Thickness)		Description
				-8.23	X - X	16.20	Boring complete at 16.20m BGL - continued by rotary drilling.	

Boring Progress and Water Observations					Liner Sample Information				General Remarks
Date	Depth	Casing	Casing Dia (mm)	Water Standing	From - To	Internal Dia (mm)	Recovery (%)	Subsampled	
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.

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Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Boart Longyear DB520)		Ground Level (m): 7.976	Start Date: 24/05/2021
		Sheet: 1 of 17	

RUN DETAILS			STRATA					Instrument/ Backfill	
Depth & (Core Ø)	TCR (SCR) RQD	Fracture Index	Water	Reduced Level	Legend	Depth (Thickness)	Description		
							Discontinuity Detail		Main
16.30		RO		-8.23		16.20	16.20-16.30m ... rotary openhole.	(1) Brown CLAY.	
	100	SOIL		-8.32		16.30	16.30m ... J57 16.30-22.00m ... Soil.	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 high plasticity.	
							16.60m ... U58		
							17.05m ... B59		
17.30						(2.00)	17.30m ... J1	17.30m ... clay is of intermediate plasticity.	
	100						17.55m ... J60 17.55m ... B61		
							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).	
18.30		95		-10.32		18.30	18.85m ... U64		
						(1.50)			
							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	
19.80		0		-11.82		19.80			
						(0.45)			

Drilling Progress and Water Observations				Standard Penetration Test			Flush			General Remarks
Date	Depth	Casing	Water Standing	Depth	Type	Result	From - To	Type	Returns (%)	
01/06/2021	16.20	16.20	5.42	17.30	S	N23	16.20 - 16.30	Water	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 carried out as per the Client instructions. (7) Aquifer protection installed between 16.20-13.40m BGL prior to commencing rotary drilling.
01/06/2021	16.30	16.30	0.00	19.80	S	N19	16.30 - 17.30	Water	100	
02/06/2021	16.30	16.30	0.00				17.30 - 18.30	Water	100	
							18.30 - 19.80	Water	100	
							19.80 - 21.30	Water	100	

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		Sheet: 2 of 17	

RUN DETAILS				STRATA					Instrument/ Backfill
Depth & (Core Ø)	TCR (SCR) RQD	Fracture Index	Water	Reduced Level	Legend	Depth (Thickness)	Description		
							Discontinuity Detail	Main	
21.30	100			-12.27		20.25		dustings on laminae. Clay is of intermediate plasticity. (1) Brown SAND. (Glacial Deposits).	
22.00	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 includes sandstone, limestone and mudstone. (Glacial Till).	
23.00	90	NI		-14.02		22.00	22.00-22.90m ... non-intact.	Extremely weak grey very clayey MUDSTONE distinctly weathered to destructured. (In places recovered as clay). (Redcar Mudstone Formation).	
23.00	77 (72) 38	NR		-15.02		23.00	22.90-23.30m ... no recovery.	Very weak thinly laminated light grey MUDSTONE distinctly weathered. (Redcar Mudstone Formation).	
		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.		

Drilling Progress and Water Observations				Standard Penetration Test			Flush			General Remarks
Date	Depth	Casing	Water Standing	Depth	Type	Result	From - To	Type	Returns (%)	
				21.30	S	N24	21.30 - 22.00	Water	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 carried out as per the Client instructions. (7) Aquifer protection installed between 16.20-13.40m BGL prior to commencing rotary drilling.
							22.00 - 23.00	Water	100	
							23.00 - 24.30	Water	100	

All dimensions in metres Scale 1:25.00	For explanation of symbols and abbreviations see Key Sheets	Checked by: <i>K.W.</i>	Logged by: G.T/R.C	Contract No. 4339
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DRILLHOLE RECORD

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Client: AECOM		Location: North-west of Redcar, North Yorkshire E:457033.748 N:525517.758	
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Boart Longyear DB520)		Ground Level (m): 7.976	Start Date: 24/05/2021
			Sheet: 3 of 17

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

Drilling Progress and Water Observations				Standard Penetration Test			Flush			General Remarks
Date	Depth	Casing	Water Standing	Depth	Type	Result	From - To	Type	Returns (%)	
02/06/2021	24.30	24.30	0.00				24.30 - 25.40	Water	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 carried out as per the Client instructions. (7) Aquifer protection installed between 16.20-13.40m BGL prior to commencing rotary drilling.
03/06/2021	24.30	24.30	7.28				25.40 - 26.90	Water	100	
03/06/2021	27.30	27.30	0.00				26.90 - 27.30	Water	100	
04/06/2021	27.30	27.30	1.46				27.30 - 28.80	Water	100	

All dimensions in metres Scale 1:25.00	For explanation of symbols and abbreviations see Key Sheets	Checked by: <i>K.W.</i>	Logged by: G.T/R.C	Contract No. 4339
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DRILLHOLE RECORD

Status:-
FINAL

Project: Preliminary Onshore Ground Investigation for NZT		Exploratory Hole No. MS1BH06	
Client: AECOM		Location: North-west of Redcar, North Yorkshire E:457033.748 N:525517.758	
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Boart Longyear DB520)		Ground Level (m): 7.976	Start Date: 24/05/2021
		Sheet: 4 of 17	

RUN DETAILS			STRATA					Instrument/ Backfill	
Depth & (Core Ø)	TCR (SCR) RQD	Fracture Index	Water	Reduced Level	Legend	Depth (Thickness)	Description		
							Discontinuity Detail		Main
28.80		NI				28.40-28.80m ... non-intact.	Weak thinly laminated light grey MUDSTONE distinctly weathered. (Redcar Mudstone Formation). (continued)		
(102mm)	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.			
30.30						30.10-30.20m ... 1 No. subvertical (75-85 degrees) undulating smooth tight clean discontinuity.			
(102mm)	51 (36) 13								
31.10				-23.12		31.10			
(102mm)	100 (86) 19	20				31.40-31.80m ... subhorizontal (5-25 degrees) very closely spaced planar to undulating smooth open and tight infilled (clay) discontinuities.	Weak thinly laminated dark grey MUDSTONE moderately weathered. (Redcar Mudstone Formation).		
31.80						31.60-31.80m ... 3 No. subvertical (75-85 degrees) planar smooth tight clean discontinuities.			
(102mm)	100 (90) 19	10				31.80-33.10m ... subhorizontal (5-25 degrees) closely spaced planar to undulating smooth open and tight clean discontinuities.			

Drilling Progress and Water Observations				Standard Penetration Test			Flush			General Remarks
Date	Depth	Casing	Water Standing	Depth	Type	Result	From - To	Type	Returns (%)	
04/06/2021	31.10	31.10	0.00				28.80 - 30.30	Water	100	
07/06/2021	31.10	31.10	7.31				30.30 - 31.10	Water	100	
							31.10 - 31.80	Water	100	
							31.80 - 33.10	Water	100	

All dimensions in metres Scale 1:25.00	For explanation of symbols and abbreviations see Key Sheets	Checked by: <i>K.W.</i>	Logged by: G.T/R.C	Contract No. 4339
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DRILLHOLE RECORD

Status:-
FINAL

Project: Preliminary Onshore Ground Investigation for NZT		Exploratory Hole No. MS1BH06	
Client: AECOM	Location: North-west of Redcar, North Yorkshire E:457033.748 N:525517.758		
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Boart Longyear DB520)	Ground Level (m): 7.976	Start Date: 24/05/2021	Sheet: 5 of 17

RUN DETAILS			STRATA					Instrument/ Backfill	
Depth & (Core Ø)	TCR (SCR) RQD	Fracture Index	Water	Reduced Level	Legend	Depth (Thickness)	Description		
							Discontinuity Detail		Main
33.10	(102mm)						32.70-32.80m ... 1 No. subvertical (65-85 degrees) stepped smooth tight infilled (clay) discontinuity.	Weak thinly laminated dark grey MUDSTONE moderately weathered. (Redcar Mudstone Formation). (continued)	
34.10	(102mm)	8				33.10-35.90m ... subhorizontal (5-25 degrees) closely spaced planar to undulating smooth open and tight infilled (clay) discontinuities.			
34.90	(102mm)	10				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.			
	(102mm)					36.10-36.35m ... 1No vertical planar smooth clean			

Drilling Progress and Water Observations				Standard Penetration Test			Flush			General Remarks
Date	Depth	Casing	Water Standing	Depth	Type	Result	From - To	Type	Returns (%)	
07/06/2021	34.10	34.10	0.00				33.10 - 34.10	Water	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 carried out as per the Client instructions. (7) Aquifer protection installed between 16.20-13.40m BGL prior to commencing rotary drilling.
08/06/2021	34.10	34.10	0.00				34.10 - 34.90	Water	100	
							34.90 - 36.40	Water	100	

All dimensions in metres Scale 1:25.00	For explanation of symbols and abbreviations see Key Sheets	Checked by: <i>K.W.</i>	Logged by: G.T/R.C	Contract No. 4339
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DRILLHOLE RECORD

Status:-
FINAL

Project: Preliminary Onshore Ground Investigation for NZT		Exploratory Hole No. MS1BH06
Client: AECOM	Location: North-west of Redcar, North Yorkshire E:457033.748 N:525517.758	
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Boart Longyear DB520)	Ground Level (m): 7.976	Start Date: 24/05/2021
Sheet: 6 of 17		

RUN DETAILS				STRATA					Instrument/ Backfill
Depth & (Core Ø)	TCR (SCR) RQD	Fracture Index	Water	Reduced Level	Legend	Depth (Thickness)	Description		
							Discontinuity Detail	Main	
36.40	83 (83) 19			-29.12		37.10	discontinuity.	Weak thinly laminated dark grey MUDSTONE moderately weathered. (Redcar Mudstone Formation). (continued)	
(102mm)								Complete at 37.10m BGL.	

Drilling Progress and Water Observations				Standard Penetration Test			Flush			General Remarks
Date	Depth	Casing	Water Standing	Depth	Type	Result	From - To	Type	Returns (%)	
08/06/2021	37.10	37.10	0.00				36.40 - 37.10	Water	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 carried out as per the Client instructions. (7) Aquifer protection installed between 16.20-13.40m BGL prior to commencing rotary drilling.

All dimensions in metres Scale 1:25.00	For explanation of symbols and abbreviations see Key Sheets	Checked by: <i>K.W.</i>	Logged by: G.T/R.C	Contract No. 4339
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DRILLHOLE RECORD

Status:-
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Project: Preliminary Onshore Ground Investigation for NZT			Exploratory Hole No. MS\BH06
Client: AECOM	Location: North-west of Redcar, North Yorkshire E:457033.748 N:525517.758		
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Boart Longyear DB520)	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





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DRILLHOLE RECORD

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Client: AECOM	Location: North-west of Redcar, North Yorkshire E:457033.748 N:525517.758		
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Boart Longyear DB520)	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





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Project: Preliminary Onshore Ground Investigation for NZT			Exploratory Hole No. MS\BH06
Client: AECOM	Location: North-west of Redcar, North Yorkshire E:457033.748 N:525517.758		
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Boart Longyear DB520)	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



Figure MS\BH06.6
MS\BH06 8.70-10.20m BGL





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Client: AECOM	Location: North-west of Redcar, North Yorkshire E:457033.748 N:525517.758		
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Boart Longyear DB520)	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





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





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Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Boart Longyear DB520)	Ground Level (m): 7.976	Start Date: 24/05/2021	Sheet: 12 of 17

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



Figure MS\BH06.12
MS\BH06 18.30-19.80m BGL





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DRILLHOLE RECORD

Status:-
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Project: Preliminary Onshore Ground Investigation for NZT		Exploratory Hole No. MS\BH06
Client: AECOM	Location: North-west of Redcar, North Yorkshire E:457033.748 N:525517.758	Sheet: 13 of 17
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Boart Longyear DB520)	Ground Level (m): 7.976 Start Date: 24/05/2021	

Figure MS\BH06.13
MS\BH06 21.50-23.00m BGL



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





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DRILLHOLE RECORD

Status:-
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Project: Preliminary Onshore Ground Investigation for NZT		Exploratory Hole No. MS\BH06	
Client: AECOM	Location: North-west of Redcar, North Yorkshire E:457033.748 N:525517.758		Sheet: 14 of 17
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Boart Longyear DB520)	Ground Level (m): 7.976	Start Date: 24/05/2021	

Figure MS\BH06.15
MS\BH06 25.40-26.90m BGL



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





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DRILLHOLE RECORD

Status:-
FINAL

Project: Preliminary Onshore Ground Investigation for NZT		Exploratory Hole No. MS\BH06	
Client: AECOM	Location: North-west of Redcar, North Yorkshire E:457033.748 N:525517.758		Sheet: 15 of 17
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Boart Longyear DB520)	Ground Level (m): 7.976	Start Date: 24/05/2021	

Figure MS\BH06.17
MS\BH06 30.30-31.80m BGL



Figure MS\BH06.18
MS\BH06 31.80-33.10m BGL





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DRILLHOLE RECORD

Status:-
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Project: Preliminary Onshore Ground Investigation for NZT		Exploratory Hole No. MS\BH06	
Client: AECOM	Location: North-west of Redcar, North Yorkshire E:457033.748 N:525517.758		Sheet: 16 of 17
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Boart Longyear DB520)	Ground Level (m): 7.976	Start Date: 24/05/2021	

Figure MS\BH06.19
MS\BH06 33.10-34.90m BGL



Figure MS\BH06.20
MS\BH06 34.90-36.40m BGL





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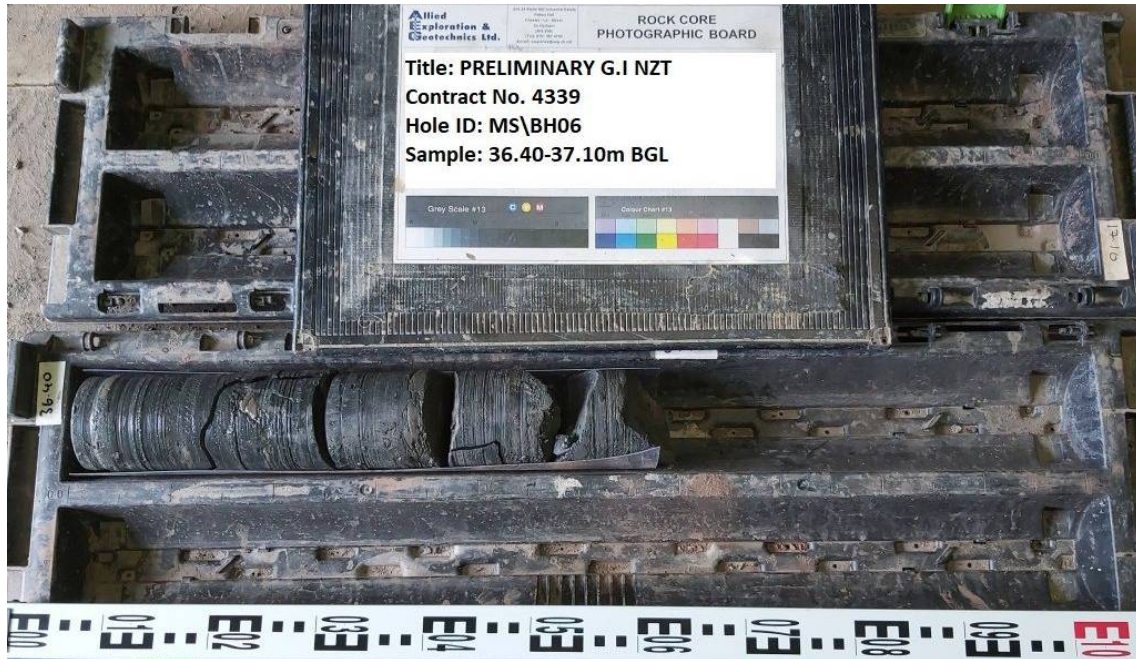
DRILLHOLE RECORD

Status:-

FINAL

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

Figure MS\BH06.21
MS\BH06 36.40-37.10m BGL



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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 Yorkshire E:457195.207 N:525424.790	
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Boart Longyear DB520)		Ground Level (m): 7.330	Start Date: 30/06/2021
		Sheet: 1 of 3	

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

Boring Progress and Water Observations					Liner Sample Information				General Remarks
Date	Depth	Casing	Casing Dia (mm)	Water Standing	From - To	Internal Dia (mm)	Recovery (%)	Subsampled	
30/06/2021	0.00	0.00	178		0.35 - 1.20	178	100	Yes	
					1.20 - 2.70	178	100	Yes	
					2.70 - 4.20	178	100	Yes	
					4.20 - 5.70	178	100	Yes	
					5.70 - 7.20	178	100	Yes	
					7.20 - 8.70	178	100	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.

All dimensions in metres Scale 1:50.00	For explanation of symbols and abbreviations see Key Sheets	Checked by: <i>K.W.</i>	Logged by: G.T/M.B/R.C	Contract No. 4339
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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 Yorkshire E:457195.207 N:525424.790	
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Boart Longyear DB520)		Ground Level (m): 7.330	Start Date: 30/06/2021
		Sheet: 2 of 3	

SAMPLES & TESTS			STRATA					Instrument/ Backfill		
Depth	Type No	Test Result	Water	Reduced Level	Legend	Depth (Thickness)	Description			
7.55-8.25 8.00 8.25-8.70	B18 _(SL6) J20 _(SL6) B21 _(SL6)			-0.92	x x x	8.25	Yellow brown SAND with occasional fine to coarse gravel sized pockets of soft brown silty clay. Sand is fine to coarse. (Tidal Flat Deposits).			
8.50	PID	<0.1ppm			x x x					
8.70-10.20 8.70-9.45 8.70 9.00	SL8 _(SS) B22 _(SL8) S J23 _(SL8)	N28			x x x	(1.95)				
9.45-10.20 9.50 9.50	B24 _(SL8) J25 _(SL8) PID	<0.1ppm			x x x					
10.00	J26 _(SL8)			-2.87	x x x	10.20				
10.20-11.70 10.20-11.00 10.20 10.50 10.50	SL9 _(SS) B27 _(SL9) S J28 _(SL9) PID	N26 <0.1ppm			x o x				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 _(SL9) J30 _(SL9)				x o x					
11.50 11.50 11.70-13.20 11.70-12.45 11.70 12.00	J31 _(SL9) PID SL10 _(SS) B32 _(SL10) S J33 _(SL10)	<0.1ppm N33			x o x	(3.45)				
12.45-13.20 12.50 12.50	B34 _(SL10) J35 _(SL10) PID	<0.1ppm			x o x					
13.00	J36 _(SL10)				x o x					
13.20-14.70 13.20-13.40 13.20 13.20 13.50	SL11 _(SS) ES37 _(SL11) S PID J38 _(SL11)	N41 <0.1ppm		-6.32	x o x	13.65	between c. 13.40-13.65m BGL ... dark brown.			
13.65-13.85 13.65 13.85 13.85-14.60 14.00 14.50 14.65 14.70-15.12 14.70-16.20 14.70 14.80-15.60 15.00	ES39 _(SL11) PID ES(M)40 _(SL11) B41 _(SL11) J42 _(SL11) J43 _(SL11) PID UT1 SL12 _(SS) J44 _(SL12) B45 _(SL12) J46 _(SL12)	<0.1ppm <0.1ppm (35)			x o x	(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.			
14.70-15.12 14.70-16.20 14.70 14.80-15.60 15.00	UT1 SL12 _(SS) J44 _(SL12) B45 _(SL12) J46 _(SL12)			-7.27	x o x	14.60				
14.70-15.12 14.70-16.20 14.70 14.80-15.60 15.00	UT1 SL12 _(SS) J44 _(SL12) B45 _(SL12) J46 _(SL12)			-7.47	x o x	14.80	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	UT1 SL12 _(SS) J44 _(SL12) B45 _(SL12) J46 _(SL12)				x o x	(0.80)	Soft thinly laminated grey brown silty CLAY. (Tidal Flat Deposits).			
15.00	J46 _(SL12)			-8.27	x o x	15.60				
15.70 15.70-15.90	J47 _(SL12) ES48 _(SL12)			-8.37	x o x	15.70	Firm grey black organic CLAY. Mild organic odour. (Tidal Flat Deposits).			

Boring Progress and Water Observations					Liner Sample Information				General Remarks
Date	Depth	Casing	Casing Dia (mm)	Water Standing	From - To	Internal Dia (mm)	Recovery (%)	Subsampled	
30/06/2021	13.20	13.20	178		8.70 - 10.20	178	100	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 16.55-14.50m prior 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.
01/07/2021	13.20	13.20	178		10.20 - 11.70	178	100	Yes	
					11.70 - 13.20	178	100	Yes	
					13.20 - 14.70	178	100	Yes	
					14.70 - 16.20	178	100	Yes	

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

Status:-
FINAL

Project: Preliminary Onshore Ground Investigation for NZT		Exploratory Hole No.	
Client: AECOM		MS1BH07	
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Boart Longyear DB520)		Ground Level (m): 7.330	Start Date: 30/06/2021
		Sheet: 3 of 3	

SAMPLES & TESTS			STRATA					Instrument/ Backfill
Depth	Type No	Test Result	Water	Reduced Level	Legend	Depth (Thickness)	Description	
15.70	ES(M)49 ^(SL12)	<0.1ppm (150)	Water	-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. (Glacial Deposits). <i>(continued)</i> at c.16.20m BGL ... very high strength. Clay is of high plasticity. <i>Boring complete at 16.55m BGL - continued by rotary drilling.</i>	
15.70	PID							
15.90-16.20	B50 ^(SL12)							
16.00	J51 ^(SL12)							
16.20-16.55	UT2					16.55		

Boring Progress and Water Observations					Liner Sample Information				General Remarks
Date	Depth	Casing	Casing Dia (mm)	Water Standing	From - To	Internal Dia (mm)	Recovery (%)	Subsampled	
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.

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

Status:-
FINAL

Project: Preliminary Onshore Ground Investigation for NZT		Exploratory Hole No. MS1BH07	
Client: AECOM	Location: North-west of Redcar, North Yorkshire E:457195.207 N:525424.790		
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Boart Longyear DB520)	Ground Level (m): 7.330	Start Date: 30/06/2021	Sheet: 1 of 17

RUN DETAILS			STRATA						Instrument/ Backfill
Depth & (Core Ø)	TCR (SCR) RQD	Fracture Index	Water	Reduced Level	Legend	Depth (Thickness)	Description		
							Discontinuity Detail	Main	
16.60	100	RO SOIL		-9.22 -9.27		16.55 16.60	16.55-16.60m ... rotary openhole drilling. 16.60-22.30m ... soil.	(1) Firm brown CLAY. (Glacial Deposits).	Instrument/ Backfill
16.80	100					16.70m ... J52		Stiff dark 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). 17.10m ... clay is of intermediate plasticity.	
16.90	100					16.80m ... ES55 16.80m ... ES(M)56			
17.10	100					17.00m ... J53 17.10m ... U54			
17.60	100					17.60m ... B58 17.70m ... J57			
18.30	56					18.10m ... U59 18.30m ... J1		18.10m ... high strength. Clay is of intermediate plasticity.	
19.10	100			-11.57		18.90	19.00m ... J60 19.10m ... B62 19.20m ... J61 19.40m ... U63	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). 19.40m ... clay is of intermediate plasticity.	
19.80	47					19.80m ... B65 19.90m ... J64			

Drilling Progress and Water Observations				Standard Penetration Test			Flush			General Remarks
Date	Depth	Casing	Water Standing	Depth	Type	Result	From - To	Type	Returns (%)	
01/07/2021	16.55	16.55	4.68	18.30	S	N16	16.60 - 16.80	Water	100	(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 16.55-14.50m prior 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 Log.
01/07/2021	16.90	16.90	0.00				16.80 - 16.90	Water	100	
02/07/2021	16.90	16.90	0.00				16.90 - 17.10	Water	100	
02/07/2021	19.10	19.10	0.00				17.10 - 17.60	Water	100	
05/07/2021	19.10	19.10	6.71				17.60 - 18.30	Water	100	
							18.30 - 19.10	Water	100	
							19.10 - 19.80	Water	100	
							19.80 - 21.30	Water	100	

All dimensions in metres Scale 1:25.00	For explanation of symbols and abbreviations see Key Sheets	Checked by: <i>K.W.</i>	Logged by: G.T/M.B/R.C	Contract No. 4339
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DRILLHOLE RECORD

Status:-
FINAL

Project: Preliminary Onshore Ground Investigation for NZT		Exploratory Hole No. MS1BH07	
Client: AECOM		Location: North-west of Redcar, North Yorkshire E:457195.207 N:525424.790	
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Boart Longyear DB520)		Ground Level (m): 7.330	Start Date: 30/06/2021
		Sheet: 2 of 17	

RUN DETAILS				STRATA				Instrument/ Backfill	
Depth & (Core Ø)	TCR (SCR) RQD	Fracture Index	Water	Reduced Level	Legend	Depth (Thickness)	Description		
							Discontinuity Detail		Main
21.30	100					(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)	
						21.40m ... J66 21.40m ... ES67 21.40m ... ES(M)68			
						21.90m ... U69		21.90m ... high strength. Clay is of low plasticity.	
		NI		-14.97		22.30		22.30-22.80m ... non-intact. Recovered as clay. 22.40m ... ES70	
						(0.85)		Extremely weak thinly laminated dark grey MUDSTONE residual. (Recovered as gravelly clay). (Redcar Mudstone Formation).	
22.80		10				22.80-23.15m ... horizontal (0-5 degrees) closely spaced undulating rough partly open infilled (grey sandy clay) discontinuities.			
23.00	0 (0) 0					23.15		(1) Grey MUDSTONE. (Driller describes as 'weathered').	
	15 (0) 0	NR		-15.82		23.15-24.10m ... no recovery.			
						(0.95)			
				-16.77		24.10		Extremely weak dark grey MUDSTONE distinctly weathered. (Redcar Mudstone Formation).	
24.30		NI				(0.30)			
24.40	100 (0) 0	NR		-17.07		24.40			
						24.40-25.90m ... no recovery.			

Drilling Progress and Water Observations				Standard Penetration Test			Flush			General Remarks
Date	Depth	Casing	Water Standing	Depth	Type	Result	From - To	Type	Returns (%)	
05/07/2021	23.00	23.00	0.00	21.30	S	N21	21.30 - 22.80	Water	100	(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 16.55-14.50m prior 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
06/07/2021	23.00	23.00	2.46				22.80 - 23.00	Water	100	
							23.00 - 24.30	Water	100	
							24.30 - 24.40	Water	100	
							24.40 - 24.90	Water	100	

All dimensions in metres Scale 1:25.00	For explanation of symbols and abbreviations see Key Sheets	Checked by: <i>K.W.</i>	Logged by: G.T/M.B/R.C	Contract No. 4339
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DRILLHOLE RECORD

Status:-
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Project: Preliminary Onshore Ground Investigation for NZT		Exploratory Hole No. MS1BH07	
Client: AECOM		Location: North-west of Redcar, North Yorkshire E:457195.207 N:525424.790	
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Boart Longyear DB520)		Ground Level (m): 7.330	Start Date: 30/06/2021
		Sheet: 3 of 17	

RUN DETAILS			STRATA					Instrument/ Backfill	
Depth & (Core Ø)	TCR (SCR) RQD	Fracture Index	Water	Reduced Level	Legend	Depth (Thickness)	Description		
							Discontinuity Detail		Main
24.90	(0) 0							(1) Grey MUDSTONE. (Driller describes as 'badly broken and fractured'). (continued)	
25.40	0 (0) 0								
	0 (0) 0					(2.65)			
26.20		RO					25.90-26.20m ... rotary openhole drilling		
	43 (30) 0	NR					26.20-27.05m ... no recovery.		
				-19.72		27.05	27.05-27.60m ... horizontal to oblique (0-40 degrees) closely spaced undulating rough tight infilled (grey clayey sand and gravel) discontinuities.	Extremely weak dark grey MUDSTONE distinctly weathered. (Redcar Mudstone Formation).	
27.70		NI				(1.25)	27.60-27.70m ... non-intact.		
	100 (89) 50	8					27.70-28.30m ... horizontal to subhorizontal (0-30 degrees) closely spaced planar to undulating smooth tight partly open clean discontinuities.		
28.40		5		-20.97		28.30	28.30-28.80m ... horizontal (0-5 degrees) medium spaced planar smooth tight clean discontinuities.		
	80 (70)								

Drilling Progress and Water Observations				Standard Penetration Test			Flush			General Remarks
Date	Depth	Casing	Water Standing	Depth	Type	Result	From - To	Type	Returns (%)	
06/07/2021	25.80	25.80	0.00	24.90	C	N32	24.90 - 25.40	Water	100	(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
07/07/2021	25.80	25.80	0.00	25.90	C	N47	25.40 - 25.90	Water	100	
07/07/2021	28.40	26.20	0.00				25.90 - 26.20	Water	100	
08/07/2021	28.40	26.20	6.10				26.20 - 27.70	Water	100	
							27.70 - 28.40	Water	100	
							28.40 - 28.90	Water	100	

All dimensions in metres Scale 1:25.00	For explanation of symbols and abbreviations see Key Sheets	Checked by: <i>K.W.</i>	Logged by: G.T/M.B/R.C	Contract No. 4339
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DRILLHOLE RECORD

Status:-
FINAL

Project: Preliminary Onshore Ground Investigation for NZT		Exploratory Hole No. MS1BH07
Client: AECOM	Location: North-west of Redcar, North Yorkshire E:457195.207 N:525424.790	
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Boart Longyear DB520)	Ground Level (m): 7.330	Start Date: 30/06/2021
		Sheet: 4 of 17

RUN DETAILS			STRATA					Instrument/ Backfill	
Depth & (Core Ø)	TCR (SCR) RQD	Fracture Index	Water	Reduced Level	Legend	Depth (Thickness)	Description		
							Discontinuity Detail		Main
28.90	56	NR				28.80-28.90m ... no recovery.	Weak to medium strong grey dark grey fossiliferous MUDSTONE partially weathered. (Redcar Mudstone Formation). (continued)		
30.10	100 (92) 77	6				28.90-29.90m ... horizontal to subhorizontal (0-80 degrees) closely spaced undulating to planar smooth tight to partly open clean discontinuities.	29.00m ... moderately weak.		
31.60	100 (91) 77	NI				29.90-30.10m ... non-intact.			
31.60	100 (77) 60	7			(6.50)	30.10-31.60m ... subhorizontal to oblique (5-50 degrees) closely spaced planar to undulating smooth tight to partly open clean discontinuities.			
	100 (77) 60	10				31.60-31.90m ... horizontal to subvertical (0-75 degrees) closely spaced undulating rough tight to partly open infilled (gravelly clay) discontinuities.			
		9				31.90-32.80m ... oblique (30-60 degrees) closely spaced planar to undulating smooth tight to open clean discontinuities.			

Drilling Progress and Water Observations				Standard Penetration Test			Flush			General Remarks
Date	Depth	Casing	Water Standing	Depth	Type	Result	From - To	Type	Returns (%)	
							28.90 - 30.10	Water	100	(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 16.55-14.50m prior 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 Logfile.
							30.10 - 31.60	Water	100	
							31.60 - 33.10	Water	100	

All dimensions in metres Scale 1:25.00	For explanation of symbols and abbreviations see Key Sheets	Checked by: <i>K.W.</i>	Logged by: G.T.M./B.R.C	Contract No. 4339
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DRILLHOLE RECORD

Status:-
FINAL

Project: Preliminary Onshore Ground Investigation for NZT		Exploratory Hole No. MS1BH07	
Client: AECOM		Location: North-west of Redcar, North Yorkshire E:457195.207 N:525424.790	
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Boart Longyear DB520)		Ground Level (m): 7.330	Start Date: 30/06/2021
		Sheet: 5 of 17	

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

Drilling Progress and Water Observations				Standard Penetration Test			Flush			General Remarks
Date	Depth	Casing	Water Standing	Depth	Type	Result	From - To	Type	Returns (%)	
08/07/2021	34.80	28.50	0.00				33.10 - 34.60	Water	100	(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
09/07/2021	34.80	28.50	1.60				34.80 - 36.30	Water	100	
							36.30 - 37.30	Water	100	

All dimensions in metres Scale 1:25.00	For explanation of symbols and abbreviations see Key Sheets	Checked by: <i>K.W.</i>	Logged by: G.T/M.B/R.C	Contract No. 4339
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DRILLHOLE RECORD

Status:-
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Project: Preliminary Onshore Ground Investigation for NZT		Exploratory Hole No. MS1BH07	
Client: AECOM		Location: North-west of Redcar, North Yorkshire E:457195.207 N:525424.790	
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Boart Longyear DB520)		Ground Level (m): 7.330	Start Date: 30/06/2021
		Sheet: 6 of 17	

RUN DETAILS				STRATA				Instrument/ Backfill	
Depth & (Core Ø)	TCR (SCR) RQD	Fracture Index	Water	Reduced Level	Legend	Depth (Thickness)	Description		
							Discontinuity Detail		Main
(102mm)	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).	
						40.60			
				-29.97		37.30		Complete at 37.30m BGL.	

