

Environmental Services

Factual Report on Ground Investigation

Stonehaven River Carron & Burn of Glaslaw Flood Alleviation Scheme -Ground Investigation

Volume 1 of 2

Contract No: 018936/5414 January 2014

Client: Aberdeenshire Council Engineer: JBA Consulting



Environmental Services

Factual Report on Ground Investigation

Stonehaven River Carron & Burn of Glaslaw Flood Alleviation Scheme -Ground Investigation

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1.0 INTRODUCTION

This report is prepared by Costain Environmental Services (CES) and presents the results of a ground investigation carried out in the town of Stonehaven, Aberdeenshire. CES were instructed by Aberdeenshire Council (the Client) on 12th September 2013 and the investigative work was carried out under the technical direction of JBA Consulting (the Engineer).

The services provided comprised a ground investigation to assist with the design of proposed flood defences associated with the River Carron and the Burn of Glaslaw.

The scope of the ground investigation was defined in the Engineer's specification, reference: SH-JBA-00-00-SP-GE-0003-D2_Specification _P1.0, date unrecorded, together with all associated schedules and drawings.

The fieldwork was carried out between 16th October and 8th November 2013 and comprised cable percussion boring, rota-sonic drilling, rotary core drilling and hand dug pits with associated sampling and in situ testing. Post fieldwork groundwater monitoring was carried out weekly between 27th November and 13th December 2013.

This report details the scope of the works undertaken together with factual results of the fieldwork, in situ testing and laboratory testing. Electronic digital data is provided in AGS 3.1 format and is emailed together with this report.

This report has been prepared, checked and approved by authorised personnel in accordance with our quality system as outlined in our proposal for the work.

Geological formation names have not been applied to the strata encountered. The brief did not require an interpretation of the factual information contained in this report.

2.0 SITE SETTING

2.1 Site Location

The site is located immediately south of Stonehaven town centre in Aberdeenshire, Scotland as indicated on the Site Location Plan in Appendix 2.1. The approximate National Grid Reference of the site centre is NO 872 857.

2.2 Site Description

At the time of undertaking the investigative work, the site typically comprised public highways, parkland, woodland, residential gardens and car parks. The site is bounded to the south and west by the Woods of Dunnotar, to the north by Stonehaven town centre and to the east by residential properties close to the sea front.

The River Carron bisects the site, flowing from west to east and discharging into the sea at the eastern edge of the site. The Burn of Glaslaw runs from the high ground to the south of the site, down to the centre of the site where it flows into the River Carron. The exploratory hole locations and general site layout are shown on the Site Layout Plan and Exploratory Hole Location Plans included in Appendix 2.2.

2.3 Review of Published Geology

The published geological map covering the site, (British Geological Survey Sheet 67, Solid and Drift, Stonehaven (1999)), indicates the site to be underlain by Superficial Deposits including the Mill of Forest Till Formation, Alluvium, Drumlithie Sand & Gravel Formation, River Terrace Deposits and Raised Marine deposits. The indicated solid geology is shown to include the Carron & Cowie Sandstone Formations and the Strathlethan Sandstone Member of the Dunnotar Castle Conglomerate Formation

3.0 FIELDWORK

The fieldwork was carried out in general accordance with the procedures set out in BS 5930:1999+A2 (2010).

A summary of the fieldwork is given below with detailed method specific procedures provided in Appendix 3.

The exploratory hole positions were set out relative to existing features in general accordance with the provided Site Layout Plan and by agreement with JBA Consulting's representative during the fieldworks.

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3.1 Exploratory Holes

At the location of each exploratory hole an inspection pit was hand excavated to a depth of 1.20m to confirm the absence of underground services. Details of these are given on the relevant exploratory hole log.

The following exploratory holes were carried out:

| Hole Type | No. of Holes | Maximum Depth (m) | Remarks |
|--|--------------|----------------------|---|
| Rota-sonic drilling | 13 | 12.50 | |
| Rota-sonic drilling with Rotary Cored follow on | 13 | 15.00 | |
| Cable Percussion boring with Rotary Cored follow-on | 1 | 10.00 | Modular CP rig used |
| Cable Percussion boring in restricted access areas | 4 | 8.30 | Modular CP rig used |
| Structural Observation Pits | 12 | 1.70 | Hand dug |
| Trial Pits in restricted access areas | 1 | 1.50 | Hand dug |
| Groundwater monitoring Installations | 6 | 7.50 | 50mm / 19mm install in BH13. All others 50mm. |

Details of the strata encountered, sampling, groundwater encountered and in situ testing are shown on the individual Exploratory Hole Records in Appendix 4.

Photographs of rock core and observation pits are presented in Appendix 5.

3.2 In Situ Testing

The following in situ testing was carried out in accordance with the relevant methodology described in Appendix 3:

| Test Type | No. of Tests | Remarks |
|---------------------------------|--------------|---|
| Standard Penetration Test* | 181 | Calibration certificate in Appendix 6.1 |
| Variable Head Permeability Test | 6 | Carried out in 50mm standpipes |

The test results are presented in Appendix 6 and on the exploratory hole records.

*Standard Penetration Tests (SPT) were carried out in accordance with the Engineer's specification, the results of which are summarised on the relevant exploratory hole logs.

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In accordance with BS EN ISO 22476: Part 3, a graphical presentation of the SPT test results is presented in Appendix 6.1. The energy ratio of the hammer (E_r) is presented on the individual borehole record and the SPT Hammer Energy Measurement Reports are presented in Appendix 6.1.

3.3 Groundwater Monitoring

Groundwater strikes encountered in boreholes during drilling operations are recorded on the relevant exploratory hole logs in Appendix 4.

Following completion of the boreholes, 6no. groundwater standpipes were installed in accordance with the Engineer's instructions, details of which are given on the exploratory hole logs. 50mm diameter standpipes were installed in BH6, BH8, BH15, BH18 & BH21B. A combined 19mm piezometer / 50mm standpipe was installed in BH13.

On completion of the fieldwork, groundwater levels were monitored on three occasions as specified by the Engineer. Groundwater sampling was carried out on 27th November, 6th December & 13th December 2013 from the 6no. installations. On the 13th December the installation in BH6 in the verge of Carron Terrace was found to have been damaged by vehicular traffic and could not be monitored. The groundwater monitoring results are presented in Appendix 7.1.

3.4 Surveying

On completion of the fieldwork, locations of the exploratory holes were surveyed using Trimble GPS survey equipment. Coordinates and ground levels relative to Ordnance Datum are presented on the Exploratory Hole Records in Appendix 4.

4.0 LABORATORY TESTING

4.1 Geotechnical Testing

The following geotechnical testing was scheduled by JBA Consulting and carried out in accordance with BS1377 (unless otherwise stated) at Costain Environmental Services' UKAS accredited laboratories (No.1489) and K4 Soils UKAS accredited laboratories (No. 2519). Several samples were affected by restrictions, and the list of restrictions (with associated Engineer's instructions) is included with the lab test results in Appendix 8.

COSTAIN

| | • | |
|---|--------------|--|
| Test Type | No. of Tests | Remarks |
| Natural Moisture Content | 69 | |
| Liquid and Plastic Limits | 49 | |
| Particle Size Distribution (wet sieving method) | 167 | |
| Compaction (2.5kg rammer) | 2 | |
| One dimensional consolidation | 11 | |
| Unconsolidated undrained triaxial | 10 | |
| Organic Matter Content | 11 | |
| Point Load Index | 15 | Up to 10no. individual tests per sample, depending on available sample material. |
| рН | 16 | Testing carried out by i2 Analytical Ltd in accordance with BRE Special Digest |
| SO4 | 18 | 1. |
| Triaxial cell / Permeameter Constant Head Permeability Testing | 0* | Tests cancelled by the Engineer. See restriction in Appendix 8. |

The results of the testing are presented in Appendix 8.

4.2 Geoenvironmental Testing

The following chemical testing suites were scheduled by JBA and carried out by i2 Analytical Ltd UKAS accredited chemical laboratories (No.4041).

- Suite A (waters): pH & SO4
- Suite F (waters): Arsenic, Boron, Cadmium, Chromium (total), Copper, Lead, Mercury, Nickel, Zinc, pH, SO4, TPH, PAH (USEPA 16), Phenol, total Cyanide.
- Suite E (Soils): Arsenic, Boron, Cadmium, Chromium, Copper, Lead, Mercury, Nickel, Zinc, pH, 2:1 SO4, Organic Matter Content, TPH, speciated PAH (GC FID), Phenol, Cyanide, Asbestos Screen.
- pH, SO4 (water soluble), Organic Matter Content.

The results of the testing are presented in Appendix 9.

5.0 **REFERENCES**

Association of Geotechnical and Geoenvironmental specialists, Electronic Transfer of Geotechnnical and Geoenvironmental Data. (AGS Edition 3.1 or 4.0).

http://www.bgs.ac.uk/opengeoscience/home.html?Accordion2=1#maps

British Geological Survey Sheet 67, Solid and Drift, Stonehaven (1999)

BRE Special Digest 1:2005: Concrete in aggressive ground. Part 1.

BS 5930:(1999) + A2:(2010), Code of Practice for Site Investigations

BS 1377: Parts 1 to 9 (1990), Methods of Tests of Soils for Civil Engineering Purposes

BS EN ISO 14688: Part 1: (2002), Identification and description of soil.

BS EN ISO 14688: Part 2: (2004), Principles for a classification of soil.

BS EN ISO 14689: Part 1: (2003), Identification and description.

BS EN ISO 22475: Part 1: (2006), Technical principles for execution.

BS EN ISO 22476: Part 3: (2005), Standard penetration test.

ISRM RTH 325-89 SR12, Suggested Method for Determining Point Load Strength.

| For and on behalf of Costain Environmental Services: | | | | | | | | | |
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Appendix 1

Appendix 1 - Limitations and Exceptions to the Investigation

Limitations and Exceptions to the Investigation

The Client has requested that a ground investigation be performed in order to investigate ground conditions at the site to provide information to assist in design of the proposed development. This report is not a comprehensive site characterisation and should not be construed as such.

This ground investigation was conducted and this report has been prepared for the sole internal use and reliance of the Client. This report shall not be relied upon or transferred to any other parties without the express written authorisation of Costain Environmental Services. If an unauthorised third party comes into possession of this report they rely on it at their peril and the authors owe them no duty of care and skill.

The report represents the findings of experienced geotechnical contractors. Costain Environmental Services does not provide legal advice and the advice of lawyers may also be required.

The work carried out for this ground investigation can only investigate and monitor a small part of the subsurface conditions. Certain ground conditions may have been outside the very limited portion of the subsurface investigated or monitored, latent at the time of this work or only partially intercepted by the works and thus their full significance could not have been appreciated. Groundwater levels are particularly susceptible to variation. Accordingly, it is possible that Costain Environmental Services work, whilst fully appropriate for this ground investigation, failed to indicate the presence of particular ground conditions.

Costain Environmental Services believes that providing information about limitations is essential to help the Client identify and thereby manage its risks. These risks can be mitigated – but they cannot be limited, through additional research. Costain Environmental Services will on request advise the Client of the additional research opportunities available, their impact on risk, and their cost.

The ground investigation was specifically limited by the following:

- The location and type of exploratory hole was selected by others.
- The laboratory testing was scheduled by others.