Drilling Progress and Water Observations				Standard Penetration Test			Flush			General Remarks
Date	Depth	Casing	Water Standing	Depth	Type	Result	From - To	Type	Returns (%)	
09/07/2021	37.30	28.50	0.00							(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 Logfile by: G.T/M.B/R.C

All dimensions in metres Scale 1:25.00	For explanation of symbols and abbreviations see Key Sheets	Checked by: <i>K.W.</i>	Contract No. 4339
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DRILLHOLE RECORD

Status:-
FINAL

Project: Preliminary Onshore Ground Investigation for NZT			Exploratory Hole No. MS\BH07
Client: AECOM	Location: North-west of Redcar, North Yorkshire E:457195.207 N:525424.790		
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Boart Longyear DB520)	Ground Level (m): 7.330	Start Date: 30/06/2021	Sheet: 7 of 17

Figure MS\BH07.1
MS\BH07 0.35-1.20m BGL



Figure MS\BH07.2
MS\BH07 1.20-2.70m BGL





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DRILLHOLE RECORD

Status:-
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Project: Preliminary Onshore Ground Investigation for NZT			Exploratory Hole No. MS\BH07
Client: AECOM	Location: North-west of Redcar, North Yorkshire E:457195.207 N:525424.790		
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Boart Longyear DB520)	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

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

Figure MS\BH07.5
MS\BH07 5.70-7.20m BGL



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





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DRILLHOLE RECORD

Status:-
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Project: Preliminary Onshore Ground Investigation for NZT			Exploratory Hole No. MS\BH07
Client: AECOM	Location: North-west of Redcar, North Yorkshire E:457195.207 N:525424.790		
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Boart Longyear DB520)	Ground Level (m): 7.330	Start Date: 30/06/2021	Sheet: 10 of 17

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

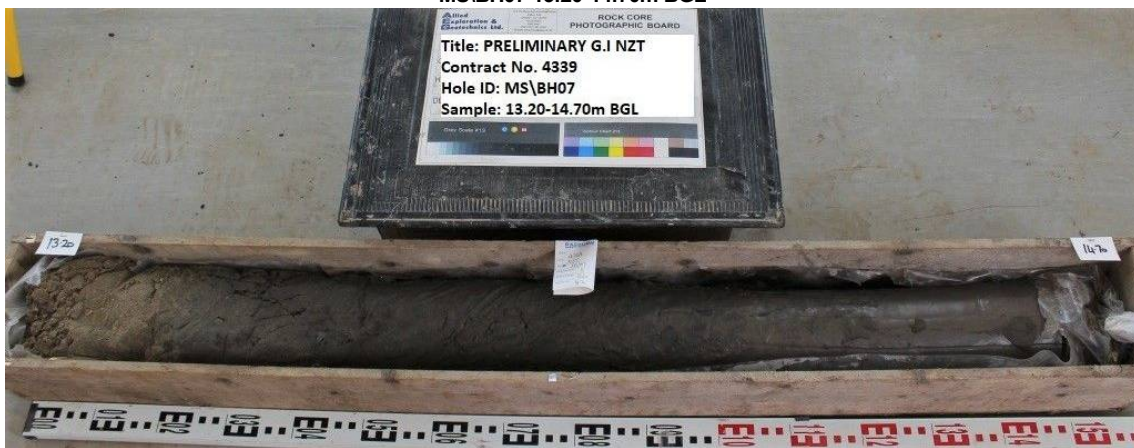
Status:-
FINAL

Project: Preliminary Onshore Ground Investigation for NZT			Exploratory Hole No. MS\BH07
Client: AECOM	Location: North-west of Redcar, North Yorkshire E:457195.207 N:525424.790		
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Boart Longyear DB520)	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: Preliminary Onshore Ground Investigation for NZT			Exploratory Hole No. MS\BH07
Client: AECOM	Location: North-west of Redcar, North Yorkshire E:457195.207 N:525424.790		
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Boart Longyear DB520)	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

Status:-
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Client: AECOM	Location: North-west of Redcar, North Yorkshire E:457195.207 N:525424.790		
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Boart Longyear DB520)	Ground Level (m): 7.330	Start Date: 30/06/2021	Sheet: 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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Client: AECOM	Location: North-west of Redcar, North Yorkshire E:457195.207 N:525424.790		
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Boart Longyear DB520)	Ground Level (m): 7.330	Start Date: 30/06/2021	Sheet: 14 of 17

Figure MS\BH07.15
MS\BH07 21.30-22.80m BGL



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





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DRILLHOLE RECORD

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Client: AECOM	Location: North-west of Redcar, North Yorkshire E:457195.207 N:525424.790		
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Boart Longyear DB520)	Ground Level (m): 7.330	Start Date: 30/06/2021	Sheet: 15 of 17

Figure MS\BH07.17
MS\BH07 27.70-28.90m BGL



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





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Client: AECOM	Location: North-west of Redcar, North Yorkshire E:457195.207 N:525424.790		
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Boart Longyear DB520)	Ground Level (m): 7.330	Start Date: 30/06/2021	Sheet: 16 of 17

Figure MS\BH07.19
MS\BH07 30.10-31.60m BGL



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





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DRILLHOLE RECORD

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Project: Preliminary Onshore Ground Investigation for NZT			Exploratory Hole No. MS\BH07
Client: AECOM	Location: North-west of Redcar, North Yorkshire E:457195.207 N:525424.790		
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Boart Longyear DB520)	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 Investigation for NZT		Exploratory Hole No.	
Client: AECOM		Location: North-west of Redcar, North Yorkshire E:457240.665 N:525356.883	
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Boart Longyear DB520)		Ground Level (m): 8.745	Start Date: 28/05/2021
		Sheet: 1 of 2	

SAMPLES & TESTS			STRATA					Instrument/ Backfill
Depth	Type No	Test Result	Water	Reduced Level	Legend	Depth (Thickness)	Description	
0.36-1.20	ES1 SL1 _(SS)			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%)).	
0.36	J7 _(SL1)						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.	
0.36-0.50	B8 _(SL1)	<0.1ppm						
0.36	PID							
0.50	ES2							
0.50	J9 _(SL1)							
0.50-1.20	B10 _(SL1)	<0.1ppm						
0.50	PID							
1.00	ES3	<0.1ppm						
1.00	PID							
1.20-2.70	SL2 _(SS)							
1.20	J11 _(SL2)							
1.20-1.80	B12 _(SL2)							
1.20	S	N46				(3.90)		
1.50	PID	<0.1ppm						
1.80	J13 _(SL2)							
1.80-2.70	B14 _(SL2)							
2.00	ES4	<0.1ppm						
2.00	PID							
2.50	PID	<0.1ppm						
2.70-4.20	SL3 _(SS)							
2.70	J15 _(SL3)							
2.70-3.45	B16 _(SL3)							
2.70	S	N11						
3.00	ES5	<0.1ppm						
3.00	PID							
3.45	J17 _(SL3)							
3.45-4.20	B18 _(SL3)							
3.50	PID	<0.1ppm		4.55		4.20		
4.20	S	50/75mm						
4.20-5.70	SL*							
							(1) MADE GROUND (Brown grey slag fill). at c.4.20m BGL ... very dense.	
							(1.50)	
5.70-7.20	SL4 _(SS)			3.05		5.70		
5.70	J19 _(SL4)							
5.70-6.30	B20 _(SL4)	50/165mm		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%)).	
5.70	S							
6.00	ES6	<0.1ppm						
6.00	PID							
6.30	J21 _(SL4)							
6.30-7.20	B22 _(SL4)						MADE GROUND (Brown grey slightly silty sand. Sand is fine to medium).	
6.50	PID	<0.1ppm		1.85		6.90		
7.20-8.70	SL5 _(SS)			1.55		7.20	MADE GROUND (Dark brown slightly organic clayey sand with occasional organic fragments).	
7.20	J23 _(SL5)							
7.20-7.80	B24 _(SL5)							
7.20	S	N12						
7.20	PID	<0.1ppm		0.94		7.80	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).	
7.80	J25 _(SL5)							

Boring Progress and Water Observations					Liner Sample Information				General Remarks
Date	Depth	Casing	Casing Dia (mm)	Water Standing	From - To	Internal Dia (mm)	Recovery (%)	Subsampled	
28/05/2021	0.00	0.00	178		0.36 - 1.20	178	100	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.
					1.20 - 2.70	178	100	Yes	
					2.70 - 4.20	178	100	Yes	
					4.20 - 5.70	178	0	No	
					5.70 - 7.20	178	100	Yes	
					7.20 - 8.70	178	100	Yes	

All dimensions in metres Scale 1:50.00	For explanation of symbols and abbreviations see Key Sheets	Checked by: <i>K.W.</i>	Logged by: G.T/R.C	Contract No. 4339
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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 Yorkshire E:457240.665 N:525356.883	
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Boart Longyear DB520)		Ground Level (m): 8.745	Start Date: 28/05/2021
		Sheet: 2 of 2	

SAMPLES & TESTS			STRATA					Instrument/ Backfill
Depth	Type No	Test Result	Water	Reduced Level	Legend	Depth (Thickness)	Description	
7.80-8.50	B26 _(SL5)					(0.70)	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). <i>(continued)</i>	
8.20	PID	0.4ppm		0.24		8.50		
8.50	J27 _(SL5)					(0.75)	Soft to firm black grey slightly organic sandy CLAY. Sand is fine to coarse. (Tidal Flat Deposits).	
8.50-8.70	B28 _(SL5)	(24)				9.25		
8.70-9.15	UT1						at c.8.50m BGL ... clay is of intermediate to high plasticity. at c.8.90m BGL ... very low strength.	
9.20	PID	<0.1ppm		-0.51		9.25		
9.25	J1					(0.50)	Dark grey very clayey SAND with occasional fragments of shell. Sand is fine to coarse. (Tidal Flat Deposits).	
9.25-10.20	SL6 _(SS)					9.75		
9.25	J29 _(SL6)					(0.45)	Dark grey sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is fine to medium subangular to subrounded. (Tidal Flat Deposits).	
9.25-9.75	B30 _(SL6)			-1.01		10.20		
9.75	J31 _(SL6)						Very loose and loose dark grey brown very clayey SAND with occasional fragments of shell. Sand is fine to coarse. (Tidal Flat Deposits).	
9.75-10.20	B32 _(SL6)					10.20		
10.20-11.70	SL7 _(SS)					(3.60)	from c.12.20m BGL ... medium dense.	
10.20	J33 _(SL7)					12.20		
10.20-10.95	B34 _(SL7)						at c.12.45m BGL ... slightly silty sand.	
10.20	S	N4				12.45		
10.20	PID	<0.1ppm						
10.95	J35 _(SL7)					(3.60)		
10.95-11.70	B36 _(SL7)						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. (Tidal Flat Deposits).	
11.20	PID	<0.1ppm				13.80		
11.70-13.20	SL8 _(SS)					(1.90)	at c.14.70m BGL... very low strength clay of low plasticity.	
11.70	J37 _(SL8)					15.20		
11.70-12.45	B38 _(SL8)						at c.15.20m BGL ... clay is of intermediate plasticity.	
11.70	S	N12				15.70		
12.20	PID	<0.1ppm					at c.15.70m BGL ... silty clay of intermediate plasticity.	
12.45	J39 _(SL8)							
12.45-13.20	B40 _(SL8)							
13.20-14.70	SL9 _(SS)							
13.20	J41 _(SL9)						Boring complete at 15.70m BGL - continued by rotary drilling.	
13.20-13.80	B42 _(SL9)							
13.20	S	N23						
13.20	PID	<0.1ppm						
13.80	J43 _(SL9)							
13.80-14.25	B44 _(SL9)							
14.20	PID	<0.1ppm						
14.25	J45 _(SL9)							
14.25-14.70	B46 _(SL9)							
14.70-15.15	UT2	(20)						
14.70-15.70	SL10 _(SS)							
14.70	J47 _(SL10)							
14.70-15.20	B48 _(SL10)							
15.20	J49 _(SL10)							
15.20-15.70	B50 _(SL10)							
15.20	PID	<0.1ppm						
15.70-15.70	J51							

Boring Progress and Water Observations					Liner Sample Information				General Remarks
Date	Depth	Casing	Casing Dia (mm)	Water Standing	From - To	Internal Dia (mm)	Recovery (%)	Subsampled	
28/05/2021	10.20	10.20	178	5.85	9.25 - 10.20	178	100	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.
01/06/2021	10.20	10.20	178	6.00	10.20 - 11.70	178	100	Yes	
01/06/2021	14.70	14.70	178	5.70	11.70 - 13.20	178	100	Yes	
02/06/2021	14.70	14.70	178	7.20	13.20 - 14.70	178	100	Yes	
02/06/2021	15.70	15.70	178	4.90	14.70 - 15.70	178	100	Yes	

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

Status:-
FINAL

Project: Preliminary Onshore Ground Investigation for NZT		Exploratory Hole No. MS1BH08	
Client: AECOM		Location: North-west of Redcar, North Yorkshire E:457240.665 N:525356.883	
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Boart Longyear DB520)		Ground Level (m): 8.745	Start Date: 28/05/2021
			Sheet: 1 of 13

RUN DETAILS					STRATA		Instrument/ Backfill	
Depth & (Core Ø)	TCR (SCR) RQD	Fracture Index	Water	Reduced Level	Legend	Depth (Thickness)		Description
								Discontinuity Detail
15.70 (102mm)	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 (102mm)	87	SOIL		-7.56		16.30 (1.50)	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.
17.80 (102mm)	47			-9.06		17.80	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	87						19.30m ... J57 19.50m ... B58	

Drilling Progress and Water Observations				Standard Penetration Test			Flush			General Remarks
Date	Depth	Casing	Water Standing	Depth	Type	Result	From - To	Type	Returns (%)	
04/06/2021	15.70	15.70	4.11	16.30	S	N4	15.70 - 16.30	Water	100	(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.
				19.30	S	N26	16.30 - 17.80	Water	100	
							17.80 - 19.30	Water	100	
							19.30 - 20.50	Water	100	
All dimensions in metres Scale 1:25.00				For explanation of symbols and abbreviations see Key Sheets			Checked by: <i>K.W.</i>	Logged by: G.T/R.C		Contract No. 4339



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DRILLHOLE RECORD

Status:-
FINAL

Project: Preliminary Onshore Ground Investigation for NZT		Exploratory Hole No. MS1BH08	
Client: AECOM		Location: North-west of Redcar, North Yorkshire E:457240.665 N:525356.883	
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Boart Longyear DB520)		Ground Level (m): 8.745	Start Date: 28/05/2021
		Sheet: 2 of 13	

RUN DETAILS			STRATA				Instrument/ Backfill		
Depth & (Core Ø)	TCR (SCR) RQD	Fracture Index	Water	Reduced Level	Legend	Depth (Thickness)		Description	
								Discontinuity Detail	Main
20.50	67				(4.00)	20.35m ... U59	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)	Instrument/ Backfill	
						20.80m ... J60 20.80m ... B61	20.35m ... very high strength. Clay is of intermediate plasticity. 20.80m ... slightly sandy slightly gravelly clay of intermediate plasticity.		
22.30	50			-13.06	21.80	22.30m ... B62	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. (Glacial Till).		
23.30	100			-14.56	23.30	23.30m ... U63	23.30m ... clay is of low plasticity.		

Drilling Progress and Water Observations				Standard Penetration Test			Flush			General Remarks
Date	Depth	Casing	Water Standing	Depth	Type	Result	From - To	Type	Returns (%)	
				22.30	S	N29	20.50 - 22.30	Water	100	(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.
							22.30 - 23.30	Water	100	
							23.30 - 23.80	Water	100	

All dimensions in metres Scale 1:25.00	For explanation of symbols and abbreviations see Key Sheets	Checked by: <i>K.W.</i>	Logged by: G.T/R.C	Contract No. 4339
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DRILLHOLE RECORD

Status:-
FINAL

Project: Preliminary Onshore Ground Investigation for NZT		Exploratory Hole No. MS1BH08	
Client: AECOM		Location: North-west of Redcar, North Yorkshire E:457240.665 N:525356.883	
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Boart Longyear DB520)		Ground Level (m): 8.745	Start Date: 28/05/2021
		Sheet: 3 of 13	

RUN DETAILS				STRATA				Instrument/ Backfill	
Depth & (Core Ø)	TCR (SCR) RQD	Fracture Index	Water	Reduced Level	Legend	Depth (Thickness)	Description		
							Discontinuity Detail		Main
23.80	100					(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 and sandstone. (Probable Weathered Redcar Mudstone Formation). (continued) 24.35m ... high strength. Clay is of low plasticity.	
							24.35m ... U67		
24.80	100 (48) 0	12		-16.06			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							25.40-25.70m ... non-intact.		
	100 (25) 13	NI					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) discontinuities.		
		26				(2.00)	26.20-26.40m ... non-intact.		
		NI					26.40-26.80m ... subhorizontal (5-25 degrees) and subvertical (65-85 degrees) closely to medium spaced smooth planar and undulating open and tight infilled (clay) discontinuities.		
		18					26.80-29.90m ... subhorizontal (5-25 degrees) and subvertical (65-85 degrees) very closely spaced smooth planar and undulating open and tight infilled (clay) discontinuities.		
26.90	100 (69) 0	15		-18.06			26.90-28.40m ... driller notes loss of flush to 0% returns.	Very weak thinly laminated light grey MUDSTONE distinctly weathered. (Redcar Mudstone Formation). 26.90-28.40m ... driller notes loss of flush to 0% returns.	

Drilling Progress and Water Observations				Standard Penetration Test			Flush			General Remarks
Date	Depth	Casing	Water Standing	Depth	Type	Result	From - To	Type	Returns (%)	
04/06/2021	25.40	25.40	3.11				23.80 - 24.80	Water	100	(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.
07/06/2021	25.40	25.40	0.96				24.80 - 25.40	Water	100	
							25.40 - 26.90	Water	100	
							26.90 - 28.40	Water	0	

All dimensions in metres Scale 1:25.00	For explanation of symbols and abbreviations see Key Sheets	Checked by: <i>K.W.</i>	Logged by: G.T/R.C	Contract No. 4339
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DRILLHOLE RECORD

Status:-
FINAL

Project: Preliminary Onshore Ground Investigation for NZT		Exploratory Hole No. MS1BH08	
Client: AECOM		Location: North-west of Redcar, North Yorkshire E:457240.665 N:525356.883	
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Boart Longyear DB520)		Ground Level (m): 8.745	Start Date: 28/05/2021
		Sheet: 4 of 13	

RUN DETAILS				STRATA					Instrument/ Backfill
Depth & (Core Ø)	TCR (SCR) RQD	Fracture Index	Water	Reduced Level	Legend	Depth (Thickness)	Description		
							Discontinuity Detail	Main	
28.40	100 (88) 0			-21.16		(3.10) 29.90	Very weak thinly laminated light grey MUDSTONE distinctly weathered. (Redcar Mudstone Formation). (continued)		
(102mm)							28.40-29.90m ... driller notes loss of flush to 50% returns.		
							Terminated at 29.90m BGL - due to sinking casing and jammed tools.		

Drilling Progress and Water Observations				Standard Penetration Test			Flush			General Remarks
Date	Depth	Casing	Water Standing	Depth	Type	Result	From - To	Type	Returns (%)	
07/06/2021	28.40	28.40	0.96				28.40 - 29.90	Water	50	(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.
08/06/2021	28.40	28.40	0.00							
08/06/2021	29.90	29.90	0.00							

All dimensions in metres Scale 1:25.00	For explanation of symbols and abbreviations see Key Sheets	Checked by: <i>K.W.</i>	Logged by: G.T/R.C	Contract No. 4339
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DRILLHOLE RECORD

Status:-
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Project: Preliminary Onshore Ground Investigation for NZT			Exploratory Hole No. MS\BH08
Client: AECOM	Location: North-west of Redcar, North Yorkshire E:457240.665 N:525356.883		
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Boart Longyear DB520)	Ground Level (m): 8.745	Start Date: 28/05/2021	Sheet: 5 of 13

Figure MS\BH08.1
MS\BH08 0.36-1.20m BGL



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





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Client: AECOM	Location: North-west of Redcar, North Yorkshire E:457240.665 N:525356.883		
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Boart Longyear DB520)	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





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Client: AECOM	Location: North-west of Redcar, North Yorkshire E:457240.665 N:525356.883		
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Boart Longyear DB520)	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



Figure MS\BH08.6
MS\BH08 9.25-10.20m BGL





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Client: AECOM	Location: North-west of Redcar, North Yorkshire E:457240.665 N:525356.883		
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\BH08.7
MS\BH08 10.20-11.70m BGL



Figure MS\BH08.8
MS\BH08 11.70-13.20m BGL





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DRILLHOLE RECORD

Status:-
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Client: AECOM	Location: North-west of Redcar, North Yorkshire E:457240.665 N:525356.883		
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Boart Longyear DB520)	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

Status:-

FINAL

Project: Preliminary Onshore Ground Investigation for NZT		Exploratory Hole No. MS\BH08	
Client: AECOM	Location: North-west of Redcar, North Yorkshire E:457240.665 N:525356.883		Sheet: 10 of 13
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Boart Longyear DB520)	Ground Level (m): 8.745	Start Date: 28/05/2021	

Figure MS\BH08.11
MS\BH08 15.70-17.80m BGL



Figure MS\BH08.12
MS\BH08 17.80-20.80m BGL





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DRILLHOLE RECORD

Status:-
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Project: Preliminary Onshore Ground Investigation for NZT			Exploratory Hole No. MS\BH08
Client: AECOM	Location: North-west of Redcar, North Yorkshire E:457240.665 N:525356.883		
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Boart Longyear DB520)	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

Status:-
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Project: Preliminary Onshore Ground Investigation for NZT		Exploratory Hole No. MS\BH08
Client: AECOM	Location: North-west of Redcar, North Yorkshire E:457240.665 N:525356.883	
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Boart Longyear DB520)	Ground Level (m): 8.745	Start Date: 28/05/2021
		Sheet: 12 of 13

Figure MS\BH08.15
MS\BH08 25.40-26.90m BGL



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





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DRILLHOLE RECORD

Status:-

FINAL

Project: Preliminary Onshore Ground Investigation for NZT			Exploratory Hole No. MS\BH08
Client: AECOM	Location: North-west of Redcar, North Yorkshire E:457240.665 N:525356.883		
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Boart Longyear DB520)	Ground Level (m): 8.745	Start Date: 28/05/2021	Sheet: 13 of 13

Figure MS\BH08.17
MS\BH08 28.40-29.90m BGL



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SONIC SAMPLE HOLE RECORD

Status:-

FINAL

Project: Preliminary Onshore Ground Investigation for NZT		Exploratory Hole No.	
Client: AECOM		MS1BH09	
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Comacchio GEO 205)		Ground Level (m): 7.466	Start Date: 05/07/2021
		Sheet: 1 of 2	

SAMPLES & TESTS			STRATA					Instrument/ Backfill	
Depth	Type No	Test Result	Water	Reduced Level	Legend	Depth (Thickness)	Description		
0.20	J1			7.42		0.05	MADE GROUND (Macadam).		
0.30	ES2					0.05	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%)).		
0.30	PID	<0.1ppm					(1.30)		
0.50	ES3								
0.50	PID	<0.1ppm							
0.75-1.20	SL1 _(SS)								
0.75-1.20	B5 _(SL1)								
1.00	ES4			6.12			1.35		
1.00	PID	<0.1ppm							
1.20-2.70	SL2 _(SS)								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).
1.20	S	N8				(0.60)			
1.35-1.95	B6 _(SL2)								
1.50	J7 _(SL2)			5.52		1.95			
1.50	PID	<0.1ppm							
1.95-2.70	B9 _(SL2)						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 and include yellow compacted ash). (Engineer notes locally saturated). at c.2.70m BGL ... loose and very loose.		
2.00-2.30	ES8 _(SL2)								
2.00	PID	<0.1ppm							
2.50	PID	<0.1ppm							
2.70-4.20	SL3 _(SS)								
2.70	S	N4							
3.00-3.20	ES10 _(SL3)								
3.00	J11 _(SL3)					(2.70)			
3.00	PID	<0.1ppm							
3.20-4.00	B12 _(SL3)								
3.50	PID	<0.1ppm							
4.00-4.20	ES13 _(SL3)								
4.00	J14 _(SL3)								
4.00	PID	<0.1ppm							
4.20-5.70	SL4 _(SS)								
4.20-4.65	B15 _(SL4)			2.82		4.65			
4.20	S	N12							
4.50	J16 _(SL4)								
4.65-4.85	ES17 _(SL4)								
4.65	PID	<0.1ppm							
4.85-5.70	B18 _(SL4)								
5.00	J19 _(SL4)								
5.50	J20 _(SL4)								
5.50	PID	<0.1ppm							
5.70-7.20	SL5 _(SS)								
5.70-6.45	B21 _(SL5)								
5.70	S	N15							
6.00	J22 _(SL5)								
6.45-7.20	B23 _(SL5)								
6.50	J24 _(SL5)								
6.50	PID	<0.1ppm							
7.00	J25 _(SL5)								
7.20-8.70	SL6 _(SS)								
7.20	S	50/285mm							
7.50	J27 _(SL6)								
7.50	PID	<0.1ppm							

Boring Progress and Water Observations					Liner Sample Information				General Remarks
Date	Depth	Casing	Casing Dia (mm)	Water Standing	From - To	Internal Dia (mm)	Recovery (%)	Subsampled	
05/07/2021	0.00	0.00	178		0.75 - 1.20	178	100	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 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.
					1.20 - 2.70	178	100	Yes	
					2.70 - 4.20	178	100	Yes	
					4.20 - 5.70	178	100	Yes	
					5.70 - 7.20	178	100	Yes	
					7.20 - 8.70	178	100	Yes	

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

Status:-

FINAL

Project: Preliminary Onshore Ground Investigation for NZT		Exploratory Hole No. MS1BH09	
Client: AECOM		Location: North-west of Redcar, North Yorkshire E:456823.949 N:525534.870	
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Comacchio GEO 205)		Ground Level (m): 7.466	Start Date: 05/07/2021
		Sheet: 2 of 2	

SAMPLES & TESTS			STRATA					Instrument/ Backfill
Depth	Type No	Test Result	Water	Reduced Level	Legend	Depth (Thickness)	Description	
7.95-8.45 7.95-8.45 8.00	B26 _(SL6) B28 _(SL6) J29 _(SL6)						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). <i>(continued)</i>	
8.50 8.50 8.70-10.20 8.70-9.45 8.70 9.00	J30 _(SL6) PID SL7 _(SS) B31 _(SL7) S J32 _(SL7)	<0.1ppm N37				(8.75)	at c.8.70m BGL ... dense.	
9.45-10.20 9.50 9.50	B33 _(SL7) J34 _(SL7) 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 _(SL7) SL8 _(SS) B36 _(SL8) S J37 _(SL8) PID	50/295mm N37 N37					at c.10.20m BGL ... very dense. between c.10.80-13.40m BGL ... gravelly sand.	
10.95-11.70 11.00	B38 _(SL8) J39 _(SL8)							
11.50 11.50 11.70-13.20 11.70-13.00 11.70 12.00	J40 _(SL8) PID SL9 _(SS) B41 _(SL9) S J42 _(SL9)	<0.1ppm N48					at c.11.70m BGL ... dense.	
12.50 12.50	J43 _(SL9) PID	<0.1ppm						
13.00-13.20 13.00 13.00	ES44 _(SL9) J45 _(SL9) PID	<0.1ppm		-5.93		13.40		
13.20-14.70 13.20 13.40-13.60 13.50 13.60-13.80 13.60 13.60 14.00 14.00-14.20 14.00 14.00 14.20-14.70 14.50 14.70	SL10 _(SS) S B46 _(SL10) J47 _(SL10) ES48 _(SL10) ES(M)49 _(SL10) PID J50 _(SL10) ES51 _(SL10) ES(M)52 _(SL10) PID B53 _(SL10) J54 _(SL10) S	N22 N22 N28		-6.33 -7.24		(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. <i>Boring complete at 14.70m BGL - continued by rotary drilling.</i>	

Boring Progress and Water Observations					Liner Sample Information				General Remarks
Date	Depth	Casing	Casing Dia (mm)	Water Standing	From - To	Internal Dia (mm)	Recovery (%)	Subsampled	
05/07/2021	13.20	13.20	178	4.70	8.70 - 10.20	178	100	Yes	
06/07/2021	13.20	13.20	178	5.90	10.20 - 11.70	178	100	Yes	
06/07/2021	13.20	13.50	178		11.70 - 13.20	178	100	Yes	
					13.20 - 14.70	178	100	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 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 1:50.00	For explanation of symbols and abbreviations see Key Sheets	Checked by: <i>K.W.</i>	Logged by: M.B/R.C	Contract No. 4339
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DRILLHOLE RECORD

Status:-
FINAL

Project: Preliminary Onshore Ground Investigation for NZT		Exploratory Hole No. MS1BH09	
Client: AECOM		Location: North-west of Redcar, North Yorkshire E:456823.949 N:525534.870	
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Comacchio GEO 205)		Ground Level (m): 7.466	Start Date: 05/07/2021
		Sheet: 1 of 18	

RUN DETAILS			STRATA					Instrument/ Backfill	
Depth & (Core Ø)	TCR (SCR) RQD	Fracture Index	Water	Reduced Level	Legend	Depth (Thickness)	Description		
							Discontinuity Detail		Main
15.15		RO		-7.24	(0.45)	14.70	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).	
15.50	100	SOIL		-7.68		15.15	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).	
	63						15.70m ... U57	15.20m ... clay is of intermediate plasticity. 15.70m ... high strength. Clay is of intermediate plasticity.	
17.00					(3.35)		16.90m ... J58 17.00m ... B60 17.10m ... J59		
	100						18.00m ... J61 18.00m ... B62	18.00m ... clay is of intermediate plasticity.	
18.50				-11.03		18.50	18.50m ... B64 18.60m ... J63	18.60m ... clay is of high plasticity.	
	37								

Drilling Progress and Water Observations				Standard Penetration Test			Flush			General Remarks
Date	Depth	Casing	Water Standing	Depth	Type	Result	From - To	Type	Returns (%)	
07/07/2021	14.70	14.70	3.11				14.70 - 15.15	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 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.
							15.15 - 15.50	Water	100	
							15.50 - 17.00	Water	100	
							17.00 - 18.50	Water	100	
							18.50 - 20.00	Water	100	

All dimensions in metres Scale 1:25.00	For explanation of symbols and abbreviations see Key Sheets	Checked by: <i>K.W.</i>	Logged by: M.B/R.C	Contract No. 4339
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DRILLHOLE RECORD

Status:-
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Project: Preliminary Onshore Ground Investigation for NZT		Exploratory Hole No. MS1BH09	
Client: AECOM	Location: North-west of Redcar, North Yorkshire E:456823.949 N:525534.870		
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Comacchio GEO 205)	Ground Level (m): 7.466	Start Date: 05/07/2021	Sheet: 2 of 18

RUN DETAILS				STRATA				Instrument/ Backfill	
Depth & (Core Ø)	TCR (SCR) RQD	Fracture Index	Water	Reduced Level	Legend	Depth (Thickness)	Description		
							Discontinuity Detail		Main
20.00				-11.53	(0.50)	19.00m ... ES65 19.00m ... ES(M)66	Stiff thinly laminated dark brown silty slightly sandy CLAY. Sand is fine to coarse. (Glacial Deposits). (continued)		
21.00	100 (0) 0	NI		-12.53	(1.00)	20.00m ... ES67 20.00-23.40m ... non-intact.	Stiff dark 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).		
21.50	70 (12) 0			-13.53	(1.00)		Extremely weak thinly laminated dark grey MUDSTONE distinctly weathered. (Recovered as very stiff gravelly clay). (Redcar Mudstone Formation).		
22.50	46 (12) 0				(2.40)		Very weak thinly laminated dark grey MUDSTONE partially weathered. (Redcar Mudstone Formation).		
	80 (54) 0								

Drilling Progress and Water Observations				Standard Penetration Test			Flush			General Remarks
Date	Depth	Casing	Water Standing	Depth	Type	Result	From - To	Type	Returns (%)	
07/07/2021	20.00	20.00	0.00				20.00 - 21.00	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 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.
08/07/2021	20.00	20.00	4.16				21.00 - 21.50	Water	100	
							21.50 - 22.50	Water	100	
							22.50 - 23.30	Water	100	

All dimensions in metres Scale 1:25.00	For explanation of symbols and abbreviations see Key Sheets	Checked by: <i>K.W.</i>	Logged by: M.B/R.C	Contract No. 4339
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DRILLHOLE RECORD

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Client: AECOM	Location: North-west of Redcar, North Yorkshire E:456823.949 N:525534.870		
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Comacchio GEO 205)	Ground Level (m): 7.466	Start Date: 05/07/2021	Sheet: 3 of 18

RUN DETAILS				STRATA				Instrument/ Backfill	
Depth & (Core Ø)	TCR (SCR) RQD	Fracture Index	Water	Reduced Level	Legend	Depth (Thickness)	Description		
							Discontinuity Detail		Main
23.30	(102mm)							Very weak thinly laminated dark grey MUDSTONE partially weathered. (Redcar Mudstone Formation). (continued)	
24.40	100 (70) 0	16		-15.93		23.40-26.30m ... subhorizontal (5-25 degrees) closely spaced planar smooth tight clean and infilled (clay) discontinuities.		Weak thinly laminated dark grey MUDSTONE partially weathered. (Redcar Mudstone Formation).	
24.50	100 (100) 0								
25.90	100 (100) 0								
26.30	100 (64) 22	12				26.30-26.50m ... non-intact.			
						26.50-27.00m ... subhorizontal (5-30 degrees) closely spaced planar smooth to rough tight stained (grey silt) discontinuities.			

Drilling Progress and Water Observations				Standard Penetration Test			Flush			General Remarks
Date	Depth	Casing	Water Standing	Depth	Type	Result	From - To	Type	Returns (%)	
08/07/2021	24.50	24.50	0.00				23.30 - 24.40	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 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.
09/07/2021	24.50	24.50	2.16				24.40 - 24.50	Water	100	
							24.50 - 25.90	Water	100	
							25.90 - 26.30	Water	100	
							26.30 - 27.50	Water	100	

All dimensions in metres Scale 1:25.00	For explanation of symbols and abbreviations see Key Sheets	Checked by: <i>K.W.</i>	Logged by: M.B/R.C	Contract No. 4339
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Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Comacchio GEO 205)		Ground Level (m): 7.466	Start Date: 05/07/2021
		Sheet: 4 of 18	

RUN DETAILS				STRATA				Instrument/ Backfill	
Depth & (Core Ø)	TCR (SCR) RQD	Fracture Index	Water	Reduced Level	Legend	Depth (Thickness)	Description		
							Discontinuity Detail		Main
27.50	100 (83) 77	8		-19.83		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)		
29.00	100 (79) 73	6		-21.53		29.00-30.65m ... subhorizontal (5-30 degrees) closely spaced undulating rough very tight to tight infilled (grey clayey sand and gravel) discontinuities.	Medium strong thinly bedded grey light grey arenaceous MUDSTONE unweathered. (Redcar Mudstone Formation).		
30.50	100 (65) 49	NI		-23.18			Extremely weak thinly bedded grey light grey MUDSTONE distinctly weathered. (Redcar Mudstone Formation).		

Drilling Progress and Water Observations				Standard Penetration Test			Flush			General Remarks
Date	Depth	Casing	Water Standing	Depth	Type	Result	From - To	Type	Returns (%)	
09/07/2021	29.00	29.00	0.00				27.50 - 29.00	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 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.
12/07/2021	29.00	29.00	4.11				29.00 - 30.50	Water	100	
							30.50 - 32.00	Water	100	

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Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Comacchio GEO 205)		Ground Level (m): 7.466	Start Date: 05/07/2021
		Sheet: 5 of 18	

RUN DETAILS				STRATA					Instrument/ Backfill
Depth & (Core Ø)	TCR (SCR) RQD	Fracture Index	Water	Reduced Level	Legend	Depth (Thickness)	Description		
							Discontinuity Detail	Main	
32.00	100 (57) 39	10				30.65-31.20m ... non-intact.		30.65-30.80m ... residual (recovered as sandy gravel). Very weak thinly bedded grey dark grey MUDSTONE distinctly weathered to destructured. (Redcar Mudstone Formation). (continued)	
						31.20-33.30m ... subhorizontal to oblique (5-60 degrees) closely spaced undulating rough to striated partly open infilled (clayey sand and gravel) discontinuities.			
33.50	100 (52) 31	NI		-26.03		33.30-34.50m ... non-intact.		Weak to medium strong thinly bedded dark grey arenaceous MUDSTONE partially weathered to destructured. (Redcar Mudstone Formation).	
		14				34.50-35.60m ... subhorizontal (5-30 degrees) closely spaced planar to undulating smooth to rough stained and infilled (clayey sand and gravel) discontinuities.			

Drilling Progress and Water Observations				Standard Penetration Test			Flush			General Remarks
Date	Depth	Casing	Water Standing	Depth	Type	Result	From - To	Type	Returns (%)	
							32.00 - 33.50	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 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.
							33.50 - 35.00	Water	100	

All dimensions in metres Scale 1:25.00	For explanation of symbols and abbreviations see Key Sheets	Checked by: <i>K.W.</i>	Logged by: M.B/R.C	Contract No. 4339
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Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Comacchio GEO 205)		Ground Level (m): 7.466	Start Date: 05/07/2021	Sheet: 6 of 18

RUN DETAILS				STRATA					Instrument/ Backfill
Depth & (Core Ø)	TCR (SCR) RQD	Fracture Index	Water	Reduced Level	Legend	Depth (Thickness)	Description		
							Discontinuity Detail	Main	
35.00	100 (60) 20			-28.13		35.60		Weak to medium strong thinly bedded dark grey arenaceous MUDSTONE partially weathered to destructured. (Redcar Mudstone Formation). (continued)	
								Complete at 35.60m BGL.	

Drilling Progress and Water Observations				Standard Penetration Test			Flush			General Remarks
Date	Depth	Casing	Water Standing	Depth	Type	Result	From - To	Type	Returns (%)	
12/07/2021	35.60	35.60	0.00				35.00 - 35.60	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 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	For explanation of symbols and abbreviations see Key Sheets	Checked by: <i>K.W.</i>	Logged by: M.B/R.C	Contract No. 4339
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Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Comacchio GEO 205)	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





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

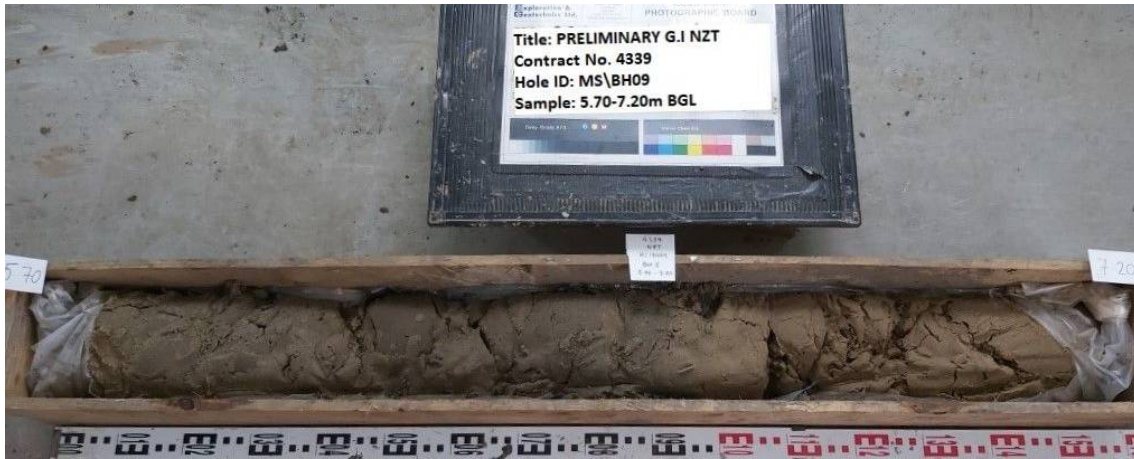


Figure MS\BH09.6
MS\BH09 7.20-8.70m BGL





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Figure MS\BH09.7
MS\BH09 8.70-10.20m BGL



Figure MS\BH09.8
MS\BH09 10.20-11.70m BGL





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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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Figure MS\BH09.11
MS\BH09 15.15-17.00m BGL

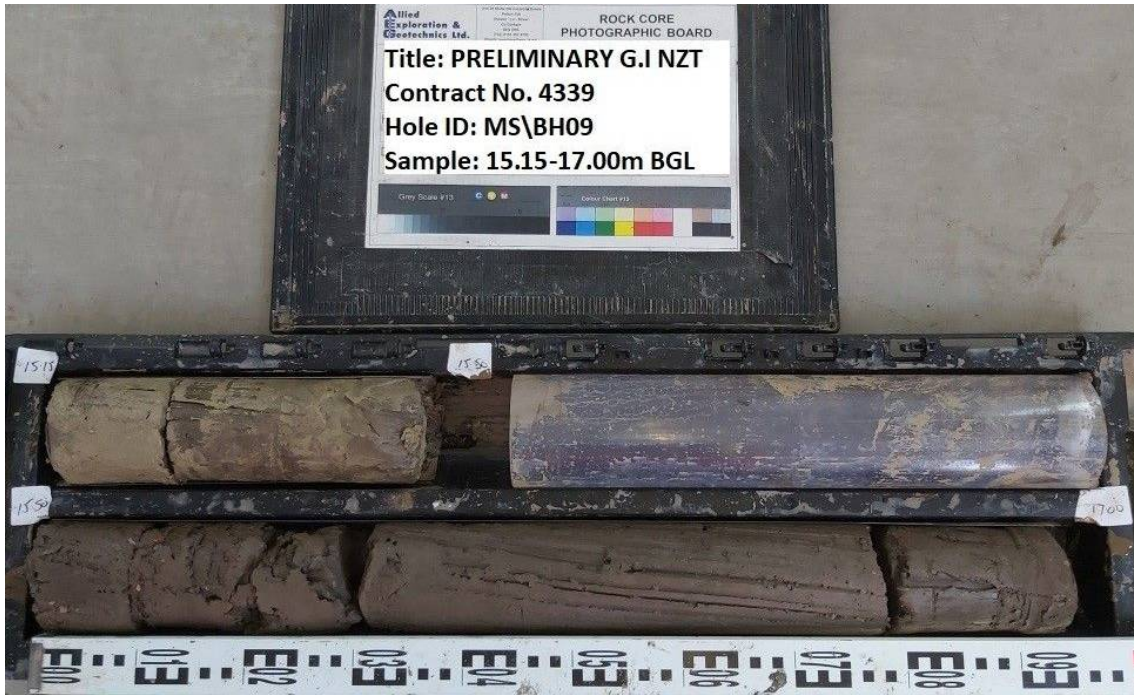


Figure MS\BH09.12
MS\BH09 17.00-18.50m BGL





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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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Figure MS\BH09.15
MS\BH09 23.30-24.50m BGL



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





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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\BH09.17
MS\BH09 26.30-27.50m BGL

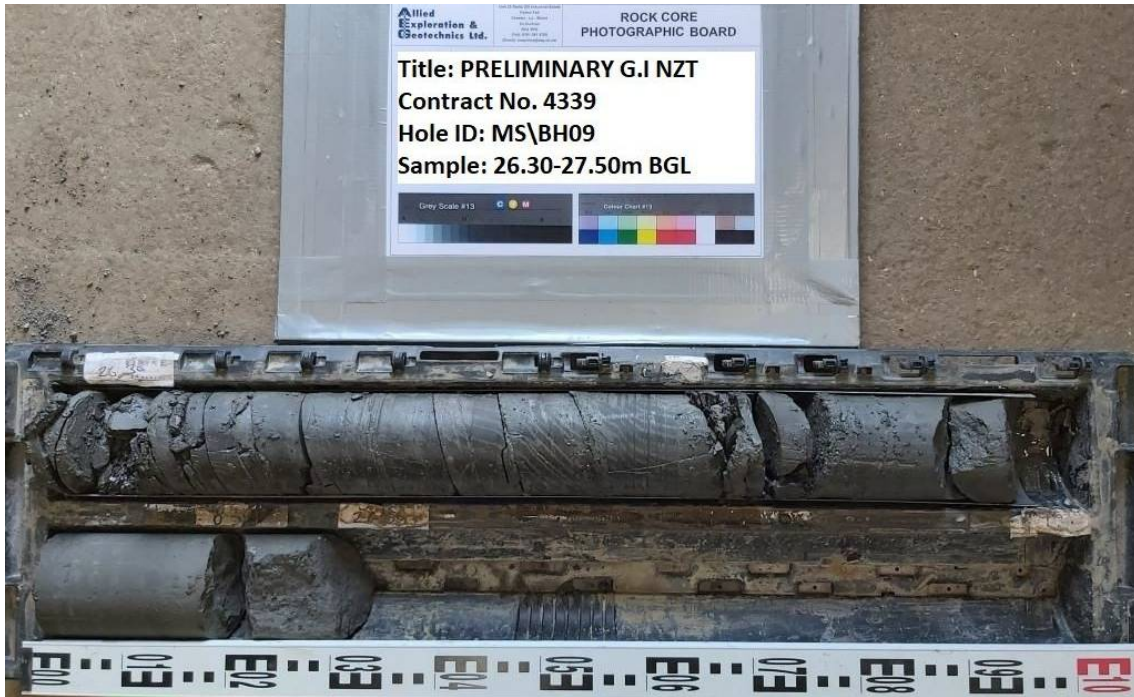


Figure MS\BH09.18
MS\BH09 27.50-29.00m BGL





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DRILLHOLE RECORD

Status:-
FINAL

Project: Preliminary Onshore Ground Investigation for NZT		Exploratory Hole No. MS\BH09	
Client: AECOM	Location: North-west of Redcar, North Yorkshire E:456823.949 N:525534.870		Sheet: 16 of 18
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Comacchio GEO 205)	Ground Level (m): 7.466	Start Date: 05/07/2021	

Figure MS\BH09.19
MS\BH09 29.00-30.50m BGL



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





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DRILLHOLE RECORD

Status:-
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Project: Preliminary Onshore Ground Investigation for NZT			Exploratory Hole No. MS\BH09
Client: AECOM	Location: North-west of Redcar, North Yorkshire E:456823.949 N:525534.870		
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



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





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DRILLHOLE RECORD

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

Figure MS\BH09.23
MS\BH09 35.00-35.60m BGL



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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 Yorkshire E:457026.135 N:525257.651	
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Boart Longyear DB520)		Ground Level (m): 7.502	Start Date: 07/06/2021
		Sheet: 1 of 2	

SAMPLES & TESTS			STRATA				Instrument/ Backfill
Depth	Type No	Test Result	Water	Reduced Level	Legend	Depth (Thickness)	
0.00-0.05	ES			7.45		0.05	MADE GROUND (Grass over soft dark brown clayey topsoil).
0.00	PID	<0.1ppm		7.26		0.24	MADE GROUND (Dark grey fused gravel with medium cobble content. Gravel is fine to coarse angular to subangular and includes slag. Cobbles are angular and include slag. Slag is vesicular (100%).
0.30	ES1						
0.30	PID	<0.1ppm					
0.45-1.20	SL1						
0.50	ES2						
0.50	PID	<0.1ppm					
1.00	ES3						
1.00	PID	<0.1ppm					
1.20-2.70	SL2						
1.20	C	50/15mm					
1.50	PID	<0.1ppm					
2.00	ES4						
2.00	PID	<0.1ppm					
2.50	PID	<0.1ppm				(4.36)	
2.70-4.20	SL3 _(SS)						
2.70	J8 _(SL3)						
2.70-3.45	B9 _(SL3)						
2.70	C	50/150mm					
3.00	ES5						
3.00	PID	<0.1ppm					
3.45	J10 _(SL3)						
3.45-4.20	B11 _(SL3)						
3.50	PID	<0.1ppm					
4.00	ES6						
4.00	PID	<0.1ppm					
4.20-5.70	SL4 _(SS)						
4.20	J12 _(SL4)						
4.20-4.60	B13 _(SL4)			2.90	4.60		
4.20	C	50/175mm					
4.50	PID	<0.1ppm					
4.60	J14 _(SL4)						
4.60-5.70	B15 _(SL4)				(1.10)		
5.00	ES7						
5.00	PID	<0.1ppm					
5.50	PID	<0.1ppm		1.80	5.70		
5.70-7.20	SL5 _(SS)						
5.70	J16 _(SL5)						
5.70-7.20	B17 _(SL5)						
5.70	S	N57					
6.50	PID	<0.1ppm			(2.25)		
7.20-8.70	SL6 _(SS)						
7.20	J18 _(SL6)						
7.20-7.95	B19 _(SL6)						
7.20	S	N37					
7.50	PID	<0.1ppm		-0.45	7.95		

Boring Progress and Water Observations					Liner Sample Information				General Remarks
Date	Depth	Casing	Casing Dia (mm)	Water Standing	From - To	Internal Dia (mm)	Recovery (%)	Subsampled	
07/06/2021	0.00	0.00	178		0.45 - 1.20	178	100	No	
07/06/2021	2.70	2.70	178	Dry	1.20 - 2.70	178	100	No	
08/06/2021	2.70	2.70	178	Dry	2.70 - 4.20	178	100	Yes	
08/06/2021	4.20	4.20	178	Dry	4.20 - 5.70	178	100	Yes	
14/06/2021	4.20	4.20	178	Dry	5.70 - 7.20	178	100	Yes	
					7.20 - 8.70	178	100	Yes	

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

Status:-
FINAL

Project: Preliminary Onshore Ground Investigation for NZT		Exploratory Hole No. MS1BH10	
Client: AECOM		Location: North-west of Redcar, North Yorkshire E:457026.135 N:525257.651	
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Boart Longyear DB520)		Ground Level (m): 7.502	Start Date: 07/06/2021
		Sheet: 2 of 2	

SAMPLES & TESTS			STRATA				Instrument/ Backfill	
Depth	Type No	Test Result	Water	Reduced Level	Legend	Depth (Thickness)		Description
7.95 7.95-8.70	J20 ^(SL6) B21 ^(SL6)						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). <i>(continued)</i>	[Hatched Area]
8.50 8.70-10.20	PID SL7 ^(SS) J22 ^(SL7) B23 ^(SL7) S	<0.1ppm				(1.50)	at c.8.70m BGL ... dense.	
8.70-9.45 8.70		N43						
9.45 9.45-10.20 9.50	J24 ^(SL7) B25 ^(SL7) PID	<0.1ppm				(0.75)	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). at c.9.45m BGL ... clay/silt is of low plasticity.	
10.20-11.70 10.20 10.20-11.30 10.20 10.50	SL8 ^(SS) J26 ^(SL8) B27 ^(SL8) S PID	N53 <0.1ppm				(1.10)	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 ^(SL8) ES29 ^(SL8) PID UT1 ^(SS) U30 ^(UT1)	<0.1ppm				(0.85)	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.								

Boring Progress and Water Observations					Liner Sample Information				General Remarks
Date	Depth	Casing	Casing Dia (mm)	Water Standing	From - To	Internal Dia (mm)	Recovery (%)	Subsampled	
14/06/2021	12.15	11.70	178	5.80	8.70 - 10.20	178	100	Yes	
					10.20 - 11.70	178	100	No	
					11.70 - 12.15	116	78	No	

(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.

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

Status:-
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Project: Preliminary Onshore Ground Investigation for NZT		Exploratory Hole No. MS1BH10	
Client: AECOM		Location: North-west of Redcar, North Yorkshire E:457026.135 N:525257.651	
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Boart Longyear DB520)		Ground Level (m): 7.502	Start Date: 07/06/2021
		Sheet: 1 of 16	

RUN DETAILS			STRATA					Instrument/ Backfill	
Depth & (Core Ø)	TCR (SCR) RQD	Fracture Index	Water	Reduced Level	Legend	Depth (Thickness)	Description		
							Discontinuity Detail		Main
		RO		-4.65		12.15	12.15-12.60m ... rotary openhole drilling.	(1) Laminated brown grey CLAY with sand lenses. (Driller describes as 'firm'). (Tidal Flat Deposits).	
12.60				-5.10		12.60	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	SOIL				13.60	13.60m ... J33 13.60m ... B34	13.60m ... clay is of high plasticity.	
						14.10	14.10m ... J35 14.10m ... B36	14.10m ... clay is of high plasticity with rare peat pockets.	
15.10	100			-7.10		14.60	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).	
						15.10	15.10m ... U38	15.10m ... clay is of high plasticity.	
						15.60	15.60m ... J39 15.60m ... B40		

Drilling Progress and Water Observations				Standard Penetration Test			Flush			General Remarks
Date	Depth	Casing	Water Standing	Depth	Type	Result	From - To	Type	Returns (%)	
15/06/2021	12.15	12.15	0.00	13.60	S	N6	12.60 - 13.60 13.60 - 15.10 15.10 - 16.60	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 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.

All dimensions in metres Scale 1:25.00	For explanation of symbols and abbreviations see Key Sheets	Checked by: <i>K.W.</i>	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		Exploratory Hole No. MS1BH10	
Client: AECOM	Location: North-west of Redcar, North Yorkshire E:457026.135 N:525257.651		Sheet: 2 of 16
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Boart Longyear DB520)	Ground Level (m): 7.502	Start Date: 07/06/2021	

RUN DETAILS			STRATA				Instrument/ Backfill	
Depth & (Core Ø)	TCR (SCR) RQD	Fracture Index	Water	Reduced Level	Legend	Depth (Thickness)		Description
							Discontinuity Detail	Main
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	17.25m ... very high strength. Clay is of intermediate plasticity.
18.10	82					17.50m ... B45		
(102mm)								
19.50	0			-12.00		19.50		(1) Laminated brown grey CLAY with sand lenses. (Driller describes as 'firm'). (Glacial Deposits).
(102mm)						(0.20)		(1) Grey MUDSTONE. (Driller describes as 'weak' recovered as angular hard pieces).
20.00	0 (0)	NR		-12.20		19.70		
							20.00-21.40m ... no recovery.	

Drilling Progress and Water Observations				Standard Penetration Test			Flush			General Remarks
Date	Depth	Casing	Water Standing	Depth	Type	Result	From - To	Type	Returns (%)	
				16.60	S	N12	16.60 - 18.10	Water	100	(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.
				19.50	S	N46	18.10 - 19.50	Water	100	
							19.50 - 20.00	Water	100	
							20.00 - 21.00	Water	100	

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DRILLHOLE RECORD

Status:-
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Project: Preliminary Onshore Ground Investigation for NZT		Exploratory Hole No. MS1BH10	
Client: AECOM		Location: North-west of Redcar, North Yorkshire E:457026.135 N:525257.651	
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Boart Longyear DB520)		Ground Level (m): 7.502	Start Date: 07/06/2021
			Sheet: 3 of 16

RUN DETAILS			STRATA					Instrument/ Backfill	
Depth & (Core Ø)	TCR (SCR) RQD	Fracture Index	Water	Reduced Level	Legend	Depth (Thickness)	Description		
							Discontinuity Detail		Main
21.00	0					(1.70)	(1) Grey MUDSTONE. (Driller describes as 'weak' recovered as angular hard pieces). (continued)		
21.50	20 (0) 0	NI		-13.90		21.40	21.40-21.50m ... non-intact. 21.50-21.80m ... no recovery.	Extremely weak thinly laminated dark grey MUDSTONE distinctly weathered. (Redcar Mudstone Formation).	
22.00	40 (0) 0	NR		-14.50		22.00	21.80-22.00m ... non-intact. 22.00-22.30m ... no recovery.	Very weak thinly laminated dark grey MUDSTONE partially weathered. (Redcar Mudstone Formation).	
22.50	40 (40) 0	NR		-15.00		22.50	22.30-22.50m ... subhorizontal (5-25 degrees) closely spaced planar tight clean discontinuities. 22.50-22.60m ... non-intact.	Weak to moderately weak dark grey black fossiliferous MUDSTONE partially weathered with occasional fragments of shell. (Redcar Mudstone Formation).	
23.00	100 (80) 40	NI					22.60-25.40m ... subhorizontal (10-20 degrees) planar and irregular rough undulating smooth and rough tight clean discontinuities.		
24.00	100 (100) 68	6							

Drilling Progress and Water Observations				Standard Penetration Test			Flush			General Remarks
Date	Depth	Casing	Water Standing	Depth	Type	Result	From - To	Type	Returns (%)	
15/06/2021	21.50	21.50	0.00	21.00	C	50/161mm	21.00 - 21.50	Water	100	(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.
16/06/2021	21.50	21.50	0.00	21.50	C	N40	21.50 - 22.00	Water	100	
				22.50	C	50/167mm	22.00 - 22.50	Water	100	
							22.50 - 23.00	Water	100	
							23.00 - 24.00	Water	100	
							24.00 - 25.50	Water	100	

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DRILLHOLE RECORD

Status:-
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Project: Preliminary Onshore Ground Investigation for NZT		Exploratory Hole No. MS1BH10	
Client: AECOM		Location: North-west of Redcar, North Yorkshire E:457026.135 N:525257.651	
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Boart Longyear DB520)		Ground Level (m): 7.502	Start Date: 07/06/2021
		Sheet: 4 of 16	

RUN DETAILS				STRATA					Instrument/ Backfill
Depth & (Core Ø)	TCR (SCR) RQD	Fracture Index	Water	Reduced Level	Legend	Depth (Thickness)	Description		
							Discontinuity Detail	Main	
25.50	60	NI							Weak to moderately weak dark grey black fossiliferous MUDSTONE partially weathered with occasional fragments of shell. (Redcar Mudstone Formation). (continued)
	NI								
27.00	100 (87) 67	8							25.40-25.50m ... non-intact.
	NI								
27.00	100 (87) 47	8							25.50-25.90m ... subhorizontal (10-20 degrees) planar and irregular rough undulating smooth and rough tight clean discontinuities.
	NI								
27.00	100 (87) 47	6							25.90-26.10m ... non-intact.
	NI								
27.00	100 (87) 47	6							26.10-27.80m ... subhorizontal (10-20 degrees) planar and irregular rough undulating smooth and rough tight clean discontinuities.
	NI								
27.00	100 (87) 47	6							27.80-28.00m ... non-intact.
	NI								
27.00	100 (87) 47	6							28.00-31.20m ... subhorizontal (10-20 degrees) planar and irregular rough undulating smooth and rough tight
	NI								

Drilling Progress and Water Observations				Standard Penetration Test			Flush			General Remarks
Date	Depth	Casing	Water Standing	Depth	Type	Result	From - To	Type	Returns (%)	
							25.50 - 27.00	Water	100	(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.
							27.00 - 28.50	Water	100	

All dimensions in metres Scale 1:25.00	For explanation of symbols and abbreviations see Key Sheets	Checked by: <i>K.W.</i>	Logged by: G.T/R.C/D.P	Contract No. 4339
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DRILLHOLE RECORD

Status:-
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Project: Preliminary Onshore Ground Investigation for NZT			Exploratory Hole No. MS1BH10		
Client: AECOM		Location: North-west of Redcar, North Yorkshire E:457026.135 N:525257.651			
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Boart Longyear DB520)		Ground Level (m): 7.502	Start Date: 07/06/2021	Sheet: 5 of 16	

RUN DETAILS				STRATA					Instrument/ Backfill
Depth & (Core Ø)	TCR (SCR) RQD	Fracture Index	Water	Reduced Level	Legend	Depth (Thickness)	Description		
							Discontinuity Detail	Main	
28.50	100 (100) 60 (102mm)					(12.20)	clean discontinuities.	Weak to moderately weak dark grey black fossiliferous MUDSTONE partially weathered with occasional fragments of shell. (Redcar Mudstone Formation). (continued)	
29.50							100 (100) 43 (102mm)		
30.20	100 (73) 33 (102mm)						31.20-31.60m ... non-intact.		
31.70	87 (87) 37	9					31.60-33.00m ... subhorizontal (10-20 degrees) planar and irregular rough undulating smooth and rough tight clean discontinuities.		

Drilling Progress and Water Observations				Standard Penetration Test			Flush			General Remarks
Date	Depth	Casing	Water Standing	Depth	Type	Result	From - To	Type	Returns (%)	
16/06/2021	29.50	29.50	0.00				28.50 - 29.50	Water	100	(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.
17/06/2021	29.50	29.50	7.60				29.50 - 30.20	Water	100	
							30.20 - 31.70	Water	100	
							31.70 - 33.20	Water	60	

All dimensions in metres Scale 1:25.00	For explanation of symbols and abbreviations see Key Sheets	Checked by: <i>K.W.</i>	Logged by: G.T/R.C/D.P	Contract No. 4339
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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

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 Tel: 01772 735 300 Fax: 01772 735 999

DRILLHOLE RECORD

Status:-
FINAL

Project: Preliminary Onshore Ground Investigation for NZT		Exploratory Hole No. MS1BH10	
Client: AECOM		Location: North-west of Redcar, North Yorkshire E:457026.135 N:525257.651	
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Boart Longyear DB520)		Ground Level (m): 7.502	Start Date: 07/06/2021
		Sheet: 6 of 16	

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

Drilling Progress and Water Observations				Standard Penetration Test			Flush			General Remarks
Date	Depth	Casing	Water Standing	Depth	Type	Result	From - To	Type	Returns (%)	
17/06/2021	33.20	33.20	0.00				33.20 - 34.70	Water	50	(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.

All dimensions in metres Scale 1:25.00	For explanation of symbols and abbreviations see Key Sheets	Checked by: <i>K.W.</i>	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			Exploratory Hole No. MS\BH10
Client: AECOM	Location: North-west of Redcar, North Yorkshire E:457026.135 N:525257.651		
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Boart Longyear DB520)	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:-
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Project: Preliminary Onshore Ground Investigation for NZT			Exploratory Hole No. MS\BH10
Client: AECOM	Location: North-west of Redcar, North Yorkshire E:457026.135 N:525257.651		
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Boart Longyear DB520)	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



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





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DRILLHOLE RECORD

Status:-
FINAL

Project: Preliminary Onshore Ground Investigation for NZT			Exploratory Hole No. MS\BH10
Client: AECOM	Location: North-west of Redcar, North Yorkshire E:457026.135 N:525257.651		
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Boart Longyear DB520)	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: Preliminary Onshore Ground Investigation for NZT			Exploratory Hole No. MS\BH10
Client: AECOM	Location: North-west of Redcar, North Yorkshire E:457026.135 N:525257.651		
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Boart Longyear DB520)	Ground Level (m): 7.502	Start Date: 07/06/2021	Sheet: 10 of 16

Figure MS\BH10.7
MS\BH10 8.70-10.20m BGL



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





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DRILLHOLE RECORD

Status:-
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Project: Preliminary Onshore Ground Investigation for NZT			Exploratory Hole No. MS\BH10
Client: AECOM	Location: North-west of Redcar, North Yorkshire E:457026.135 N:525257.651		
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Boart Longyear DB520)	Ground Level (m): 7.502	Start Date: 07/06/2021	Sheet: 11 of 16

Figure MS\BH10.9
MS\BH10 12.60-14.60m BGL



Figure MS\BH10.10
MS\BH10 14.60-16.60m BGL





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DRILLHOLE RECORD

Status:-
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Project: Preliminary Onshore Ground Investigation for NZT		Exploratory Hole No. MS\BH10	
Client: AECOM	Location: North-west of Redcar, North Yorkshire E:457026.135 N:525257.651		Sheet: 12 of 16
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Boart Longyear DB520)	Ground Level (m): 7.502	Start Date: 07/06/2021	

Figure MS\BH10.11
MS\BH10 16.60-18.10m BGL



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





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DRILLHOLE RECORD

Status:-
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Client: AECOM	Location: North-west of Redcar, North Yorkshire E:457026.135 N:525257.651		
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Boart Longyear DB520)	Ground Level (m): 7.502	Start Date: 07/06/2021	Sheet: 13 of 16

Figure MS\BH10.13
MS\BH10 22.50-24.00m BGL



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





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DRILLHOLE RECORD

Status:-
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Project: Preliminary Onshore Ground Investigation for NZT			Exploratory Hole No. MS\BH10
Client: AECOM	Location: North-west of Redcar, North Yorkshire E:457026.135 N:525257.651		
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Boart Longyear DB520)	Ground Level (m): 7.502	Start Date: 07/06/2021	Sheet: 14 of 16

Figure MS\BH10.15
MS\BH10 25.50-27.00m BGL



Figure MS\BH10.16
MS\BH10 27.00-28.50m BGL





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DRILLHOLE RECORD

Status:-
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Project: Preliminary Onshore Ground Investigation for NZT			Exploratory Hole No. MS\BH10
Client: AECOM	Location: North-west of Redcar, North Yorkshire E:457026.135 N:525257.651		
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Boart Longyear DB520)	Ground Level (m): 7.502	Start Date: 07/06/2021	Sheet: 15 of 16

Figure MS\BH10.17
MS\BH10 28.50-30.20m BGL



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





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DRILLHOLE RECORD

Status:-
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Project: Preliminary Onshore Ground Investigation for NZT		Exploratory Hole No. MS\BH10	
Client: AECOM	Location: North-west of Redcar, North Yorkshire E:457026.135 N:525257.651		Sheet: 16 of 16
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Boart Longyear DB520)	Ground Level (m): 7.502	Start Date: 07/06/2021	

Figure MS\BH10.19
MS\BH10 31.70-33.20m BGL



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		Exploratory Hole No. MS1BH11
Client: AECOM	Location: North-west of Redcar, North Yorkshire E:457121.000 N:525296.160	
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Boart Longyear DB520)	Ground Level (m): 7.255	Start Date: 02/06/2021 Sheet: 1 of 2

SAMPLES & TESTS			STRATA					Instrument/ Backfill
Depth	Type No	Test Result	Water	Reduced Level	Legend	Depth (Thickness)	Description	
0.30	ES1 ^(SL1)						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%).	
0.30-1.20	SL1 ^(SS)					(1.60)		
0.30	J8 ^(SL1)							
0.30-1.20	B9 ^(SL1)							
0.30	PID	<0.1ppm						
0.50	ES2 ^(SL1)							
0.50	PID	<0.1ppm						
1.00	ES3 ^(SL1)							
1.00	PID	<0.1ppm						
1.20-2.20	SL2 ^(SS)			5.66		1.60		
1.20	J10 ^(SL2)					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%).		
1.20-1.95	B11 ^(SL2)				(0.70)			
1.20	S	N17						
1.50	PID	<0.1ppm						
1.95	J12 ^(SL2)					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%).		
1.95-2.70	B13 ^(SL2)			4.96	2.30			
2.00	ES4 ^(SL2)					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%).		
2.00	PID	<0.1ppm						
2.50	PID	<0.1ppm				MADE GROUND (Blue grey slightly silty sandy gravel and cobbles with boulder content. Gravel is fine to coarse angular to subangular and includes slag and ash. Cobbles and boulders are subangular and include slag. Slag is 75-100%).		
2.70-4.20	SL3 ^(SS)				(1.20)			
2.70	J14 ^(SL3)					MADE GROUND (Blue grey slightly silty sandy gravel and cobbles with boulder content. Gravel is fine to coarse angular to subangular and includes slag and ash. Cobbles and boulders are subangular and include slag. Slag is 75-100%).		
2.70-3.45	B15 ^(SL3)							
2.70	S	N6				MADE GROUND (Blue grey slightly silty sandy gravel and cobbles with boulder content. Gravel is fine to coarse angular to subangular and includes slag and ash. Cobbles and boulders are subangular and include slag. Slag is 75-100%).		
3.00	ES5 ^(SL3)							
3.00	PID	<0.1ppm				MADE GROUND (Blue grey slightly silty sandy gravel and cobbles with boulder content. Gravel is fine to coarse angular to subangular and includes slag and ash. Cobbles and boulders are subangular and include slag. Slag is 75-100%).		
3.45	J16 ^(SL3)			3.76	3.50			
3.45-4.20	B17 ^(SL3)					MADE GROUND (Blue grey slightly silty sandy gravel and cobbles with boulder content. Gravel is fine to coarse angular to subangular and includes slag and ash. Cobbles and boulders are subangular and include slag. Slag is 75-100%).		
3.50	PID	<0.1ppm						
4.00	ES6 ^(SL3)					MADE GROUND (Blue grey slightly silty sandy gravel and cobbles with boulder content. Gravel is fine to coarse angular to subangular and includes slag and ash. Cobbles and boulders are subangular and include slag. Slag is 75-100%).		
4.00	PID	<0.1ppm						
4.20-5.70	SL4 ^(SS)					MADE GROUND (Blue grey slightly silty sandy gravel and cobbles with boulder content. Gravel is fine to coarse angular to subangular and includes slag and ash. Cobbles and boulders are subangular and include slag. Slag is 75-100%).		
4.20	J18 ^(SL4)			2.66	4.60			
4.20-4.50	B19 ^(SL4)					MADE GROUND (Blue grey slightly silty sandy gravel and cobbles with boulder content. Gravel is fine to coarse angular to subangular and includes slag and ash. Cobbles and boulders are subangular and include slag. Slag is 75-100%).		
4.20	S	50/20mm						
4.50	J20 ^(SL4)					Brown silty SAND with numerous fragments of shell. Sand is fine to coarse.		
4.50-5.10	B21 ^(SL4)				(0.60)			
4.50	PID	<0.1ppm				Brown silty SAND with numerous fragments of shell. Sand is fine to coarse.		
5.00	ES7 ^(SL4)			2.06	5.20			
5.00	PID	<0.1ppm				Brown silty SAND with numerous fragments of shell. Sand is fine to coarse.		
5.10	J22 ^(SL4)							
5.10-5.70	B23 ^(SL4)					Brown silty SAND with numerous fragments of shell. Sand is fine to coarse.		
5.70-7.20	SL5 ^(SS)							
5.70	J24 ^(SL5)					Brown silty SAND with numerous fragments of shell. Sand is fine to coarse.		
5.70-6.45	B25 ^(SL5)							
5.70	S	N17				Brown silty SAND with numerous fragments of shell. Sand is fine to coarse.		
5.70	PID	<0.1ppm						
6.45	J26 ^(SL5)					Brown silty SAND with numerous fragments of shell. Sand is fine to coarse.		
6.45-7.20	B27 ^(SL5)							
6.70	PID	<0.1ppm				Brown silty SAND with numerous fragments of shell. Sand is fine to coarse.		
7.20-8.70	SL6 ^(SS)							
7.20	J28 ^(SL6)					Brown silty SAND with numerous fragments of shell. Sand is fine to coarse.		
7.20-7.90	B29 ^(SL6)							
7.20	S	N7				Brown silty SAND with numerous fragments of shell. Sand is fine to coarse.		
7.70	PID	<0.1ppm						
7.70								

Boring Progress and Water Observations					Liner Sample Information				General Remarks
Date	Depth	Casing	Casing Dia (mm)	Water Standing	From - To	Internal Dia (mm)	Recovery (%)	Subsampled	
02/06/2021	0.00	0.00	178		0.30 - 1.20	178	100	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.
					1.20 - 2.70	178	100	Yes	
					2.70 - 4.20	178	100	Yes	
					4.20 - 5.70	178	100	Yes	
					5.70 - 7.20	178	100	Yes	
					7.20 - 8.70	178	100	Yes	

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

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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 Yorkshire E:457121.000 N:525296.160	
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Boart Longyear DB520)		Ground Level (m): 7.255	Start Date: 02/06/2021
		Sheet: 2 of 2	

SAMPLES & TESTS			STRATA					Instrument/ Backfill
Depth	Type No	Test Result	Water	Reduced Level	Legend	Depth (Thickness)	Description	
7.90 7.90-8.70	J30 _(SL6) B31 _(SL6)						Loose to medium dense light grey brown clayey SAND with rare fragments of shell. Sand is fine to coarse. (Tidal Flat Deposits). <i>(continued)</i>	
8.70-10.20 8.70 8.70-9.45 8.70 8.70	SL7 _(SS) J32 _(SL7) B33 _(SL7) S PID	N14 <0.1ppm		-1.45		8.70 (1.50)	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 _(SL7) B35 _(SL7) PID	<0.1ppm						
10.20-11.70 10.20 10.20-10.95 10.20 10.70	SL8 _(SS) J36 _(SL8) B37 _(SL8) S PID	N12 <0.1ppm					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 _(SL8) B39 _(SL8)							
11.70-13.20 11.70 11.70-12.90 11.70 11.70	SL9 _(SS) J40 _(SL9) B41 _(SL9) S PID	N28 <0.1ppm						
12.70 12.90 12.90-13.20 13.20-13.65 13.20-14.70 13.20 13.20-13.95 13.20 13.20 13.70 13.95 13.95-14.70	PID J42 _(SL9) B43 _(SL9) UT1 SL10 _(SS) J44 _(SL10) B45 _(SL10) ES48 PID PID J46 _(SL10) B47 _(SL10)	<0.1ppm <0.1ppm					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). 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					<i>Boring complete at 14.70m BGL - continued by rotary drilling.</i>	

Boring Progress and Water Observations					Liner Sample Information				General Remarks
Date	Depth	Casing	Casing Dia (mm)	Water Standing	From - To	Internal Dia (mm)	Recovery (%)	Subsampled	
02/06/2021	10.20	10.20	178	7.45	8.70 - 10.20	178	100	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.
03/06/2021	10.20	10.20	178	4.00	10.20 - 11.70	178	100	Yes	
03/06/2021	14.70	14.70	178	4.00	11.70 - 13.20	178	100	Yes	
					13.20 - 14.70	178	100	Yes	

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

Status:-
FINAL

Project: Preliminary Onshore Ground Investigation for NZT		Exploratory Hole No. MS1BH11
Client: AECOM	Location: North-west of Redcar, North Yorkshire E:457121.000 N:525296.160	
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Boart Longyear DB520)	Ground Level (m): 7.255	Start Date: 02/06/2021 Sheet: 1 of 17

RUN DETAILS			STRATA				Instrument/ Backfill		
Depth & (Core Ø)	TCR (SCR) RQD	Fracture Index	Water	Reduced Level	Legend	Depth (Thickness)		Description	
								Discontinuity Detail	Main
15.00		RO		-7.45		14.70 (0.30)	14.70-15.00m ... rotary openhole drilling.	(1) Laminated brown CLAY. (Driller describes as 'soft'). (Probable Tidal Flat Deposits).	
	34	SOIL		-7.75		15.00 (0.60)	15.00m ... J48 15.00-20.50m ... soil. 15.00m ... B49	Firm grey brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is fine to coarse subangular to subrounded and includes sandstone, mudstone and limestone. (Glacial Till).	
15.90				-8.35		15.60	15.90m ... J50 15.90m ... U51	Stiff grey brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is fine to coarse subangular to subrounded and includes sandstone, mudstone and limestone. (Glacial Till). 15.90m ... clay is of intermediate plasticity.	
	83						16.35m ... B52	16.35m ... clay is of intermediate to high plasticity.	
17.40							17.20m ... J53 17.20m ... B54	17.20m ... clay is of intermediate plasticity.	
	77						17.55m ... U55	17.55m ... very high strength. Clay is of intermediate plasticity.	
						(5.10)			

Drilling Progress and Water Observations				Standard Penetration Test			Flush			General Remarks
Date	Depth	Casing	Water Standing	Depth	Type	Result	From - To	Type	Returns (%)	
09/06/2021	14.70	14.70	0.00				14.70 - 15.00	Water	100	(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
							15.00 - 15.90	Water	100	
							15.90 - 17.40	Water	100	
							17.40 - 18.90	Water	100	

All dimensions in metres Scale 1:25.00	For explanation of symbols and abbreviations see Key Sheets	Checked by: <i>K.W.</i>	Logged by: G.T/R.C	Contract No. 4339
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DRILLHOLE RECORD

Status:-
FINAL

Project: Preliminary Onshore Ground Investigation for NZT		Exploratory Hole No. MS1BH11	
Client: AECOM		Location: North-west of Redcar, North Yorkshire E:457121.000 N:525296.160	
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Boart Longyear DB520)		Ground Level (m): 7.255	Start Date: 02/06/2021
		Sheet: 2 of 17	

RUN DETAILS				STRATA				Instrument/ Backfill	
Depth & (Core Ø)	TCR (SCR) RQD	Fracture Index	Water	Reduced Level	Legend	Depth (Thickness)	Description		
							Discontinuity Detail		Main
18.90	0					18.90m ... J1 18.90m ... J56 18.90m ... B57	Stiff grey brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is fine to coarse subangular to subrounded and includes sandstone, mudstone and limestone. (Glacial Till). (continued) 19.15-20.15m ... engineer notes material appears possibly disturbed and may have expanded within core box. The following assumed zone of no recovery could be more extensive.		
19.40	0								
20.40	100					20.40m ... J58			
20.50	71 (50) 0	NR		-13.45		20.50-20.70m ... no recovery.			
21.20	79 (79) 0	NR				20.70-21.20m ... subhorizontal (5-25 degrees) closely spaced planar to undulating smooth open and tight infilled (clay) discontinuities.	Extremely weak thinly laminated light grey MUDSTONE residual. (Redcar Mudstone Formation).		
21.90	68 (55) 0	NR		-14.65		21.20-21.35m ... no recovery. 21.35-21.90m ... subhorizontal (5-25 degrees) closely spaced planar smooth tight and open infilled (clay) discontinuities.			
		NI				21.90-22.15m ... no recovery.	Very weak thinly laminated dark grey MUDSTONE partially weathered. (Redcar Mudstone Formation).		
		15				22.15-22.25m ... non-intact. 22.25-22.65m ... subhorizontal (5-25 degrees) closely spaced planar smooth tight clean discontinuities.			
		12							

Drilling Progress and Water Observations				Standard Penetration Test			Flush			General Remarks
Date	Depth	Casing	Water Standing	Depth	Type	Result	From - To	Type	Returns (%)	
09/06/2021	21.90	21.90	0.00	18.90	S	N18	18.90 - 19.40	Water	100	(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
10/06/2021	21.90	21.90	0.00	20.40	S	N13	19.40 - 20.40	Water	100	
				21.20	C	100/96mm	20.40 - 20.50	Water	100	
							20.50 - 21.20	Water	100	
							21.20 - 21.90	Water	100	
							21.90 - 23.00	Water	100	

All dimensions in metres Scale 1:25.00	For explanation of symbols and abbreviations see Key Sheets	Checked by: <i>K.W.</i>	Logged by: G.T/R.C	Contract No. 4339
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Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Boart Longyear DB520)		Ground Level (m): 7.255	Start Date: 02/06/2021
		Sheet: 3 of 17	

RUN DETAILS				STRATA					Instrument/ Backfill
Depth & (Core Ø)	TCR (SCR) RQD	Fracture Index	Water	Reduced Level	Legend	Depth (Thickness)	Description		
							Discontinuity Detail	Main	
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)	
23.75	100 (100) 0	18		-16.50		23.75	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 (53) 0	15					24.50-26.00m ... subhorizontal (5-25 degrees) and subvertical (65-85 degrees) very closely to closely spaced planar to undulating smooth open and tight clean discontinuities.	24.90-27.90m ... redrilled high Pressure Dilatometer socket.	
26.00	44 (31) 0	NR					26.00-26.45m ... no recovery.		
		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 Water Observations				Standard Penetration Test			Flush			General Remarks
Date	Depth	Casing	Water Standing	Depth	Type	Result	From - To	Type	Returns (%)	
10/06/2021	24.90	24.90	0.00				23.00 - 23.75	Water	100	(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.
11/06/2021	24.90	24.90	0.00				23.75 - 24.50	Water	100	
							24.50 - 26.00	Water	100	
							26.00 - 26.80	Water	100	

All dimensions in metres Scale 1:25.00	For explanation of symbols and abbreviations see Key Sheets	Checked by: <i>K.W.</i>	Logged by: G.T/R.C	Contract No. 4339
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DRILLHOLE RECORD

Status:-
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Project: Preliminary Onshore Ground Investigation for NZT		Exploratory Hole No. MS1BH11	
Client: AECOM		Location: North-west of Redcar, North Yorkshire E:457121.000 N:525296.160	
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Boart Longyear DB520)		Ground Level (m): 7.255	Start Date: 02/06/2021
		Sheet: 4 of 17	

RUN DETAILS			STRATA					Instrument/ Backfill	
Depth & (Core Ø)	TCR (SCR) RQD	Fracture Index	Water	Reduced Level	Legend	Depth (Thickness)	Description		
							Discontinuity Detail		Main
26.80	100 (100) 33							Weak thinly laminated dark grey MUDSTONE partially weathered. (Redcar Mudstone Formation). (continued)	
27.10									
	100 (75) 30								
27.90									
	100 (80) 13								
29.40									
	100 (68) 0								
30.20									
	100 (71) 46	7					30.20-30.90m ... subhorizontal (5-25 degrees) closely spaced planar to undulating open and tight smooth infilled (clay) discontinuities.		