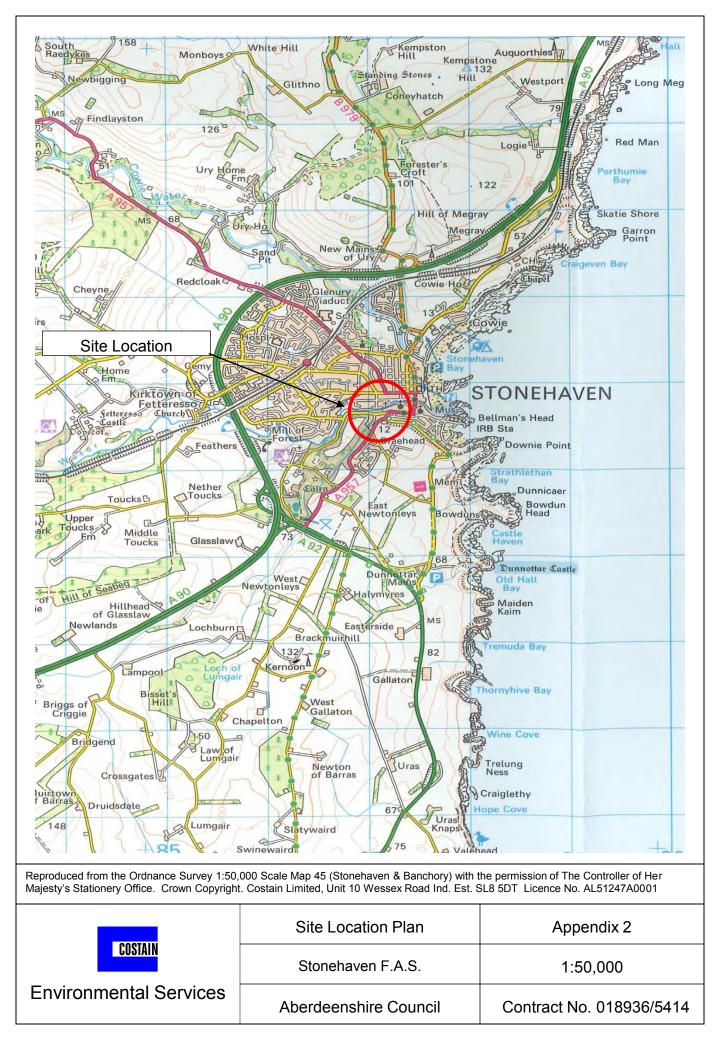


Appendix 2 - Drawings



Appendix 2.1

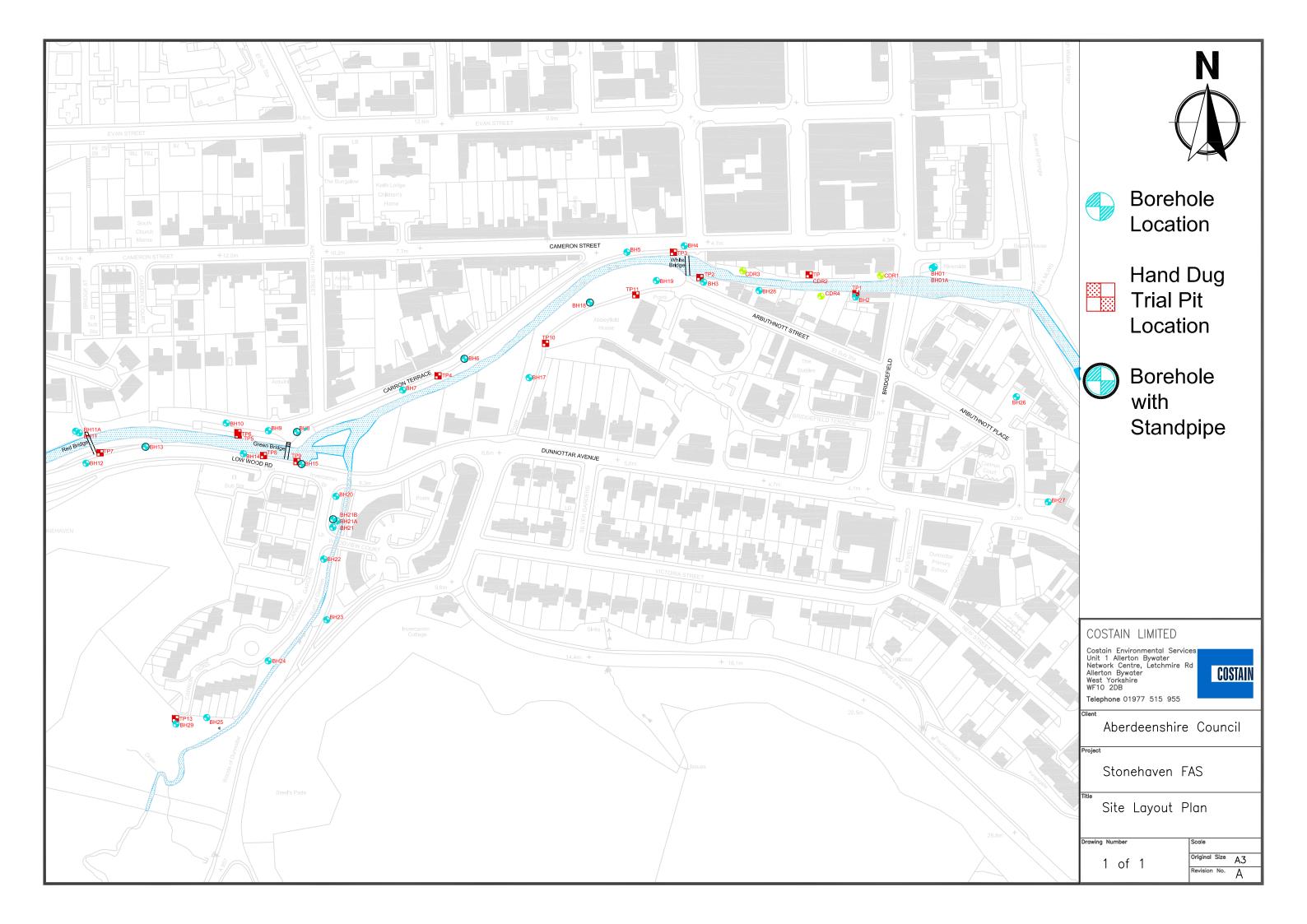
Appendix 2.1 - Site Location Plan

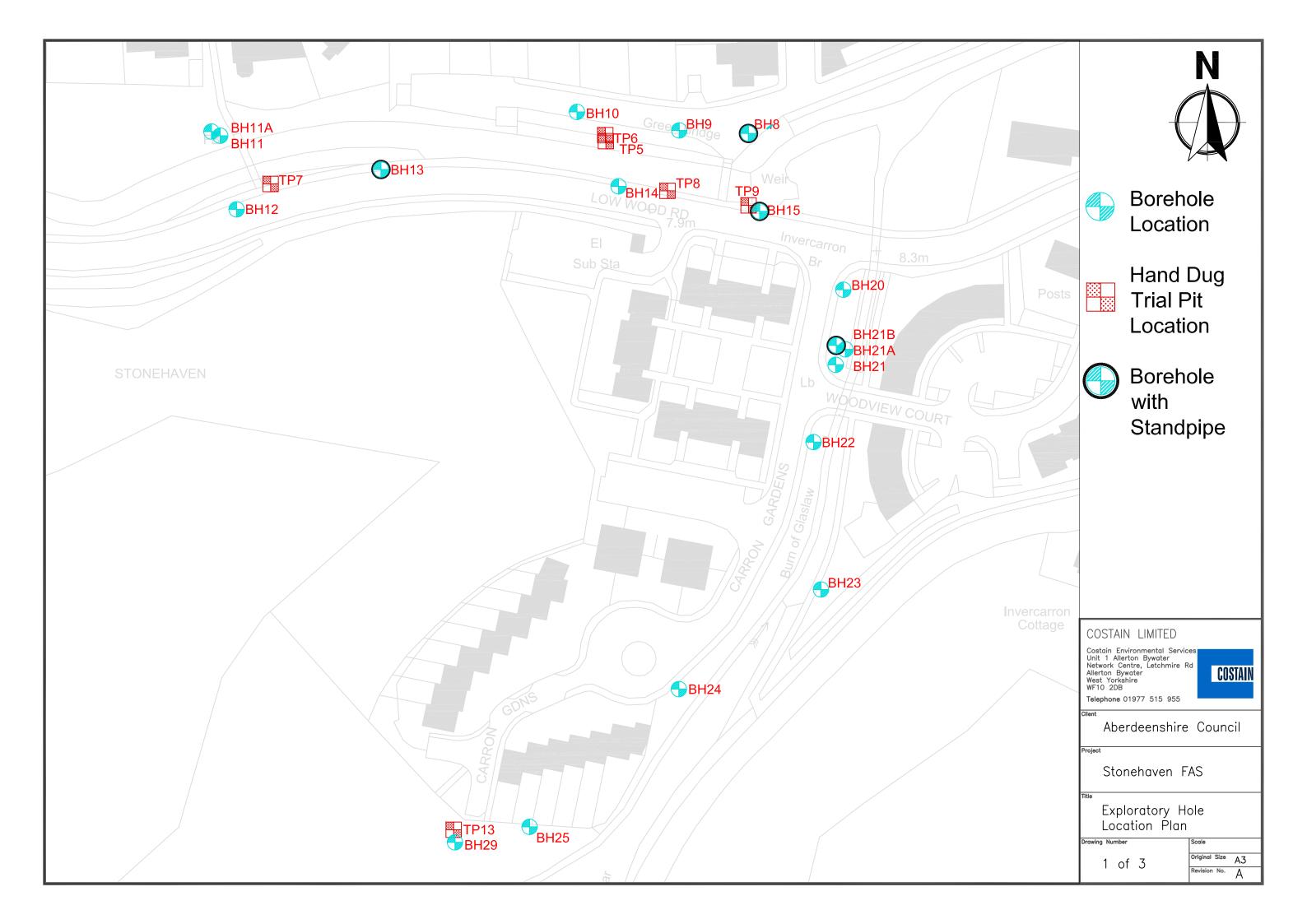


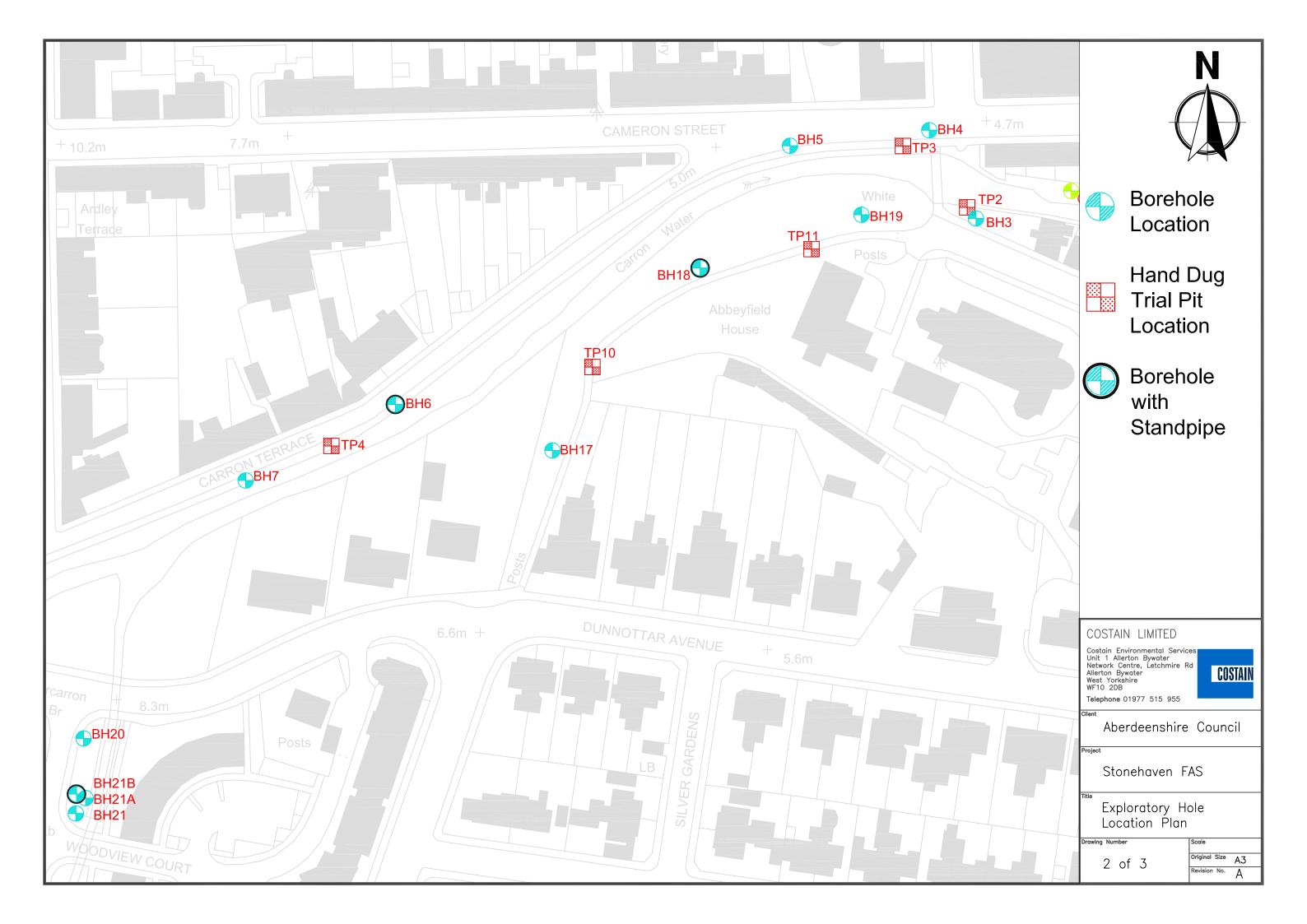


Appendix 2.2

Appendix 2.2 - Site Layout Plan











Appendix 3

Appendix 3 - Site Work Methods and BS 5930 Logging Guides



A1.0 FIELDWORK METHODS

A1.1 Inspection Pits

An inspection pit is dug using hand tools at the location of every borehole or dynamic probing position to check for the presence of underground services with the exception of areas where the risk of encountering underground services is deemed sufficiently low as to not warrant an inspection pit.

Inspection pits are scanned with a Cable Avoidance Tool (CAT) and Genny at the surface before digging commences and at 300mm intervals to the base of the pit.

Where services are located in the inspection pit they are recorded on the engineer's log and photographed where necessary. The pit is then backfilled and reinstated at the surface and the borehole/dynamic probe will be moved to a new position.

A1.2 Cable Percussion Boring

Cable percussion boring is commonly used for constructing boreholes through soils and weak rocks where a depth of more than approximately 3.0m is required.

The rig generally consists of a diesel powered winch and tripod frame with running wheels that are permanently attached allowing the rig to be towed behind a suitable vehicle. When the rig has been towed into position it is erected using its own winching system.

Boreholes are advanced through cohesive soil by the percussive action of the cable tool. The force of the cylindrical tool as it is dropped into the borehole cuts a plug of soil that is removed by the tool. In poor consistency soil casing is often used to prevent the sides of the borehole collapsing. Casing may be deemed to be un-necessary in cohesive soils of adequate consistency as the borehole sides will be self supporting.

In non-cohesive soils the borehole is advanced using a shell or bailer. When it is dropped into the borehole, material enters the shell and is retained by use of a clack valve. The water level in the borehole is above that in the surrounding soil to allow for temporary reductions in the head of water as the shell is withdrawn from the borehole.

Water should always flow from the borehole into the surrounding soil at all times to prevent loosening of the soil at the base of the hole. Casing is always advanced with the borehole in granular soil to that material is drawn from the base, rather than the side, of the borehole.

Obstructions to boring are overcome by fitting a heavy chisel with a hardened cutting edge to the base of the percussion tool.

Borehole diameters tend to vary from 6" to 12" however 6" and 8" are most common.

Where suspected contamination is encountered in near surface material the borehole will generally be commenced in a larger diameter until the base of the contaminated layer is reached, the borehole will also be cased to the base of this layer. An impermeable plug, usually bentonite, will then be placed at the bottom of the borehole and left to go off before drilling is recommenced in smaller diameter. This "clean drilling" method reduces the likelihood that a pathway will be created for contamination to migrate down the borehole.

The borehole depth, casing depth and groundwater level is measured at start of every working shift and recorded on the drillers daily record.

Cable percussion boreholes allow soil sampling, groundwater sampling and Standard Penetration Testing (SPT) in addition to installation of groundwater/gas monitoring standpipes or piezometers and other specialised monitoring equipment.

A1.4 Rotary Drilling

Rotary drilling is generally employed for exploratory holes extending into rock strata, although rotary drilling can also be used in both granular and cohesive soils. Rotary drilling utilizes a rotating drill bit at the base of the borehole to advance the borehole. A drilling fluid is used to cool and lubricate the drill bit and in some cases stabilise the borehole sides prior to advancement of casing.

Commonly used drilling fluids are air, mist, water, mud, foam and polymer which are introduced to the borehole via the hollow drilling rods.

Open hole rotary drilling utilises a tricone drill bit or down the hole hammer to rapidly construct a borehole for the installation of monitoring equipment, carrying out of *in situ* tests, probing for voids or reaching a suitable depth where rotary coring can commence.

Rotary coring utilises a double or triple barrelled tungsten or diamond impregnated core bit with a non-rotating inner core barrel fitted with a plastic sample liner. On completion of a core run the liner containing the sample is extracted and stored in a core box where it can be stored before it is photographed, logged and tested.

A1.5 Rota Sonic Drilling

Rota Sonic drilling is generally employed for all strata types as this technique is able to drill through, and recover samples from, most types of soil and rock strata. This drilling technique employs a combination of high frequency resonance (sonic) and rotation of the drill bit to penetrate the strata. Samples from softer strata are recovered in a hollow sample barrel similar to dynamic sampling techniques, while harder strata are drilled using conventional rotary drilling techniques detailed above. Sonic boreholes allow soil sampling, groundwater sampling, Standard Penetration Testing (SPT) and open tube sampling in addition to installation of groundwater/gas monitoring standpipes or piezometers and other specialised monitoring equipment.

A1.7 Standard Penetration Testing

The Standard Penetration Test (SPT) can be carried out in most forms of borehole in accordance with the methodology recommended by BS EN ISO 22476: Part 3: (2005).

The SPT determines the in situ resistance of soil to a 50mm diameter split-spoon (S) or solid cone (C) being driven by 63.5kg hammer with a 750mm drop.

The result of an SPT is expressed as an N value which is defined as number of blows needed to obtain 300mm of penetration (the main drive) beneath the initial seating drive of 150mm which is utilized to penetrate any disturbed material at the bottom of the borehole.

The seating drive and main drive are usually recorded in six increments of 75mm, the last four of which are added together to give the N value.

The split spoon sampler is usually used in cohesive soils allowing a sample of the material that was tested to be obtained for observation and testing. The solid cone is usually used where the test is conducted in granular soils or weak rocks.

In granular soils the N value obtained from the SPT is used to assess the relative density of granular soils as shown in the following table:

| Term | SPT N-value |
|--------------|-------------|
| Very Loose | 0 – 4 |
| Loose | 4 - 10 |
| Medium dense | 10 – 30 |



| Dense | 30 – 50 |
|------------|---------|
| Very Dense | >50 |

Where the seating drive has been completed the main drive is terminated if 50 blows have been carried out before the full penetration of 300mm is achieved. The penetration for 50 blows is recorded and an approximate SPT value can be calculated by linear extrapolation of the number of blows for the partial test drive. If the seating drive is not completed at 25 blows, the penetration is recorded and the main drive is started immediately.

For tests in weak rocks the main drive should only be terminated after 100 blows where the penetration of 300mm has not been achieved.

Test results are presented on the logs in the following formats:

(S)N=24(11,11,6,6,6,6)

Denotes a split spoon test (S) and a calculated N value of 24 followed by the individual blow counts for each increment in the seating drive and main drive.

(C)50/89mm(13,11,25,25)

Denotes a cone test (C) and the maximum blow count in soil of 50 in the main drive followed by the penetration for 50 blows. Individual blow counts for each increment are also shown.

A1.15 Variable Head Permeability Testing

The determination of in situ permeability by tests in boreholes involves the application of a hydraulic pressure in the borehole different from that in the ground and the measurement of the rate of flow due to this difference.

The pressure in the borehole may be increased by introducing water into it; a falling head test, or decreased by pumping water out of it; a rising head test.

The technique is only applicable to measurement of the permeability of soils below groundwater level.

When carrying out the test the first operation is to add water to the borehole or piezometer (falling head test) or to bail or pump out the water (rising head test). The head in the borehole is then allowed to equalise with that in the ground, the actual head being measured at intervals of time from the commencement of the test.

The permeability can be calculated using the following equation: k = A/FT

Where:



k = the permeability of soil

A = the cross sectional area of the borehole casing or standpipe as appropriate.

F = the intake factor (see below)

T = the basic time factor (see below)

The intake factor is calculated based on the borehole casing/piezometer conditions and the ground conditions when the test is carried out. The calculations for this are given in detail in Figure 6 of BS 5930+A2:1999 (2010).

The basic time factor T is taken to be the value of elapsed time, t, corresponding to a value of H/H_0 of 0.37 where H_0 is the head at the start of the test and H is the head at any time, t, which has elapsed since the test began.

A1.20 Groundwater and Gas Monitoring

When groundwater is encountered during drilling work, drilling stops and the depth to groundwater and the casing depth is measured. The groundwater level is then measured at 5 minute intervals for 20 minutes to record rate of inflow. Groundwater levels are also measured at the start and end of every drilling shift.

The symbols on the log to denote the groundwater strike and rise are as follows:

7 Depth of groundwater strike



On completion of the borehole, it can either be backfilled or installed with a groundwater/gas monitoring piezometer or standpipe.

A groundwater monitoring standpipe usually consists of sections of plain and slotted pipe connected together with the slotted section set in a porous filter medium, known as a response zone, to allow water to flow into the standpipe where it can be monitored. Response zones are normally targeted to monitor groundwater from a particular strata or soil type; as such a bentonite seal is normally placed above and below the response zone. Where the bottom of the slotted section of the standpipe is placed at, or close to, the bottom of the borehole a bentonite seal beneath the response zone is often not required.



A porous groundwater monitoring piezometer is similar to a standpipe but consists of a 300mm porous piezometer tip placed on the end of a plain pipe. They are usually narrower in diameter than standpipes and are often used in narrower response zones and nested installations.

Response zones should never be constructed where they allow transmission of groundwater between contaminated and uncontaminated strata.

Groundwater monitoring is usually carried by lowering a dip meter down the hole until it signals that groundwater has been reached. Alternatively, groundwater can be continually monitored by leaving a pressure transducer, known as a diver, in the borehole which will take a pressure reading at set intervals for a set period of time. The data can then be downloaded at a later date.

Groundwater sampling can be carried out by using a bailer, Waterra tubing, or peristaltic pump. Prior to sampling the volume of groundwater in the well must be calculated and 3 well volumes must be removed to create a cone of depression and causing groundwater to flow into the installation. Where re-charge rates are slow, it may not be possible to remove three well volumes.

Where hydrocarbon contamination is known to be present, an interface meter should be used to measure the thickness of Light Non-Aqueous Phase Liquid (LNAPL) or Dense Non-Aqueous Phase Liquid (DNAPL). LNAPL should be sampled separately.

Gas monitoring can be carried out where a gas tap is present on top of a standpipe or piezometer. Gas monitoring is carried out by connecting either a Flame Ionisation Detector (FID) or Photo Ionisation Detector (PID) to the top of the borehole; numerous gases can be monitored depending on site specific requirements, flow of gases from the borehole can be measured using a flow-pod.

Gas monitoring must be carried out prior to removal of the gas tap for groundwater monitoring or sampling.

Vibrating wire piezometers measure groundwater level by converting water pressure to a frequency signal via a diaphragm, a tensioned steel wire, and an electromagnetic coil. A readout unit is then connected to the vibrating wire at groundwater to measure the frequency. Data-loggers can be connected to vibrating wires for continual monitoring.



A1.21 Samples

Various samples are taken during site investigation works and post fieldwork core logging to enable further inspection and the completion of laboratory geotechnical and geoenvironmental testing.

A bulk disturbed sample (B) comprises a 20 - 30kg bag of material, a disturbed sample (D) comprises a 1 - 2kg plastic tub and environmental sample (ES) comprises a 1 - 2kg plastic tub, a 250ml amber glass jar and 60ml amber glass jar.

A water sample (W) is taken during drilling work in conjunction with a water strike and comprises approximately 1I of water (where obtainable) stored in a plastic bottle; an environmental water sample (EW) is taken during a post site work monitoring visit after development of the monitoring well and comprises a 1000ml plastic bottle, a 1000ml amber glass bottle and a 20ml amber vial.

Core samples (C) are taken during detailed logging of rock cores that are obtained by rotary coring. Core samples will ideally have at least 2:1 length to diameter ratio for uniaxial compressive strength testing. Where this is not possible due to excessive fracturing of the core irregularly shaped samples of 1 - 2kg can be taken for point load testing. Samples are suitably wrapped to maintain natural moisture content.

Block samples (BLK) are usually taken in trial pits and comprise up to 20kg of cohesive soil that is cut, undisturbed, from the base of the pit and stored to maintain natural moisture content and structure. Where trial pits are being dug through weak and very weak rocks boulders of material can be recovered which can be treated as BLK samples and stored appropriately.

Undisturbed samples (U) are taken in boreholes by driving thin walled sampling tube using a down-the hole hammer. When the sample is retrieved, both ends of the sample tube are sealed in wax to maintain the natural moisture content. The number of blows taken to drive the sample and the percentage of sample recovery are shown on the borehole records.

U samples are denoted on the log in the following format:

*34/450mm

Denoting the number of blows and the recovery in millimetres.

Where undisturbed sampling is unsuccessful a disturbed sample is usually taken across the proposed depth of the undisturbed sample.



A2.0 BS 5930 Logging Guides

The following table taken from BS 5930+A2 (2010) Table 13, outlines the field identification and description of soils.

| ell Group | Principal Soll | | | Visual identification | Relative Dens | tty/Consistency | - | tinuities | | | Colour | Composite | a Soli Types | Minor | Particle | Principal Boll | Minor | Stratum Name | | | | | | | | | | | | |
|----------------------|----------------|---------------------------------------|---------------------------|--|---|--|--|---|----------------------------------|---|---|--|---|---|--|--|---|---------------------------------------|---|-------------|---|--|---------------------------|--|------------------|--|---|----------|--|---|
| on Group | Туре | Particle Size (mm) | | Visitin identification | Term | Field Test | Uiseen | m num or G | | edding | Concur | (mixtures of b | (mixtures of basis soll types) | | Shape | Туре | Minor Constituents | Stratum Hame | | | | | | | | | | | | |
| Very Coanse Bolls | BOULDERS | Large boulder Bouider Cobble | e30 | Only seen complete in pits or exposures Often difficult to recover whole from boreholes | None defined | Qualitative description of packing by inspection and ease of excavation | Describe spac such au fissun partings, isolat laminae, desic rootiets etc. | led beds or | | e thickness of ordance with lefnition | Lightness: Light Dark | For midures invol solis see BS 5930 | For midures involving very coarse solts see BS 5350 CH1.4.4.2 | | For mazules incoving very coalise software BS 5930 CM14.4.2 | | For matures involving very coarse solts see BS 5930 CI41 4.4.2 | | For macunes incoving very dualitie solts see BS 5930 CH1 4.4.2 | | For madulate hydrolog ymy doanie eolis ee BS 5930 Cl41 4.4.2 | | is see BS 5930 CI41 4.4.2 | | 88 5990 CH1 44 2 | | Very angular Angular Subangular Subrounded | BOULDERS | | Name in accordance with published geological maps, memois or sheet, explanation |
| 7 | | 63 Coarse | | | Borehole wi | 5 SPT N Value | | _ | | | | Term before principal soil | Proportion secondary (see | t i | Rounded Weil rounded | | with rare | | | | | | | | | | | | | |
| 1 | | Medium | 20 | Easily visible to naked eye | Very loose | 0-4 | 1 | | | Atemating layers of | | slightly (sandy) | Note A) | | Cubic | _ | we some | For example: | | | | | | | | | | | | |
| end and pavel | GRAVEL | | 6.3 | Particle shape, grading can be described | Loose | 4-10 | Fissured Soit preaks int unpolished dis | o blocks along | | different types | | see Note B | 5 - 20% | | Flat Elongated | GRAVEL | we some | RIVER TERRACE DEPOSITS | | | | | | | | | | | | |
| | | Fine | | | Medium cense | 10 - 30 | | | Inter- | Pregual fied by thickness | | see Note B | See Note C | | Tabular | | frequent or abundant | GLACIAL SAND A | | | | | | | | | | | | |
| 2 | | Coarse | 0.63 | Vaible to naked eye; no | Lar. | | | | bedded or inter- laminated | added or equal | Chroma: Pinkish | very (sandy) see Note B | >20% See Note C | Terms car glauconitie micaceour | | SAND | | BRICKEARTH | | | | | | | | | | | | |
| | SAND | Medium | 0.2 | ophesion when dry grading can be described | Dense | 30 - 50 | _ | | | Otherwise thickness of and spacing | Yellowish Orangish Brownish | SAND and GRAVEL | About 50% | shely | | | | | | | | | | | | | | | | |
| 2 | | Fine | 0.063 | · | Very dense | >50 | Sheared Soil breaks inti polished disco | b blocks along | | between subordinate layers | Greenish Bluish Greyish | Term before | Proportion | aliantita (a) | acculted | - | | WEATHERED LL | | | | | | | | | | | | |
| | | Coarse | | | Very soft | Finger easily pushed in up to 25mm; exudes between | poisned date | | | defined | | principal soil type | Note A) | slightly (glauconitic) (glauconitic) very (glauconitic) | 0) | | Terms can include: ahell fragments pockets of peat | DARTFORD BILT | | | | | | | | | | | | |
| | | | 0.02 | Only coarse silt visible with | | Finger pushed in up to 10mm; moulded by Right finger pressure | Spacing scale of discontinuities | | Spacing a | cale of bedding ickness | | elightly (eandy) see Note D | <35% | | | | gypsum crystals. fint gravel brick fragments | EMBANKMENT | | | | | | | | | | | | |
| ĩ | SILT | Medium | | hand lens; eshibits little plasticity and marked dilatancy; slightly granular or silky to the | 8of | | Term | Mean Spacing (mm) | Term | Moars thickness intel | 1 | | | Proportion | n defined on a site | | piantio baga | LONDON CLAY FORMATION | | | | | | | | | | | | |
| tend chy the | | 0.0063 | | | touch; disintegrates in water; tumps dry quickly, potsesses ochesion but can | 1 | Thumb makes impression | Very widely | >2000 | Very thickly bedded | >2000 | 1 | (sandy) see Note D | 35 65% See Note E | of materia subjective | specific basis or | SILT | | ALLUVIUM | | | | | | | | | | | |
| | | | 0.0063 | | | be powdered easily between fingers | Film | eanity, cannot be moulded by fingers, role to a thread | Widely | 2000 - 600 | Thickly | 2000-600 | | | 1 | - | | | | MADE GROUND | | | | | | | | | | |
| | | Fine | | | | Fine . | | | 11 | Can be indented slightly by | Medium | 600-200 | Medium | 600 - 200 | Pink Red | very (sandy) | >85% | | s - clear but not effervescence from | | | | | | | | | | | |
| | | | 0.002 | | Stiff thimb; cnimbles in rolling thread; | | Closely 200-60 | | Thinly 200-60 | | Vellow Orange Brown | see Note F See Note E | | highly calcareous - strong | | | | · · · · · · · · · · · · · · · · · · · | | | | | | | | | | | | |
| - | CLAY | not powd disintegra | ered betwe ste under w | Dry lumps can be broken but en the fingers. They also also but more slowly than sit | Very stiff | remoulds Can be indented by thumbnall; cannot be moulded; | Very closely | 60-20 | Very thinly bedded | 60 - 20 | Green Blue White Grey Black | Silly CLAY | Terms used to reflect secondary fine | from HCI | ined effervencence | CLAY | Proportions can be defined on a site of material specific | | | | | | | | | | | | | |
| | | diatancy; | sticies to th | error planetry put no is fingers and dries slowly; on drying usually showing | Haid | Can be scratched by | Extremely closely | <20 | Thickly laminated | 20-6 | | Clayey SILT | constituents where this is important | | | | basis of purely autjectively | | | | | | | | | | | | | |
| | | | _ | | (or extremely weak) | thumbnail | 1. 1997 | | Thinly laminated | 48 | | 2010 | _ | | | | | | | | | | | | | | | | | |
| | Condition | | | Accumulated in situ | Predominantly pi | ant remains, usually d | ark brown or black | in colour. | | ains finely divided o | r discrete | Loose brox | tescriptions which grey very sand | GRAVEL WI | b occasional pockets | (<30mm) of | A percentage coars | e of fine soil assessed | | | | | | | | | | | | |
| | Film | Fibres comp together | ressed | PEAT | distinctive smell. | ow bulk density. minated or discrete in | | particles of organic matter | | er, often with a idiale rapidly. | RIVER TE | er is angular to suban ERRACE DEPOSITS | guiar fine to or | same of fint. Sand is f | line | A. percentage coarse or fine soil assessed excluding cobbies and boakters B. Gravely or sandy and/or sity or clayey | | | | | | | | | | | | | | |
| 1 | - | 1 | | Fibrous peak | Plant remains res Water and no sol | ognisable and retains de on equesting | some atrength | | Jerm | above Term | Colour | Medium dense tight browning sing gravely wightly dawy SAVID. Sand is fire to coarse. Grave is subsequent to subtrounded fire to coarse of eachdone (GLACHL DEPOSITS) SMT finand orange motified brown sightly sandy CLAY. Sand is fire to coarse. | | | | ine soil depending on | | | | | | | | | | | | | | |
| Organitic Books | Spongy | Very compre open structu | resible; re | Pseudo-fibrous peat Plant remains recognisable and s Turbid water and <50% solide on | | | cognisable and strength lost d <50% solids on squeezing | | | tly organic | grey | Fistures a occasional (LONDON | re generally subvertic grey gleying on sufficient of the sufficien | y subvertical, very closely spaced, smooth, planar with ng on surfaces. RMATION) | | | D. Gravely and/orks E. Or described as o | | | | | | | | | | | | | |
| | 15.72 | Can be mou | ided in | Amorphous peat | No recognisable Paste and >50% | plant remains, mushy solids on squeezing | consistency | | orga | nic | dark grey | (ALLUVIUI | MI | | h closely spaced thick | | mass behaviour F. Gravely or sandy | | | | | | | | | | | | | |
| | Plastic. | hand; smears finge | | Gyttja Humus | Decomposed plan Remains of plant | nt and animal remains a, organisms and excr | May contain ince etions with increase | ganic particles nic particles | very | organic | black | coarse brid | sk fragments, oliniker i wo dayey amorphou | n sandy GRAVEL of angular to subangular fine to and chalk with occasional broken tile fragments as PEAT | | | | | | | | | | | | | | | | |