Drilling Progress and Water Observations				Standard Penetration Test			Flush			General Remarks
Date	Depth	Casing	Water Standing	Depth	Type	Result	From - To	Type	Returns (%)	
11/06/2021	30.20	30.20	0.00				26.80 - 27.10	Water	100	(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
14/06/2021	30.20	30.20	0.00				27.10 - 27.90	Water	100	
							27.90 - 29.40	Water	100	
							29.40 - 30.20	Water	100	
							30.20 - 30.90	Water	100	

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Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Boart Longyear DB520)		Ground Level (m): 7.255	Start Date: 02/06/2021
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RUN DETAILS			STRATA				Instrument/ Backfill		
Depth & (Core Ø)	TCR (SCR) RQD	Fracture Index	Water	Reduced Level	Legend	Depth (Thickness)		Description	
								Discontinuity Detail	Main
30.90								Weak thinly laminated dark grey MUDSTONE partially weathered. (Redcar Mudstone Formation). (continued)	
(102mm)	100 (73) 31	14							
31.70								31.70-32.33m ... no recovery.	
(102mm)	10 (10) 0	NR							
32.40								32.33-34.00m ... subhorizontal (5-25 degrees) closely spaced planar to undulating open tight smooth infilled (clay) discontinuities.	
(102mm)	100 (100) 0	10							
32.50									
(102mm)	100 (87) 53								
34.00				-26.75		34.00		34.00-35.50m ... subhorizontal (5-25 degrees) closely spaced planar to undulating open and tight smooth clean discontinuities.	
(102mm)	100 (97) 53	6						Medium strong thinly laminated dark grey MUDSTONE partially weathered with occasional fossilised remains (2-40mm in size). (Redcar Mudstone Formation).	

Drilling Progress and Water Observations				Standard Penetration Test			Flush			General Remarks
Date	Depth	Casing	Water Standing	Depth	Type	Result	From - To	Type	Returns (%)	
							30.90 - 31.70	Water	100	(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
							31.70 - 32.40	Water	100	
							32.40 - 32.50	Water	100	
							32.50 - 34.00	Water	100	
							34.00 - 35.50	Water	100	

All dimensions in metres Scale 1:25.00	For explanation of symbols and abbreviations see Key Sheets	Checked by: <i>K.W.</i>	Logged by: G.T/R.C	Contract No. 4339
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DRILLHOLE RECORD

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Client: AECOM		Location: North-west of Redcar, North Yorkshire E:457121.000 N:525296.160	
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Boart Longyear DB520)		Ground Level (m): 7.255	Start Date: 02/06/2021
		Sheet: 6 of 17	

RUN DETAILS			STRATA				Instrument/ Backfill	
Depth & (Core Ø)	TCR (SCR) RQD	Fracture Index	Water	Reduced Level	Legend	Description		
						Depth (Thickness)	Discontinuity Detail	Main
(102mm)				-28.25		(1.50)	Medium strong thinly laminated dark grey MUDSTONE partially weathered with occasional fossilised remains (2-40mm in size). (Redcar Mudstone Formation). (continued) 35.00m ... weak.	
						35.50	Complete at 35.50m BGL.	

Drilling Progress and Water Observations				Standard Penetration Test			Flush			General Remarks
Date	Depth	Casing	Water Standing	Depth	Type	Result	From - To	Type	Returns (%)	
14/06/2021	35.50	35.50	0.00							(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 1:25.00				For explanation of symbols and abbreviations see Key Sheets			Checked by: <i>K.W.</i>		Logged by: G.T/R.C	Contract No. 4339



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DRILLHOLE RECORD

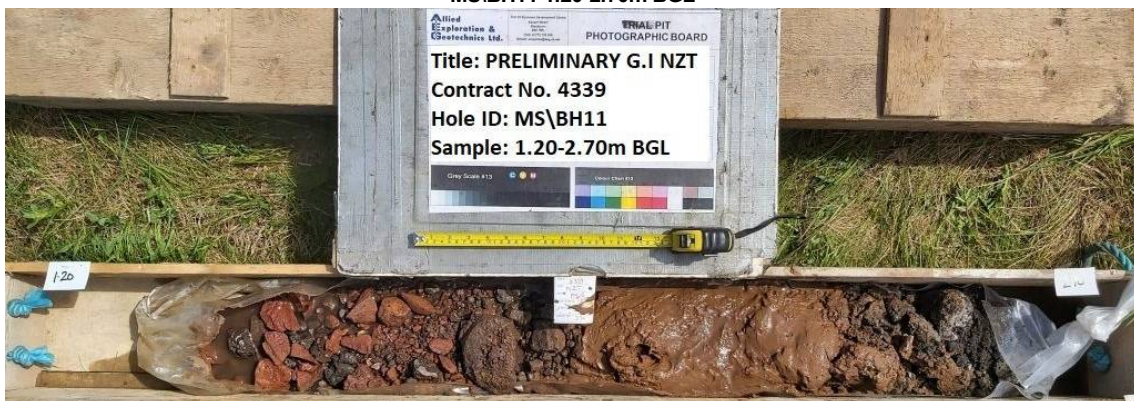
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Project: Preliminary Onshore Ground Investigation for NZT			Exploratory Hole No. MS\BH11
Client: AECOM	Location: North-west of Redcar, North Yorkshire E:457121.000 N:525296.160		
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Boart Longyear DB520)	Ground Level (m): 7.255	Start Date: 02/06/2021	Sheet: 7 of 17

Figure MS\BH11.1
MS\BH11 0.30-1.20m BGL



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





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

Figure MS\BH11.3
MS\BH11 2.70-4.20m BGL



Figure MS\BH11.4
MS\BH11 4.20-5.70m BGL





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

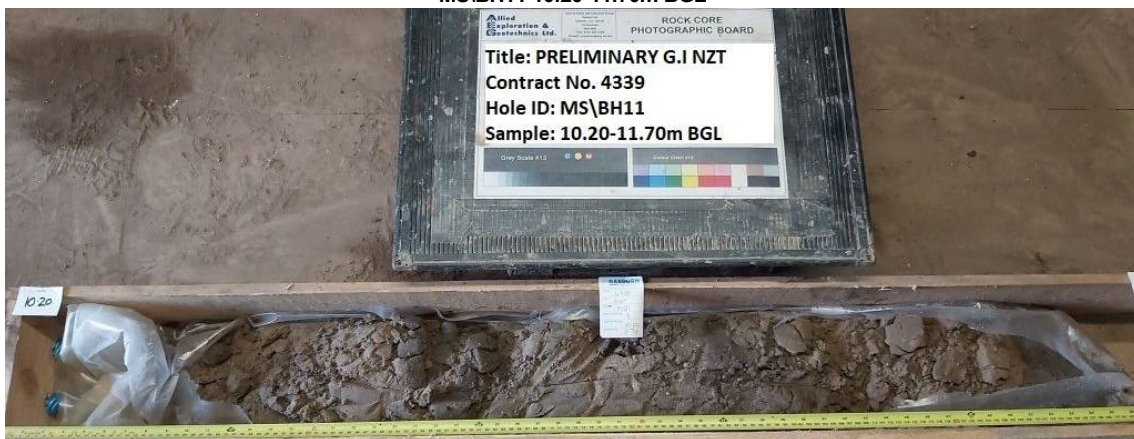
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Client: AECOM	Location: North-west of Redcar, North Yorkshire E:457121.000 N:525296.160		
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Boart Longyear DB520)	Ground Level (m): 7.255	Start Date: 02/06/2021	Sheet: 10 of 17

Figure MS\BH11.7
MS\BH11 8.70-10.20m BGL



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





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



Figure MS\BH11.10
MS\BH11 13.20-14.70m BGL





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Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Boart Longyear DB520)	Ground Level (m): 7.255	Start Date: 02/06/2021	

Figure MS\BH11.11
MS\BH11 15.00-17.20m BGL



Figure MS\BH11.12
MS\BH11 17.20-19.15m BGL





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Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Boart Longyear DB520)	Ground Level (m): 7.255	Start Date: 02/06/2021	

Figure MS\BH11.13
MS\BH11 19.15-21.20m BGL



Figure MS\BH11.14
MS\BH11 21.20-23.00m BGL





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Client: AECOM	Location: North-west of Redcar, North Yorkshire E:457121.000 N:525296.160		Sheet: 14 of 17
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Boart Longyear DB520)	Ground Level (m): 7.255	Start Date: 02/06/2021	

Figure MS\BH11.15
MS\BH11 23.00-24.50m BGL - Test Pocket for HDP testing



Figure MS\BH11.16
MS\BH11 23.40-26.00m BGL - Redrilled 23.40-24.50m BGL using Geobore





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Client: AECOM	Location: North-west of Redcar, North Yorkshire E:457121.000 N:525296.160		Sheet: 15 of 17
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Boart Longyear DB520)	Ground Level (m): 7.255	Start Date: 02/06/2021	

Figure MS\BH11.17
MS\BH11 26.00-27.10m BGL - Test Pocket for HDP testing



Figure MS\BH11.18
MS\BH11 26.40-28.90m BGL - Redrilled 26.40-27.10m BGL using Geobore





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Client: AECOM	Location: North-west of Redcar, North Yorkshire E:457121.000 N:525296.160		Sheet: 16 of 17
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Boart Longyear DB520)	Ground Level (m): 7.255	Start Date: 02/06/2021	

Figure MS\BH11.19
MS\BH11 28.90-30.20m BGL



Figure MS\BH11.20
MS\BH11 30.20-32.40m 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:457121.000 N:525296.160	MS\BH11
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Boart Longyear DB520)	Ground Level (m): 7.255	Start Date: 02/06/2021
		Sheet: 17 of 17

Figure MS\BH11.21
MS\BH11 32.40-34.00m BGL



Figure MS\BH11.22
MS\BH11 34.00-35.50m BGL



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

SONIC SAMPLE HOLE RECORD

Status:-
FINAL

Project: Preliminary Onshore Ground Investigation for NZT		Exploratory Hole No.	
Client: AECOM		MS1BH12	
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Comacchio GEO 205)		Ground Level (m): 7.147	Start Date: 03/06/2021
		Sheet: 1 of 3	

SAMPLES & TESTS			STRATA					Instrument/ Backfill
Depth	Type No	Test Result	Water	Reduced Level	Legend	Depth (Thickness)	Description	
0.12-1.20	SL1 _(SS)					(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%).	
0.12	J5 _(SL1)							
0.12-1.20	B6 _(SL1)			6.55		0.60		
0.30	ES1							
0.30	PID	<0.1ppm						
0.50	ES2							
0.50	PID	<0.1ppm						
1.00	ES3			5.95		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%).	
1.00	PID	<0.1ppm						
1.20-2.70	SL2 _(SS)						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).	
1.20	J7 _(SL2)							
1.20-2.70	B8 _(SL2)					(1.40)		
1.20	S	N15						
1.50	PID	<0.1ppm						
2.50	PID	<0.1ppm		4.55		2.60		
2.60	J9 _(SL2)						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).	
2.70-4.20	SL3 _(SS)							
2.70-3.00	ES4 _(SL3)							
2.70	J10 _(SL3)					(2.10)		
2.70-3.45	B11 _(SL3)							
2.70	S	N13						
2.70	PID	<0.1ppm						
3.00	PID	<0.1ppm						
3.45	J12 _(SL3)							
3.45-4.20	B13 _(SL3)							
3.50	PID	<0.1ppm						
4.20-5.70	SL4 _(SS)							
4.20	J14 _(SL4)							
4.20-4.95	B15 _(SL4)			2.45		4.70		
4.20	S	N23						
4.50	PID	<0.1ppm						
4.95	J16 _(SL4)			2.20		4.95	Light grey brown silty SAND with rare fragments of shell. Sand is fine to coarse. (Tidal Flat Deposits).	
4.95-5.70	B17 _(SL4)						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. (Tidal Flat Deposits).	
5.70-7.20	SL5 _(SS)			1.35		5.80		
5.70	S	N10						
5.70	PID	<0.1ppm						
5.80	J18 _(SL5)					(1.00)	Soft dark brown sandy CLAY with occasional fragments of shell. Sand is fine to coarse. (Tidal Flat Deposits).	
5.80-6.80	B19 _(SL5)						at c.5.80m BGL ... clay is of intermediate plasticity with occasional sand pockets.	
6.70	PID	<0.1ppm		0.35		6.80		
6.80	J20 _(SL5)						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).	
6.80-7.20	B21 _(SL5)							
7.20-8.70	SL6 _(SS)					(1.10)		
7.20	J22 _(SL6)							
7.20-7.90	B23 _(SL6)							
7.20	S	N5						
7.70	PID	<0.1ppm		-0.75		7.90		

Boring Progress and Water Observations					Liner Sample Information				General Remarks
Date	Depth	Casing	Casing Dia (mm)	Water Standing	From - To	Internal Dia (mm)	Recovery (%)	Subsampled	
03/06/2021	0.00	0.00	178		0.12 - 1.20	178	100	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.
03/06/2021	7.20	7.20	178	3.00	1.20 - 2.70	178	53	Yes	
04/06/2021	7.20	7.20	178	4.00	2.70 - 4.20	178	100	Yes	
					4.20 - 5.70	178	100	Yes	
					5.70 - 7.20	178	100	Yes	
					7.20 - 8.70	178	100	Yes	

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

Status:-
FINAL

Project: Preliminary Onshore Ground Investigation for NZT		Exploratory Hole No. MS1BH12	
Client: AECOM		Location: North-west of Redcar, North Yorkshire E:457207.512 N:525257.781	
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Comacchio GEO 205)		Ground Level (m): 7.147	Start Date: 03/06/2021
		Sheet: 2 of 3	

SAMPLES & TESTS			STRATA					Instrument/ Backfill
Depth	Type No	Test Result	Water	Reduced Level	Legend	Depth (Thickness)	Description	
7.90 7.90-8.70	J24 _(SL6) B25 _(SL6)						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 sandstone. (Tidal Flat Deposits). (continued)	
8.70-10.20 8.70 8.70-9.45 8.70 8.70	SL7 _(SS) J26 _(SL7) B27 _(SL7) S PID	N11 <0.1ppm						
9.45 9.45-10.20 9.70	J28 _(SL7) B29 _(SL7) PID	<0.1ppm						
10.20-11.70 10.20 10.20-10.95 10.20 10.70	SL8 _(SS) J30 _(SL8) B31 _(SL8) S PID	N29 <0.1ppm				(5.30)		
10.95 10.95-11.70	J32 _(SL8) B33 _(SL8)							
11.70-13.20 11.70 11.70-12.45 11.70 11.70	SL9 _(SS) J34 _(SL9) B35 _(SL9) S PID	N23 <0.1ppm						
12.45 12.45-13.20 12.70	J36 _(SL9) B37 _(SL9) PID	<0.1ppm						
13.20-14.70 13.20 13.20-13.95 13.20 13.70	SL10 _(SS) J38 _(SL10) B39 _(SL10) S PID	N31 <0.1ppm				(-6.05)	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 _(SL10) B41 _(SL10)					(2.20)		
14.70-16.20 14.70 14.70-15.40 14.70-15.15 14.70	SL11 _(SS) J42 _(SL11) B43 _(SL11) S PID	N31 <0.1ppm				(-8.25)		
15.40 15.40-16.20 15.70	J44 _(SL11) B45 _(SL11) PID	<0.1ppm					Soft grey brown sandy CLAY. Sand is fine to coarse. (Tidal Flat Deposits). at 15.40m BGL ... clay of intermediate plasticity.	

Boring Progress and Water Observations					Liner Sample Information				General Remarks
Date	Depth	Casing	Casing Dia (mm)	Water Standing	From - To	Internal Dia (mm)	Recovery (%)	Subsampled	
04/06/2021	14.70	14.70	178	4.50	8.70 - 10.20	178	100	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.
07/06/2021	14.70	14.70	178	4.00	10.20 - 11.70	178	100	Yes	
					11.70 - 13.20	178	100	Yes	
					13.20 - 14.70	178	100	Yes	
					14.70 - 16.20	178	100	Yes	

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

Status:-
FINAL

Project: Preliminary Onshore Ground Investigation for NZT		Exploratory Hole No. MSBH12	
Client: AECOM		Location: North-west of Redcar, North Yorkshire E:457207.512 N:525257.781	
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Comacchio GEO 205)		Ground Level (m): 7.147	Start Date: 03/06/2021
		Sheet: 3 of 3	

SAMPLES & TESTS			STRATA					Instrument/ Backfill
Depth	Type No	Test Result	Water	Reduced Level	Legend	Depth (Thickness)	Description	
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). <i>(continued)</i> at c.16.20m BGL ... very low strength. Clay is of intermediate plasticity. <i>Boring complete at 16.65m BGL - continued by rotary drilling.</i>	

Boring Progress and Water Observations					Liner Sample Information				General Remarks
Date	Depth	Casing	Casing Dia (mm)	Water Standing	From - To	Internal Dia (mm)	Recovery (%)	Subsampled	
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.

All dimensions in metres Scale 1:50.00	For explanation of symbols and abbreviations see Key Sheets	Checked by: <i>K.W.</i>	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		Exploratory Hole No. MS1BH12	
Client: AECOM	Location: North-west of Redcar, North Yorkshire E:457207.512 N:525257.781		
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Comacchio GEO 205)	Ground Level (m): 7.147	Start Date: 03/06/2021	Sheet: 1 of 16

RUN DETAILS			STRATA					Instrument/ Backfill	
Depth & (Core Ø)	TCR (SCR) RQD	Fracture Index	Water	Reduced Level	Legend	Depth (Thickness)	Description		
							Discontinuity Detail		Main
16.65 (102mm)	33	SOIL		-9.50		16.65 16.65m ... J46 16.65m ... B47	16.65-20.40m ... soil.	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 (102mm)	63								
18.90 (102mm)	100			-11.75		18.90 18.90m ... J48 18.90m ... B49	18.90m ... J48	Stiff light red brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is fine to coarse subangular to subrounded and includes sandstone, mudstone and limestone. (Glacial Till). 18.90m ... clay is of low to intermediate plasticity.	
19.40 (102mm)	70					(1.50)	19.40m ... J50 19.40m ... B51		
20.40 (102mm)	100 (0) 0	NI		-13.25		20.40 20.40-23.00m ... non-intact.			

Drilling Progress and Water Observations				Standard Penetration Test			Flush			General Remarks
Date	Depth	Casing	Water Standing	Depth	Type	Result	From - To	Type	Returns (%)	
11/06/2021	16.65	16.65	4.11	17.60	S	N4	16.65 - 17.60	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 standpipe installed between 18.20-20.50m and 30.70-34.50m BGL respectively. (4) UJO carried out as per the Client instructions. (5) Aquifer protection installed between 14.90-16.65m BGL prior to commencing rotary drilling.
				18.90	S	N25	17.60 - 18.10	Water	100	
							18.10 - 18.90	Water	100	
							18.90 - 19.40	Water	100	
							19.40 - 20.40	Water	100	
							20.40 - 21.70	Water	100	

All dimensions in metres Scale 1:25.00	For explanation of symbols and abbreviations see Key Sheets	Checked by: <i>K.W.</i>	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			Exploratory Hole No. MS1BH12		
Client: AECOM		Location: North-west of Redcar, North Yorkshire E:457207.512 N:525257.781			
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Comacchio GEO 205)		Ground Level (m): 7.147	Start Date: 03/06/2021	Sheet: 2 of 16	

RUN DETAILS				STRATA					Instrument/ Backfill
Depth & (Core Ø)	TCR (SCR) RQD	Fracture Index	Water	Reduced Level	Legend	Depth (Thickness)	Description		
							Discontinuity Detail	Main	
21.70	(102mm)					(1.80)		Extremely weak thinly laminated dark grey MUDSTONE distinctly weathered. (Recovered as very stiff clay). (Redcar Mudstone Formation). (continued)	
22.00	(102mm)	100 (0) 0		-15.05		22.20		Extremely weak thinly laminated dark grey MUDSTONE distinctly weathered. (Redcar Mudstone Formation).	
23.50	(102mm)	100 (0) 0	12				23.00-25.00m ... horizontal to subhorizontal (0-15 degrees) closely spaced planar to undulating smooth tight to partly open clean and infilled (clayey gravel) discontinuities.		
24.00	(102mm)	100 (0) 0				(2.70)			
	(102mm)	100 (42) 0							

Drilling Progress and Water Observations				Standard Penetration Test			Flush			General Remarks
Date	Depth	Casing	Water Standing	Depth	Type	Result	From - To	Type	Returns (%)	
11/06/2021	24.00	24.00	0.00				21.70 - 22.00	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 standpipe installed between 18.20-20.50m and 30.70-34.50m BGL respectively. (4) UJO carried out as per the Client instructions. (5) Aquifer protection installed between 14.90-16.65m BGL prior to commencing rotary drilling.
14/06/2021	24.00	24.00	4.09				22.00 - 23.50	Water	100	
							23.50 - 24.00	Water	100	
							24.00 - 25.20	Water	100	

All dimensions in metres Scale 1:25.00	For explanation of symbols and abbreviations see Key Sheets	Checked by: <i>K.W.</i>	Logged by: G.T/R.C/D.P	Contract No. 4339
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DRILLHOLE RECORD

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Project: Preliminary Onshore Ground Investigation for NZT		Exploratory Hole No. MS1BH12	
Client: AECOM		Location: North-west of Redcar, North Yorkshire E:457207.512 N:525257.781	
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Comacchio GEO 205)		Ground Level (m): 7.147	Start Date: 03/06/2021
		Sheet: 3 of 16	

RUN DETAILS			STRATA				Instrument/ Backfill
Depth & (Core Ø)	TCR (SCR) RQD	Fracture Index	Reduced Level	Legend	Depth (Thickness)	Description	
						Discontinuity Detail	Main
25.20		10	-17.75		24.90		Very weak thinly laminated dark grey MUDSTONE partially weathered. (Redcar Mudstone Formation).
					(0.30)	25.00-25.20m ... subhorizontal (5-25 degrees) very closely spaced planar to undulating open and tight infilled (clay) discontinuities.	
	100 (93) 60	4	-18.05		25.20		Weak thinly laminated dark grey MUDSTONE partially weathered with occasional fossilised remains (2-40mm in size). (Redcar Mudstone Formation).
						25.20-26.30m ... subhorizontal (5-25 degrees) closely spaced planar to undulating open and tight infilled (clay) discontinuities.	
	(102mm)						
		15				26.30-26.70m ... subhorizontal (5-25 degrees) and subvertical (65-85 degrees) closely to very closely spaced planar to undulating open and tight infilled (clay) discontinuities.	
26.70					(3.00)		
	100 (87) 70	6				26.70-28.20m ... subvertical (65-85 degrees) very closely spaced planar to undulating open and tight infilled (clay) discontinuities.	
	(102mm)						
						28.20-29.50m ... oblique (25-65 degrees) and subhorizontal (5-25 degrees) very closely spaced planar to undulating open and tight infilled (clay) discontinuities.	
28.20		11	-21.05		28.20		Weak grey fossiliferous MUDSTONE partially weathered. (Redcar Mudstone Formation).
	100 (85) 38						

Drilling Progress and Water Observations				Standard Penetration Test			Flush			General Remarks
Date	Depth	Casing	Water Standing	Depth	Type	Result	From - To	Type	Returns (%)	
							25.20 - 26.70	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 standpipe installed between 18.20-20.50m and 30.70-34.50m BGL respectively. (4) UJO carried out as per the Client instructions. (5) Aquifer protection installed between 14.90-16.65m BGL prior to commencing rotary drilling.
							26.70 - 28.20	Water	100	
							28.20 - 29.50	Water	100	

All dimensions in metres Scale 1:25.00	For explanation of symbols and abbreviations see Key Sheets	Checked by: <i>K.W.</i>	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		Exploratory Hole No. MS1BH12	
Client: AECOM		Location: North-west of Redcar, North Yorkshire E:457207.512 N:525257.781	
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Comacchio GEO 205)		Ground Level (m): 7.147	Start Date: 03/06/2021
		Sheet: 4 of 16	

RUN DETAILS				STRATA				Instrument/ Backfill	
Depth & (Core Ø)	TCR (SCR) RQD	Fracture Index	Water	Reduced Level	Legend	Depth (Thickness)	Description		
							Discontinuity Detail		Main
29.50	(102mm)			-22.35		29.50		Weak grey fossiliferous MUDSTONE partially weathered. (Redcar Mudstone Formation). (continued)	
30.20	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 weak dark grey black grey black fossiliferous MUDSTONE partially weathered. (Redcar Mudstone Formation).	
31.20	100 (100) 80								
31.70	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.			
	77 (57) 33	NR				32.45-32.70m ... no recovery.			
	(102mm)					(6.20)			

Drilling Progress and Water Observations				Standard Penetration Test			Flush			General Remarks
Date	Depth	Casing	Water Standing	Depth	Type	Result	From - To	Type	Returns (%)	
14/06/2021	29.50	29.50	2.19				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 standpipe installed between 18.20-20.50m and 30.70-34.50m BGL respectively. (4) UJO carried out as per the Client instructions. (5) Aquifer protection installed between 14.90-16.65m BGL prior to commencing rotary drilling.
16/06/2021	29.50	29.50	5.19				30.20 - 31.20	Water	100	
							31.20 - 31.70	Water	100	
							31.70 - 33.20	Water	100	

All dimensions in metres Scale 1:25.00	For explanation of symbols and abbreviations see Key Sheets	Checked by: <i>K.W.</i>	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		Exploratory Hole No. MS1BH12	
Client: AECOM		Location: North-west of Redcar, North Yorkshire E:457207.512 N:525257.781	
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Comacchio GEO 205)		Ground Level (m): 7.147	Start Date: 03/06/2021
		Sheet: 5 of 16	

RUN DETAILS			STRATA					Instrument/ Backfill	
Depth & (Core Ø)	TCR (SCR) RQD	Fracture Index	Water	Reduced Level	Legend	Depth (Thickness)	Description		
							Discontinuity Detail		Main
33.20	100 (100) 70	6				32.70-33.00m ... non-intact.	Weak to moderately weak dark grey black grey black fossiliferous MUDSTONE partially weathered. (Redcar Mudstone Formation). (continued)		
34.20	100 (100) 82					33.00-35.70m ... subhorizontal (10-20 degrees) closely spaced planar and irregular rough undulating smooth and rough tight clean discontinuities.			
35.30	100 (100) 75								
				-28.55		35.70	Complete at 35.70m BGL.		

Drilling Progress and Water Observations				Standard Penetration Test			Flush			General Remarks
Date	Depth	Casing	Water Standing	Depth	Type	Result	From - To	Type	Returns (%)	
16/06/2021	33.20	33.20	5.19				33.20 - 34.20	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 standpipe installed between 18.20-20.50m and 30.70-34.50m BGL respectively. (4) UJO carried out as per the Client instructions. (5) Aquifer protection installed between 14.90-16.65m BGL prior to commencing rotary drilling.
17/06/2021	33.20	33.20	4.67				34.20 - 35.30	Water	100	
17/06/2021	35.70	35.70	4.67				35.30 - 35.70	Water	100	

All dimensions in metres Scale 1:25.00	For explanation of symbols and abbreviations see Key Sheets	Checked by: <i>K.W.</i>	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			Exploratory Hole No. MS\BH12
Client: AECOM	Location: North-west of Redcar, North Yorkshire E:457207.512 N:525257.781		
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Comacchio GEO 205)	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

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Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Comacchio GEO 205)	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



Figure MS\BH12.4
MS\BH12 4.20-5.70m BGL





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DRILLHOLE RECORD

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Client: AECOM	Location: North-west of Redcar, North Yorkshire E:457207.512 N:525257.781		
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Comacchio GEO 205)	Ground 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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Client: AECOM	Location: North-west of Redcar, North Yorkshire E:457207.512 N:525257.781		
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Comacchio GEO 205)	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

Status:-
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Client: AECOM	Location: North-west of Redcar, North Yorkshire E:457207.512 N:525257.781		
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Comacchio GEO 205)	Ground Level (m): 7.147	Start Date: 03/06/2021	Sheet: 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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Client: AECOM	Location: North-west of Redcar, North Yorkshire E:457207.512 N:525257.781		
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Comacchio GEO 205)	Ground Level (m): 7.147	Start Date: 03/06/2021	Sheet: 11 of 16

Figure MS\BH12.11
MS\BH12 16.65-19.40m BGL



Figure MS\BH12.12
MS\BH12 19.40-21.40m BGL





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DRILLHOLE RECORD

Status:-
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Project: Preliminary Onshore Ground Investigation for NZT		Exploratory Hole No. MS\BH12	
Client: AECOM	Location: North-west of Redcar, North Yorkshire E:457207.512 N:525257.781		Sheet: 12 of 16
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Comacchio GEO 205)	Ground Level (m): 7.147	Start Date: 03/06/2021	

Figure MS\BH12.13
MS\BH12 21.40-23.60m BGL



Figure MS\BH12.14
MS\BH12 23.40-24.00m BGL





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Client: AECOM	Location: North-west of Redcar, North Yorkshire E:457207.512 N:525257.781		Sheet: 13 of 16
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Comacchio GEO 205)	Ground Level (m): 7.147	Start Date: 03/06/2021	

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

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Project: Preliminary Onshore Ground Investigation for NZT		Exploratory Hole No.	
Client: AECOM	Location: North-west of Redcar, North Yorkshire E:457207.512 N:525257.781		MS\BH12
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Comacchio GEO 205)	Ground Level (m): 7.147	Start Date: 03/06/2021	Sheet: 14 of 16

Figure MS\BH12.17
MS\BH12 26.70-28.20m BGL



Figure MS\BH12.18
MS\BH12 28.20-29.50m BGL





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Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Comacchio GEO 205)	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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Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250/Comacchio GEO 205)	Ground Level (m): 7.147	Start Date: 03/06/2021	Sheet: 16 of 16

Figure MS\BH12.21
MS\BH12 32.25-34.20m BGL



Figure MS\BH12.22
MS\BH12 34.20-35.70m BGL





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SONIC SAMPLE HOLE RECORD

Status:-
FINAL

Project: Preliminary Onshore Ground Investigation for NZT		Exploratory Hole No. MS1BH13	
Client: AECOM	Location: North-west of Redcar, North Yorkshire E:456773.892 N:525178.376		
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250)	Ground Level (m): 5.714	Start Date: 25/06/2021	Sheet: 1 of 2

SAMPLES & TESTS			STRATA				Instrument/ Backfill
Depth	Type No	Test Result	Water	Reduced Level	Legend	Depth (Thickness)	
0.15-1.20	SL1 _(SS)			5.56		0.15	(1) MADE GROUND (Black ash and soil).
0.15-1.20	B7 _(SL1)						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%).
0.30	ES1 _(SL1)	0.1ppm				(1.05)	
0.30	PID						
0.50	ES2 _(SL1)						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%).
0.50	J8 _(SL1)	<0.1ppm		4.51		1.20	
0.50	PID						
1.00	ES3 _(SL1)						MADE GROUND (Soft red brown sandy gravelly clay with low cobble content. Gravel is fine to coarse angular to subrounded and includes grey slag. Slag is vesicular (100%). Cobbles are subrounded and include slag. at c.3.00m BGL ... clay is of intermediate plasticity.
1.00	J9 _(SL1)	<0.1ppm				(1.50)	
1.00	PID						
1.20-2.70	SL2 _(SS)						MADE GROUND (Dark blue brown sand with mild hydrocarbon odour. Sand is fine to coarse).
1.20-1.95	B10 _(SL2)	N28				2.70	
1.20	S						
1.50	J11 _(SL2)	<0.1ppm					MADE GROUND (Soft red brown sandy gravelly clay with low cobble content. Gravel is fine to coarse angular to subrounded and includes grey slag. Slag is vesicular (100%). Cobbles are subrounded and include slag. at c.3.00m BGL ... clay is of intermediate plasticity.
1.50	PID					(0.95)	
1.95-2.70	B12 _(SL2)						MADE GROUND (Dark blue brown sand with mild hydrocarbon odour. Sand is fine to coarse).
2.00	ES4 _(SL2)	<0.1ppm		3.01		2.70	
2.00	J13 _(SL2)						
2.00	PID						MADE GROUND (Dark blue brown sand with mild hydrocarbon odour. Sand is fine to coarse).
2.50	J14 _(SL2)	<0.1ppm				(0.55)	
2.50	PID						
2.70-4.20	SL3 _(SS)						Soft brown black slightly organic slightly sandy CLAY with occasional fragments of white shell. Mild organic odour. (Tidal Flat Deposits). at c.4.20m BGL ... clay is of high plasticity. between c.4.80-5.70m BGL ... black brown.
2.70-3.65	B15 _(SL3)	N9				3.65	
2.70	S						
3.00	ES5 _(SL3)	<0.1ppm		2.06		3.65	Soft brown black slightly organic slightly sandy CLAY with occasional fragments of white shell. Mild organic odour. (Tidal Flat Deposits). at c.4.20m BGL ... clay is of high plasticity. between c.4.80-5.70m BGL ... black brown.
3.00	J16 _(SL3)					(1.85)	
3.00	PID						
3.60	ES6 _(SL3)	<0.1ppm					Brown clayey SAND. Sand is fine to coarse. (Engineer notes slightly saturated). (Tidal Flat Deposits).
3.60	PID					4.20	
3.65-4.20	B17 _(SL3)						
4.00	J18 _(SL3)	<0.1ppm		1.51		4.20	Brown clayey SAND. Sand is fine to coarse. (Engineer notes slightly saturated). (Tidal Flat Deposits).
4.00	PID					(1.15)	
4.20-5.70	SL4 _(SS)						Medium dense to dense yellow brown very silty SAND with occasional fragments of bivalve shell. (Tidal Flat Deposits).
4.20-4.80	B19 _(SL4)	N4				7.20	
4.20	S						
4.50	J20 _(SL4)	<0.1ppm					
4.80-5.70	B21 _(SL4)						
5.00	J22 _(SL4)	<0.1ppm					
5.00	PID						
5.50	J23 _(SL4)						
5.70-6.15	UT1						Brown clayey SAND. Sand is fine to coarse. (Engineer notes slightly saturated). (Tidal Flat Deposits).
5.70-7.20	SL5 _(SS)					6.05	
5.70-6.05	B24 _(SL5)	<0.1ppm		-0.34		6.05	
6.00	PID						
6.05-7.20	B26 _(SL5)						
6.50	J25 _(SL5)						
7.00	PID	<0.1ppm					
7.20-8.70	SL6 _(SS)						Medium dense to dense yellow brown very silty SAND with occasional fragments of bivalve shell. (Tidal Flat Deposits).
7.20-7.95	B27 _(SL6)	N33					
7.20	S						
7.50	J28 _(SL6)						

Boring Progress and Water Observations					Liner Sample Information				General Remarks
Date	Depth	Casing	Casing Dia (mm)	Water Standing	From - To	Internal Dia (mm)	Recovery (%)	Subsampled	
25/06/2021	0.00	0.00	178		0.15 - 1.20	178	76	Yes	
25/06/2021	5.70	5.70	178	5.00	1.20 - 2.70	178	100	Yes	
28/06/2021	5.70	5.70	178	4.00	2.70 - 4.20	178	100	Yes	
					4.20 - 5.70	178	100	Yes	
					5.70 - 7.20	178	67	Yes	
					7.20 - 8.70	178	100	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	For explanation of symbols and abbreviations see Key Sheets	Checked by: <i>K.W.</i>	Logged by: M.B/R.C	Contract No. 4339
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SONIC SAMPLE HOLE RECORD

Status:-
FINAL

Project: Preliminary Onshore Ground Investigation for NZT			Exploratory Hole No. MS1BH13	
Client: AECOM		Location: North-west of Redcar, North Yorkshire E:456773.892 N:525178.376		
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250)		Ground Level (m): 5.714	Start Date: 25/06/2021	Sheet: 2 of 2

SAMPLES & TESTS			STRATA					Instrument/ Backfill
Depth	Type No	Test Result	Water	Reduced Level	Legend	Depth (Thickness)	Description	
7.95-8.70 8.00 8.00	B29 ^(SL6) J30 ^(SL6) PID	<0.1ppm			x		Medium dense to dense yellow brown very silty SAND with occasional fragments of bivalve shell. (Tidal Flat Deposits). <i>(continued)</i>	
8.50	J31 ^(SL6)				x			
8.70-10.20 8.70-10.20	SL7 ^(SS) B32 ^(SL7)	N24			x	(3.30)		
8.70 9.00	S PID	<0.1ppm			x			
9.50	J33 ^(SL7)				x			
10.20-11.70 10.20-10.40	SL8 ^(SS) ES34 ^(SL8)	N26		-4.79	x	10.50	Brown very clayey SAND with occasional pockets of soft brown very sandy clay. Sand is fine to coarse. (Tidal Flat Deposits).	
10.20 10.20 10.50	S PID J39 ^(SL8)	<0.1ppm		-5.19	x	(0.40) 10.90		
11.00-11.20 11.00	ES35 ^(SL8) ES(M)36 ^(SL8)	<0.1ppm			x	(0.80)	Stiff thinly laminated red brown silty CLAY. (Glacial Deposits).	
11.00 11.20-11.70 11.50	PID B38 ^(SL8) J37 ^(SL8)				x		at c. 11.50m BGL ... clay is of high plasticity.	
11.70-12.15	UT2			-5.99	x	11.70	<i>Boring complete at 11.70m BGL - continued by rotary drilling.</i>	

Boring Progress and Water Observations					Liner Sample Information				General Remarks
Date	Depth	Casing	Casing Dia (mm)	Water Standing	From - To	Internal Dia (mm)	Recovery (%)	Subsampled	
28/06/2021	11.70	11.70	178	5.00	8.70 - 10.20	178	47	Yes	
					10.20 - 11.70	178	100	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	For explanation of symbols and abbreviations see Key Sheets	Checked by: <i>K.W.</i>	Logged by: M.B/R.C	Contract No. 4339
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DRILLHOLE RECORD

Status:-
FINAL

Project: Preliminary Onshore Ground Investigation for NZT		Exploratory Hole No. MS1BH13	
Client: AECOM		Location: North-west of Redcar, North Yorkshire E:456773.892 N:525178.376	
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250)		Ground Level (m): 5.714	Start Date: 25/06/2021
		Sheet: 1 of 10	

RUN DETAILS				STRATA				Instrument/ Backfill	
Depth & (Core Ø)	TCR (SCR) RQD	Fracture Index	Water	Reduced Level	Legend	Depth (Thickness)	Description		
							Discontinuity Detail		Main
11.70	70	SOIL		-5.99		11.70	11.70-15.30m ... soil.	Stiff dark 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). 11.70m ... clay is of high plasticity.	
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 strength. Clay is of intermediate plasticity.	
14.20	97 (0) 0			-8.49		(0.50)	14.20m ... B48 14.30m ... J47	Stiff thinly laminated grey brown silty slightly sandy CLAY. Sand is fine to coarse. (Glacial Till).	
14.70				-8.99		(0.60)	14.70m ... U49	Stiff dark brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is fine to medium angular to subangular and includes mudstone, sandstone, limestone and coal. (Glacial Till). 14.70m ... clay is of intermediate plasticity.	
15.70		NI		-9.59		(0.40)	15.30m ... E50 15.30-15.70m ... non-intact. Recovered as clay.	Extremely weak thinly laminated blue grey MUDSTONE residual. (Recovered as stiff clay). (Redcar Mudstone Formation).	
15.70				-9.99					

Drilling Progress and Water Observations				Standard Penetration Test			Flush			General Remarks
Date	Depth	Casing	Water Standing	Depth	Type	Result	From - To	Type	Returns (%)	
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 6.50-9.50m 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 1:25.00	For explanation of symbols and abbreviations see Key Sheets	Checked by: <i>K.W.</i>	Logged by: M.B/R.C	Contract No. 4339
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DRILLHOLE RECORD

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Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250)		Ground Level (m): 5.714	Start Date: 25/06/2021	Sheet: 3 of 10

RUN DETAILS				STRATA				Instrument/ Backfill	
Depth & (Core Ø)	TCR (SCR) RQD	Fracture Index	Water	Reduced Level	Legend	Depth (Thickness)	Description		
							Discontinuity Detail		Main
				-14.49		20.20		Very weak thinly laminated grey MUDSTONE partially to distinctly weathered. (continued)	
								Complete at 20.20m BGL.	

Drilling Progress and Water Observations				Standard Penetration Test			Flush			General Remarks
Date	Depth	Casing	Water Standing	Depth	Type	Result	From - To	Type	Returns (%)	
30/06/2021	20.20	20.20	6.00							(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 6.50-9.50m 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 1:25.00	For explanation of symbols and abbreviations see Key Sheets	Checked by: <i>K.W.</i>	Logged by: M.B/R.C	Contract No. 4339
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DRILLHOLE RECORD

Status:-

FINAL

Project: Preliminary Onshore Ground Investigation for NZT			Exploratory Hole No. MS\BH13
Client: AECOM	Location: North-west of Redcar, North Yorkshire E:456773.892 N:525178.376		
Method (Equipment): 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



Figure MS\BH13.2
MS\BH13 1.20-2.70m BGL





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DRILLHOLE RECORD

Status:-

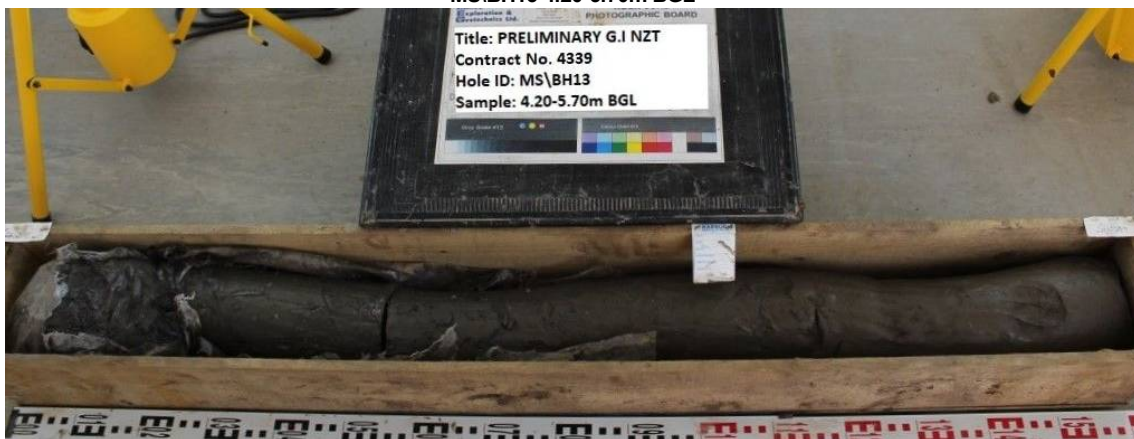
FINAL

Project: Preliminary Onshore Ground Investigation for NZT			Exploratory Hole No. MS\BH13
Client: AECOM	Location: North-west of Redcar, North Yorkshire E:456773.892 N:525178.376		
Method (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



Figure MS\BH13.4
MS\BH13 4.20-5.70m BGL





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DRILLHOLE RECORD

Status:-
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Project: Preliminary Onshore Ground Investigation for NZT			Exploratory Hole No. MS\BH13
Client: AECOM	Location: North-west of Redcar, North Yorkshire E:456773.892 N:525178.376		
Method (Equipment): 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:-
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Project: Preliminary Onshore Ground Investigation for NZT			Exploratory Hole No. MS\BH13
Client: AECOM	Location: North-west of Redcar, North Yorkshire E:456773.892 N:525178.376		
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250)	Ground Level (m): 5.714	Start Date: 25/06/2021	Sheet: 7 of 10

Figure MS\BH13.7
MS\BH13 8.70-10.20m BGL



Figure MS\BH13.8
MS\BH13 10.20-11.70m BGL





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DRILLHOLE RECORD

Status:-
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Project: Preliminary Onshore Ground Investigation for NZT			Exploratory Hole No. MS\BH13
Client: AECOM	Location: North-west of Redcar, North Yorkshire E:456773.892 N:525178.376		
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250)	Ground Level (m): 5.714	Start Date: 25/06/2021	Sheet: 8 of 10

Figure MS\BH13.9
MS\BH13 11.70-12.70m BGL

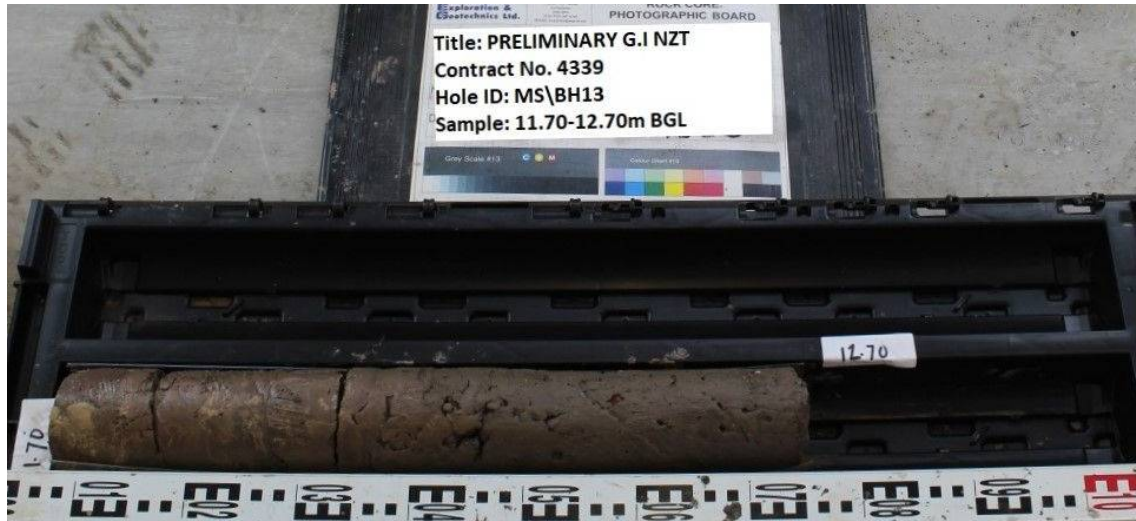


Figure MS\BH13.10
MS\BH13 12.70-14.20m BGL





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DRILLHOLE RECORD

Status:-
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Project: Preliminary Onshore Ground Investigation for NZT			Exploratory Hole No. MS\BH13
Client: AECOM	Location: North-west of Redcar, North Yorkshire E:456773.892 N:525178.376		
Method (Equipment): Sonic/Rotary Coring (Boart Longyear LS250)	Ground Level (m): 5.714	Start Date: 25/06/2021	Sheet: 9 of 10

Figure MS\BH13.11
MS\BH13 14.20-15.70m BGL



Figure MS\BH13.12
MS\BH13 15.70-17.20m BGL





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DRILLHOLE RECORD

Status:-
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Client: AECOM	Location: North-west of Redcar, North Yorkshire E:456773.892 N:525178.376		
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



Figure MS\BH13.14
MS\BH13 18.20-20.20m BGL



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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 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: 1 of 2	

SAMPLES & TESTS			STRATA					Instrument/ Backfill
Depth	Type No	Test Result	Water	Reduced Level	Legend	Depth (Thickness)	Description	
0.10-1.20	SL1 _(SL1)					(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).	
0.10-1.20	B4 _(SL1)							
0.30	ES1 _(SL1)	<0.1ppm						
0.30	PID							
0.50	ES2 _(SL1)							
0.50	J5 _(SL1)	<0.1ppm						
0.50	PID							
1.00	ES3 _(SL1)	<0.1ppm		5.99				
1.00	PID							
1.20-2.70	SL2 _(SL2)							
1.20-1.95	B6 _(SL2)							
1.20	S	N26						
1.50	J7 _(SL2)	<0.1ppm						
1.50	PID							
1.95-2.70	B8 _(SL2)							
2.00	PID	<0.1ppm						
2.00	J9 _(SL2)							
2.00	ES9A _(SL2)							
2.50	J10 _(SL2)	<0.1ppm						
2.50	PID							
2.70-4.20	SL3 _(SL3)					(0.65)	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).	
2.70-3.55	B11 _(SL3)							
2.70	S	N15						
3.00	PID	<0.1ppm						
3.00	J12 _(SL3)							
3.00	ES12A _(SL3)							
3.00	PID							
3.50	J13 _(SL3)							
3.50	B14 _(SL3)							
4.00	J15 _(SL3)	<0.1ppm		2.99				
4.00	PID							
4.20	PID	1.0ppm						
4.20-5.70	SL4 _(SL4)					(4.20)	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). 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.	
4.20-4.40	ES16 _(SL4)							
4.20	S	N19						
4.50	PID	<0.1ppm						
4.50	J17 _(SL4)							
4.50-4.80	ES18 _(SL4)							
5.00	J19 _(SL4)							
5.00-5.70	B20 _(SL4)							
5.50	J21 _(SL4)							
5.70-7.20	SL5 _(SL5)							
5.70-6.45	B22 _(SL5)							
5.70	S	N12						
6.00	J23 _(SL5)							
6.00	PID	<0.1ppm						
6.45-7.20	B24 _(SL5)					(4.20)		
6.50	J25 _(SL5)							
7.00	J26 _(SL5)							
7.00	PID	<0.1ppm						
7.20-8.70	SL6 _(SL6)							
7.20-7.95	B27 _(SL6)							
7.20	S	N15						
7.50	J28 _(SL6)							

Boring Progress and Water Observations					Liner Sample Information				General Remarks
Date	Depth	Casing	Casing Dia (mm)	Water Standing	From - To	Internal Dia (mm)	Recovery (%)	Subsampled	
28/06/2021	0.00	0.00	178	Dry	0.10 - 1.20	178	100	Yes	
28/06/2021	1.20	0.00	178		1.20 - 2.70	178	100	Yes	
29/06/2021	1.20	0.00	178		2.70 - 4.20	178	100	Yes	
					4.20 - 5.70	178	100	Yes	
					5.70 - 7.20	178	100	Yes	
					7.20 - 8.70	178	100	Yes	

All dimensions in metres Scale 1:50.00	For explanation of symbols and abbreviations see Key Sheets	Checked by: <i>K.W.</i>	Logged by: M. Bell	Contract No. 4339
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SONIC SAMPLE HOLE RECORD

Status:-
FINAL

Project: Preliminary Onshore Ground Investigation for NZT		Exploratory Hole No. MS1BH14	
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: 2 of 2	

SAMPLES & TESTS			STRATA					Instrument/ Backfill
Depth	Type No	Test Result	Water	Reduced Level	Legend	Depth (Thickness)	Description	
7.95-8.70 8.00 8.00	B29 _(SL6) J30 _(SL6) PID	<0.1ppm			x x x		Medium dense black brown silty SAND with occasional fragments of shell. Mild organic odour (Tidal Flat Deposits). <i>(continued)</i>	
8.50	J31 _(SL6)			-1.51	x	8.70	Medium dense yellow brown silty SAND with pockets of soft brown silty clay. (Tidal Flat Deposits).	
8.70-10.20 8.70-9.45	SL7 _(SS) B32 _(SL7)	N25			x x			
8.70 9.00 9.00	S J33 _(SL7) PID	<0.1ppm			x x x	(1.50)		
9.45-10.20 9.50	B34 _(SL7) J35 _(SL7)				x x			
10.00 10.00	J36 _(SL7) PID	<0.1ppm			x	10.20		
10.20-11.70 10.20-10.95 10.20	SL8 _(SS) B37 _(SL8) S	N2			x x x	(1.20)	Very loose yellow brown SAND. Sand is fine to coarse. (Tidal Flat Deposits).	
10.50	J38 _(SL8)				x			
10.95-11.40 11.00 11.00	B39 _(SL8) J40 _(SL8) PID	<0.1ppm			x x	11.40		
11.50	J41 _(SL8)				x			
11.70-13.20 11.70-12.45	SL9 _(SS) B42 _(SL9)	N23			x x	(1.60)	Medium dense yellow brown silty SAND with occasional pockets of soft brown silty clay and fragments of shell. Sand is fine to coarse. (Tidal Flat Deposits).	
11.70 12.00 12.00	S J43 _(SL9) PID	<0.1ppm			x x x			
12.45-12.65 12.45 12.50	ES44 _(SL9) PID J45 _(SL9)	<0.1ppm			x x			
13.00	J46 _(SL9)				x	13.00		
13.20 13.20	UT*B1 PID	(15) <0.1ppm				13.20	Soft dark brown very sandy CLAY. (Tidal Flat Deposits).	
Boring complete at 13.20m BGL - continued by rotary drilling.								

Boring Progress and Water Observations					Liner Sample Information				General Remarks
Date	Depth	Casing	Casing Dia (mm)	Water Standing	From - To	Internal Dia (mm)	Recovery (%)	Subsampled	
29/06/2021	13.20	13.20	178	8.70	8.70 - 10.20	178	100	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.
					10.20 - 11.70	178	100	Yes	
					11.70 - 13.20	178	100	Yes	

All dimensions in metres Scale 1:50.00	For explanation of symbols and abbreviations see Key Sheets	Checked by: <i>K.W.</i>	Logged by: M. Bell	Contract No. 4339
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DRILLHOLE RECORD

Status:-
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Project: Preliminary Onshore Ground Investigation for NZT		Exploratory Hole No. MS1BH14	
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: 1 of 11	

RUN DETAILS				STRATA					Instrument/ Backfill
Depth & (Core Ø)	TCR (SCR) RQD	Fracture Index	Water	Reduced Level	Legend	Depth (Thickness)	Description		
							Discontinuity Detail	Main	
13.20	100	SOIL		-6.01	X	13.20	13.20m ... B47 13.20-17.25m ... soil.	Soft grey silty CLAY. (Tidal Flat Deposits).	
				(0.35)					
				-6.36	X	13.55	13.55m ... J48 13.55m ... B49	Firm brown slightly sandy slightly gravelly CLAY. Gravel is fine to coarse subangular to subrounded and includes sandstone, mudstone and limestone. (Tidal Flat Deposits).	
14.70	100			-6.81	O	14.00	14.00m ... B50 14.20m ... U51 14.20m ... ES51A	Stiff brown slightly sandy slightly gravelly CLAY. Gravel is fine to coarse subangular to subrounded and includes sandstone, mudstone and limestone. (Tidal Flat Deposits). 14.20m ... clay is of intermediate plasticity.	
				(1.38)					
				-8.19	X	15.38	14.57m ... B52 15.00m ... J53 15.05m ... U54	15.05m ... very high strength. Clay is of intermediate plasticity.	
16.20	100 (0) 0			-9.01	X	16.20	15.38m ... B55 15.60m ... J56	Stiff thinly laminated silty CLAY with lenses of silt and occasional plant remains. (Tidal Flat Deposits). 15.60m ... clay is of intermediate plasticity.	
				(0.82)					
				-9.18	O	16.37	16.20m ... J57 16.20m ... B58 16.20m ... ES57A	Firm red brown slightly sandy slightly gravelly CLAY. Gravel is fine to coarse subangular to subrounded and includes sandstone, limestone and mudstone. (Glacial Till).	
						16.62m ... U59	Stiff red brown slightly sandy slightly gravelly CLAY. Gravel is fine to coarse subangular to subrounded and includes sandstone, limestone and mudstone. (Glacial Till). 16.62m BGL ... very high strength. Clay is of low to intermediate		
						16.95m ... J60			

Drilling Progress and Water Observations				Standard Penetration Test			Flush			General Remarks
Date	Depth	Casing	Water Standing	Depth	Type	Result	From - To	Type	Returns (%)	
01/07/2021	13.20	13.20	3.80	16.20	S	N28	13.20 - 22.20	Water	100	(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	Checked by: <i>K.W.</i>	Logged by: M. Bell	Contract No. 4339
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DRILLHOLE RECORD

Status:-
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Project: Preliminary Onshore Ground Investigation for NZT		Exploratory Hole No. MS1BH14	
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: 2 of 11	

RUN DETAILS			STRATA				Instrument/ Backfill		
Depth & (Core Ø)	TCR (SCR) RQD	Fracture Index	Water	Reduced Level	Legend	Depth (Thickness)		Description	
							Discontinuity Detail	Main	
17.70		NI		-10.06		17.25	17.25m ... B61 17.25-17.70m ... non-intact. Recovered as clay. (0.45)	plasticity. Extremely weak grey MUDSTONE residual. (Recovered as gravelly clay. Gravel is fine to coarse angular). (Redcar Mudstone Formation).	Instrument/ Backfill
				-10.51		17.70	17.70-18.00m ... non-intact. (0.30)	Extremely weak grey MUDSTONE destructured. (Redcar Mudstone Formation).	
	100 (77) 7	NI		-10.81		18.00	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. (0.20)	Very weak thinly to thickly laminated grey MUDSTONE distinctly weathered. (Redcar Mudstone Formation).	
	(102mm)	30		-11.01		18.20		Weak grey MUDSTONE partially weathered with occasional fragments of shell (5-20mm in size). (Redcar Mudstone Formation).	
				-11.81		19.00			
				-11.96		19.15			
		NI		-12.01		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.	Very weak thinly to thickly laminated grey MUDSTONE distinctly weathered. (Redcar Mudstone Formation).	
	100 (70) 29	20						Extremely weak grey MUDSTONE destructured. (Redcar Mudstone Formation).	
	(102mm)							Weak grey thinly to thickly laminated grey MUDSTONE partially weathered with occasional fragments of shell (5-40mm in size). (Redcar Mudstone Formation).	
20.70						(3.00)			

Drilling Progress and Water Observations				Standard Penetration Test			Flush			General Remarks
Date	Depth	Casing	Water Standing	Depth	Type	Result	From - To	Type	Returns (%)	
										(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	Checked by: <i>K.W.</i>	Logged by: M. Bell	Contract No. 4339
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DRILLHOLE RECORD

Status:-
FINAL

Project: Preliminary Onshore Ground Investigation for NZT		Exploratory Hole No. MS1BH14	
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: 3 of 11

RUN DETAILS				STRATA				Instrument/ Backfill	
Depth & (Core Ø)	TCR (SCR) RQD	Fracture Index	Water	Reduced Level	Legend	Depth (Thickness)	Description		
							Discontinuity Detail		Main
(102mm)		NI		-15.01		21.50-21.70m ... non-intact.		Weak grey thinly to thickly laminated grey MUDSTONE partially weathered with occasional fragments of shell (5-40mm in size). (Redcar Mudstone Formation). (continued)	
		12				21.70-22.20m ... horizontal to vertical (0-90 degrees) very closely spaced planar very tight to partly open clean discontinuities.			
						22.20		Complete at 22.20m BGL.	

Drilling Progress and Water Observations				Standard Penetration Test			Flush			General Remarks
Date	Depth	Casing	Water Standing	Depth	Type	Result	From - To	Type	Returns (%)	
01/07/2021	22.20	22.20	3.80							(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	Checked by: <i>K.W.</i>	Logged by: M. Bell	Contract No. 4339
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DRILLHOLE RECORD

Status:-
FINAL

Project: Preliminary Onshore Ground Investigation for NZT			Exploratory Hole No. MS\BH14
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: 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

Project: Preliminary Onshore Ground Investigation for NZT			Exploratory Hole No. MS\BH14
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: 5 of 11

**Figure MS\BH14.3
MS\BH14 2.70-4.20m BGL**



**Figure MS\BH14.4
MS\BH14 4.20-5.70m BGL**





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DRILLHOLE RECORD

Status:-
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Project: Preliminary Onshore Ground Investigation for NZT			Exploratory Hole No. MS\BH14
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: 6 of 11

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 Ground Investigation for NZT			Exploratory Hole No. MS\BH14
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:-
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Project: Preliminary Onshore Ground Investigation for NZT			Exploratory Hole No. MS\BH14
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: 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:-
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Project: Preliminary Onshore Ground Investigation for NZT			Exploratory Hole No. MS\BH14
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: 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

Status:-
FINAL

Project: Preliminary Onshore Ground Investigation for NZT			Exploratory Hole No. MS\BH14
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: 10 of 11

Figure MS\BH14.13
MS\BH14 17.70-19.20m BGL

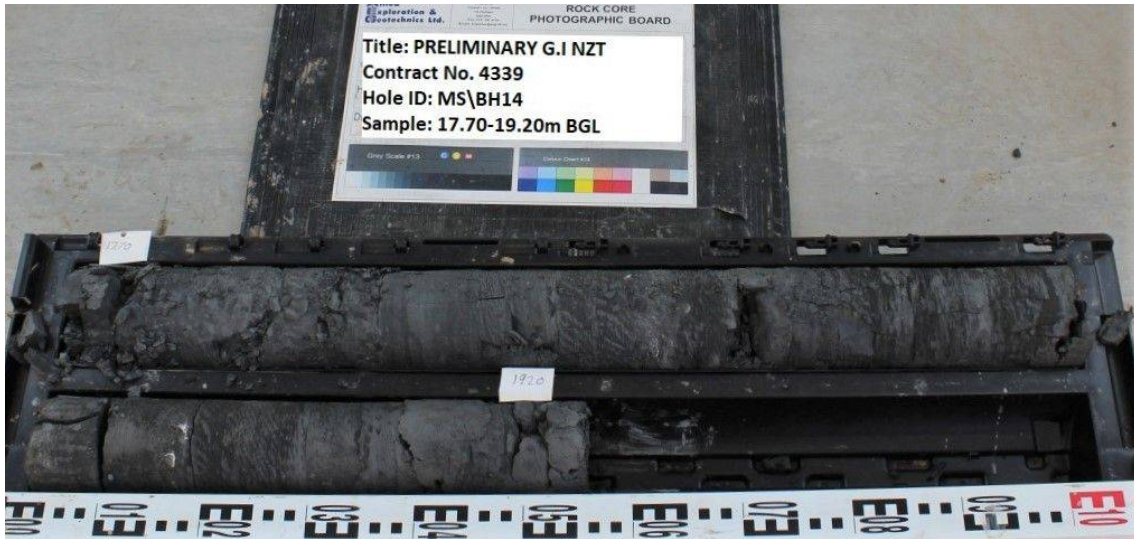


Figure MS\BH14.14
MS\BH14 19.20-20.70m BGL





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DRILLHOLE RECORD

Status:-
FINAL

Project: Preliminary Onshore Ground Investigation for NZT			Exploratory Hole No. MS\BH14
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: 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		Exploratory Hole No. MS1BH15	
Client: AECOM		Location: North-west of Redcar, North Yorkshire E:456595.238 N:524931.815	
Method (Equipment): Sonic Coring (Boart Longyear LS250)		Ground Level (m): 7.247	Start Date: 01/07/2021
		Sheet: 1 of 10	

SAMPLES & TESTS			STRATA					Instrument/ Backfill
Depth	Type No	Test Result	Water	Reduced Level	Legend	Depth (Thickness)	Description	
0.13-1.20	SL ₁ (SS)			7.12		0.13	MADE GROUND (Dark grey slag). (Driller notes iron rich).	
0.30	ES1 _(SL1)	<0.1ppm				(0.65)	MADE GROUND (Black clayey sand and gravel. Gravel is fine to coarse angular to subangular and includes slag. Slag is vesicular (100%)).	
0.30	PID							
0.50	J2 _(SL1)							
0.50	ES3 _(SL1)	<0.1ppm		6.47		0.78	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).	
0.50	PID							
1.00	ES4 _(SL1)					(0.47)		
1.00	J5 _(SL1)	<0.1ppm		6.00		1.25	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 subangular to angular and include brick and slag).	
1.00	PID							
1.20-2.70	SL2 _(SS)							
1.20	C	N8						
1.25-2.20	B6 _(SL2)					(0.95)		
1.50	J9 _(SL2)	<0.1ppm						
1.50	PID							
1.80-2.00	ES7 _(SL2)	<0.1ppm		5.05		2.20	MADE GROUND (Dense black clayey very sandy gravel with low 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). at c.1.25m BGL ... clay is of intermediate plasticity.	
1.80	PID							
2.00	ES(M)8 _(SL2)							
2.00	J11 _(SL2)	<0.1ppm				(1.10)		
2.20-2.70	B10 _(SL2)							
2.50	J12 _(SL2)							
2.50	PID							
2.70-4.20	SL3 _(SS)							
2.70-2.90	ES13 _(SL3)							
2.70	C	N34		3.95		3.30	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%)).	
2.70	PID	<0.1ppm						
3.50	J14 _(SL3)					(0.90)		
3.90-4.20	ES15 _(SL3)	<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 subrounded and includes slag. Cobbles are subrounded and includes slag. Slag is vesicular (100%). Mild hydrogen sulphide odour).	
3.90	PID							
4.00	J16 _(SL3)							
4.20-5.70	SL4 _(SS)							
4.20-5.20	B17 _(SL4)					(1.00)		
4.20	S	N49						
4.40-4.60	ES18 _(SL4)	<0.1ppm						
4.40	PID							
4.50	J19 _(SL4)							
5.00	J20 _(SL4)							
5.20-5.40	ES21 _(SL4)	<0.1ppm		2.05		5.20	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).	
5.20	PID							
5.50	J22 _(SL4)							
5.70-7.20	SL5 _(SS)							
5.70-6.45	J23 _(SL5)							
5.70	S	N28						
6.00	J24 _(SL5)	<0.1ppm						
6.00	PID							
6.45-7.20	J25 _(SL5)							
6.50	J26 _(SL5)							
7.00	J27 _(SL5)	<0.1ppm						
7.00	PID							
7.20-8.70	SL6 _(SS)							
7.20-7.95	J28 _(SL6)							
7.20	S	N29						
7.50	J29 _(SL6)							

Boring Progress and Water Observations					Liner Sample Information				General Remarks
Date	Depth	Casing	Casing Dia (mm)	Water Standing	From - To	Internal Dia (mm)	Recovery (%)	Subsampled	
01/07/2021	0.00	0.00	178		0.13 - 1.20	178	75	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.
					1.20 - 2.70	178	100	Yes	
					2.70 - 4.20	178	67	Yes	
					4.20 - 5.70	178	80	Yes	
					5.70 - 7.20	178	100	Yes	
					7.20 - 8.70	178	100	Yes	

All dimensions in metres Scale 1:50.00	For explanation of symbols and abbreviations see Key Sheets	Checked by: <i>K.W.</i>	Logged by: G.T/M.B	Contract No. 4339
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SONIC SAMPLE HOLE RECORD

Status:-
FINAL

Project: Preliminary Onshore Ground Investigation for NZT		Exploratory Hole No. MS1BH15	
Client: AECOM		Location: North-west of Redcar, North Yorkshire E:456595.238 N:524931.815	
Method (Equipment): Sonic Coring (Boart Longyear LS250)		Ground Level (m): 7.247	Start Date: 01/07/2021
		Sheet: 2 of 10	

SAMPLES & TESTS			STRATA					Instrument/ Backfill
Depth	Type No	Test Result	Water	Reduced Level	Legend	Depth (Thickness)	Description	
7.95-8.70	B30 _(SL6)	<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. (Tidal Flat Deposits). (continued)	
8.00	J31 _(SL6)							
8.00	PID							
8.50	J32 _(SL6)	N24			○	(8.20)	at c.10.20m BGL ... dense.	
8.70-10.20	SL7 _(SS)							
8.70-9.45	B33 _(SL7)							
8.70	S	<0.1ppm			○			
9.00	J34 _(SL7)							
9.00	PID							
9.45-10.20	B35 _(SL7)	<0.1ppm			○			
9.50	J36 _(SL7)							
	PID							
10.00	J37 _(SL7)	<0.1ppm			○			
10.00	PID							
10.20-11.70	SL8 _(SS)							
10.20-10.95	B38 _(SL8)	N31			○			
10.20	S							
10.50	J39 _(SL8)							
10.95-11.70	B40 _(SL8)	<0.1ppm			○			
11.00	J41 _(SL8)							
11.00	PID							
11.50	J42 _(SL8)	N27			○			
11.70-13.20	SL9 _(SS)							
11.70-12.45	B43 _(SL9)							
11.70	S	<0.1ppm			○			
12.00	J44 _(SL9)							
12.00	PID							
12.45	PID	<0.1ppm			○			
12.45-13.00	B45 _(SL9)	<0.1ppm			○			
12.45-13.00	ES45 _(SL9)							
12.50	J46 _(SL9)							
13.00-13.20	ES47 _(SL9)	<0.1ppm			○			
13.00	J48 _(SL9)							
13.00	PID							
13.20-14.70	SL10 _(SS)	N12			○		Soft black brown slightly sandy CLAY with frequent pockets of black very organic silty clay. Mild to moderate organic odour. (Tidal Flat Deposits).	
13.20	S							
13.40-13.60	ES49 _(SL10)							
13.40	ES(M)50 _(SL10)	<0.1ppm			○	(0.90)	at c.14.00m BGL ... clay is of low plasticity.	
13.40	PID							
13.60-14.30	B51 _(SL10)							
14.00	J52 _(SL10)	<0.1ppm			○			
14.30-14.50	ES53 _(SL10)							
14.30	ES(M)54 _(SL10)							
14.30	PID	<0.1ppm			○	(0.60)	Firm to stiff dark brown slightly sandy silty CLAY with occasional blue grey organic traces and fragments of wood. (Tidal Flat Deposits).	
14.50-14.70	B56 _(SL10)							
14.70-15.15	UT1							
14.70-16.20	SL11 _(SS)	<0.1ppm			○		Firm to stiff thin 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).	
14.80	J57 _(SL11)							
14.80-15.45	B58 _(SL11)							
15.00	J59 _(SL11)	<0.1ppm			○		at c.15.00m BGL ... clay is of high plasticity.	
15.45-15.65	ES60 _(SL11)							
15.45	ES(M)61 _(SL11)							
15.45	PID	<0.1ppm			○		Firm to stiff thin laminated grey brown sandy silty CLAY.	
15.50	J62 _(SL11)							