The following table taken from BS 5930+A2:(2010) Table 14/15, is an aid to identification of rocks for engineering purposes and describes the terminology for rock discontinuity description.

| | Rock Meeriel | | | | | | | | Rock Mass | | | | | | | | | | | | | |
|----------|--|---|---------------------------------|-------------------------------------|-----------------|--------|-------------------------------|----------------------------|--------------------|-------------------------------|---|---|---------------------------------------|----------------------------------|------------------------|----------------------------|---|--|------------------------------------|---|---|--|
| none los | | | Rock Material | | | | | Rock Name | | Ger | eria. | | | Discontinuities | | | | | | | | |
| | Blrength | Structure and fabric | Colour | Testure | Gran | Size | BEDIMENTARY | IGNEOUS | METAMORPHIC | Ninor Constitutents | Formation Netter | Weathering | Orientation | Specing | Persistence | Terminetics | Roughman | Well Strength | Aperture | Infiling | Seronge | Noter |
| 20 mm | >250MPa Extremally Strong Rings on harmen blows. Only | Use standard geological terms | LIGHTNESS Light / Dark | Use standard geological terms | | | | | Massive / Folleted | Describe using relative terms | Name according to published geological methors and methors | Approach 1 Mandatory description of all features associated with | Dip direction and dip eg 245/70 | Extremely widely >6m | Very high <20m | | Lerge scale (m) Waviness Curveture | Use standard sbergth terns (col 2) | Carrot be described in cores | Clean | Can be summerised in cores where | or Bed in detail in division into sets drip amounts is |
| | chipped with peological hammer | Very Thickly | Light / Links | | | Ĩ | | | | | 11 | weathering Describe state | | | High 10-20m | | Straightness | Support by uning | Extremely wide >1000 mm | Surface staining (colour) | sets of different | office des afficients |
| | - | Thickly | 1 - 1 | For exemple. | | | CONCLOMERATE | GRANITE | | 14 | | and changes in: | Dip amount only it cores | Very widely 2 To 6mi | Medium 3 to 10m | | Medum scale | Field strength tests | Very wide 100- 1000 mm | Soll infilling | 5.0 | Can |
| | | | | | | | BRECCIA | | GNEISS | nere | | | | Widely 0.8 to 2m | Low 1 to 3m | | (cm) and small scale (mm) | Point load | Wide 10- 100mm | (describe as for soils) | Moisture on rock warface | |
| | 100-250MPa | Medium | | phanentto | | | | | | occasional | COAL MEASURES | | 1.21 | | Very low <1m | acposure. | Stepped | Schmidt hammer | Moderately wide 2.5-10mm | Mineral coatings | | |
| m | Very Strong Requires many hermen blows to break specimen | Thinly | | ophilic | Contract | | LIMESTONE | | | Request | 1.00 | Strength | | Medium 200- 800mm | | r within rock | Rough | Other Index tests | Open 0.5- 2.5mm | (eg. calcite, chiorite, gypsum etc.) | Dripping water | fauch se |
| | CIER PROVINI | Very Thinly | CHROMA. Pinkab | parphyritic. | Colored | | AGOLOMERATE | DIORITE | MIGMATITE | | WEATHERED WICKERSLEY ROCK | Fracture state | | Closely 60- 200mm | | d egenst discontinuity | Smooth | Visual atsetsment | Partly open 0.5- 2.5mm | | Water fow measured per | ntation o |
| | 50-100MPa Strong | Thickly isminated / Narrowly | Reddish Yellowish Brownsh | crystalline | | | AGGLOMERATE | | - | | 2 - L | Colour | | Very closely 20-60mm | | | Strated | | Tight 0.1- 0.25mm | | unit time on en individual discontinuity of | 90 |
| • | Rock broken by more than one harmer blow | Thinly lansingled / Vary marrowly | Greenish Buish Greyish | amorphous | | | DOLOMITE | | MARBLE | | REBIDUAL MUDSTONE | Presence of absence of weathering | | Extremely closely <20mm | | | Undulating | | Very tight ×0.1mm | Other - specify | set of discontinuities | CUDIOR I |
| m | | | | | | | | CABBRO | | | 1.5 | products | 1.11 | | Discontinuoua | Cannot | 2999 | - | | | Large >5i/sec | Record |
| | 25-50 Mpa Medium Strong | 100 | | | | | VOLCANIC BRECCIA | | 4 | | SHERWOOD SANDSTONE | | | 111 | 10 | described in cores | Smooth /// | | Take several readings | Record width, continuity and relevant | Medium 0.5- 5.0/sec | |
| 1 | Carnot be peeled with knile, fractures with single blow of | 125 | HUE | | | oatee | SANDSTONE HALITE | MICROGRANITE | SCHIST | | 10.1 | Approaches 4 or 5 | | Take several readings | Continuous in cores | | Strated | | Report average and modimum | characteristics of infil | Small 0,05- 5,0Vsec | |
| territ | harmer | | Pink Red | | Da | ä | | | | vugs | CHALK | Classify only if useful and unembiguous | Ρ., | Report overage and maximum | | Record size of exposure | Planar | | 100 | | 1 | |
| - | L.C. | | Yellow | | am Grait | Medium | QUARTZITE | OOLERITE. | PHYLLITE | pyrite | DISTINCTLY | | | - | | | Smooth | | | | | |
| | 5-25MPa Weak Can be period | Terms include | Blue | | Med | | | | | crystate | MERCIA | | | | | | Strated | | | | | |
| Smm | with difficulty. Point of hammer makes shallow indents | bedded / laminated, foliated, banded and | Webs | | | Fine | TUFF ANHYDRITE | MICRODIORITE | QUARTZITE | organics | | | | | | | Measure amplitude and wavelength of | | 11.1 | | | |
| | | flow banded | Grey | | | | SILTETONE | RHYOLITE | SLATE | colours | | FRACTURE S | TATE | | | | feieture | | | | | - |
| | 1-5MPa Very Weak | | Black | | Contract of | | CHALK | ANDESITE | | odours | | Solid Core | Solid core is t natural fracture | | with at least one | ful dameter (| but not necessar | ity a full circumfe | metrice) meaniumo | t along the core a | is or other scan | ine betwee |
| m | Crumbles under firm hartener blows. Cart be peeled by knife | | | | - | 2 | GYPSUM | BABALT | HORNFELS | | | TCR | | | | | act) to the lotal h | ingth of the pare | i run. | | | |
| m | 0.6 -1.0MPa | ł | | | 2 4 | 2 | FINE GRAINED TUFF MUDSTONE | | | | | SCR | | | e recovered to | | | | 10.00 | | | |
| | Extremely Weak Gravel size | - C | | | Vory | 6° | VERY FINE GRAINED TUFF | | | | | ROD | | - | | | | | | dage of total lengt | (| _ |
| | lumps crush between finger and thumb. Indented by | | | | and set of side | | CHERT FLINT | OBSIDIAN VOLCANIC GLASS | | | | (F | | | | | nes over core ler | | bly uniform chara | edwistics, not con | 1275 | |





Appendix 4 - Exploratory Hole Records



Appendix 4.1

Appendix 4.1 - Key to Exploratory Hole Records & Soil and Rock Description Terminology



A4.1 Key to Exploratory Hole Records

The following table denotes the legend used for principal soil types when presented on geological logs:

| Class | Туре | Legend | Grain size | | | | | | |
|--|--------------|--|--|--|--|--|--|--|--|
| | Boulders | 0 ~ 0 0 ° ° ° ° ° ° ° ° ° ° ° ° ° ° ° ° | >200mm | | | | | | |
| Coarse Grained/Non- | Cobbles | 0 ~ 0 0 ° ° ° ° ° ° ° ° ° ° ° ° ° ° ° ° | 63 – 200mm | | | | | | |
| Cohesive | Gravel | | Coarse 20 – 63mm Medium 6.3 – 20mm Fine 2 – 6.3mm | | | | | | |
| | Sand | | Coarse 0.63 – 2mm Medium 0.2 – 0.63mm Fine 0.063 – 0.2mm | | | | | | |
| Fine Grained/ | Silt | $\begin{array}{c} \times \times \times \times \times \\ \times \times \times \times \end{array}$ | 0.002 – 0.063mm | | | | | | |
| Cohesive | Clay | | >30% of particles finer than 0.002mm | | | | | | |
| Organic | Peat/Topsoil | یاند یاند یاند د یاند یاند ی | | | | | | | |
| | Made Ground | | N/A | | | | | | |
| Man Made Material | Concrete | | IV/A | | | | | | |
| | Blacktop | | | | | | | | |
| Composite soils, such as clayey sands or silty gravels will combine the above legend codes | | | | | | | | | |



The following table denotes the legends used for rock types when presented on geological logs:

| Rock Type | Legend | Rock Type | Legend | | | |
|-----------|---|--------------------------------------|------------------------|--|--|--|
| Mudstone | | Conglomerate | 00000 | | | |
| Siltstone | × | Fine Grained Igneous | | | | |
| Sandstone | · · · · · · · · · · · · · · · · | Medium Grained Igneous | + + + + - + + + + + | | | |
| Limestone | | Coarse Grained Igneous | + + + + · + + + + + | | | |
| Chalk | | Fine Grained Metamorphic | | | | |
| Coal | | Medium/Coarse Grained Metamorphic | | | | |
| Breccia | | | | | | |

The following table denotes the legends used for borehole backfill and commonly used installation types:

| Backfill Type | Legend | Installation Type | Legend |
|------------------------|--|------------------------------|--------|
| Arisings | | Plain Pipe | |
| Bentonite Pellet Seal | | Slotted Pipe | |
| Sand Filter Medium | | Porous Piezometer Tip | |
| Gravel Filter Medium | 0° 0° 0° 0° 0° 0° 0° 0° 0° 0° 0° 0° 0° 0 | Vibrating Wire Piezometer | |
| Cement/bentonite grout | | | |



A4.2 Soil and Rock Description Terminology

The following table gives the descriptive consistency term for cohesive soils as described on geological logs based on field observations:

| Consistency term for field description | Field test | |
|--|---|--|
| Very soft | Finger easily pushed in up to 25 mm. Exudes between fingers | |
| Soft | Finger pushed in up to 10mm. Moulds by light finger pressure | |
| Firm | Thumb makes and impression easily. Cannot be moulded by fingers, rolls into a 3 mm thick thread without breaking or crumbling | |
| Stiff | Can be indented slightly by thumb. Crumbles in rolling to a 3 mm thick thread, but can then be remoulded into a lump | |
| Very stiff | Can be indented by thumb nail. Cannot be moulded but crumbles under pressure | |
| Hard | Can be scratched by thumbnail | |

The term Hard Clay is for transported materials only such as glacial till.