Boring Progress and Water Observations					Liner Sample Information				General Remarks
Date	Depth	Casing	Casing Dia (mm)	Water Standing	From - To	Internal Dia (mm)	Recovery (%)	Subsampled	
01/07/2021	13.20	13.20	178	6.00	8.70 - 10.20	178	100	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.
02/07/2021	13.20	13.20	178		10.20 - 11.70	178	100	Yes	
					11.70 - 13.20	178	100	Yes	
					13.20 - 14.70	178	100	Yes	
					14.70 - 16.20	178	100	Yes	

All dimensions in metres Scale 1:50.00	For explanation of symbols and abbreviations see Key Sheets	Checked by: <i>K.W.</i>	Logged by: G.T/M.B	Contract No. 4339
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SONIC SAMPLE HOLE RECORD

Status:-
FINAL

Project: Preliminary Onshore Ground Investigation for NZT		Exploratory Hole No.	
Client: AECOM		MS1BH15	
Method (Equipment): Sonic Coring (Boart Longyear LS250)		Ground Level (m): 7.247	Start Date: 01/07/2021
		Sheet: 3 of 10	

SAMPLES & TESTS			STRATA				Instrument/ Backfill	
Depth	Type No	Test Result	Water	Reduced Level	Legend	Depth (Thickness)		Description
15.70-15.90	ES63 ^(SL11)	<0.1ppm			x x x x	(1.30)	(Tidal Flat/Glacial Deposits). Firm to stiff thinly laminated grey brown sandy silty CLAY. (Tidal Flat/Glacial Deposits). <i>(continued)</i> at c. 16.00m BGL ... clay is of high plasticity.	
15.70	PID							
15.90-16.20	B64 ^(SL11)	<0.1ppm			x x x x	-9.70	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.	
15.90	ES(M)66 ^(SL11)							
16.00	J65 ^(SL11)	N15			o o o o	16.95		
16.20-17.70	SL12 ^(SS)							
16.20-16.95	B67 ^(SL12)	<0.1ppm			o o o o	-11.75	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.	
16.20	S							
16.50	J68 ^(SL12)	<0.1ppm			o o o o	19.00		
16.95-17.15	ES69 ^(SL12)							
16.95	PID	<0.1ppm			o o o o	-12.75	Complete at 20.00m BGL.	
17.00	J70 ^(SL12)							
17.15-17.70	B71 ^(SL12)	<0.1ppm			o o o o	(2.05)		
17.15	ES(M)73 ^(SL2)							
17.50	J72 ^(SL12)	50/225mm			o o o o	(1.00)		
17.70-18.15	UT2							
17.70-19.20	SL13 ^(SS)	<0.1ppm			o o o o	20.00		
17.70-18.45	B74 ^(SL13)							
18.00	J75 ^(SL13)	<0.1ppm			o o o o			
18.45-18.65	ES76 ^(SL13)							
18.45	ES(M)77 ^(SL13)	<0.1ppm			o o o o			
18.45	PID							
18.50	J78 ^(SL13)	50/225mm			o o o o			
19.00-19.20	ES79 ^(SL13)							
19.00	PID	<0.1ppm			o o o o			
19.20-20.00	SL14 ^(SS)							
19.20-20.00	B81 ^(SL14)	50/225mm			o o o o			
19.20	S							
19.50	J80 ^(SL14)	<0.1ppm			o o o o			
20.00	PID							

Boring Progress and Water Observations					Liner Sample Information				General Remarks
Date	Depth	Casing	Casing Dia (mm)	Water Standing	From - To	Internal Dia (mm)	Recovery (%)	Subsampled	
02/07/2021	20.00	20.00	178		16.20 - 17.70	178	73	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.
					17.70 - 19.20	178	73	Yes	
					19.20 - 20.00	178	100	Yes	

All dimensions in metres Scale 1:50.00	For explanation of symbols and abbreviations see Key Sheets	Checked by: <i>K.W.</i>	Logged by: G.T/M.B	Contract No. 4339
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SONIC SAMPLE HOLE RECORD

Status:-
FINAL

Project: Preliminary Onshore Ground Investigation for NZT			Exploratory Hole No. MS\BH15
Client: AECOM	Location: North-west of Redcar, North Yorkshire E:456595.238 N:524931.815		
Method (Equipment): Sonic Coring (Boart Longyear LS250)	Ground Level (m): 7.247	Start Date: 01/07/2021	Sheet: 4 of 10

Figure MS\BH15.1
MS\BH15 0.13-1.20m BGL



Figure MS\BH15.2
MS\BH15 1.20-2.70m BGL





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Method (Equipment): Sonic Coring (Boart Longyear LS250)	Ground Level (m): 7.247	Start Date: 01/07/2021	Sheet: 5 of 10

Figure MS\BH15.3
MS\BH15 2.70-4.20m BGL



Figure MS\BH15.4
MS\BH15 4.20-5.70m BGL





ALLIED EXPLORATION & GEOTECHNICS LIMITED

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Method (Equipment): Sonic Coring (Boart Longyear LS250)	Ground Level (m): 7.247	Start Date: 01/07/2021	Sheet: 6 of 10

Figure MS\BH15.5
MS\BH15 5.70-7.20m BGL



Figure MS\BH15.6
MS\BH15 7.20-8.70m BGL





ALLIED EXPLORATION & GEOTECHNICS LIMITED

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SONIC SAMPLE HOLE RECORD

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Project: Preliminary Onshore Ground Investigation for NZT			Exploratory Hole No. MS\BH15
Client: AECOM	Location: North-west of Redcar, North Yorkshire E:456595.238 N:524931.815		
Method (Equipment): 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



Figure MS\BH15.8
MS\BH15 10.20-11.70m BGL





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SONIC SAMPLE HOLE RECORD

Status:-
FINAL

Project: Preliminary Onshore Ground Investigation for NZT			Exploratory Hole No. MS\BH15
Client: AECOM	Location: North-west of Redcar, North Yorkshire E:456595.238 N:524931.815		
Method (Equipment): 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

Status:-
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Project: Preliminary Onshore Ground Investigation for NZT			Exploratory Hole No. MS\BH15
Client: AECOM	Location: North-west of Redcar, North Yorkshire E:456595.238 N:524931.815		
Method (Equipment): 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

Status:-
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Project: Preliminary Onshore Ground Investigation for NZT			Exploratory Hole No. MS\BH15
Client: AECOM	Location: North-west of Redcar, North Yorkshire E:456595.238 N:524931.815		
Method (Equipment): 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

Status:-
FINAL

Project: Preliminary Onshore Ground Investigation for NZT		Exploratory Hole No.	
Client: AECOM		Location: North-west of Redcar, North Yorkshire E:456991.050 N:524873.262	
Method (Equipment): Sonic Coring (Boart Longyear LS250)		Ground Level (m): 7.904	Start Date: 01/07/2021
		Sheet: 1 of 10	

SAMPLES & TESTS			STRATA					Instrument/ Backfill
Depth	Type No	Test Result	Water	Reduced Level	Legend	Depth (Thickness)	Description	
0.00-0.40	B1					(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%)).	
0.10	J2			7.50		0.40		
0.30	ES3	<0.1ppm					MADE GROUND (Black grey dark grey gravelly sand with 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%)).	
0.30	PID							
0.40-1.20	SL1 _(SS)						between c.1.05-1.50m BGL ... slag is occasionally white.	
0.40-1.20	ES5 _(SL1)	<0.1ppm						
0.50	J6 _(SL1)					(1.10)	between c.1.30-1.50m BGL ... clayey.	
0.50	PID							
1.00	ES7 _(SL1)	<0.1ppm					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%)).	
1.00	PID					(0.80)		
1.20-2.70	SL2 _(SS)						at c.2.00m BGL ... clay is of intermediate plasticity.	
1.20	C	N26						
1.40	J8 _(SL2)						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%)).	
1.50-1.70	ES9 _(SL2)	<0.1ppm				(0.80)		
1.50	PID						at c.2.50m BGL ... clay is of intermediate plasticity.	
1.70-2.30	B10 _(SL2)							
2.00	J11 _(SL2)					2.30	between c.3.00-4.20m BGL ... mild hydrocarbon odour.	
2.30-2.50	ES12 _(SL2)	<0.1ppm						
2.30	PID						between c.3.10-3.40m BGL ... black brown.	
2.50	J13 _(SL2)					(1.90)		
2.50-3.00	B14 _(SL2/SL3)						between c.3.70-4.20m BGL ... very gravelly.	
2.70-4.20	SL3 _(SS)	N9						
2.70	C						MADE GROUND (Grey black brown very clayey sand and gravel. Gravel is fine to coarse angular to subangular and includes slag (75-100%) and clinker. Mild hydrocarbon odour).	
3.00	J15 _(SL3)	<0.1ppm				(0.80)		
3.00-4.20	B16 _(SL3)						MADE GROUND (Firm to stiff black red brown sandy slightly gravelly clay. Gravel is fine to coarse angular to subangular and includes black slag. Slag is vesicular (100%). Hydrogen sulphide odour).	
3.00	PID	<0.1ppm				(0.60)		
3.30-3.50	ES17 _(SL3)						at c.5.00m BGL ... clay is of intermediate plasticity.	
3.30	PID	<0.1ppm				2.30		
4.00	J18 _(SL3)					4.20	Black very organic sandy SILT with organic rootlets. (Tidal flat Deposits).	
4.00	PID	<0.1ppm				2.20		
4.20-5.70	SL4 _(SS)						at c.5.70m BGL ... dense.	
4.20-4.40	ES19 _(SL4)	N20				(0.80)		
4.20	C	<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).	
4.20	PID							
4.40-5.00	B20 _(SL4)						at c.5.90m BGL ... sandy silt with shell fragments and organic matter.	
4.50	J21 _(SL4)	<0.1ppm				5.00		
5.00	J22 _(SL4)						between c.6.90-13.20m BGL ... with fragments of shell.	
5.00-5.20	ES23 _(SL4)					(0.60)		
5.00	ES(M)24 _(SL4)						at c.7.20m BGL ... very loose and loose.	
5.00	J26 _(SL4)	<0.1ppm				2.30		
5.00	PID					5.70		
5.20-5.60	B25 _(SL4)							
5.65	J27 _(SL4)							
5.70-7.20	SL5 _(SS)							
5.70-5.90	ES28 _(SL5)							
5.70	S	N32						
5.70	PID	<0.1ppm						
5.90-6.45	B30 _(SL5)							
6.00	J29 _(SL5)							
6.45-7.20	B32 _(SL5)							
6.50	J31 _(SL5)							
6.60	PID	<0.1ppm						
7.00	J33 _(SL5)							
7.20-8.70	SL6 _(SS)							
7.20-7.95	B34 _(SL6)							
7.20	S	N4						
7.50	J35 _(SL6)							
7.60	PID	<0.1ppm						

Boring Progress and Water Observations					Liner Sample Information				General Remarks
Date	Depth	Casing	Casing Dia (mm)	Water Standing	From - To	Internal Dia (mm)	Recovery (%)	Subsampled	
01/07/2021	0.00	0.00	178		0.40 - 1.20	178	100	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.
01/07/2021	5.70	5.70	178		1.20 - 2.70	178	100	Yes	
02/07/2021	5.70	5.70	178		2.70 - 4.20	178	100	Yes	
					4.20 - 5.70	178	100	Yes	
					5.70 - 7.20	178	100	Yes	
					7.20 - 8.70	178	100	Yes	

All dimensions in metres Scale 1:50.00	For explanation of symbols and abbreviations see Key Sheets	Checked by: <i>K.W.</i>	Logged by: M. Bell	Contract No. 4339
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SONIC SAMPLE HOLE RECORD

Status:-
FINAL

Project: Preliminary Onshore Ground Investigation for NZT		Exploratory Hole No. MS1BH16	
Client: AECOM		Location: North-west of Redcar, North Yorkshire E:456991.050 N:524873.262	
Method (Equipment): Sonic Coring (Boart Longyear LS250)		Ground Level (m): 7.904	Start Date: 01/07/2021
		Sheet: 2 of 10	

SAMPLES & TESTS			STRATA					Instrument/ Backfill
Depth	Type No	Test Result	Water	Reduced Level	Legend	Depth (Thickness)	Description	
7.95-8.70 8.00	B36 _(SL6) J37 _(SL6)						Loose to medium dense brown dark brown clayey SAND with occasional pockets of soft dark brown very sandy silty clay. (Tidal Flat Deposits). <i>(continued)</i>	
8.50 8.60	J38 _(SL6) PID	<0.1ppm						
8.70-10.20 8.70-9.45	SL7 _(SS) B39 _(SL7)							
8.70 9.00	S J40 _(SL7)	N22				(7.50)		
9.45-10.20 9.50 9.60	B41 _(SL7) J42 _(SL7) PID	<0.1ppm						
10.00	J43 _(SL7)						at c.10.20m BGL ... very loose and loose silty sand.	
10.20-11.70 10.20-10.95	SL8 _(SS) B44 _(SL8)							
10.20 10.50	S J45 _(SL8)	N4						
10.20 10.60	PID PID	<0.1ppm						
10.50 10.60	J45 _(SL8) PID	<0.1ppm						
10.60 10.95-11.70	PID B46 _(SL8)							
11.00	J47 _(SL8)							
11.50 11.60	J48 _(SL8) PID	<0.1ppm						
11.70-13.20 11.70-12.45	SL9 _(SS) B49 _(SL9)							
11.70 12.00	S J50 _(SL9)	N8						
12.00 12.20	PID PID	<0.1ppm						
12.45-13.00 12.50	B51 _(SL9) J52 _(SL9)							
13.00-13.20 13.00	ES53 _(SL9) J54 _(SL9)			-5.30		13.20		
13.00 13.20-14.70	PID SL10 _(SS)	<0.1ppm					Firm thinly laminated red brown slightly sandy slightly gravelly CLAY. Gravel is fine to coarse subangular to rounded and includes mudstone and sandstone. (Glacial Deposits).	
13.20 13.40-13.60	S ES55 _(SL10)	N27				(0.90)	between c.13.20-13.45m BGL ... very sandy. at c.13.50m BGL ... clay is of high plasticity.	
13.40 13.40	ES(M)56 _(SL10) PID	<0.1ppm		-6.20		14.10		
13.40 13.50	PID J57 _(SL10)							
13.50 13.60-14.10	J57 _(SL10) B58 _(SL10)						Stiff brown red sandy gravelly silty CLAY. Gravel is fine to coarse angular to rounded and includes mudstone, sandstone and limestone. (Glacial Till).	
14.00 14.10-14.30	J59 _(SL10) ES60 _(SL10)						at c.14.70m BGL ... high strength. Clay is of intermediate plasticity.	
14.10 14.10	ES(M)61 _(SL10) PID	<0.1ppm						
14.10 14.30-14.70	PID B62 _(SL10)							
14.30-14.70 14.50	B62 _(SL10) J63 _(SL10)							
14.50 14.70-15.15	J63 _(SL10) UT1	(100)						
14.70-16.20 14.70-16.20	SL11 _(SS) B64 _(SL11)							
15.00 15.10	J65 _(SL11) PID	<0.1ppm						
15.10 15.50	PID J66 _(SL11)					(3.60)		

Boring Progress and Water Observations					Liner Sample Information				General Remarks
Date	Depth	Casing	Casing Dia (mm)	Water Standing	From - To	Internal Dia (mm)	Recovery (%)	Subsampled	
02/07/2021	14.70	14.70	178		8.70 - 10.20	178	100	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.
05/07/2021	14.70	14.70	178		10.20 - 11.70	178	100	Yes	
					11.70 - 13.20	178	100	Yes	
					13.20 - 14.70	178	100	Yes	
					14.70 - 16.20	178	73	Yes	

All dimensions in metres Scale 1:50.00	For explanation of symbols and abbreviations see Key Sheets	Checked by: <i>K.W.</i>	Logged by: M. Bell	Contract No. 4339
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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 Yorkshire E:456991.050 N:524873.262	
Method (Equipment): Sonic Coring (Boart Longyear LS250)		Ground Level (m): 7.904	Start Date: 01/07/2021
		Sheet: 3 of 10	

SAMPLES & TESTS			STRATA					Instrument/ Backfill
Depth	Type No	Test Result	Water	Reduced Level	Legend	Depth (Thickness)	Description	
16.00 16.10 16.20-17.20 16.20-16.95 16.50	J67 ^(SL11) PID SL12 ^(SS) B68 ^(SL12) J69 ^(SL12)	<0.1ppm				17.70	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 17.50 17.70-18.55 17.70 18.00	B70 ^(SL12/SL13) J71 ^(SL12) PID SL13 ^(SS) ES72 ^(SL13) ES(M)73 ^(SL13) J74 ^(SL13) PID B75 ^(SL13) S J76 ^(SL13)	<0.1ppm N39		-9.80		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 19.20	J77 ^(SL13) ES78 ^(SL13) PID B79 ^(SL13) J80 ^(SL13) PID	<0.1ppm N39		-10.65 -11.30		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.	

Boring Progress and Water Observations					Liner Sample Information				General Remarks
Date	Depth	Casing	Casing Dia (mm)	Water Standing	From - To	Internal Dia (mm)	Recovery (%)	Subsampled	
05/07/2021	19.20	19.20	178		16.20 - 17.20 17.20 - 19.20	178 178	100 100	Yes Yes	

All dimensions in metres Scale 1:50.00	For explanation of symbols and abbreviations see Key Sheets	Checked by: <i>K.W.</i>	Logged by: M. Bell	Contract No. 4339
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SONIC SAMPLE HOLE RECORD

Status:-
FINAL

Project: Preliminary Onshore Ground Investigation for NZT			Exploratory Hole No. MS\BH16
Client: AECOM	Location: North-west of Redcar, North Yorkshire E:456991.050 N:524873.262		
Method (Equipment): Sonic Coring (Boart Longyear LS250)	Ground Level (m): 7.904	Start Date: 01/07/2021	Sheet: 4 of 10

Figure MS\BH16.1
MS\BH16 0.40-1.20m BGL



Figure MS\BH16.2
MS\BH16 1.20-2.70m BGL





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SONIC SAMPLE HOLE RECORD

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Client: AECOM	Location: North-west of Redcar, North Yorkshire E:456991.050 N:524873.262		
Method (Equipment): Sonic Coring (Boart Longyear LS250)	Ground Level (m): 7.904	Start Date: 01/07/2021	Sheet: 5 of 10

Figure MS\BH16.3
MS\BH16 2.70-4.20m BGL



Figure MS\BH16.4
MS\BH16 4.20-5.70m BGL





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SONIC SAMPLE HOLE RECORD

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Project: Preliminary Onshore Ground Investigation for NZT			Exploratory Hole No. MS\BH16
Client: AECOM	Location: North-west of Redcar, North Yorkshire E:456991.050 N:524873.262		
Method (Equipment): Sonic Coring (Boart Longyear LS250)	Ground Level (m): 7.904	Start Date: 01/07/2021	Sheet: 6 of 10

Figure MS\BH16.5
MS\BH16 5.70-7.20m BGL



Figure MS\BH16.6
MS\BH16 7.20-8.70m BGL





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SONIC SAMPLE HOLE RECORD

Status:-
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Project: Preliminary Onshore Ground Investigation for NZT			Exploratory Hole No. MS\BH16
Client: AECOM	Location: North-west of Redcar, North Yorkshire E:456991.050 N:524873.262		
Method (Equipment): 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

Status:-

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Project: Preliminary Onshore Ground Investigation for NZT			Exploratory Hole No. MS\BH16
Client: AECOM	Location: North-west of Redcar, North Yorkshire E:456991.050 N:524873.262		
Method (Equipment): Sonic Coring (Boart Longyear LS250)	Ground Level (m): 7.904	Start Date: 01/07/2021	Sheet: 8 of 10

Figure MS\BH16.9
MS\BH16 11.70-13.20m BGL



Figure MS\BH16.10
MS\BH16 13.20-14.70m BGL





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SONIC SAMPLE HOLE RECORD

Status:-

FINAL

Project: Preliminary Onshore Ground Investigation for NZT			Exploratory Hole No. MS\BH16
Client: AECOM	Location: North-west of Redcar, North Yorkshire E:456991.050 N:524873.262		
Method (Equipment): Sonic Coring (Boart Longyear LS250)	Ground Level (m): 7.904	Start Date: 01/07/2021	Sheet: 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

Status:-
FINAL

Project: Preliminary Onshore Ground Investigation for NZT			Exploratory Hole No. MS\BH16
Client: AECOM	Location: North-west of Redcar, North Yorkshire E:456991.050 N:524873.262		
Method (Equipment): Sonic Coring (Boart Longyear LS250)	Ground Level (m): 7.904	Start Date: 01/07/2021	Sheet: 10 of 10

Figure MS\BH16.13
MS\BH16 17.70-19.20m BGL





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SONIC SAMPLE HOLE RECORD

Status:-
FINAL

Project: Preliminary Onshore Ground Investigation for NZT		Exploratory Hole No. MS1BH17	
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: 1 of 10	

SAMPLES & TESTS			STRATA					Instrument/ Backfill	
Depth	Type No	Test Result	Water	Reduced Level	Legend	Depth (Thickness)	Description		
0.10	J1				[Cross-hatched pattern]		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. at c.1.20m BGL ... medium dense. between c.1.20-1.70m BGL ... very clayey.	[Symbolic representation of soil layers]	
0.30	B1								
0.30	ES2								
0.30	PID	<0.1ppm							
0.50	B2								
0.50	ES3								
0.50	B4								
0.50	PID	<0.1ppm							
0.75-1.20	SL1 _(SS)								1.70
1.00-1.20	ES6 _(SL1)								
1.00	J7 _(SL1)			7.55					
1.00	PID	<0.1ppm							
1.20-2.70	SL2 _(SS)					1.70	MADE GROUND (Purple very gravelly sand. Sand is fine to coarse. Gravel is fine to coarse angular to subrounded and includes slag and coke). at c.2.70m BGL ... very dense. between c.3.10-3.70m BGL ... grey brown.	[Symbolic representation of soil layers]	
1.20-1.70	B8 _(SL2)								
1.20	C	N26							
1.50	J9 _(SL2)								
1.50	PID	<0.1ppm							
2.00-2.20	ES10 _(SL2)								
2.00	J11 _(SL2)								
2.00	PID	<0.1ppm							
2.20-2.70	B12 _(SL2)					2.20			
2.50	J13 _(SL2)								
2.70-4.20	SL3 _(SS)						MADE GROUND (Black slightly silty sandy gravel and cobbles. 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). at c.4.20m BGL ... very dense.	[Symbolic representation of soil layers]	
2.70-3.90	B14 _(SL3)								
2.70	S	51/236mm							
3.00-3.20	ES15 _(SL3)								
3.00	J16 _(SL3)								
3.00	PID	0.7ppm							
3.50	J17 _(SL3)			5.35		3.90			
3.50	PID	0.7ppm							
3.90-4.20	ES18 _(SL3)								
3.90	PID	2.0ppm							
4.00	J19 _(SL3)								
4.20-5.70	SL4 _(SS)					1.80	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). at c.5.70m BGL ... dark blue rounded metallic cobble. at c.5.70m BGL ... medium dense.	[Symbolic representation of soil layers]	
4.20	S	50/200mm							
5.00-5.20	ES20 _(SL4)								
5.00	J21 _(SL4)								
5.00	PID	0.3ppm							
5.20-5.70	B22 _(SL4)								
5.50	J23 _(SL4)			3.55		5.70			
5.50	PID	0.2ppm							
5.70-7.20	SL5 _(SS)								
5.70	S	N24							
6.00-6.20	ES25 _(SL5)								
6.00	PID	<0.1ppm							
6.20-6.70	B26 _(SL5)					1.50	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). at c.5.70m BGL ... dark blue rounded metallic cobble. at c.5.70m BGL ... medium dense.	[Symbolic representation of soil layers]	
6.50	J27 _(SL5)								
6.50	PID	<0.1ppm							
7.00	PID	<0.1ppm							
7.20-8.70	SL6 _(SS)								
7.20-7.40	ES28 _(SL6)								
7.20	S	N13							
7.20	PID	<0.1ppm							
7.40-7.95	B29 _(SL6)								
7.50	J30 _(SL6)								
						2.05	7.20	Medium dense yellow grey brown silty SAND with occasional fragments of shell. (Tidal Flat Deposits).	[Symbolic representation of soil layers]

Boring Progress and Water Observations					Liner Sample Information				General Remarks
Date	Depth	Casing	Casing Dia (mm)	Water Standing	From - To	Internal Dia (mm)	Recovery (%)	Subsampled	
06/07/2021	0.00	0.00	178		0.75 - 1.20	178	100	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.
					1.20 - 2.70	178	100	Yes	
					2.70 - 4.20	178	100	Yes	
					4.20 - 5.70	178	50	Yes	
					5.70 - 7.20	178	33	Yes	
					7.20 - 8.70	178	100	Yes	

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



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SONIC SAMPLE HOLE RECORD

Status:-
FINAL

Project: Preliminary Onshore Ground Investigation for NZT		Exploratory Hole No. MS1BH17	
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: 2 of 10	

SAMPLES & TESTS			STRATA				Instrument/ Backfill
Depth	Type No	Test Result	Water	Reduced Level	Legend	Depth (Thickness)	
7.95-8.70 8.00 8.00	B31 _(SL6) J32 _(SL6) PID	<0.1ppm			x		Medium dense yellow grey brown silty SAND with occasional fragments of shell. (Tidal Flat Deposits). (continued)
8.50	J33 _(SL6)				x		
8.70-10.20 8.70-9.45	SL7 _(SS) B34 _(SL7)	N28			x	(3.30)	
8.70	S				x		
9.00	J35 _(SL7)				x		
9.00	PID	<0.1ppm			x		
9.45-10.20 9.50	B36 _(SL7) J37 _(SL7)				x		
10.00	J38 _(SL7)				x		
10.20-11.70 10.20	SL8 _(SS) S	N29		-1.25	x	10.50	
10.50-10.70 10.50	ES39 _(SL8) ES(M)40 _(SL8)				x		Soft dark brown slightly sandy CLAY/SILT. (Tidal Flat Deposits).
10.50	J41 _(SL8)				x	(0.90)	at c.10.50m BGL ... clay/silt is of low plasticity.
10.50	PID	<0.1ppm			x		
10.70-11.40 11.00	B42 _(SL8) J43 _(SL8)	<0.1ppm		-2.15	x	11.40	
11.00	PID				x		
11.50	J44 _(SL8)				x		Loose to medium dense yellow brown SAND with occasional fragments of shell. (Tidal Flat Deposits).
11.70-13.20 11.70	SL9 _(SS) S	N14			x		
12.00	PID	<0.1ppm			x		
12.45-13.20 12.50	B41 _(SL9) J42 _(SL9)				x	(2.80)	
13.00	J43 _(SL9)				x		between c.13.20-13.45m BGL ... very sandy.
13.20-14.70 13.20-13.40	SL10 _(SS) ES44 _(SL10)	N9			x		
13.20	S				x		
13.20	PID	<0.1ppm			x		
14.20-14.40 14.20	ES45 _(SL10) ES(M)46 _(SL10)	<0.1ppm		-4.95	x	14.20	Soft dark brown slightly sandy silty CLAY. (Tidal Flat Deposits).
14.20	PID				x		
14.50	J47 _(SL10)				x		
14.70-15.15 14.70-16.20	UT1 SL11 _(SS)	(30)			x	(1.15)	at c.14.70m BGL ... low strength. Clay is of intermediate plasticity.
14.70-15.35 15.00	B48 _(SL11) J49 _(SL11)	<0.1ppm		-6.10	x	15.35	
15.00	PID				x		
15.35-15.55 15.35	ES50 _(SL11) ES(M)51 _(SL11)	<0.1ppm			x	(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).
15.35	PID				x		
15.50	J52 _(SL11)				x		
15.55-16.20	B53 _(SL11)				x		

Boring Progress and Water Observations					Liner Sample Information				General Remarks
Date	Depth	Casing	Casing Dia (mm)	Water Standing	From - To	Internal Dia (mm)	Recovery (%)	Subsampled	
06/07/2021	14.70	14.70	178	6.00	8.70 - 10.20	178	73	Yes	
07/07/2021	14.70	14.70	178	6.00	10.20 - 11.70	178	53	Yes	
					11.70 - 13.20	178	100	Yes	
					13.20 - 14.70	178	47	Yes	
					14.70 - 16.20	178	100	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.

All dimensions in metres Scale 1:50.00	For explanation of symbols and abbreviations see Key Sheets	Checked by: <i>K.W.</i>	Logged by: M. Bell	Contract No. 4339
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SONIC SAMPLE HOLE RECORD

Status:-
FINAL

Project: Preliminary Onshore Ground Investigation for NZT		Exploratory Hole No. MS1BH17	
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	

SAMPLES & TESTS			STRATA					Instrument/ Backfill
Depth	Type No	Test Result	Water	Reduced Level	Legend	Depth (Thickness)	Description	
16.00	J54 _(SL11)			-6.95		16.20	at c. 15.50m BGL ... clay is of intermediate plasticity.	
16.00	PID	<0.1ppm						
16.20-17.70	SL12 _(SS)						Firm thinly laminated brown sandy silty CLAY. (Glacial Till).	
16.20-17.30	B55 _(S12)							
16.20	S	N23						
16.50	J56 _(S12)					(1.10)		
17.00	J57 _(S12)							
17.00	PID	<0.1ppm		-8.05		17.30		
17.30-17.70	B58 _(S12)						Stiff brown red sandy gravelly CLAY. Gravel is fine to coarse angular to rounded and includes mudstone, sandstone and limestone. (Glacial Till).	
17.50	J59 _(S12)					(0.70)		
17.70-18.15	UT2	(50)						
17.70-19.20	SL13 _(SS)			-8.75		18.00	at c. 17.70m BGL very high strength. Clay is of intermediate plasticity.	
17.70-17.90	ES60 _(S13)							
17.70	ES(M)61 _(S13)							
17.70	PID	<0.1ppm				(0.70)		
18.00-18.70	B62 _(S13)						Extremely weak blue grey MUDSTONE residual. (Recovered as blue brown sandy gravelly clay). (Redcar Mudstone Formation).	
18.50	J63 _(S13)			-9.45		18.70	at c. 18.50m BGL ... clay is of intermediate plasticity.	
18.70-18.90	ES64 _(S13)							
18.70	PID	<0.1ppm						
18.90-20.00	B65 _(S13)						Extremely weak blue grey MUDSTONE residual. (Recovered as sand and gravel). (Redcar Mudstone Formation).	
19.00	J66 _(S13)							
19.20-20.00	SL14 _(SS)					(1.30)	between c. 19.00-19.20m BGL ... weak.	
19.20	S	50/105mm						
19.50	J67 _(S14)							
20.00	J68 _(S14)			-10.75		20.00		
20.00	PID	<0.1ppm					Complete at 20.00m BGL.	

Boring Progress and Water Observations					Liner Sample Information				General Remarks
Date	Depth	Casing	Casing Dia (mm)	Water Standing	From - To	Internal Dia (mm)	Recovery (%)	Subsampled	
07/07/2021	20.00	20.00	178	6.00	16.20 - 17.70	178	100	Yes	
					17.70 - 19.20	178	100	Yes	
					19.20 - 20.00	178	89	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.

All dimensions in metres Scale 1:50.00	For explanation of symbols and abbreviations see Key Sheets	Checked by: <i>K.W.</i>	Logged by: M. Bell	Contract No. 4339
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SONIC SAMPLE HOLE RECORD

Status:-
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Project: Preliminary Onshore Ground Investigation for NZT			Exploratory Hole No. MS\BH17
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: 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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SONIC SAMPLE HOLE RECORD

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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: 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

Status:-
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Project: Preliminary Onshore Ground Investigation for NZT			Exploratory Hole No. MS\BH17
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: 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

Status:-
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Project: Preliminary Onshore Ground Investigation for NZT			Exploratory Hole No. MS\BH17
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: 7 of 10

Figure MS\BH17.7
MS\BH17 8.70-10.20m BGL



Figure MS\BH17.8
MS\BH17 10.20-11.70m BGL





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SONIC SAMPLE HOLE RECORD

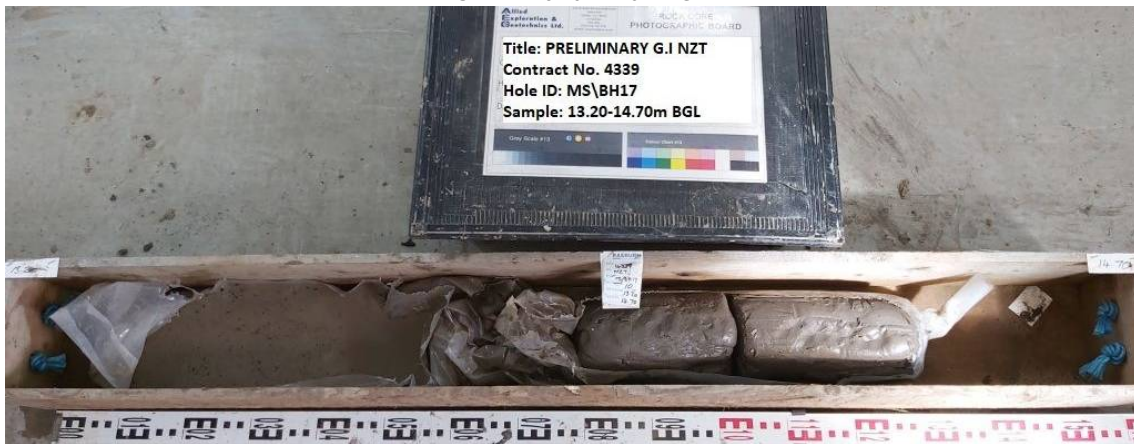
Status:-
FINAL

Project: Preliminary Onshore Ground Investigation for NZT			Exploratory Hole No. MS\BH17
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: 8 of 10

Figure MS\BH17.9
MS\BH17 11.70-13.20m BGL



Figure MS\BH17.10
MS\BH17 13.20-14.70m BGL





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SONIC SAMPLE HOLE RECORD

Status:-
FINAL

Project: Preliminary Onshore Ground Investigation for NZT			Exploratory Hole No. MS\BH17
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: 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





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SONIC SAMPLE HOLE RECORD

Status:-
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Project: Preliminary Onshore Ground Investigation for NZT			Exploratory Hole No. MS\BH17
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: 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





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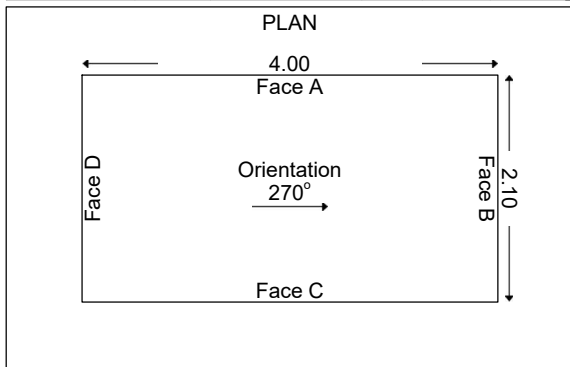
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TRIAL PIT RECORD

Status:-
FINAL

Project: Preliminary Onshore Ground Investigation for NZT		Exploratory Hole No. LFITP01	
Client: AECOM		Location: North-west of Redcar, North Yorkshire E:457392.527 N:525703.811	
Method (Equipment): Machine Excavated (Komatsu 210)		Ground Level (m): 7.172	Start Date: 23/06/2021 Sheet: 1 of 3

SAMPLES & TESTS			STRATA				
Depth	Type No	Test Result	Water	Reduced Level	Legend	Description	
0.30	ES1		Water	7.12		MADE GROUND (Red brown grey very sandy gravel with occasional rootlets. Sand is fine to coarse and includes crushed slag. Gravel is fine to medium subangular and includes vesicular slag (100%)).	
0.30	PID	0.1ppm		0.05			MADE GROUND (Grey 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%)).
0.40	J2						
0.50	ES3						
0.50	PID	<0.1ppm					
0.80	B4						
1.00	ES5						
1.00	PID	0.1ppm					
1.10	J6						
1.40	J7						
1.50	PID	<0.1ppm					
1.80	B8						
1.85	LB9						
1.90	J10						
2.00	ES11					4.45	between c.2.00-4.50m BGL ... iron rich slag (frequent rust).
2.00	PID	0.2ppm					
2.40	J12						
2.50	PID	0.2ppm					
2.90	B13						
3.00	ES14						
3.00	PID	<0.1ppm					
3.10	J15						
3.40	J16						
3.50	PID	<0.1ppm					
3.60	J17						
3.90	LB18						
4.00	ES19						
4.00	PID	<0.1ppm					
4.50	J20			2.67			
4.50	PID	<0.1ppm		4.50	Complete at 4.50m BGL.		