When measurements of undrained shear strength of fine soils are made in the field using a hand vane or in the laboratory by triaxial test the following terms can be given on the logs using the terms described below:

| Descriptive term based on measurement | Undrained shear strength classification definition (kPa) | |
|---------------------------------------|--|--|
| Extremely low | <10 | |
| Very low | 10 – 20 | |
| Low | 20 - 40 | |
| Medium | 40 – 75 | |
| High | 75 – 150 | |
| Very high | 150 – 300 | |
| Extremely high | 300 – 600 | |



The following table gives the descriptive term for strength of rock as it would be described on the geological log relative to field assessments and laboratory tests:

| Term for use in field or based on measurement | Definition for field use | Definition on basis of Unconfined Compressive Strength measurements (MPa) |
|---|--|---|
| Extremely Weak | Can be indented by thumbnail. Gravel sized lumps crush between finger and thumb | 0.6 – 1.0 |
| Very Weak | Crumbles under firm blows with the point of a geological hammer. Can be peeled with a pocket knife | 1 – 5 |
| Weak | Can be peeled with a pocket knife with difficulty. Shallow indentations made by firm blows with the point of a geological hammer | 5 – 25 |
| Medium Strong | Cannot be scraped with a pocket knife. Can be fractured with a single firm blow of a geological hammer | 25 – 50 |
| Strong | Requires more than one blow of a geological hammer to fracture | 50 – 100 |
| Very Strong | Requires many blows of a geological hammer to fracture | 100 – 250 |
| Extremely Strong | Can only be chipped with a geological hammer | >250 |

The following table gives the descriptive terms for the structure of sedimentary soils and rocks:

| Descriptive Term | Thickness | |
|---------------------------------|-----------------|--|
| Very thickly | >2 m | |
| Thickly | 600 mm – 2 m | |
| Medium | 200 mm – 600 mm | |
| Thinly | 60 mm – 200 mm | |
| Very Thinly | 20 mm – 60 mm | |
| Thickly laminated (sedimentary) | 6 – 20 mm | |
| Thinly laminated (sedimentary) | < 6 mm | |



The following table defines the standard indices used for the description of the fractures state in rock cores and is presented on geological logs:

| Indices Term | Definition |
|--------------|--|
| TCR (%) | Total Core Recovery – Ratio of core recovered (solid and non-intact) to the length of the core run |
| SCR (%) | Solid Core Recovery – Ratio of solid core recovered to the length of the core run |
| RQD (%) | Rock Quality Designation – Ratio of solid core pieces longer than 100 mm to the length of the core run |
| FI | Fracture Index – The number of fractures per metre as calculated from a count of the number of fractures over an arbitrary length of core with similar fracturing intensity. |
| lf (mm) | Fracture Spacing, reported as minimum/mode/maximum spacing of fractures over an arbitrary length of core of similar intensity of fracturing. |
| NI | Where core is non-intact in the ground, the abbreviation NI may be used. |
| AZCL | Assessed zone of core loss |
| CRF | Core recovered from the following run. (length in m) |





Appendix 4.2 - Cable Percussion / Rotary Core / Rota-Sonic Borehole Logs

| | | | Contract | | tonehav | /en FAS | | | Client: | Aber | deenshire Council | orehole ID | |
|--|----------------------|----------|----------|-------------------|-----------------------|------------------------|---------|---------------|-------------------------|-------------------------------|--|--|---|
| Environm | CESTAIN nental Se | rvices | Contract | t Number: 5414 | | Date Started: 06/11 | 1/2013 | | Logged E | ^{By:} CLP | Checked By: MJB | BH heet 1 of 1 | -11 |
| Combine | ed Rotary | Cored | Easting: | 387457 | | Northing: 785 | 756.2 | | Ground L | evel: 4.23 | | icale: 1:2 | 25 |
| - | ng Information | - | | Sample | es & In Situ | u Testing | | | | | Strata Details | | Groundwater Backfill & Installation |
| TCR SC | | FI | Run | | iple ID | Test Re | sult (m | _evel AOD) | Depth (m) (Thickness | Legend | Strata Description | | Installation |
| ICR SC - - | -κ RQD | | Kun | | 20 D1 | Test Re | | 3.23 | (1.00) 1.00 | | Strata Description MADE GROUND. Dark brown slightly clayey gravelly fine to medium sand with medium cobble content. Gravel is subangular to subrounded fine to coarse of sandstone, quartz and mixed lithologies. 3 no. pairs of blue-green rubber gloves present within pit. Cobbles are subrounded of mixed lithologies. 1 no. sandstone boulder present (60x40x30mm). End of Borehole at 1.00 m | | |
| | Progress & V | | asing | Water | Borehole Depth (m) | Diameter | Casinı | - | | Remarks: 1. Hand of | dug inspection pit to 1.00m depth. | - - - - - - - - - - | |
| Date | Time Dept | h (m) De | pth (m) | Depth (m) | -e (vy | | | | | 2. Boreho within depth. | ole terminated after a previous borehol the inspection pit. Previous hole found undertaken 1.00m to the west. | e was disco to be open | vered to 2.50m |

| | | | | Contra | ct Name: | Stonehav | /en FAS | | | Client: | Aber | deenshire Council | Borehole ID | |
|--------|------------|----------------|-------|--------------------|---|--|---|--------------------------|--|---|--|---|--|----------------------------|
| | C | STAIN | | Contra | ct Number: | | Date Started: | | | Logged E | | Checked By: | BH [,] | 1 A |
| Enviro | onmen | tal Sei | vices | | 5414 | | 06/11 | 1/201 | 3 | 209900 2 | CLP | MJB | Sheet 1 of 2 | 17 \ |
| | bined R | | | Easting | ^{ی:} 387458 | | Northing: 785 | 756.2 | | Ground L | -evel: 4.23 | Plant Used: Sonic rig | Scale: 1:2 | 5 |
| | Coring In | | 0 | | Sampl | es & In Situ | Testing | | | | | Strata Details | | Groundwater |
| | - | | | Run | | | | sult / | Level | Depth (m) | legend | | | Backfill & Installation |
| TCR | SCR | RQD | FI | Run | 0.30- 0.50- 0.80- 1.20- 1.20 1.20- 2.00- 2.2 2.60 2.9 3.00- 3.20-4 3.30 3.30 | 0.50 B1 0.80 B2 1.20 B3 1.20 B3 1.65 D4 0 ES85 2.00 B5 2.00 B5 2.00 B5 0 ES7 0 ES8 ESES8 0 ES9 3.20 B10 4.00 B12 0 D11 ESD11 | Test Re (S)N=21 (0,0,3,8,5,5) (S)N=8 (1,1,3,2,2,1) (S)N=26 (5,6,8,9,6,3) (S)N=0 (0,0,0,0,0,0) | 5) | Level MAOD) 3.63 3.23 1.73 1.43 1.03 | Depth (m) (Thickness (0.60) (0.40) 1.00 (1.50) 2.50 (0.30) 2.80 (0.40) 3.20 (1.40) | Legend Image: Constraint of the second se | Strata Description MADE GROUND. Dark brown slightly clayey gravelly fine to medium sand. Gravel is subangular to subrounded fine to coarse of sandstone, quartz and mixed lithologies. from 0.30m depth, light orangish brown. MADE GROUND. Yellowish brown clayey gravelly fine to medium sand with low cobble content. Gravel is subangular to rounded fine to coarse of sandstone, quartz and mixed lithologies. MADE GROUND. Dark brown slightly clayey gravelly fine to medium sand with low cobble content. Gravel is subangular to subrounded of sandstone and mixed lithologies. MADE GROUND. Dark brown slightly clayey gravelly fine to medium sand with low cobble content. Gravel is subangular to subrounded fine to coarse of sandstone, quartz, mixed lithologies, rare concrete and ceramic pipe fragments. Cobbles are subangular of sandstone. from 2.00m depth, chemical/hydrocarbon odour noted. MADE GROUND. Black slightly clayey wood with slight oily sheen and hydrocarbon odour. MADE GROUND. Light yellowish brown clayey gravelly fine to coarse of sandstone, quartz not mixed lithologies. from 3.00m depth, dark brown mottled multicoloured in colour. MADE GROUND. Light yellowish brown clayey gravelly fine to coarse of sandstone, quartz and mixed lithologies. from 3.00m depth, dark brown mottled multicoloured in colour. Soft thinly laminated brown and grey organic SILT with very closely to closely spaced thin laminations of grey fine to medium sand and occasional fine to coarse gravel sized pockets of fibrous material. | | |
| - | | | | | 4.60-5 | 5.00 B15 | | | -0.37 | 4.60 | $\begin{array}{c} (16\times2\times2)\\ (16\times2\times2)\\$ | Dark grey slightly clayey fine to medium SAND. | - | |
| | | | | | | | | | | | | Continued next sheet | | |
| Во | oring Prog | | | | | Borehole | Diameter | Casi | ng Diar | neter | Remarks: | | | |
| Date | Time | Boreh Depth | | Casing apth (m) | Water Depth (m) | Depth (m) 2.00 7.50 10.00 | Diameter (mm) 229 140 115 | Depth (n 2.00 7.50 | | meter (mm) 220 140 | Sonic c Ground mins. Boreho Boreho | lug inspection pit to 1.20m. No servic trilling from 1.20m to 10.00m depth. dwater encountered at 4.00m rising to le complete at 10.00m upon specifie le backfilled with bentonite upon con ammer id = GS RIG02. Hammer ene | o 3.45m after 2 d depth. npletion. | 20 |
| | | | | | | | | | | | Release S | tatus: Final | | |

| | r P | STAIN | | Contra | ct Name: | Stoneha | ven FAS | | | Client: | Aber | rdeensł | nire Council | Borehole ID | |
|--------|------------|----------------|----------|------------------|--------------------|----------------------------|-------------------------|------------|----------------|--------------------------|--|--|--|---|--|
| | 6 | 01KIII | | Contra | ct Number: | | Date Started: | | | Logged E | | | Checked By: | BH' | 1A |
| Enviro | onmen | tal Se | rvices | | 5414 | | 06/11 | 1/201 | 13 | | CLP | | MJB | Sheet 2 of 2 | |
| | pined R | | | Easting | | | Northing: | 750 | | Ground I | | | Plant Used: Sonic rig | Scale: | |
| & Dyr | namic S | Sample | er Log | | 387458 | .5 | 785 | 756.2 | 2 | | 4.23 | | Someng | 1:2 | |
| | Coring In | ormation | | | Sampl | es & In Situ | u Testing | | | | | Stra | ata Details | | Groundwate Backfill & Installation |
| TCR | SCR | RQD | FI | Run | | ple ID 5.45 D16 | Test Re | sult | Level m AOI | Depth (m) (Thickness |) Legend | | Strata Description | | |
| - | | | | | | 5.60 B17 ESB17 | (S)N=14 (0,1,1,2,3,8 | 3) | -0.87 | 5.10 (0.50) | shice shice shice a shice shice a shice shice shice a shice shice shice a shice shice a a shice shice a shice shice shice a shice shice a | fron occasi sized p peat. Dark b | ning Detail : 4.90m - 4.90m : n 4.90m depth, with onal fine to coarse gravel pockets of brown amorphous rown amorphous PEAT with onal fine to coarse gravel | | |
| _ | | | | | | | | | -1.37 | 5.60 | shka shka shka ka shka shka s | sized p sand. | pockets of grey fine to medium | ו 1 | |
| - | | | | | 5.7 | 0 D18 | | | -1.57 | 5.80 | | fine to suban | rown slightly clayey gravelly coarse SAND. Gravel is gular to subrounded fine to | - | |
| _ | | | | | 6.00-6 | 0 D19 6.50 U20 0 U20 | | | | | | mixed | e of sandstone, quartz and lithologies. | | |
| - | | | | | | | | | | (0.70) | | sandy to subi | CLAY. Gravel is subangular rounded fine to coarse of tone, quartz and mixed | - | |
| - | | | | | | 0 D21 7.00 B23 | | | -2.27 | 6.50 | | Soft re | ddish brown very sandy SILT. | | |
| - | | | | | | | | | | (0.50) | | | | - | |
| - | | | | | 7.00-7 | 7.50 B24 | | | -2.77 | 7.00 | | slightly | ecoming stiff reddish brown / sandy slightly gravelly | | |
| - | | | | | | | | | | | | subrou | Gravel is subangular to unded fine to coarse of tone, quartz and mixed gies. | - | |
| - | | | | | | 7.95 D25 3.50 B26 | (S)N=42 (4,9,10,10, | 10,1 | | | | | | - | |
| - | | | | | | | 2) | | | | | | | - | |
| - | | | | | | | | | | | | | | - 8 - | |
| - | | | | | | | | | | (2.50) | | | | - | |
| - | | | | | 8.50-9 | 9.00 B27 | | | | | | | | - | |
| - | | | | | | | | | | | | | | - | |
| - | | | | | | 9.45 D28 | (S)50/203n | -m | | | | | | - - 9 - | |
| - | | | | | 9.00-1 | 0.00 B29 | (5,8,20,17, | | | | | | | - | |
| - | | | | | | | | | -5.27 | 9.50 | | | | - | |
| - | | | | | | | | | -9.27 | | | SAND. | clayey gravelly fine to coarse . Gravel is subangular to unded fine to coarse of tone, quartz and mixed | | |
| - | | | | | | | | | | (0.50) | | litholog | gies. | - | |
| Br | oring Proc | ress & W | /ater Oh | servatio | ns | Borehole | Diameter | Cas | sing Di | ameter | Remarks | End o | f Borehole at 10.00 m | | |
| Date | Time | Boreh Depth | iole C | asing pth (m) | Water Depth (m) | Depth (m) | Diameter (mm) | Depth (| | iameter (mm) | 1. Hand | dug inspe | ection pit to 1.20m. No ser om 1.20m to 10.00m dept | | ed. |
| | | | | | | 2.00 7.50 10.00 | 229 140 115 | 2.0 7.5 | | 220 140 | Groun mins. Boreho Boreho | ndwater er ole comp ole backfi | lete at 10.00m upon speci llete at 10.00m upon speci lled with bentonite upon c d = GS RIG02. Hammer er | g to 3.45m after 2 fied depth. ompletion. | |
| | | | | | | | | | | | Release | Status: | Final | | |
| | | | | | | | | | | | iteledse (| ວເລເບຣ. | 1 11101 | | |