GROUNDWATER
No groundwater inflow observed. Damp between 3.50-4.50m.

STABILITY
Pit sides and base stable throughout excavation.

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

GENERAL REMARKS

All dimensions in metres Scale 1:50.00	For explanation of symbols and abbreviations see Key Sheets	Checked by: <i>K.W.</i>	Logged by: D. Portsmouth	Contract No. 4339
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TRIAL PIT RECORD

Status:-

FINAL

Project: Preliminary Onshore Ground Investigation for NZT		Exploratory Hole No. LFTP01	
Client: AECOM	Location: North-west of Redcar, North Yorkshire E:457392.527 N:525703.811		Sheet: 2 of 3
Method (Equipment): Machine Excavated (Komatsu 210)	Ground Level (m): 7.172	Start Date: 23/06/2021	

Figure LFTP01.1
LFTP01



Figure LFTP01.2
LFTP01





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Tel: 0191 387 4700 Fax: 0191 387 4710
Tel: 01772 735 300 Fax: 01772 735 999

TRIAL PIT RECORD

Status:-

FINAL

Project: Preliminary Onshore Ground Investigation for NZT			Exploratory Hole No. LFFTP01
Client: AECOM	Location: North-west of Redcar, North Yorkshire E:457392.527 N:525703.811		
Method (Equipment): Machine Excavated (Komatsu 210)	Ground Level (m): 7.172	Start Date: 23/06/2021	Sheet: 3 of 3

Figure LFFTP01.3
LFFTP01 Spoil





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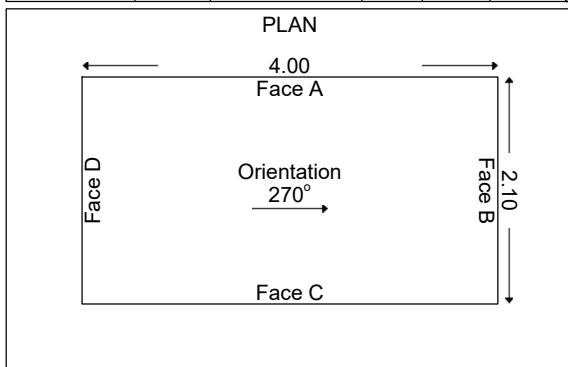
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TRIAL PIT RECORD

Status:-
FINAL

Project: Preliminary Onshore Ground Investigation for NZT		Exploratory Hole No. LFITP02	
Client: AECOM		Location: North-west of Redcar, North Yorkshire E:457400.272 N:525733.924	
Method (Equipment): Machine Excavated (Komatsu 210)		Ground Level (m): 7.892	Start Date: 23/06/2021 Sheet: 1 of 3

SAMPLES & TESTS			STRATA				
Depth	Type No	Test Result	Water	Reduced Level	Legend	Depth (Thickness)	Description
0.30	ES1		Water	7.84	[Cross-hatched pattern]	0.05	MADE GROUND (Red brown grey very sandy gravel with occasional rootlets. Sand is fine to coarse and includes crushed slag. Gravel is fine to medium subangular and includes slag. Slag is vesicular (100%).
0.30	PID	0.1ppm					
0.50	ES2						
0.50	PID	0.1ppm					
0.55	J3						
0.80	B4						
1.00	ES5						
1.00	PID	0.3ppm					
1.05	J6						
1.50	J7						
1.50	PID	1.1ppm					
1.80	B8						
2.00	ES9						
2.00	PID	0.2ppm					
2.10	J7						
2.50	PID	2.1ppm					
2.60	J8						
2.80	B9						
3.00	ES10						
3.00	PID	1.0ppm					
3.10	J11						
3.50	PID	1.0ppm					
3.60	J12						
3.80	LB13						
4.00	ES14						
4.00	PID	<0.1ppm					
4.10	J15						
4.50	LB16						
4.50	PID	<0.1ppm					
				3.39		4.50	Complete at 4.50m BGL.



GROUNDWATER
No groundwater inflow observed. Damp between 2.00-4.50m BGL.

STABILITY
Pit sides and base stable throughout excavation.

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

GENERAL REMARKS

All dimensions in metres Scale 1:50.00	For explanation of symbols and abbreviations see Key Sheets	Checked by: <i>K.W.</i>	Logged by: D. Portsmouth	Contract No. 4339
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TRIAL PIT RECORD

Status:-

FINAL

Project: Preliminary Onshore Ground Investigation for NZT		Exploratory Hole No. LFTP02	
Client: AECOM	Location: North-west of Redcar, North Yorkshire E:457400.272 N:525733.924		Sheet: 2 of 3
Method (Equipment): Machine Excavated (Komatsu 210)	Ground Level (m): 7.892	Start Date: 23/06/2021	

Figure LFTP02.1
LFTP02



Figure LFTP02.2
LFTP02





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TRIAL PIT RECORD

Status:-

FINAL

Project: Preliminary Onshore Ground Investigation for NZT			Exploratory Hole No. LFFTP02
Client: AECOM	Location: North-west of Redcar, North Yorkshire E:457400.272 N:525733.924		
Method (Equipment): Machine Excavated (Komatsu 210)	Ground Level (m): 7.892	Start Date: 23/06/2021	Sheet: 3 of 3

Figure LFFTP02.3
LFFTP02 Spoil





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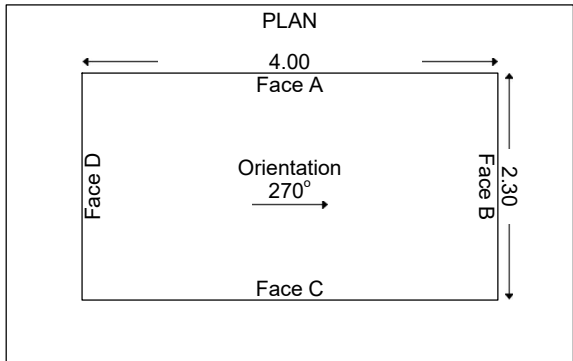
Tel: 0191 387 4700 Fax: 0191 387 4710
 Tel: 01772 735 300 Fax: 01772 735 999

TRIAL PIT RECORD

Status:-
FINAL

Project: Preliminary Onshore Ground Investigation for NZT		Exploratory Hole No. LFITP03
Client: AECOM	Location: North-west of Redcar, North Yorkshire E:457407.062 N:525773.704	
Method (Equipment): Machine Excavated (Komatsu 210)	Ground Level (m): 7.703	Start Date: 24/06/2021 Sheet: 1 of 3

SAMPLES & TESTS			STRATA					
Depth	Type No	Test Result	Water	Reduced Level	Legend	Depth (Thickness)	Description	
0.30	ES1		Water	7.65	[Cross-hatched pattern]	0.05	MADE GROUND (Red brown grey very sandy gravel with occasional rootlets. Sand is fine to coarse and includes crushed slag. Gravel is fine to medium subangular and includes slag. Slag is vesicular (100%).	
0.30	PID	0.4ppm		(1.15)		MADE GROUND (Grey light brown slightly sandy gravel and cobbles. 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 and non vesicular (100%).		
0.45	J2			6.50		1.20	MADE GROUND (Grey 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 includes slag. Boulders are subangular to subrounded and includes slag. Slag is vesicular (100%). (Engineer notes slag shows relatively high content of metal - observed by rusty appearance and individual weight of cobbles).	
0.50	ES3	<0.1ppm					(3.30)	
0.50	PID							
0.80	B4							
0.95	J5							
1.00	ES6	<0.1ppm						
1.00	PID							
1.10	LB7							
1.45	J8	1.5ppm						
1.50	PID							
1.80	B9							
1.95	J10							
2.00	ES11	1.1ppm						
2.00	PID							
2.45	J12	1.1ppm						
2.50	PID							
2.80	B13							
2.95	J14							
3.00	ES15	1.2ppm						
3.00	PID							
3.45	J16	2.0ppm						
3.50	PID							
3.80	B17							
3.95	J18							
4.00	ES19	2.2ppm						
4.00	PID							
4.50	LB20			3.20		4.50	Complete at 4.50m BGL.	
4.50	PID	2.0ppm						



GROUNDWATER
 No groundwater inflow observed. Damp between 3.00-4.50m BGL.

STABILITY
 Pit sides and base stable throughout excavation.

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

GENERAL REMARKS

All dimensions in metres Scale 1:50.00	For explanation of symbols and abbreviations see Key Sheets	Checked by: <i>K.W.</i>	Logged by: D. Portsmouth	Contract No. 4339
---	---	----------------------------	-----------------------------	-----------------------------



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TRIAL PIT RECORD

Status:-

FINAL

Project: Preliminary Onshore Ground Investigation for NZT			Exploratory Hole No. LFITP03
Client: AECOM	Location: North-west of Redcar, North Yorkshire E:457407.062 N:525773.704		
Method (Equipment): Machine Excavated (Komatsu 210)	Ground Level (m): 7.703	Start Date: 24/06/2021	Sheet: 2 of 3

Figure LFITP03.1
LFITP03



Figure LFITP03.2
LFITP03





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TRIAL PIT RECORD

Status:-

FINAL

Project: Preliminary Onshore Ground Investigation for NZT			Exploratory Hole No. LFFTP03
Client: AECOM	Location: North-west of Redcar, North Yorkshire E:457407.062 N:525773.704		
Method (Equipment): Machine Excavated (Komatsu 210)	Ground Level (m): 7.703	Start Date: 24/06/2021	Sheet: 3 of 3

Figure LFFTP03.3
LFFTP03 Spoil





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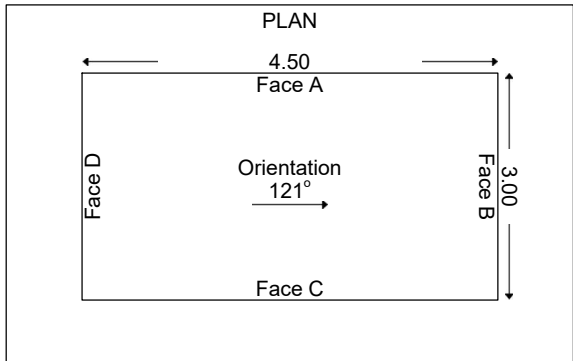
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TRIAL PIT RECORD

Status:-
FINAL

Project: Preliminary Onshore Ground Investigation for NZT		Exploratory Hole No. MSITP01
Client: AECOM	Location: North-west of Redcar, North Yorkshire E:457180.039 N:525540.369	
Method (Equipment): Machine Excavated (Komatsu 210)	Ground Level (m): 6.638	Start Date: 16/06/2021 Sheet: 1 of 3

SAMPLES & TESTS			STRATA			
Depth	Type No	Test Result	Water	Reduced Level	Legend	Description
0.20	J1		Water	6.24		MADE GROUND (Black brown grey very gravelly sand with low cobble and boulder content and fragments of rubber, plastic and metal. Gravel is fine to coarse angular to subrounded and includes concrete and slag. Cobbles are angular to rounded and include slag and concrete. Boulders are subangular and include concrete. Slag is vesicular (50-75%)). at c.0.10m BGL ... metal rope recovered - 10m in length.
0.30	ES2					
0.30	PID	<0.1ppm				
0.40	B3					
0.50	ES4					
0.50	PID	<0.1ppm				
0.70	J5					
1.00	ES6					
1.00	PID	<0.1ppm				
1.20	J7					
1.40	B8					
1.50	PID	<0.1ppm				
1.70	J9					
2.00	ES10					
2.00	LB11					
2.00	PID	0.2ppm				
2.20	J12					
2.40	B13					
2.50	PID	<0.1ppm				
2.70	J14					
3.00	ES15					
3.00	PID	0.2ppm				
3.20	J16					
3.40	B17					
3.50	PID	<0.1ppm				
3.70	J18					
4.00	ES19					
4.00	LB20					
4.00	PID	<0.1ppm				
4.20	J21					
4.40	B22					
4.50	PID	<0.1ppm				
			↓			Complete at 4.50m BGL.



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.

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

GENERAL REMARKS

All dimensions in metres Scale 1:50.00	For explanation of symbols and abbreviations see Key Sheets	Checked by: <i>K.W.</i>	Logged by: M. Bell	Contract No. 4339
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TRIAL PIT RECORD

Status:-

FINAL

Project: Preliminary Onshore Ground Investigation for NZT		Exploratory Hole No.	
Client: AECOM	Location: North-west of Redcar, North Yorkshire E:457180.039 N:525540.369		MSITP01
Method (Equipment): Machine Excavated (Komatsu 210)	Ground Level (m): 6.638	Start Date: 16/06/2021	Sheet: 2 of 3

Figure MSITP01.1
MSITP01



Figure MSITP01.2
MSITP01





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TRIAL PIT RECORD

Status:-

FINAL

Project: Preliminary Onshore Ground Investigation for NZT		Exploratory Hole No.	
Client: AECOM	Location: North-west of Redcar, North Yorkshire E:457180.039 N:525540.369		MSITP01
Method (Equipment): Machine Excavated (Komatsu 210)	Ground Level (m): 6.638	Start Date: 16/06/2021	Sheet: 3 of 3

Figure MSITP01.3
MSITP01 Spoil



Figure MSITP01.4
MSITP01 Spoil





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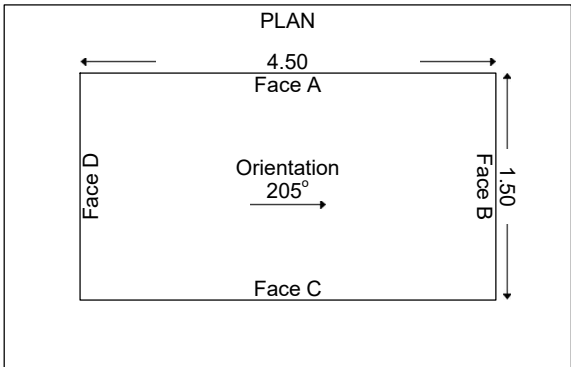
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TRIAL PIT RECORD

Status:-
FINAL

Project: Preliminary Onshore Ground Investigation for NZT		Exploratory Hole No. MSITP03	
Client: AECOM		Location: North-west of Redcar, North Yorkshire E:457331.165 N:525558.341	
Method (Equipment): Machine Excavated (Komatsu 210)		Ground Level (m): 5.076	Start Date: 14/06/2021
		Sheet: 1 of 3	

SAMPLES & TESTS			STRATA			
Depth	Type No	Test Result	Water	Reduced Level	Legend	Description
0.20	J1			4.98		0.10
0.30	ES2			0.10		MADE GROUND (Grey very sandy gravel with occasional rootlets. Sand is fine to coarse and includes crushed slag. Gravel is fine to medium subangular and includes vesicular slag (100%)).
0.30	PID	0.2ppm		0.10		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 medium subangular and includes vesicular slag (100%)).
0.40	B3			0.10		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 medium subangular and includes vesicular slag (100%)).
0.50	ES4			0.10		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 medium subangular and includes vesicular slag (100%)).
0.50	PID	<0.1ppm		0.10		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 medium subangular and includes vesicular slag (100%)).
0.70	J5			0.10		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 medium subangular and includes vesicular slag (100%)).
1.00	ES6			0.10		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 medium subangular and includes vesicular slag (100%)).
1.00	PID	0.5ppm		0.10		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 medium subangular and includes vesicular slag (100%)).
1.20	J7			0.10		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 medium subangular and includes vesicular slag (100%)).
1.40	B8			0.10		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 medium subangular and includes vesicular slag (100%)).
1.50	PID	0.2ppm		0.10		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 medium subangular and includes vesicular slag (100%)).
1.70	J9			0.10		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 medium subangular and includes vesicular slag (100%)).
2.00	ES10			2.58		at c.2.40m BGL ... gravel and cobbles.
2.00	PID	0.5ppm	2.58	Terminated at 2.50m BGL - due to water ingress.		
2.10	LB11					
2.20	J12					
2.20	B13					
2.40						



GROUNDWATER
 Saturated strata at 2.35m BGL - moderate inflow.

STABILITY
 Pit sides and base moderately stable throughout excavation.

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

GENERAL REMARKS

All dimensions in metres Scale 1:50.00	For explanation of symbols and abbreviations see Key Sheets	Checked by: <i>K.W.</i>	Logged by: D. Portsmouth	Contract No. 4339
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TRIAL PIT RECORD

Status:-

FINAL

Project: Preliminary Onshore Ground Investigation for NZT			Exploratory Hole No. MSITP03
Client: AECOM	Location: North-west of Redcar, North Yorkshire E:457331.165 N:525558.341		
Method (Equipment): Machine Excavated (Komatsu 210)	Ground Level (m): 5.076	Start Date: 14/06/2021	Sheet: 2 of 3

Figure MSITP03.1
MSITP03



Figure MSITP03.2
MSITP03





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TRIAL PIT RECORD

Status:-

FINAL

Project: Preliminary Onshore Ground Investigation for NZT			Exploratory Hole No. MS1TP03
Client: AECOM	Location: North-west of Redcar, North Yorkshire E:457331.165 N:525558.341		
Method (Equipment): Machine Excavated (Komatsu 210)	Ground Level (m): 5.076	Start Date: 14/06/2021	Sheet: 3 of 3

**Figure MS1TP03.3
MS1TP03 Spoil**





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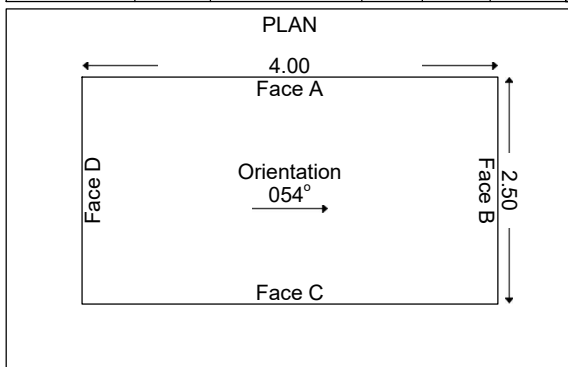
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TRIAL PIT RECORD

Status:-
FINAL

Project: Preliminary Onshore Ground Investigation for NZT		Exploratory Hole No. MSITP04	
Client: AECOM		Location: North-west of Redcar, North Yorkshire E:457237.761 N:525366.515	
Method (Equipment): Machine Excavated (Komatsu 210)		Ground Level (m): 8.831	Start Date: 14/06/2021
		Sheet: 1 of 3	

SAMPLES & TESTS			STRATA						
Depth	Type No	Test Result	Water	Reduced Level	Legend	Depth (Thickness)	Description		
0.20	J1		Water	8.73	[Cross-hatch pattern]	0.10	MADE GROUND (Grey very sandy gravel with occasional rootlets. Sand is fine to coarse and includes crushed slag. Gravel is fine to medium subangular and includes slag. Slag is vesicular (100%)).		
0.30	ES2								
0.40	B3								
0.50	ES4								
0.50	PID	0.5ppm							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%)).
0.70	J5								
1.00	ES6								
1.00	PID	0.5ppm							
1.20	J7								
1.40	B8								
1.50	PID	0.4ppm							
1.70	J9								between c.1.70-2.50m BGL ... slight sulphurous odour.
2.00	ES10								between c.1.70-2.50m BGL ... fused slag. (Engineer notes ripper tooth used to progress).
2.00	PID	<0.1ppm						(4.40)	
2.20	J11								
2.40	B12								
2.50	LB13								between c.2.50-4.50m BGL ... occasionally slightly saturated.
2.50	PID	0.1ppm							
2.70	J14								
3.00	ES15								
3.00	PID	0.3ppm							
3.20	J16								
3.40	B17								
3.70	J18A								
4.00	ES18						between c.4.10-4.40m BGL ... very sandy.		
4.00	LB19								
4.00	PID	0.3ppm							
4.20	J20								
4.40	B21								
4.40	PID	0.2ppm		4.33		4.50	Complete at 4.50m BGL.		



GROUNDWATER
 No groundwater inflow observed.

STABILITY
 Pit sides and base moderately stable throughout excavation.

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

GENERAL REMARKS

All dimensions in metres Scale 1:50.00	For explanation of symbols and abbreviations see Key Sheets	Checked by: <i>K.W.</i>	Logged by: D.P/M.B	Contract No. 4339
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TRIAL PIT RECORD

Status:-

FINAL

Project: Preliminary Onshore Ground Investigation for NZT			Exploratory Hole No. MSITP04
Client: AECOM	Location: North-west of Redcar, North Yorkshire E:457237.761 N:525366.515		
Method (Equipment): Machine Excavated (Komatsu 210)	Ground Level (m): 8.831	Start Date: 14/06/2021	Sheet: 2 of 3

Figure MSITP04.1
MSITP04



Figure MSITP04.2
MSITP04





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TRIAL PIT RECORD

Status:-

FINAL

Project: Preliminary Onshore Ground Investigation for NZT			Exploratory Hole No. MSITP04
Client: AECOM	Location: North-west of Redcar, North Yorkshire E:457237.761 N:525366.515		
Method (Equipment): Machine Excavated (Komatsu 210)	Ground Level (m): 8.831	Start Date: 14/06/2021	Sheet: 3 of 3

**Figure MSITP04.3
MSITP04 Spoil**





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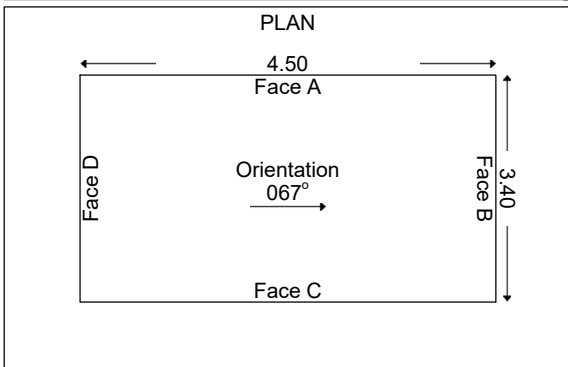
Tel: 0191 387 4700 Fax: 0191 387 4710
 Tel: 01772 735 300 Fax: 01772 735 999

TRIAL PIT RECORD

Status:-
FINAL

Project: Preliminary Onshore Ground Investigation for NZT		Exploratory Hole No. MSITP05	
Client: AECOM		Location: North-west of Redcar, North Yorkshire E:457024.962 N:525378.428	
Method (Equipment): Machine Excavated (Komatsu 210)		Ground Level (m): 7.165	Start Date: 17/06/2021 Sheet: 1 of 3

SAMPLES & TESTS			STRATA			
Depth	Type No	Test Result	Water	Reduced Level	Legend	Description
0.20	J1					MADE GROUND (Grey brown orange clayey very sandy gravel with high cobble and low boulder content with occasional pockets of black silty sand (ash). Gravel is fine to coarse angular to rounded and includes slag, concrete, clinker and brick. Slag is vesicular (50-75%). Cobbles are angular to subangular and include slag, concrete and brick. Boulders are subangular to subrounded and include slag and concrete).
0.30	ES2					
0.30	PID	0.3ppm				
0.40	B3					
0.50	ES4					
0.50	PID	0.4ppm				
0.70	J5					
1.00	ES6					
1.00	LB7					
1.00	PID	0.6ppm				
1.20	J8					
1.40	B9					
1.50	PID	0.4ppm				
1.70	J10					
2.00	ES11					
2.00	PID	7.2ppm				
2.20	J12					
2.40	B13					
2.50	PID	0.1ppm				
2.70	J14					
3.00	ES15		4.57	2.60	MADE GROUND (Red orange brown very sandy gravel with low cobble content. Gravel is fine to coarse angular to subangular and include slag. Cobbles are subangular and include slag. Slag is vesicular (100%).)	
3.00	PID	<0.1ppm	3.87	3.30		
3.20	J16				MADE GROUND (Black silty sandy gravel with high cobble content. Gravel is fine to coarse angular to subangular and includes clinker and slag. Cobbles are angular to subangular and include slag. Slag is vesicular (50-75%).)	
3.40	B17					
3.50	PID	0.1ppm				
3.70	J18					
4.00	ES19				Complete at 4.30m BGL.	
4.00	LB20		2.87	4.30		
4.00	PID	0.1ppm				
4.20	J21					



GROUNDWATER
 Seepage at 4.20m and 4.30m - moderate inflow.

STABILITY
 Pit sides and base moderately stable throughout excavation.

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

GENERAL REMARKS

All dimensions in metres Scale 1:50.00	For explanation of symbols and abbreviations see Key Sheets	Checked by: <i>K.W.</i>	Logged by: M. Bell	Contract No. 4339
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Tel: 01772 735 300 Fax: 01772 735 999

TRIAL PIT RECORD

Status:-

FINAL

Project: Preliminary Onshore Ground Investigation for NZT		Exploratory Hole No.	
Client: AECOM	Location: North-west of Redcar, North Yorkshire E:457024.962 N:525378.428		MSITP05
Method (Equipment): Machine Excavated (Komatsu 210)	Ground Level (m): 7.165	Start Date: 17/06/2021	Sheet: 2 of 3

Figure MSITP05.1
MSITP05



Figure MSITP05.2
MSITP05





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TRIAL PIT RECORD

Status:-

FINAL

Project: Preliminary Onshore Ground Investigation for NZT		Exploratory Hole No. MSITP05
Client: AECOM	Location: North-west of Redcar, North Yorkshire E:457024.962 N:525378.428	
Method (Equipment): Machine Excavated (Komatsu 210)	Ground Level (m): 7.165	Start Date: 17/06/2021
Sheet: 3 of 3		

**Figure MSITP05.3
MSITP05 Reinstatement**





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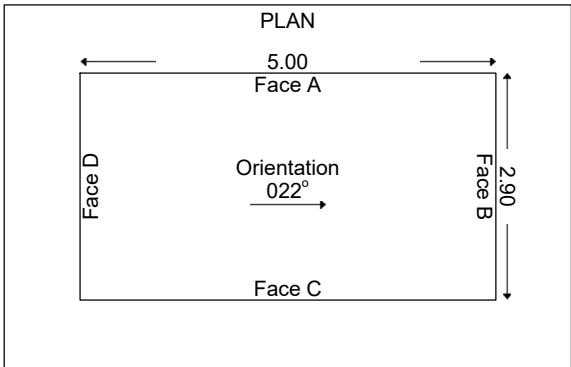
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TRIAL PIT RECORD

Status:-
FINAL

Project: Preliminary Onshore Ground Investigation for NZT		Exploratory Hole No. MSITP06	
Client: AECOM		Location: North-west of Redcar, North Yorkshire E:457098.335 N:525335.771	
Method (Equipment): Machine Excavated (Komatsu 210)		Ground Level (m): 7.271	Start Date: 15/06/2021
		Sheet: 1 of 3	

SAMPLES & TESTS			STRATA					
Depth	Type No	Test Result	Water	Reduced Level	Legend	Depth (Thickness)	Description	
0.20	J1					(0.80)	MADE GROUND (Black orange grey sandy gravel with high cobble and low boulder content and frequent fragments of metal, rubber and glass. Gravel is fine to coarse angular to subrounded and includes brick, concrete and clinker. Cobbles are angular to subangular and include concrete and slag. Boulders are angular to subangular and include concrete and slag. Slag is vesicular (50-75%) between c.0.50-3.00m BGL ... historic structure potentially furnace/ladle. Metal boulders are part of historic structure.	
0.30	ES2							
0.30	PID	<0.1ppm						
0.40	B3							
0.50	ES4			6.47				0.80
0.50	PID	<0.1ppm						
0.70	J5							
1.20	ES6							
1.20	PID	<0.1ppm						
1.50	J7							
1.50	PID	<0.1ppm						
3.10	EW8			4.47		2.80	MADE GROUND (Brown black silty sand and gravel. Gravel is fine to coarse angular to subangular and includes clinker and steel slag. Slag is vesicular (50-75%). <i>Terminated at 3.20m BGL - due to underground structure and water ingress.</i>	
3.20	ES9					(4.40)		
3.20	J10							
3.20	PID	501.0ppm		4.07		3.20		



GROUNDWATER
 Saturated strata at 3.00m BGL - heavy inflow. Water level on completion at 3.10m BGL. Between 3.00-3.20m BGL engineer notes water has brown iridescent appearance with moderate hydrocarbon odour.

STABILITY
 Pit sides and base unstable throughout excavation.

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

GENERAL REMARKS
 (1) Re-excavated as MSITP06A.

All dimensions in metres Scale 1:50.00	For explanation of symbols and abbreviations see Key Sheets	Checked by: <i>K.W.</i>	Logged by: M. Bell	Contract No. 4339
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TRIAL PIT RECORD

Status:-

FINAL

Project: Preliminary Onshore Ground Investigation for NZT			Exploratory Hole No. MSITP06
Client: AECOM	Location: North-west of Redcar, North Yorkshire E:457098.335 N:525335.771		
Method (Equipment): Machine Excavated (Komatsu 210)	Ground Level (m): 7.271	Start Date: 15/06/2021	Sheet: 2 of 3

Figure MSITP06.1
MSITP06



Figure MSITP06.2
MSITP06





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TRIAL PIT RECORD

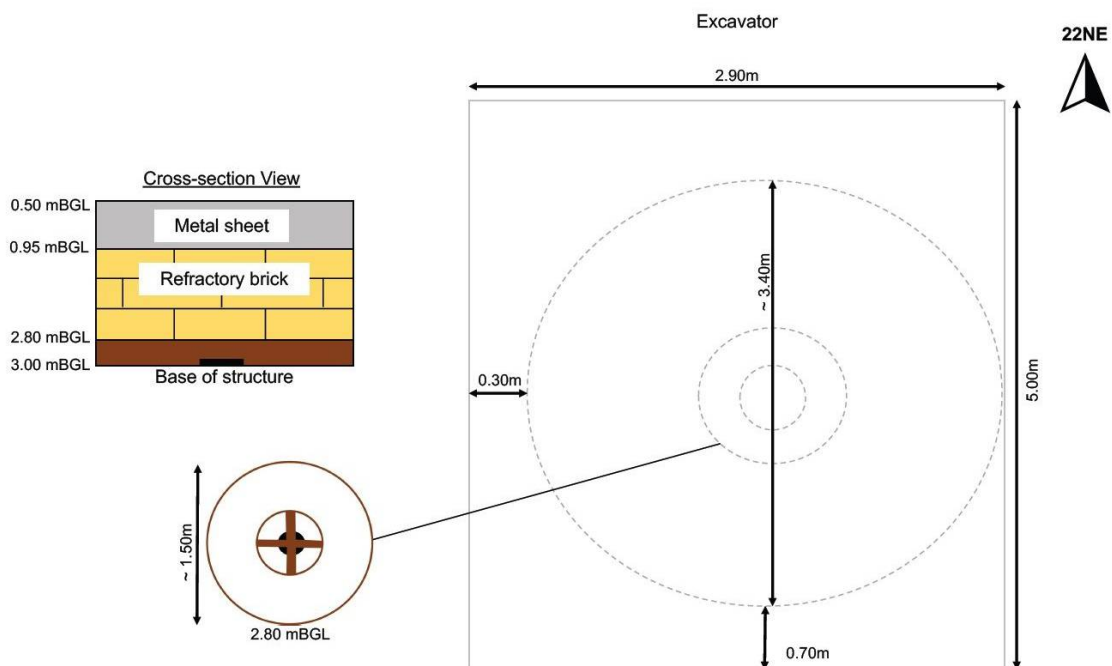
Status:-
FINAL

Project: Preliminary Onshore Ground Investigation for NZT			Exploratory Hole No. MS\TP06
Client: AECOM	Location: North-west of Redcar, North Yorkshire E:457098.335 N:525335.771		
Method (Equipment): Machine Excavated (Komatsu 210)	Ground Level (m): 7.271	Start Date: 15/06/2021	Sheet: 3 of 3

Figure MS\TP06.3
MS\TP06 Spoil



Figure MS\TP06.4
Sketch for MS\TP06





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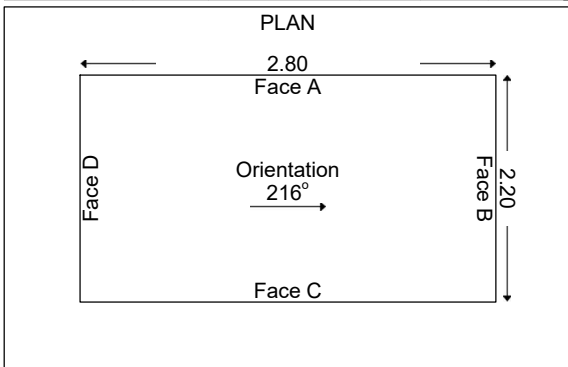
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TRIAL PIT RECORD

Status:-
FINAL

Project: Preliminary Onshore Ground Investigation for NZT		Exploratory Hole No. MS\TP06A	
Client: AECOM		Location: North-west of Redcar, North Yorkshire E:457100.653 N:525332.176	
Method (Equipment): Machine Excavated (Komatsu 210)		Ground Level (m): 7.321	Start Date: 18/06/2021 Sheet: 1 of 4

SAMPLES & TESTS			STRATA				
Depth	Type No	Test Result	Water	Reduced Level	Legend	Depth (Thickness)	Description
				6.62		0.70	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 and 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. <i>Terminated at 0.70m BGL - due to encountering pipe.</i>



GROUNDWATER
 No groundwater inflow observed.

STABILITY
 Pit sides and base unstable throughout excavation.

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

GENERAL REMARKS
 (1) Excavated to locate base of reinforced concrete block - terminated due to encountering pipe.