| COCTAIN | | Contract Nam Stonehav | | | | | Client: Aberdeens | shire Council | Borehole | |
|---------------------------------|-------------------------------|--------------------------|----------------|-----------------------|---|--|--|--|----------------------|--------------------------------|
| COSTAIN | | Contract Num | | Date S | | | Logged By: | Checked By: | - (| CDR1 |
| Environmental S | ervices | 5 Easting: | 414 | Northin | 23/10/2 | 013 | MC Ground Level: | MJB Plant Used: | Sheet 1 of Scale: | 2 |
| Cable Percuss Borehole Lo | | 38742 | 24.5 | | | 2 | 2.94 | Cut down CP | Could. | 1:25 |
| | - | | | | | | | | | One we done to a |
| Samples & Ir Sample ID | | ting est Result | Level | Depth (m (thicknes |) Legend | | Strata Details Strata Descri | ption | | Groundwater Water Backfill/ |
| 0.00 D1 | | | (m AOD) | | s) XXXXXX | MADE G | ROUND. Grey slightly san | • | | Strike(s) Installatio |
| - - 0.20 D2 | | | 2.84 | 0.10 | | coarse g | ravel of granite. | , , | | |
| 0.20-0.50 B3 | | | | | | | ROUND. Brown fine to me 0m depth, black geotextile. | | - | |
| - | | | | (0.60) | | | | | - | |
| | | | | | | | | | | |
| - | | | 2.24 | 0.70 | | MADE G | ROUND. Brown angular co | obbles and boulders of | | |
| | | | | | | sandsto | ne with fine to coarse sand | infill. | | |
| _ | | | | (0.50) | | | | | -1 | |
| - | | | | | | | | | - | |
| 1.20-1.65 D4 1.20-2.00 B5 | (S)N=50 (11,8,11, | | 1.74 | 1.20 | | | nse brown fine to coarse SA | AND and very angular to | | |
| - | , . , | / | | | | lithologie | | | - | |
| t | | | | (0.80) | | | | | | |
| - | | | | (0.80) | | | | | | |
| | | | | | | | | | - | |
| - - 2.00-2.45 D6 | (0)11.0 (| | 0.94 | 2.00 | | | | | 2 | |
| 2.00 ESD6 2.00-3.00 B7 | (S)N=2 (| =2 (3,2,1,0,1,0) | | Very l with lo | | Very loose brown slightly gravelly fine to coarse SAND with low cobble content. Gravel is angular to rounded fine | | | - | |
| 2.00 0.00 Di | | | | | | | e of sandstone and mixed I of sandstone. | ithologies. Cobbles are | - | |
| | | | | | a | | | | | |
| - | | | | | | | | | _ | |
| | | | | (1.30) | | | | | | |
| | | | | | 4 9 9 | | | | - | |
| - | | | | | | | | | | - |
| - 3.00-3.45 D8 3.00 ESB9 | (S)N=12 (1,1,4,4,1 | | | | | at 3.0 | 0m depth, medium-dense. | | -3 | |
| 3.00-4.00 B9 - | | | | | | | | | - | |
| | | | -0.36 -0.46 | 3.30 3.40 | | Grey fine | e to medium SAND. | | | |
| | | | -0.40 | 5.40 | ગોદ ગોદ ગોદ શોધ દ ગોદ ગોદ ગોદ ગોદ ગોદ ગોદ | Dark bro | wn amorphous PEAT. | | - | |
| - | | | | | د مالد مالد . مالد مالد مالد ، مالد مالد م | | | | - | |
| I. | | | | (0.75) | مالاه مالاه مالاه د مثالاه مثالاه م | | | | | |
| - | | | | | ઝોરિંદ ઝોરિંદ ઝોરિંદ ૨ ઝોરિંદ ઝોરિંદ ઝોરિંદ ઝોરિંદ ઝોરિંદ | | | | - | |
| - 4.00-4.45 UF 4.00-5.00 B10 | *4(| 0/0mm | | | د مثالات مثالات : مثالات مثالات مثالات د مثالات مثالات : | | | | -4 | |
| | | | -1.21 | 4.15 | siles siles siles | | wn sandy very angular to w | | | |
| ł | | | | | | coarse (| SRAVEL of mixed lithologie | es. | - | |
| | | | | | | | | | | |
| | | | | (0.85) | | | | | - | |
| ľ | | | | | | | | | - | |
| | | | | | | | | | | |
| | | | | | | Continue | ed next sheet | | | |
| Boring Progress & | | | epth/Casi | ng Diame | | marks: | | | | |
| Dep | Depth (m) Casing (m) Depth (r | | | | | · · / | Hand dug inspection pit to Difficult excavation 1hr. | 1.20m depth. No services e | ncountered | d |
| | | 6.00 6.00 4 | .85 | 6.00 | | Difficult excavation 1hr. 2. Cut down rig assembled on position. Cable percussion drilling with cut down rig between 1.20m and 8.30m depth. | | | th cut | |
| | | | | | ole Diam | eter 3. | Groundwater encountered encountered at 8.00m dept | at 1.30m depth, no rise. Gro th, rising to 4.85m after 20 r | nins. | |
| | | | | epth (m) | Boreh Diamete 150 | r (mm) 4. | Borehole complete at 8.10r unable to advance past 6.0 | m depth on engineer's instru 10m. | | asing |
| | | | | 8.00 150 | | | 150 Unable to advance past 0.00m. 5. Borehole backfilled with bentonite upon completion. Release Status: Final | | | |
| | ļ | Ļ | ļ | | ļ | Ļ | | | | |

| состани | | Contract Stone | _{Name:} haven FA | AS | | | | Client: | rdeensh | ire Council | Borehole | |
|----------------------------------|---|-------------------|------------------------------|-----------------|------------------------|---|----------------------------------|---|-----------------------------|--------------------------------------|----------------------------|--------------------------------------|
| COSTAIN | | Contract | Number: | | Date St | | | Logged By: | | Checked By: | _ (| CDR1 |
| Environmental S | ervices | | 5414 | | | 23/10/2 | 013 | MC | | MJB | Sheet 2 o | f 2 |
| Cable Percuss Borehole Lo | | Easting: | 7424.5 | | Northin | ^{g:} 35750.2 | 2 | Ground Level: 2.94 | | Plant Used: Cut down CP | Scale: | 1:25 |
| Samples & Ir | n Situ Test | ina | | | | | | Strata Details | | | | Groundwater |
| Sample ID | | st Result | (n | Level n AOD) | Depth (m (thickness | Legend | | | a Descript | ion | | Water Backfil Strike(s) Installat |
| 5.00-5.50 B11 | (S)N=14 (3,2,2,3,4 | ,5) | - | 2.06 | 5.00 | | Very so very ang lithologi | ft reddish brown sa jular to well rounde es. | andy gravel ad fine to c | ly CLAY. Gravel is parse of mixed | | |
| - 6.00 D12 6.00-6.50 B13 | (S)N=27 | | - | 3.06 | 6.00 | K K | cobble of fine to c | ff red slightly gravel content. Gravel is v oarse of mixed litho ded to well rounde es. | ery angula ologies. Co | r to well rounded | 6 - - - - - | |
| 6.50-7.00 B15 | (S)N=27 (3,4,5,7,7 | ;,8) | | | (2.00) | | | | | | - - 7 - - - | |
| 7.50 D16 7.50-8.00 B17 | | 1/150mm -5.0 | | | | | | | | | - | \bigtriangledown |
| - 8.00-8.30 D18 8.00-8.30 B19 | (S)50/150 (17,8,20,3 |)mm 30) | -5.0 | | 8.00 (0.30) 8.30 | | coarse angular lithologi | nse red slightly clay SAND with low cob to well rounded fin- es. Cobbles are an | ble conten | t. Gravel is very | - 8 | |
| | | | | | | | End of F | es. 3orehole at 8.30 m | | | -9 | |
| - - - - | | | | | | | | | | | | |
| ŀ | | | | | | | | | | | F | |
| | | | | | | | 1 | | | | | |
| | | | | | | ng Diame | | | | | | |
| 24/10/2013 1800 | Depth (m) Casing (m) Depth (m) Depth (m) 4/10/2013 1800 6.50 6.00 - 6.0 | | | | Depth (m) Casing | meter (mm) 6. SPT nammer id = WBT. Energy ratio = 74% | | | | | | |
| | 25/10/2013 1100 8.30 6.00 4.85 Depth/Borehole Diameter | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | epth (m) 8.00 | Diameter | r (mm) | | | | | |
| | | | | | 0.00 | 150 | | lease Statue: Fin | nal | | | |
| | | | | | | | Release Status: Final | | | | | |

| | 00075 | | | act Name: nehaven | FAS | | | | Client: Aberdeens | nire Council | Borehole | ID: |
|-----------------------|--|----------------|------------------------------------|----------------------|------------------|---|---|--|--|--|---------------------|--|
| | COSTA | IIN | Contr | act Number | | Date St | | | Logged By: | Checked By: | - | BH2 |
| Environ | menta | I Servi | | 541 | 4 | Northin | 26/10/2 | 013 | MC | MJB Plant Used: | Sheet 1 o Scale: | f 2 |
| | le Percorenole | cussion Log | Eastir | 387409 | .0 | | 85737.4 | 4 | Ground Level: 3.43 C | ut down CP rig / M | | 1:25 |
| - | | & In Situ | 9 | | | 1 | I | Ś | Strata Details | | | Groundwater |
| Sam | ple ID | | Test Resu | ult | Level (m AOD) | Depth (m (thickness | n) Legend s) | | Strata Descrip | tion | ł | Water Backfill/ Strike(s) Installatio |
| | 20 D1 -0.50 B2 | | | | 3.35 3.28 | 0.08 0.15 (0.35) | | MADE G Gravel is MADE G | ROUND. Concrete. ROUND. Light grey fine to (angular fine to coarse of m ROUND. Dark brown slight and. Gravel is subangular to | ixed lithologies. | | |
| | 50 D3 -0.65 B4 | | | | 2.93 | 0.50 (0.30) | | Coarse of MADE Of gravelly | For the second s | s. vn slightly clayey slightly is angular to well | | |
| 0.80 | 80 D5 0 ESB6 -1.00 B6 | | | | 2.63 | 0.80 | | at 0.6 Medium with me rounded | 5m depth, with subangular -dense brownish red gravell dium cobble content. Gravel fine to coarse of mixed litho | cobbles. y fine to coarse SAND is angular to well logies. Cobbles are | | |
| 1.20 | -1.65 D7) ESES9 2.00 ES9 | (3) | N=27 4,4,12,6,5) | | | | | angular | to well rounded of mixed lith | olõgies. | | |
| - 1.5 - - - | 50 W8 | | | | | (1.60) | | | | | | |
| 2.00-2 - - - | 2.45 D10 |) (S) | N=5 (3,2,2,7 | 1,1,1) | 1.00 | 0.40 | | | | | 2 - - | |
| - | | | | | 1.03 | 2.40 | | Soft darl | t dark brown slightly sandy SILT. Sand is fine. | | | |
| | 3.45 D11 4.00 B12 | | (S)N=37 0.43 | | | 3.00 | | | rown slightly silty sandy ang | | 3 | |
| | | . (14 | (S)N=37 0.43 (14,11,10,10,10,7) | | | | | fine to c | oarse GŘAVEL of sandston | e and mixed lithologies. | - | |
| - | 4 45 D42 | | | | | (1.20) | | | | | - | |
| | 4.45 D13 5.00 B14 | | N=9 (5,4,3,2 | 2,2,2) | -0.77 | 4.20 | | | -dense brownish red very sil silt partings/beds througho | | -4 | |
| - - - | | | | | | | | | | | - | |
| - | | | | | | | $\begin{array}{c} & \times & \times \\ \times & \times & \times \\ \times & \times & \times \end{array}$ | | | | F | |
| | | | | | | | | Continue | ed next sheet | | | |
| Boring | Boring Progress & Water Observations | | | | | | ng Diame | eter Re | marks: | | | |
| Date 26/10/2013 | Date Time Borehole Depth (m) Depth of Casing (m) Water Depth (m) Depth (m) 26/10/2013 1800 1.20 - - - - | | | | | | Casin Diameter 150 | r (mm) 1. 2. | (mm) 1. Hand dug inspection pit to 1.20m depth. No services encountered. 2. Cut down rig assembled on position. | | | |
| 28/10/2013 | 28/10/2013 1800 6.80 4.70 - | | | | | | Breaking out concrete surface and pit - 3 hours. Cable percussion drilling with cut down rig between 1.20m an depth. | | | 20m and 6 | .80m | |
| | | | | | | Depth (m) Borehole 5. Rotary follow-on attempted at 6.80m depth. | | | | 43m after 5 | 5 | |
| | | | | | | 6.80 150 Diameter (mm) 6.80 150 7. SPT hammer id = WB1. Hammer energy ratio =74% | | | | | | |
| | | | | | | Release Status: Final | | | | | | |

| COCTAIN | | | ct Name: ehaven f | AS | | | | Client: Aberdeens | shire Council | Borehole | | |
|---|--|---------------------|----------------------|------------------|------------------------|--|---|--|--|---------------------------|---|--|
| COSTAIN | | Contrac | ct Number: | | Date St | | | Logged By: | Checked By: | - (| CDR3 | |
| Environmental S | Services | | 5414 | 1 | | 31/10/2 | 013 | MC | 30MJB | Sheet 1 of | 2 | |
| Cable Percus | | Easting | ی 87337.4 | 1 | Northin 7 | ^{g:} 85754.9 | | Ground Level: 3.36 | Plant Used: Cut down CP | Scale: | 1:25 | |
| Borehole Lo | og | 50 | 57557.4 | + | 70 | 55754.8 | 9 | 5.50 | | | 1.25 | |
| Samples & | | <u> </u> | | | | | : | Strata Details | | | Groundwater | |
| Sample ID | Te | est Result | | Level (m AOD) | Depth (m (thickness |) Legend) | | Strata Descri | ption | | Water Backfill/ Strike(s) Installation | |
| 0.10 D1 0.10-0.50 B2 | | | | | (1.00) | | gravelly angular sandsto from rounded | ROUND. Grass over brow fine to coarse predominant to rounded fine to coarse o ne, brick and mixed litholog 0.50m depth, gravelly with cobbles of sandstone. | ly fine sánd. Gravel is f slate, quartzite, ies. subangular to well | - | | |
| - 1.00 D3 - 1.00-1.20 B4 - 1.20-1.65 D5 - 1.20 ESD5 | (S)N=6 (| 3,3,4,1, | 1,0) | 2.36 | 1.00 | | at 0.9 brown g Brown s | 0m depth, 2cm dia. tree ro 0m depth, broken ceramic lazed teapot handle. andy angular to well rounde tone and mixed lithologies | floor tile and dark | 1 | | |
| 1.20-2.00 B6 | | | | 1.86 | 1.50 | ગીલ ગીલ ગોલ દ ગોલ ગોલ ગોલ ગોલ ગોલ ગોલ ગોલ ગોલ ગોલ ગોલ ગોલ ગોલ દ ગોલ ગોલ ગોલ | Plastic of blue fine | lark brown amorphous PEA sand. | T with bands of greyish | - | | |
| 2.00 D7 2.00 ESD8 2.00 EWW9 2.00-2.45 D8 2.00 W9 2.00-2.50 B10 | (S)N=9 (| 1,2,2,3, | 2,2) | | (1.70) | العالية عالية معالية عالية معالية معالية العالية عالية معالية العالية عالية معالية معالية عالية معالية معالية معالية معالية عالية معالية معالي | | | | - 2 | | |
| - - 3.00-3.45 D11 - 3.00 ESB12 - 3.00-3.50 B12 - | (S)N=33 (6,10,12, | | | 0.16 | 3.20 | alle alle alle a alle alle alle alle alle alle alle alle alle alle alle alle alle alle alle alle | | eddish brown very gravelly s angular to rounded fine to | | -3 | | |
| | | | | | (0.80) | | intrologi | | | - | | |
| - 4.00-4.45 D13 - 4.00-4.50 B14 - - - - - | 4.00-4.45 D13 4.00-4.50 B14 (S)N=11 (2,2,2,2,3,4) -0.64 4.00 | | | | | | Firm bro angular lithologi | wnish red slightly gravelly to well rounded fine to coar es. | sandy SILT. Gravel is rse of mixed | 4 | | |
| ŀ | | | | | | × × × × × × × × × × × × × × × | Continu | ad payt shast | | - | | |
| | | | | | | r x x x x | Continu | ed next sheet | | | | |
| Boring Progress & | & Water Ob | oservat | ions | De | epth/Casi | ng Diame | | marks: | | | | |
| | | epth of sing (m) | Water Depth (m | , | epth (m) | Casing Diameter (mm) 1 | | neter (mm) 1. Hand dug inspection pit to 1.20m depth. Cable encountered in side of pit | | | | |
| 31/10/2013 1800 5.00 4.00 - 4.50 01/11/2013 0800 5.00 4.00 4.58 2.20 Depth/Borehole Dia | | | | | | 150 | 2. | at 0.80m depth, pit extended 0.5m to north. 2. Cut down rig assembled on position. Cable percussion drilling with cut | | | th cut | |
| | | | | | | ole Diame | eter 3. | down rig between 1.20m a Groundwater encountered | at 1.25m depth, rising to 1.2 | 10m after 5 | mins. | |
| | | | | De | epth (m) | Borehole Groundwater encountered at 6.50m depth, rising to 3.50m after 20 mins. Diameter (mm) 4. Borehole complete at 6.80m depth on engineer's instruction as casing | | | | | | |
| | | | | | 6.50 | 150 | 5. | unable to advance past 4.5 Borehole backfilled with be | 0m. | | - | |
| | | | | | | | | Release Status: Final | | | | |

| | | | Contra Stor | act Name: nehaven | FAS | | | | Client: | shire Council | Borehole | D: |
|--------------------------|----------------------|--------------|------------------------|----------------------|------------------|------------------------|-------------------------------------|----------------|---|---------------------------|------------|--|
| | COSTAI | N | | act Number | | Date St | arted: | | Logged By: | Checked By: | - (| CDR3 |
| Enviror | nmental | Service | | 541 | | | 31/10/2 | 013 | MC | 30MJB | Sheet 2 of | |
| | ole Percu | | Eastin | g: | | Northin | - | | Ground Level: | Plant Used: | Scale: | |
| | orehole | | 3 | 87337 | .4 | 78 | 35754.9 | 9 | 3.36 | Cut down CP | | 1:25 |
| | Samples & | & In Situ T | esting | | | | | | Strata Details | | | Groundwater |
| Sar | nple ID | | Test Resu | lt | Level (m AOD) | Depth (m (thickness |) Legend | | Strata Descri | ption | | Water Backfill/ Strike(s) Installatio |
| | -5.45 D15 0 ESD15 | (S)N= | :21 | | | | x x x x x x x x x x | Firm b | rownish red slightly gravelly r to well rounded fine to coar | sandy SILT. Gravel is | | |
| | -5.50 B16 | (4,5,6 | ,6,4,5) | | | (0.50) | X X X X X (X X X X X X X X X | litholoc | ies. | | _ | |
| - | | | | | | (2.50) | | rounde | 5.00m depth, very stiff and d sandstone. | IOW CODDIE CONTENT OF | - | |
| - | | | | | | | (| | | | | |
| - | | | | | | | × × × × × < × × × × | | | | - | |
| - | | | | | | | (* * * * * * * * * * | | | | - | |
| - | | | | | | | <pre></pre> | | | | _ | |
| - 6. | 00 D17 | | | | | | X X X X X (| | | | -6 | |
| _ 6.00 | -6.50 B18 | | | | | | x x x x x x x x x | | | | - | |
| - | | | | | | | x x x x x < | | | | | |
| ~ | | | | | | | X X X X X X X X X X X X X X X | | | | - | |
| - 6.50 6.5 | -6.80 D19 0 ESD19 | (S)50 | /170mm 22,20,8) | | -3.14 | 6.50 | CXXXX | Very de | ense brownish red very grave | elly fine to coarse SAND. | | |
| - | | (0,22, | 22,20,0) | | | (0.30) | | litholog | is angular to rounded fine to ies. | medium of mixed | | |
| - 6. | 80 W20 | | | | -3.44 | 6.80 | | End of | Borehole at 6.80 m | | | |
| | | | | | | | | | | | -7 | |
| - | | | | | | | | | | | - | |
| - | | | | | | | | | | | - | |
| m. | | | | | | | | | | | | |
| - | | | | | | | | | | | - | |
| - | | | | | | | | | | | | |
| - | | | | | | | | | | | - | |
| m. | | | | | | | | | | | - | |
| - | | | | | | | | | | | -8 | |
| - | | | | | | | | | | | - | |
| - | | | | | | | | | | | - | |
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| а. м. | | | | | | | | | | | | |
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| - | | | | | | | | | | | - | |
| [| | | | | | | | | | | | |
| Borin | g Progress | s & Water | Observa | tions | De | epth/Casi | ng Diame | eter R | emarks: | | | |
| Date | | Borehole | Depth of Casing (m) | Water | m) Di | epth (m) | Casin Diameter | | SPT hammer id = WB1. E | nergy ratio =74% | | |
| 31/10/2013 01/11/2013 | 1800 0800 | 5.00 5.00 | 4.00 4.00 | - 4.58 | | 4.50 | 150 | | | | | |
| 01/11/2013 | 1030 | 6.80 | 4.50 | 2.20 | | th/Boreh | ble Diam | eter | | | | |
| | | | | | D | epth (m) | Boreh Diameter | nole r (mm) | | | | |
| | | | | | | 6.50 | | 150 | | | | |
| | | | | | | | | R | elease Status: Final | | | |

| 00077111 | Co | ontract Name: Stonehaven | FAS | | | | Client: Aberdeei | nshire Council | Borehole I | |
|--|--------------------------|-----------------------------|---------|-----------------------|---------------------------|---------------------|--|--|------------------|--------------------------------|
| COSTAIN | Co | ontract Numbe | r: | Date S | tarted: | | Logged By: | Checked By: | - 0 | DR4 |
| Environmental Serv | vices | 542 | 4 | | 29/10/2 | 013 | MC | MJB | Sheet 2 of | 2 |
| Cable Percussion | ו Ea | asting: 387387 | 1 | Northin | ^{ig:} 85737.7 | 7 | Ground Level: 3.31 | Plant Used: Cut down CP | Scale: | 1:25 |
| Borehole Log | | | . 1 | 10 | 00707.7 | | | | | |
| Samples & In Sit | tu Testing Test R | | Level | Depth (m | Legend | Ś | Strata Details | vintion | | Groundwater Water Backfill/ |
| 5.00-5.27 U18 | *55/270 | | (m AOD) | Depth (m (thicknes | s) ***:**** | Otiff h and | Strata Desc | - | | Strike(s) Installatio |
| 5.00 U18 5.00 D18 | 33/27 | | | | | coarse c rounded | vnish red slightly gravelly ontent. Gravel is very any of mixed lithologies. Cobb of mixed lithologies. 5.30m depth, very stiff. | / sandy SILT with low gular to rounded fine to les are subangular to | | |
| - - - 6.00 D20 - 6.00-6.50 B21 | | | | (4.15) | | | | | - - 6 | |
| - - 6.50-6.95 D22 (S - 6.50-7.00 B23 (6, | i)N=49 ,6,8,13,13 | ,15) | | | | | | | | |
| - - 7.10 D24 - - | | | | | | | | | - - - - | |
| | 6)50/200mi 0,15,18,18 | | -4.54 | 7.85 | | End of B | orehole at 7.85 m | | - - | |
| | | | | | | | | | | |
| - - - - | | | | | | | | | | |
| | | | | | | | | | 9 - - - | |
| | | | | | | | | | - | |
| | | | | | | | | | F | |
| Boring Progress & Wa | ater Obse | rvations | De | epth/Casi | ng Diame | | marks: | | | |
| Date Time Borehole Depth (m | e Depth n) Casing | of Water (m) Depth (| m) De | epth (m) | Casin Diameter 150 | g r (mm) 7. | SPT hammer id = WB1. | Energy ratio =74% | | |
| | | | | 4.50 | | | | | | |
| | | | | | ole Diame | | | | | |
| | | | | epth (m) 7.50 | Boreh Diameter 150 | r (mm) | | | | |
| | | | | | | Re | ease Status: Final | | | |

| | Contract Name: Stonehaven FAS | | | Client: Aberdeer | nshire Council | Borehole I | D: |
|---|-----------------------------------|-----------------------------|---|--|--|---------------|--|
| COSTAIN | Contract Number: | Date Sta | arted: | Logged By: | Checked By: | - 0 | DR4 |
| Environmental Services | 5414 | 2 | 9/10/2013 | MC | MJB | Sheet 1 of | 2 |
| Cable Percussion | Easting: | Northing | | Ground Level: | Plant Used: | Scale: | |
| Borehole Log | 387387.1 | 78 | 5737.7 | 3.31 | Cut down CP | | 1:25 |
| Samples & In Situ Testi | • | | | Strata Details | | | Groundwater |
| Sample ID Tes | t Result Leve (m AC | Depth (m) D) (thickness) | Legend | Strata Desc | cription | | Water Backfill/ Strike(s) Installatio |
| - 0.10 D1 0.10-0.60 B2 | | (0.60) | SSSS fine sand | ROUND. Grass over dar d with some rootlets. Gra of ceramic and mixed lit | k brown slightly gravelly silty vel is angular to well hologies. (Topsoil). | | |
| - 0.60 D3 0.60 ESB4 0.60 ESD3 | 2.71 | 0.60 | XXXX with med | dium cobble content. Gra | n slightly silty gravelly sand livel is very angular to well | | |
| - 0.60-0.80 B4 | | | | fine to coarse of mixed li to rounded of concrete an | | - | |
| 0.90 D5 0.90-1.10 B6 | 2.41 | 0.90 | Gravel is | angular to well rounded es. Cobbles are angular t | AVEL with high cobble conten fine to coarse of mixed o rounded of mixed | t1 | |
| 1.20 ESD7 (5,5,4,6,3 1.20-2.00 B8 | ,4) | (0.90) | | | | - | |
| - 1.90 D9 | 1.51 | l 1.80 | alle alle alle alle alle alle alle alle a alle alle | k brown pseudo-fibrous l | PEAT. | | |
| - 2.00-2.45 U10 *18/3 2.00 U10 2.00-3.00 B12 | 330mm | (0.50) | عالد عالد م عالد ع عالد عالد م عالد عالد - عالد عالد عالد | | -2 - - | | |
| - - 2.50 D11 | 1.01 | | Soft blui remains | sh grey sandy CLAY with | some fibrous plant | | |
| - | | (0.50) | 1999 - 1999 - 1999 2019 - 1999 - 1999 2019 - 1999 - 1999 2019 - 1999 - 1999 2019 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - | | - | | |
| - 3.00 D13 (S)N=4 (4 - 3.00-3.50 B14 - | ,4,2,1,1,0) | (0.90) | i a ta i li na i a i a i | rown slighty sandy angula GRAVEL of mixed litholog | | 3 | |
| . 3.70-4.00 B15 | -0.3 | 9 3.70 | Stiff brov | wnish red slightly gravelly | sandy SILT with low | - | |
| - - 4.00-4.45 D16 (S)N=16 - 4.00-5.00 B17 (3,3,3,3,3 - | ,7) | | °≪ k k k coarse c | ontent. Gravel is very and f mixed lithologies. Cobb of mixed lithologies. | | 4 | |
| | | | | | | | |
| | | | Continue | ed next sheet | | | |
| Boring Progress & Water Ob | | Depth/Casin | - | marks: | | | |
| Date Time Borehole Dep Depth (m) Case | oth of Water ing (m) Depth (m) | Depth (m) 4.50 | 150 2. | Cut down rig assembled down rig between 1.20m | to 1.20m depth. No services e on position. Cable percussior and 7.85m depth. | n drilling wi | th cut |
| | | Depth/Boreho | le Diameter | mins. | d at 1.20m depth, rising to 1. | 10m depth | atter 20 |
| | | Depth (m) 7.50 | Diameter (mm) 150 6. | er (mm) 5. Borenole complete at 7.85m depth on engineer's instruction due to | | | 0 |