All dimensions in metres Scale 1:50.00	For explanation of symbols and abbreviations see Key Sheets	Checked by: <i>K.W.</i>	Logged by: M. Bell	Contract No. 4339
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TRIAL PIT RECORD

Status:-

FINAL

Project: Preliminary Onshore Ground Investigation for NZT			Exploratory Hole No. MS\TP06A
Client: AECOM	Location: North-west of Redcar, North Yorkshire E:457100.653 N:525332.176		
Method (Equipment): Machine Excavated (Komatsu 210)	Ground Level (m): 7.321	Start Date: 18/06/2021	Sheet: 2 of 4

Figure MS\TP06A.1
MS\TP06A



Figure MS\TP06A.2
MS\TP06A





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TRIAL PIT RECORD

Status:-

FINAL

Project: Preliminary Onshore Ground Investigation for NZT		Exploratory Hole No.	
Client: AECOM	Location: North-west of Redcar, North Yorkshire E:457100.653 N:525332.176		MS\TP06A
Method (Equipment): Machine Excavated (Komatsu 210)	Ground Level (m): 7.321	Start Date: 18/06/2021	Sheet: 3 of 4

Figure MS\TP06A.3
MS\TP06A Pipe



Figure MS\TP06A.4
MS\TP06A Reinstatement





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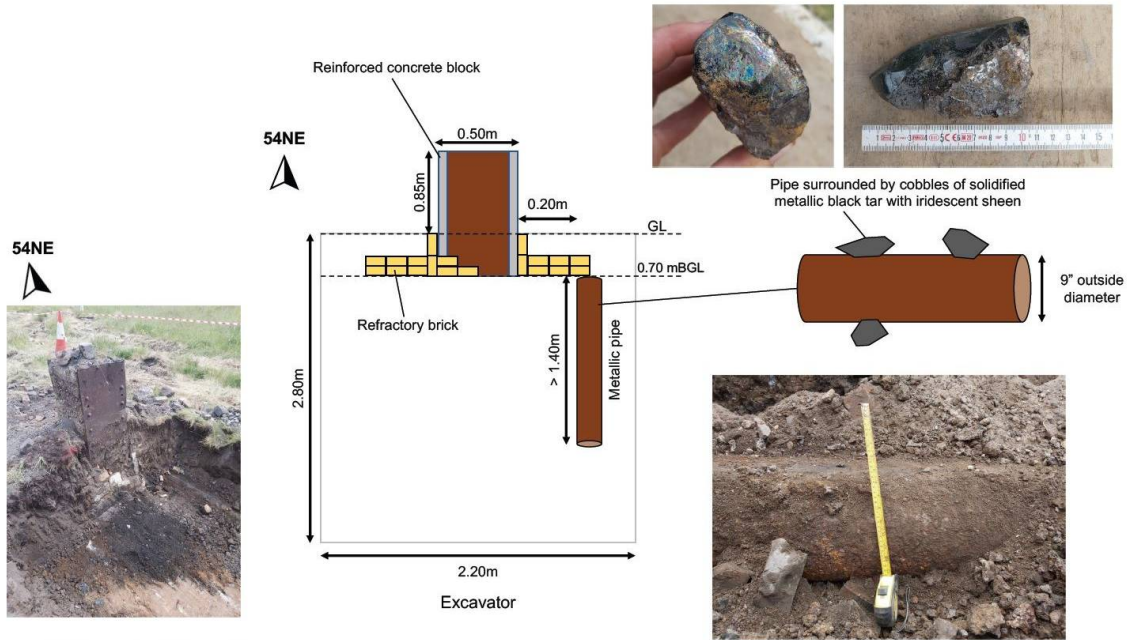
TRIAL PIT RECORD

Status:-

FINAL

Project: Preliminary Onshore Ground Investigation for NZT		Exploratory Hole No. MS\TP06A	
Client: AECOM	Location: North-west of Redcar, North Yorkshire E:457100.653 N:525332.176		Sheet: 4 of 4
Method (Equipment): Machine Excavated (Komatsu 210)	Ground Level (m): 7.321	Start Date: 18/06/2021	

Figure MS\TP06A.5
Sketch for MS\TP06A





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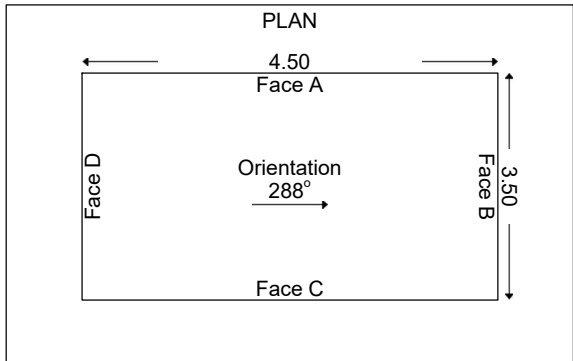
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TRIAL PIT RECORD

Status:-
FINAL

Project: Preliminary Onshore Ground Investigation for NZT		Exploratory Hole No. MSITP07	
Client: AECOM	Location: North-west of Redcar, North Yorkshire E:457070.874 N:525239.023		
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	J1				[Cross-hatched pattern]		MADE GROUND (Brown grey clayey sandy gravel with high cobble and low boulder content. Gravel is fine to coarse angular to subangular and includes concrete, brick, clinker, slag and sandstone. Cobbles are angular to subangular and include brick and slag. Boulders are subrounded and include concrete. Slag is vesicular (25-50%)). between c.0.00-1.80m BGL ... occasional pockets of black silty sandy ash at northwest corner of pit. between c.0.40-4.00m BGL ... stepped concrete footing from Face C. between c.0.60-1.20m BGL ... black grey.
0.30	ES2						
0.30	PID	<0.1ppm				(1.20)	
0.40	B3						
0.50	ES4						
0.50	PID	<0.1ppm					
0.70	J5						
1.00	ES6			6.15		1.20	
1.00	PID	<0.1ppm					
1.20	J7						
1.40	ES8				(0.80)		
1.50	PID	1.1ppm					
1.70	J9						
2.00	ES10			5.35	2.00		
2.00	LB11						
2.00	PID	<0.1ppm					
2.20	J12						
2.40	B13						
2.50	PID	<0.1ppm					
2.70	J14				(2.00)		
3.00	ES15						
3.00	PID	<0.1ppm					
3.20	J16						
3.40	B17						
3.50	PID	<0.1ppm					
3.70	J18						
4.00	ES19			3.35	4.00		
4.00	LB20						
4.00	PID	<0.1ppm					
						MADE GROUND (Black brown orange very gravelly sand with high cobble content. Gravel is fine to coarse angular to subangular and includes slag, concrete, clinker and brick. Cobbles are angular to subrounded and include slag and brick. Slag is vesicular (50-75%)). between c.1.20-1.40m BGL ... many whole yellow refractory bricks at east corner. Layer of concrete in Face A. at c.1.40m BGL ... metal sheet (2.10x0.30m). MADE GROUND (Orange grey white slightly sandy gravel with high cobble and low boulder content. Gravel is fine to coarse angular to subangular and includes slag. Cobbles are subangular to angular and include slag. Boulders are subangular and include slag. Slag is glassy and vesicular (100%)). between c.2.70-3.50m BGL ... sand and gravel. between c.3.50-4.00m BGL ... gravelly sand. at c.4.00m BGL - engineer notes base of the pit was too hard to excavate - possible extension of the concrete step structure. <i>Terminated at 4.00m BGL - unable to progress.</i>	



GROUNDWATER
 No groundwater inflow observed.

STABILITY
 Pit sides and base moderately stable throughout excavation.

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

GENERAL REMARKS

All dimensions in metres Scale 1:50.00	For explanation of symbols and abbreviations see Key Sheets	Checked by: <i>K.W.</i>	Logged by: M. Bell	Contract No. 4339
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TRIAL PIT RECORD

Status:-

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Project: Preliminary Onshore Ground Investigation for NZT			Exploratory Hole No. MSITP07
Client: AECOM	Location: North-west of Redcar, North Yorkshire E:457070.874 N:525239.023		
Method (Equipment): Machine Excavated (Komatsu 210)	Ground Level (m): 7.349	Start Date: 17/06/2021	Sheet: 2 of 5

**Figure MSITP07.1
MSITP07 Reinstatement**



**Figure MSITP07.2
MSITP07**





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TRIAL PIT RECORD

Status:-

FINAL

Project: Preliminary Onshore Ground Investigation for NZT		Exploratory Hole No.	
Client: AECOM	Location: North-west of Redcar, North Yorkshire E:457070.874 N:525239.023		MSITP07
Method (Equipment): Machine Excavated (Komatsu 210)	Ground Level (m): 7.349	Start Date: 17/06/2021	Sheet: 3 of 5

Figure MSITP07.3
MSITP07



Figure MSITP07.4
MSITP07 Spoil





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TRIAL PIT RECORD

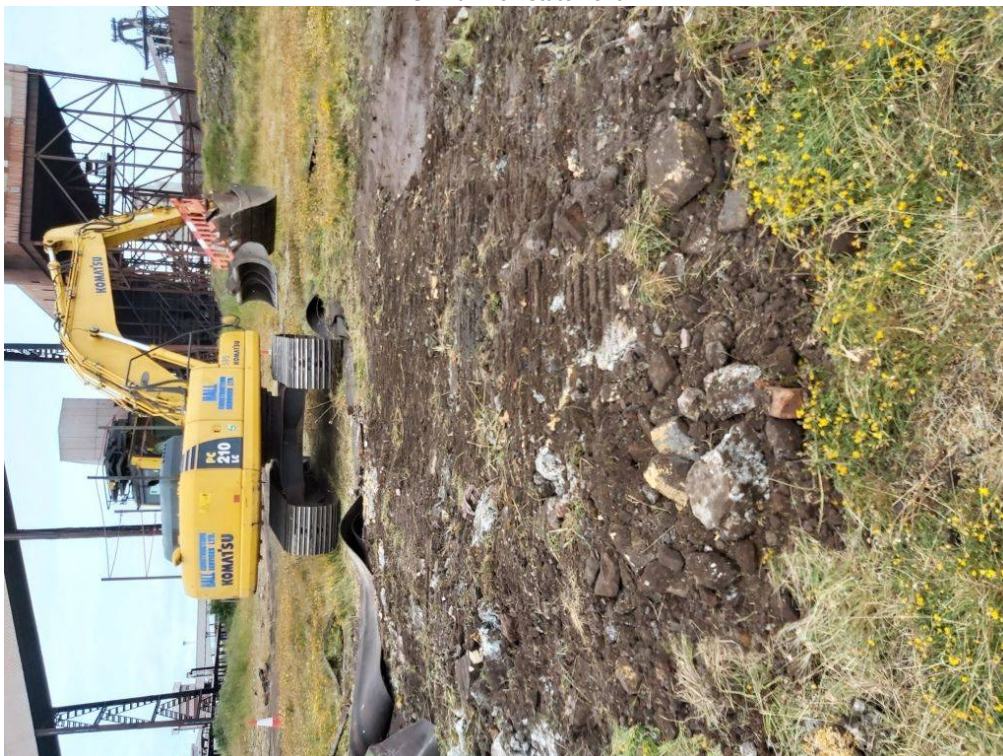
Status:-
FINAL

Project: Preliminary Onshore Ground Investigation for NZT		Exploratory Hole No.	
Client: AECOM	Location: North-west of Redcar, North Yorkshire E:457070.874 N:525239.023		MSITP07
Method (Equipment): Machine Excavated (Komatsu 210)	Ground Level (m): 7.349	Start Date: 17/06/2021	Sheet: 4 of 5

Figure MSITP07.5
MSITP07 Spoil



Figure MSITP07.6
MSITP07 Reinstatement





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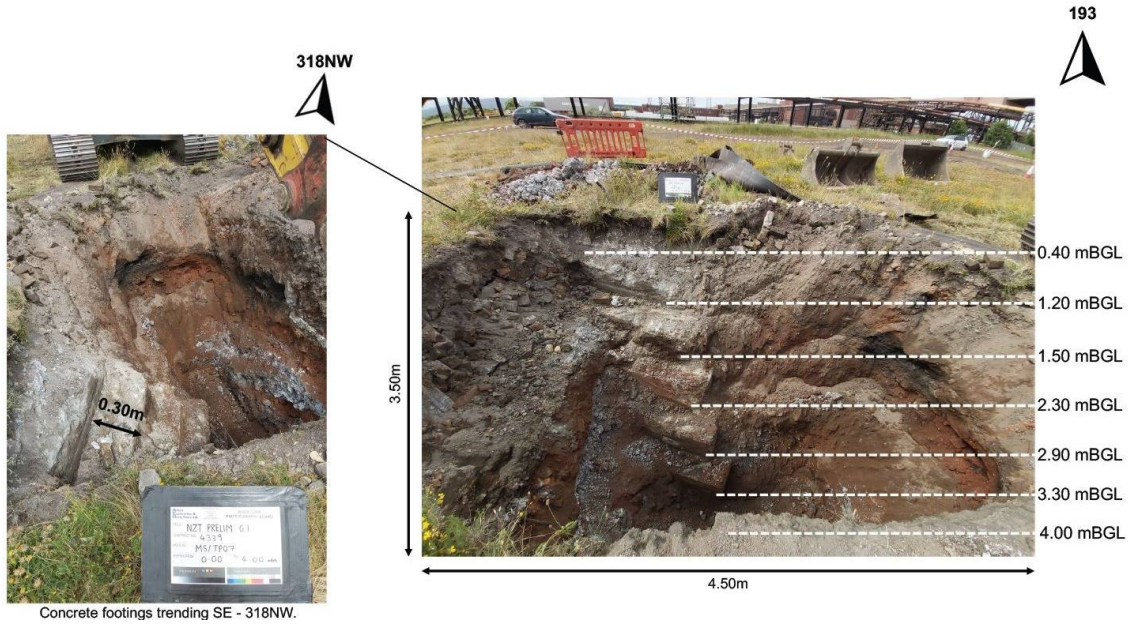
TRIAL PIT RECORD

Status:-

FINAL

Project: Preliminary Onshore Ground Investigation for NZT			Exploratory Hole No. MS1TP07
Client: AECOM	Location: North-west of Redcar, North Yorkshire E:457070.874 N:525239.023		
Method (Equipment): Machine Excavated (Komatsu 210)	Ground Level (m): 7.349	Start Date: 17/06/2021	Sheet: 5 of 5

Figure MS1TP07.7
Sketch for MS1TP07





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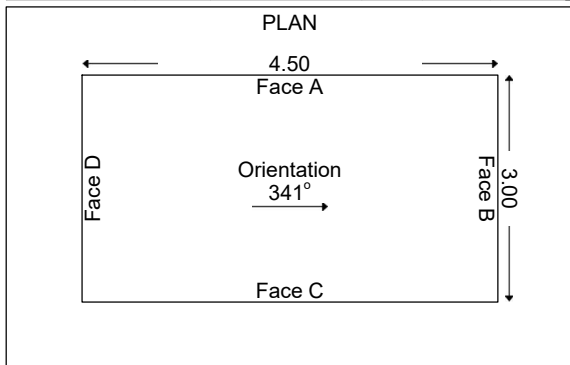
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TRIAL PIT RECORD

Status:-
FINAL

Project: Preliminary Onshore Ground Investigation for NZT		Exploratory Hole No. MSITP09	
Client: AECOM		Location: North-west of Redcar, North Yorkshire E:457016.816 N:525040.622	
Method (Equipment): Machine Excavated (Komatsu 210)		Ground Level (m): 7.430	Start Date: 16/06/2021 Sheet: 1 of 3

SAMPLES & TESTS			STRATA				
Depth	Type No	Test Result	Water	Reduced Level	Legend	Depth (Thickness)	Description
0.20	J1		Water	6.53		(0.90)	MADE GROUND (Grey very sandy gravel with high cobble and low boulder content. Gravel is fine to coarse angular to subangular and includes slag. Cobbles are angular to subangular and include slag. Boulders are subangular to subrounded and include slag. Slag is vesicular (100%).
0.30	ES2						
0.30	PID	<0.1ppm					
0.40	B3						
0.50	ES4						
0.50	PID	<0.1ppm					
0.70	J5						
1.00	ES6						
1.00	LB7						
1.00	PID	10.3ppm					
1.20	J8						
1.40	B9						
1.50	PID	<0.1ppm					
1.70	J10						
2.00	ES11						
2.00	PID	0.9ppm					
2.20	J12						
2.40	B13						
2.50	PID	<0.1ppm					
2.70	J14						
3.00	ES15		Water	3.73		3.70	MADE GROUND (Dark grey sandy gravel with high cobble content. Gravel is fine to coarse angular to subangular and includes slag and limestone. Cobbles are angular to subangular and include slag and limestone. Slag is vesicular (50-75%)). between c.0.90-1.30m BGL ... mild sulphurous odour noted.
3.00	PID	0.3ppm					
3.20	J16						
3.40	B17						
3.50	PID	<0.1ppm					
3.70	J18						
4.00	ES19		Water	2.93		(0.80)	MADE GROUND (Grey brown slightly clayey very sandy gravel with low to medium cobble content. Gravel is fine to coarse angular to subangular and includes slag. Slag is vesicular (100%).
4.00	LB20						
4.00	PID	0.5ppm					
4.20	J21						
4.40	B22						
4.50	PID	<0.1ppm					
							Complete at 4.50m BGL.



GROUNDWATER
 Seepage at 3.68m and 3.70m BGL - slow inflow.

STABILITY
 Pit sides and base moderately stable throughout excavation.

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

GENERAL REMARKS

All dimensions in metres Scale 1:50.00	For explanation of symbols and abbreviations see Key Sheets	Checked by: <i>K.W.</i>	Logged by: M. Bell	Contract No. 4339
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TRIAL PIT RECORD

Status:-

FINAL

Project: Preliminary Onshore Ground Investigation for NZT		Exploratory Hole No.	
Client: AECOM	Location: North-west of Redcar, North Yorkshire E:457016.816 N:525040.622		MSITP09
Method (Equipment): Machine Excavated (Komatsu 210)	Ground Level (m): 7.430	Start Date: 16/06/2021	Sheet: 2 of 3

Figure MSITP09.1
MSITP09



Figure MSITP09.2
MSITP09





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TRIAL PIT RECORD

Status:-
FINAL

Project: Preliminary Onshore Ground Investigation for NZT		Exploratory Hole No. MSITP09	
Client: AECOM	Location: North-west of Redcar, North Yorkshire E:457016.816 N:525040.622		Sheet: 3 of 3
Method (Equipment): Machine Excavated (Komatsu 210)	Ground Level (m): 7.430	Start Date: 16/06/2021	

Figure MSITP09.3
MSITP09 Spoil



Figure MSITP09.4
MSITP09 Spoil





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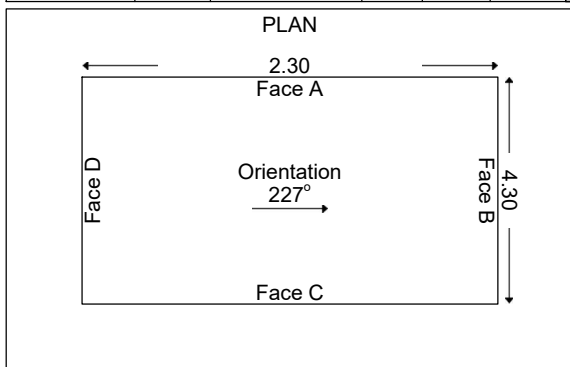
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TRIAL PIT RECORD

Status:-
FINAL

Project: Preliminary Onshore Ground Investigation for NZT		Exploratory Hole No. MSITP10
Client: AECOM	Location: North-west of Redcar, North Yorkshire E:457128.459 N:524892.473	
Method (Equipment): Machine Excavated (Komatsu 210)	Ground Level (m): 8.134	Start Date: 21/06/2021 Sheet: 1 of 3

SAMPLES & TESTS			STRATA				
Depth	Type No	Test Result	Water	Reduced Level	Legend	Depth (Thickness)	Description
0.20	J1			7.98		0.15	MADE GROUND (Grass over brown slightly sandy clayey topsoil with many rootlets).
0.30	ES2			7.63		0.50	MADE GROUND (Soft brown slightly sandy slightly gravelly clay with low cobble content and occasional fragments of plastic. Gravel is fine to coarse angular to rounded and includes sandstone, mudstone, brick and concrete. Cobbles are angular and include brick). at c.0.20m BGL ... clay is of high plasticity. at c.0.40m BGL ... slightly sandy clay of high plasticity. Metallic cobble with iridescent sheen recovered. MADE GROUND (Purple sand and gravel with high cobble and low boulder content. Gravel is fine to coarse angular to subangular and includes coke and slag. Cobbles are angular to subangular and include brick and concrete. Boulders are subangular to subrounded and include concrete). at c.0.55-0.60m BGL ... recovered concrete is reinforced. at c.0.60m BGL ... made ground (concrete base). Terminated at 0.60m BGL - due to concrete obstruction.
0.30	PID	<0.1ppm		7.53		0.60	
0.40	LB3						
0.50	ES4						
0.50	LB5						
0.50	PID	<0.1ppm					



GROUNDWATER
 No groundwater inflow observed.

STABILITY
 Pit sides and base stable throughout excavation.

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

GENERAL REMARKS

All dimensions in metres Scale 1:50.00	For explanation of symbols and abbreviations see Key Sheets	Checked by: <i>K.W.</i>	Logged by: M. Bell	Contract No. 4339
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Tel: 01772 735 300 Fax: 01772 735 999

TRIAL PIT RECORD

Status:-

FINAL

Project: Preliminary Onshore Ground Investigation for NZT		Exploratory Hole No.	
Client: AECOM	Location: North-west of Redcar, North Yorkshire E:457128.459 N:524892.473		MSITP10
Method (Equipment): Machine Excavated (Komatsu 210)	Ground Level (m): 8.134	Start Date: 21/06/2021	Sheet: 2 of 3

Figure MSITP10.1
MSITP10



Figure MSITP10.2
MSITP10





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TRIAL PIT RECORD

Status:-

FINAL

Project: Preliminary Onshore Ground Investigation for NZT			Exploratory Hole No. MSITP10
Client: AECOM	Location: North-west of Redcar, North Yorkshire E:457128.459 N:524892.473		
Method (Equipment): Machine Excavated (Komatsu 210)	Ground Level (m): 8.134	Start Date: 21/06/2021	Sheet: 3 of 3

**Figure MSITP10.3
MSITP10 Reinstatement**



Inspection Pit Records





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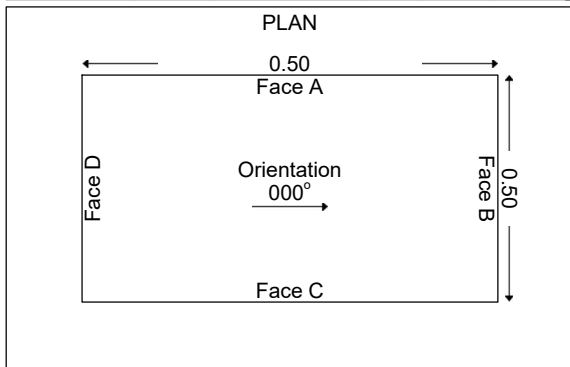
Tel: 0191 387 4700 Fax: 0191 387 4710
 Tel: 01772 735 300 Fax: 01772 735 999

INSPECTION PIT RECORD

Status:-
FINAL

Project: Preliminary Onshore Ground Investigation for NZT		Exploratory Hole No. LFCPT01	
Client: AECOM		Location: North-west of Redcar, North Yorkshire E:457527.734 N:525851.478	
Method (Equipment): Hand Excavated (Hand Tools)		Ground Level (m): 4.676	Start Date: 24/05/2021
		Sheet: 1 of 1	

SAMPLES & TESTS			STRATA				
Depth	Type No	Test Result	Water	Reduced Level	Legend	Depth (Thickness)	Description
0.30	ES1			4.48		0.20	Brown slightly organic silty SAND with many rootlets. Sand is fine to medium.
0.30	PID	<0.1ppm					Brown yellow SAND. Sand is fine to medium.
0.50	J2					(1.00)	
0.70	ES4						
0.70	PID	<0.1ppm					
0.80-0.90	B3			3.48		1.20	Complete at 1.20m BGL.
1.00	J5						
1.00	PID	<0.1ppm					



GROUNDWATER
 No groundwater inflow observed.

STABILITY
 Pit sides and base moderately unstable throughout excavation.

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

GENERAL REMARKS
 (1) Excavated prior to CPT Testing.

All dimensions in metres Scale 1:50.00	For explanation of symbols and abbreviations see Key Sheets	Checked by: <i>K.W.</i>	Logged by: D. Portsmouth	Contract No. 4339
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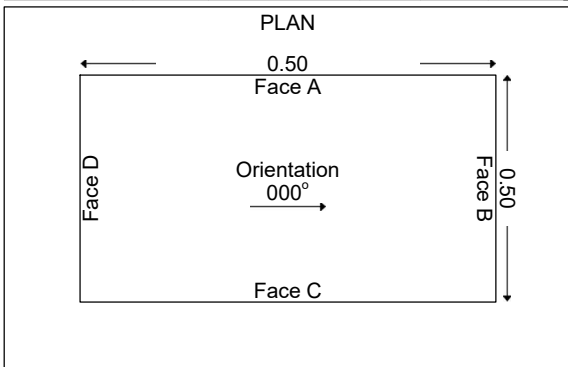
Tel: 0191 387 4700 Fax: 0191 387 4710
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INSPECTION PIT RECORD

Status:-
FINAL

Project: Preliminary Onshore Ground Investigation for NZT		Exploratory Hole No. LF/CPT01A	
Client: AECOM		Location: North-west of Redcar, North Yorkshire E:457528.447 N:525852.477	
Method (Equipment): Hand Excavated (Hand Tools)		Ground Level (m): 4.705	Start Date: 25/05/2021
		Sheet: 1 of 1	

SAMPLES & TESTS			STRATA				
Depth	Type No	Test Result	Water	Reduced Level	Legend	Depth (Thickness)	Description
				4.51		0.20	Brown slightly organic silty SAND with many rootlets. Sand is fine to medium.
						(1.30)	Brown yellow SAND. Sand is fine to medium.
				3.21		1.50	Complete at 1.50m BGL.



GROUNDWATER
 No groundwater inflow observed.

STABILITY
 Pit sides and base moderately unstable throughout excavation.

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

GENERAL REMARKS
 (1) Excavated prior to CPT Testing.
 (2) No samples were required.

All dimensions in metres Scale 1:50.00	For explanation of symbols and abbreviations see Key Sheets	Checked by: <i>K.W.</i>	Logged by: D. Portsmouth	Contract No. 4339
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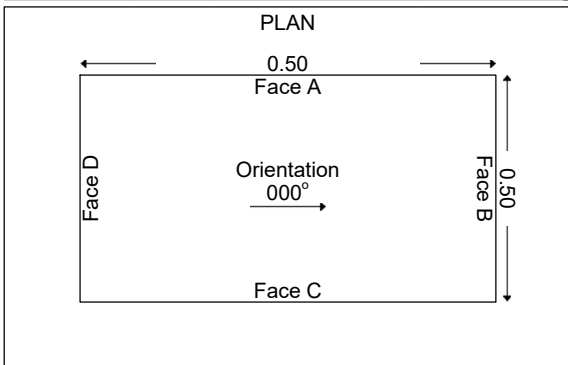
Tel: 0191 387 4700 Fax: 0191 387 4710
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INSPECTION PIT RECORD

Status:-
FINAL

Project: Preliminary Onshore Ground Investigation for NZT		Exploratory Hole No. LFCPT02	
Client: AECOM		Location: North-west of Redcar, North Yorkshire E:457548.396 N:525875.571	
Method (Equipment): Hand Excavated (Hand Tools)		Ground Level (m): 3.712	Start Date: 25/05/2021
		Sheet: 1 of 1	

SAMPLES & TESTS			STRATA				
Depth	Type No	Test Result	Water	Reduced Level	Legend	Depth (Thickness)	Description
0.30	ES1			3.51	[Cross-hatched pattern]	0.20	MADE GROUND (Brown slightly organic silty sand with many rootlets. Sand is fine to medium).
0.30	PID	<0.1ppm				(0.60)	MADE GROUND (Brown yellow sand. Sand is fine to medium).
0.50	J2			2.91		0.80	
0.70	B3			2.71		1.00	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.
0.85	ES4						
0.85	PID	<0.1ppm					
0.90	J5						
0.90	PID	<0.1ppm					



GROUNDWATER
 No groundwater inflow observed.

STABILITY
 Pit sides and base moderately unstable throughout excavation.

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

GENERAL REMARKS
 (1) Excavated prior to CPT Testing.

All dimensions in metres Scale 1:50.00	For explanation of symbols and abbreviations see Key Sheets	Checked by: <i>K.W.</i>	Logged by: D. Portsmouth	Contract No. 4339
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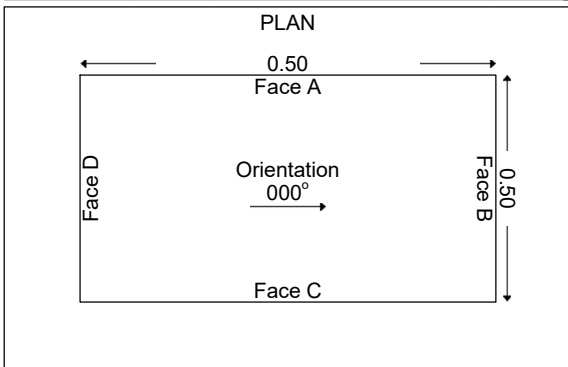
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INSPECTION PIT RECORD

Status:-
FINAL

Project: Preliminary Onshore Ground Investigation for NZT		Exploratory Hole No. LF\CPT02A	
Client: AECOM		Location: North-west of Redcar, North Yorkshire E:457549.703 N:525875.634	
Method (Equipment): Hand Excavated (Hand Tools)		Ground Level (m): 3.747	Start Date: 25/05/2021
		Sheet: 1 of 1	

SAMPLES & TESTS			STRATA				
Depth	Type No	Test Result	Water	Reduced Level	Legend	Depth (Thickness)	Description
				3.55	[Cross-hatched pattern]	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	[Cross-hatched pattern]	0.80	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 0.90m BGL - due to difficult digging.
				2.85		0.90	



GROUNDWATER
 No groundwater inflow observed.

STABILITY
 Pit sides and base moderately unstable throughout excavation.

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

GENERAL REMARKS
 (1) Excavated prior to CPT Testing.

All dimensions in metres Scale 1:50.00	For explanation of symbols and abbreviations see Key Sheets	Checked by: <i>K.W.</i>	Logged by: D. Portsmouth	Contract No. 4339
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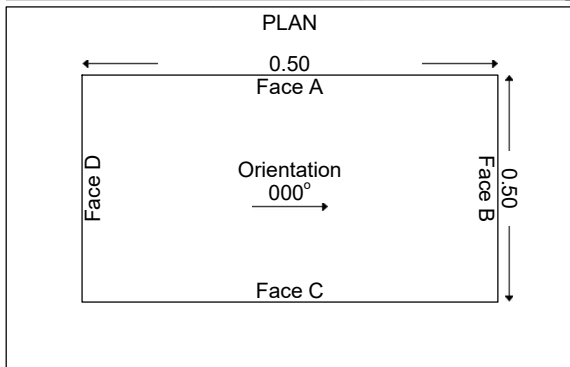
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INSPECTION PIT RECORD

Status:-
FINAL

Project: Preliminary Onshore Ground Investigation for NZT		Exploratory Hole No. LFCPT03	
Client: AECOM		Location: North-west of Redcar, North Yorkshire E:457762.771 N:525932.348	
Method (Equipment): Hand Excavated (Hand Tools)		Ground Level (m): 3.840	Start Date: 26/05/2021
		Sheet: 1 of 1	

SAMPLES & TESTS			STRATA				
Depth	Type No	Test Result	Water	Reduced Level	Legend	Depth (Thickness)	Description
0.50	J1					(1.50)	Yellow SAND. Sand is fine to medium.
0.80	ES2	<0.1ppm					
0.80	PID						
1.20	B3						
1.50	J4			2.34		1.50	Complete at 1.50m BGL.



GROUNDWATER
 No groundwater inflow observed.

STABILITY
 Pit sides and base unstable throughout excavation.

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

GENERAL REMARKS
 (1) Excavated prior to CPT Testing.

All dimensions in metres Scale 1:50.00	For explanation of symbols and abbreviations see Key Sheets	Checked by: <i>K.W.</i>	Logged by: D. Portsmouth	Contract No. 4339
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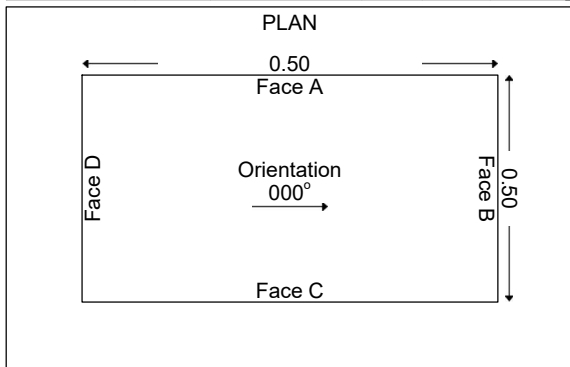
Tel: 0191 387 4700 Fax: 0191 387 4710
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INSPECTION PIT RECORD

Status:-
FINAL

Project: Preliminary Onshore Ground Investigation for NZT		Exploratory Hole No. LFCPT04
Client: AECOM	Location: North-west of Redcar, North Yorkshire E:457834.825 N:525934.533	
Method (Equipment): Hand Excavated (Hand Tools)	Ground Level (m): 2.123	Start Date: 26/05/2021 Sheet: 1 of 1

SAMPLES & TESTS			STRATA				
Depth	Type No	Test Result	Water	Reduced Level	Legend	Depth (Thickness)	Description
0.30 0.30 0.50 0.60	ES1 PID J2 B3	<0.1ppm		1.42		(0.70) 0.70	Yellow SAND. Sand is fine to medium. <i>Terminated at 0.70m BGL - due to instability caused by water ingress.</i>



GROUNDWATER
 No groundwater inflow observed.

STABILITY
 Pit sides and base unstable throughout excavation.

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

GENERAL REMARKS
 (1) Excavated prior to CPT Testing.

All dimensions in metres Scale 1:50.00	For explanation of symbols and abbreviations see Key Sheets	Checked by: <i>K.W.</i>	Logged by: D. Portsmouth	Contract No. 4339
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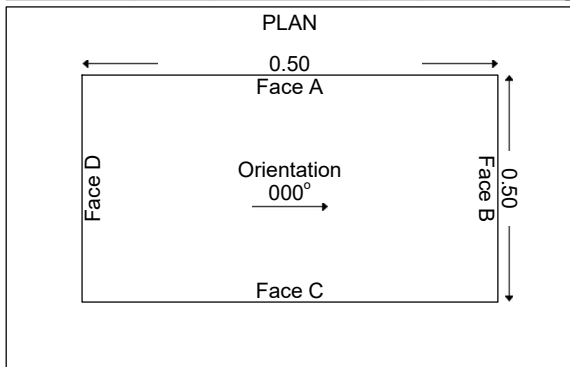
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INSPECTION PIT RECORD

Status:-
FINAL

Project: Preliminary Onshore Ground Investigation for NZT		Exploratory Hole No. LFCPT05	
Client: AECOM		Location: North-west of Redcar, North Yorkshire E:457921.134 N:525982.859	
Method (Equipment): Hand Excavated (Hand Tools)		Ground Level (m): 0.424	Start Date: 27/05/2021
		Sheet: 1 of 1	

SAMPLES & TESTS			STRATA				
Depth	Type No	Test Result	Water	Reduced Level	Legend	Depth (Thickness)	Description
				0.22		0.20	Yellow brown SAND. Sand is fine to medium. <i>Terminated at 0.20m BGL - due to instability caused by water ingress.</i>



GROUNDWATER
No groundwater inflow observed.

STABILITY
Pit sides and base unstable throughout excavation.

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

GENERAL REMARKS
(1) Excavated prior to CPT Testing.

All dimensions in metres Scale 1:50.00	For explanation of symbols and abbreviations see Key Sheets	Checked by: <i>K.W.</i>	Logged by: D. Portsmouth	Contract No. 4339
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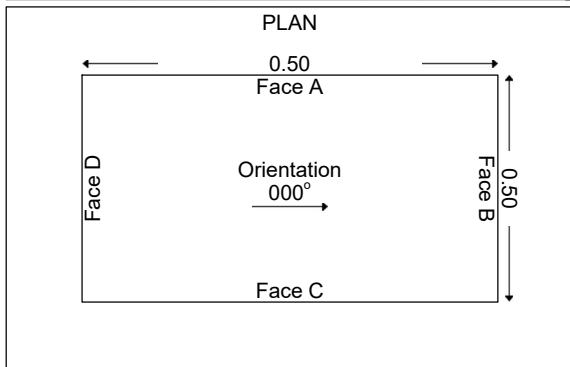
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INSPECTION PIT RECORD

Status:-
FINAL

Project: Preliminary Onshore Ground Investigation for NZT		Exploratory Hole No. LFCPT06
Client: AECOM	Location: North-west of Redcar, North Yorkshire E:458001.597 N:526043.289	
Method (Equipment): Hand Excavated (Hand Tools)	Ground Level (m): 0.786	Start Date: 28/05/2021 Sheet: 1 of 1

SAMPLES & TESTS			STRATA				
Depth	Type No	Test Result	Water	Reduced Level	Legend	Depth (Thickness)	Description
				0.49		0.30	Yellow brown SAND. Sand is fine to medium.
							Terminated at 0.30m BGL - due to instability caused by water ingress.



GROUNDWATER
No groundwater inflow observed.

STABILITY
Pit sides and base unstable throughout excavation.

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

GENERAL REMARKS
(1) Excavated prior to CPT Testing.

All dimensions in metres Scale 1:50.00	For explanation of symbols and abbreviations see Key Sheets	Checked by: <i>K.W.</i>	Logged by: D. Portsmouth	Contract No. 4339
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Groundwater Observations Made at the Time of Site Works



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

Exploratory Hole No.	Date	Depth of Water (m)	Depth of Casing (m)	Depth Sealed (m)	Final Depth (m)	Total Time (mins)	Depth After 5 mins	Depth After 10 mins	Depth After 15 mins	Depth After 20 mins	Remarks
MS\TP01	16/06/2021	4.47									Groundwater seepage - slow inflow.
MS\TP01	16/06/2021	4.50									Groundwater seepage - slow inflow.
MS\TP03	14/06/2021	2.35									Groundwater seepage - Moderate inflow (saturated strata).
MS\TP05	17/06/2021	4.20									Groundwater seepage - moderate inflow.
MS\TP05	17/06/2021	4.30									Groundwater seepage - moderate inflow.
MS\TP06	22/06/2021	3.00									Groundwater seepage - heavy inflow (saturated strata).
MS\TP09	16/06/2021	3.68									Groundwater seepage - slow inflow.
MS\TP09	16/06/2021	3.70									Groundwater seepage - slow inflow.

Contract Title :- Preliminary Onshore Ground Investigation for NZT		Client :- AECOM		AEG Contract No :- 4339	
Date of Issue :- 07/10/2021	Page No. :- 1 of 1	Checked By :- LC	Approved By :- <i>[Signature]</i>	Certificate No. :- GWOWS/4339/1	



Groundwater Monitoring Results