| | | | | Contra | ct Name: | Stoneha | ven FAS | | | Client: | Aber | deenshire Council | Borehole ID | |
|--------|-----------|--------------------|--------|---------|-----------------------------|--|-------------------------|-------------------|---------------|---------------------------|---|---|--|--------------------------|
| | | STAIN | | Contra | ct Number: | | Date Started: | | | Logged I | By: | Checked By: | B⊦ | 13 |
| Enviro | nmen | tal Sa | rvices | | 5414 | | 01/1 | 1/20 ⁻ | 13 | | CLP | MJB | Sheet 1 of 2 | |
| | | Rotary (| | Easting | g: | | Northing: | | | Ground | Level: | Plant Used: | Scale: | |
| | | Sample | | | 387314 | .9 | 785 | 746. | 4 | | 4.48 | Sonic rig | 1:2 | 25 |
| | Coring In | formation | | | Sampl | es & In Situ | u Testing | | | | | Strata Details | | Groundwate Backfill & |
| TCR | SCR | RQD | FI | Run | Sam | nple ID | Test Re | sult | Leve (m AO | Depth (m D) (Thickness |) Legend | Strata Description | | Installation |
| - | | | | | 0.30- | 20 D1 0.50 B2 1.20 B3 | | | 4.28 3.88 | (0.40) | | MADE GROUND. Grass over dark brown slightly gravelly very clayey fine to medium sand with frequent roots and rootlets. Gravel is subangular to subrounded fine to coarse of sandstone, quartz, brick and mixed lithologies. (Topsoil). MADE GROUND. Dark brown mottled light yellowish brown gravelly very clayey fine to medium sand. Gravel is subangular to subrounded fine to coarse of quartz, sandstone, brick | - - - - - - - - | |
| - | | | | | 1.20- | 1.65 D4 2.00 B5 | (S)N=30 (5,5,7,7,7,5 | 9) | | | | and mixed lithologies. from 0.40m depth, with low cobble content of subangular to subrounded sandstone and mixed lithologies. Medium-dense light yellowish brown and multicoloured slightly clayey very gravelly fine to coarse SAND with low cobble content. Gravel is subangular to subrounded fine to coarse of sandstone, quartz and | 1 - - - - - | |
| - | | | | | 2.00 2.00- 2.0 2.0 | 2.45 D6 EWW8 2.60 B7 00 W8 0 W31 | (S)N=17 (4,3,3,4,6,4 | 4) | | (2.00) | | mixed lithologies. | 2- | |
| - | | | | | 2.7 2.70 | 3.80 B10 70 D9) ESD9 3.45 D11 | (S)N=14 (0,0,1,1,4,8 | 3) | 1.88 | 2.60 | Alte Alte <td< td=""><td>Firm locally plastic dark brown slightly clayey amorphous PEAT with closely spaced thin laminations of grey fine to medium sand.</td><td>- - - - 3 - -</td><td></td></td<> | Firm locally plastic dark brown slightly clayey amorphous PEAT with closely spaced thin laminations of grey fine to medium sand. | - - - - 3 - - | |
| - | | | | | 3.9 | 0 D12 | | | 0.68 | 3.80 | a shla shla shla shla | Medium-dense reddish brown slightly gravelly very clayey fine to | - - - - - - - - | |
| - | | | | | 4.00-4 | 4.70 B13 | (S)N=12 (1,3,2,2,5,3 | 3) | | (0.90) | | medium SAND. Gravel is subangular to subrounded fine to coarse of sandstone, quartz and mixed lithologies. | 4 - - - - - | |
| - | | | | | 4.80- | 0 D14 5.00 B15 | | | -0.22 | 2 4.70 | | Firm reddish brown slightly sandy slightly gravelly CLAY. Gravel is subangular to subrounded fine to Continued next sheet | | |
| | | gress & W Boreh | iole C | asing | Water | Borehole Depth (m) | Diameter | Cas Depth | | ameter Diameter (mm) | Remarks: | dug inspection pit to 1.20m. No servi | | ed |
| Date | Time | Depth | (m) De | pth (m) | Depth (m) | 6.00 10.00 | 140 115 | 6.0 | | 140 | Sonic of 3. Ground mins. Boreho 5. Boreho | aug inspection pit to 1.20m. No servi drilling from 1.20m to 10.00m depth. dwater encountered at 2.45m rising f ole complete at 10.00m upon specific ole backfilled with bentonite upon cor ammer id = GS RIG02. Hammer ene | to 1.97m after : ed depth. mpletion. | 20 |
| | | | | | | | | | | | Release S | Status: Final | | |

| | | | | Contrac | ct Name: | Stonehav | ven FAS | | | Client: | Aber | deenshire Council | Borehole ID |
|--------|------------|-----------------------|--------|------------------|--------------------|----------------------------|-----------------------------|----------|-----------------|------------------------|---|--|---|
| | C | STAIN | - | Contrac | t Number: | | Date Started: | | | Logged E | | Checked By: | BH3 |
| Enviro | onmen | tal Serv | ∕ices | Contrac | 5414 | | 01/11 | /201 | 3 | Logged I | CLP | MJB | Sheet 2 of 2 |
| | | otary Co Sampler | | Easting | : 387314 | | Northing: 7857 | 746.4 | | Ground L | -evel: 4.48 | Plant Used: Sonic rig | Scale: 1:25 |
| | Coring Inf | ormation | - | | Sampl | es & In Situ | u Testing | | | | | Strata Details | Groundwar Backfill & |
| TCR | SCR | RQD | FI | Run | · · | nple ID | Test Res | sult / | Level m AOD) | Depth (m (Thickness | Legend | Strata Description | Installatio |
| | | | | | 5.00-5 | 5.50 U16 | | | | (0.90) | | coarse of sandstone, quartz and mixed lithologies. | |
| - | | | | | | | | | | | | | - |
| - | | | | | 5.6 | 0 D17 0 D18 5.90 B19 | | | -1.12 -1.22 | 5.60 5.70 | | Reddish brown and multicoloured slightly clayey fine to coarse SAND. | |
| - | | | | | | 0 D20 6.45 D21 | (S)N=46 | | -1.42 -1.52 | 5.90 6.00 | | Firm reddish brown slightly gravelly sandy CLAY. Gravel is subangular to subrounded fine to coarse of sandstone, quartz and mixed | 6 |
| - | | | | | | 6.90 B22 | (4,9,10,11,1 3) | | | | | lithologies. Reddish brown and multicoloured slightly clayey gravelly fine to coarse SAND. Gravel is subangular to | |
| - | | | | | | | | | | (0.90) | | subrounded fine to coarse of sandstone, quartz and mixed lithologies. Firm becoming stiff reddish brown | |
| _ | | | | | 6 90-7 | 7.50 B23 | | | -2.42 | 6.90 | | slightly gravelly sandy CLAY. Gravel is subangular to subrounded fine to coarse of sandstone, quartz and mixed lithologies. | - |
| - | | | | | 0.90-1 | | | | 2.72 | (0.60) | | Stiff dark greyish brown slightly sandy slightly gravelly CLAY. Gravel is subangular to subrounded fine to coarse of sandstone, quartz and mixed lithologies. | 7- |
| - | | | | | 7.50-7 | 7.95 D24 | (S)50/225m | | -3.02 | 7.50 | | | - |
| - | | | | | | 8.25 B25 | (2,8,16,16,1 | | | | | Stiff reddish brown occasionally mottled yellowish brown slightly sandy slightly gravelly CLAY. Gravel is subangular to subrounded fine to coarse of sandstone, quartz and mixed lithologies. | - |
| - | | | | | | | | | | | | | 8- |
| - | | | | | 8.25-8 | 8.80 B26 | | | | | | | - |
| - | | | | | 8.80-9 | 9.50 B28 | | | | (2.25) | | from 8.80m depth, mottled | - |
| - | | | | | 9.00-9 | 9.45 D27 | (S)50/145m (13,12,28,22 | | | | | multicoloured and very sandy. | 9- |
| - | | | | | | | | | | | | | |
| - | | | | | | 9.75 B29 0.00 B30 | | | -5.27 | 9.75 | | | |
| - | | | | | | | | | 0.21 | (0.25) | | Firm dark brown gravelly very sandy CLAY. Gravel is subangular to Continued next sheet | - |
| | <u> </u> | ress & Wa Borehole | | servatio | NS Water | | Diameter | | ing Diai | | Remarks: | | |
| Date | Time | Depth (n | n) Dep | asıng oth (m) | Water Depth (m) | Depth (m) 6.00 10.00 | Diameter (mm) 140 115 | Depth (n | | imeter (mm) | Sonic of Ground mins. Boreho 5. Boreho | dug inspection pit to 1.20m. No servi drilling from 1.20m to 10.00m depth. dwater encountered at 2.45m rising ble complete at 10.00m upon specifi ble backfilled with bentonite upon co ammer id = GS RIG02. Hammer end | to 1.97m after 20 ed depth. mpletion. |
| | | | | | | | | | | | Release S | Status: Final | |

| CIIST | id IN | Contrac | | Stonehav | /en FAS | | | Client: | Aber | deenshire Council | Borehole ID | |
|---|-------------|--------------------|-------------------|-----------------------|---------------------------|--------------------|------------------|--------------------------|--|---|--|---|
| Environmenta | | | t Number: 5414 | | Date Started: 01/11 | 1/2013 | 3 | Logged B | CLP | Checked By: MJB | BH Sheet 2+ of 2 | -13 |
| Combined Ro & Dynamic Sa | | Easting: | : 387314 | | Northing: 785 | 746.4 | | Ground L | evel: 4.48 | Plant Used: Sonic rig | Scale: 1:2 | 25 |
| Coring Infor | | | Sample | es & In Situ | u Testing | | | | | Strata Details | | Groundwater Backfill & Installation |
| | RQD FI | Run | - | ple ID | Test Re | sult (m | Level 1 AOD) | Depth (m) (Thickness) | Legend | Strata Description | | Installation |
| ICK SCR I - - - <tr td=""> - -<</tr> | | Kun | Sam | ipie ID | Test Re | | 5.52 | 10.00 | Legend | subrounded fine to coarse of sandstone, quartz and mixed lithologies. ;;; 9.90m - 9.90m : from 9.90m depth, slightly sandy, very gravelly | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | Borehole | Casing epth (m) | Water | Borehole Depth (m) | Diameter Diameter (mm) | Casin Depth (m) | ng Diar) Dia | meter (mm) | Remarks: 1. Hand of | dug inspection pit to 1.20m. No ser | vices encounter | ed. |
| Date Time | Depth (m) D | epth (m) | Depth (m) | 6.00 10.00 | 140 115 | 6.00 | | 140 | Sonic (3. Ground mins. Boreho Boreho SPT hat | dilling from 1.20m to 10.00m depti dwater encountered at 2.45m rising ble complete at 10.00m upon speci ble backfilled with bentonite upon c ammer id = GS RIG02. Hammer er | n. to 1.97m after fied depth. completion. | 20 |

| | | STAIN | | Contrac | | Stonehav | /en FAS | | | Client: | Aber | deenshire Council | Borehole ID | |
|--|--------------------|-------------------------------|-------|-------------------------------|----------------------------------|---|---|--------------------------|----------------------|--|---|--|--|--------------------------|
| Enviro | onmen: | | vices | Contrac | t Number: 5414 | | Date Started: 22/10 |)/201 | 3 | Logged E | ^{By:} CLP | Checked By: MJB | B Sheet 1 of 2 | H4 |
| Comb | pined R namic S | otary C | ored | Easting | 387300 | | Northing: 7857 | 769.6 | 6 | Ground L | evel: 4.33 | Plant Used: Sonic rig | Scale: | :25 |
| (| Coring Inf | ormation | | | Sampl | es & In Situ | u Testing | | | | | Strata Details | | Groundwate Backfill & |
| TCR | SCR | RQD | FI | Run | Sam | ple ID | Test Re | sult (| Level m AOD | Depth (m) (Thickness | Legend | Strata Description | | Installation |
| | | | | | 0.80- 1.20- 1.20- 1.20- | 30 D1 1.20 B2 1.65 D3 1.90 B4 3.00 B6 | (S)N=50 (8,9,12,15, ⁻ 0) | 13,1 | 4.18 3.13 2.43 | 0.15 (1.05) 1.20 (0.70) 1.90 | | MADE GROUND. Asphalt. MADE GROUND. Brownish red ve gravelly fine to medium sand with medium cobble content. Gravel is angular to subrounded, fine to coarse of mixed lithologies and tarmacadam. Cobbles are subangular to subrounded of mixel lithologies. MADE GROUND. Dark orangish brown mottled multicolours slightly clayey gravelly fine to coarse sam with low cobble content. Gravel is subangular to subrounded fine to coarse of quartz, sandstone, coal and mixed lithologies. Cobbles are subangular to rounded of sandstone, quartz and mixed lithologies. Medium-dense light yellowish | d 1 , | |
| | | | | | 2.00 | 2.45 D5) ESD5 3.45 D7 | (S)N=16 (16,7,4,5,4, | 3) | 1.33 | (1.10) | | brown mottled light grey clayey fin to medium SAND. | e 2 | - |
| | | | | | 3.00 3.00- 3.20- | 4.45 D10 | (S)N=6 (11,6,2,1,1, (S)N=7 (2,1,2,2,1,2) | | 1.13 | 3.20 | | Plastic dark brown and dark grey slightly sandy silty amorphous PEAT. Loose dark brown mottled grey slightly clayey gravelly fine to coal SAND with low cobble content. Gravel is subangular to rounded fi to coarse of sandstone, quartz an mixed lithologies. Cobbles are subrounded of mixed lithologies. | ne | |
| - - - - - - Bc Date | Dring Prog | ress & W Borehc Depth (| le C | Servation asing pth (m) | NS Water Depth (m) | Borehole Depth (m) 6.00 10.00 | Diameter Diameter (mm) 140 115 | Casi Depth (r 6.00 | m) D | | Sonic c Ground mins. From 3 Boreho | Continued next sheet dug inspection pit to 1.20m. No su drilling from 1.20m to 10.00m deg dwater encountered at 4.00m risi 3.00m depth, limited recovery due ble backfilled with bentonite upon | oth. ng to 1.00m afte to water ingres completion. | r 20 s. |
| | | | | | | | | | | | | ammer id = GS RIG02. Hammer | | % |

| | P | STAIN | | Contrac | | tonehav | ven FAS | | Client: | Aber | deenshire Council | Borehole ID |
|--------|------------|--------------------|-------|-----------|--|---|---|---------------------------------|---|--|--|--|
| | 6 | 81K.III | | Contrac | t Number: | | Date Started: | | Logged | By: | Checked By: | BH4 |
| Enviro | onmen | tal Ser | vices | | 5414 | | 22/10/ | 2013 | | CLP | MJB | Sheet 2 of 2 |
| | | otary C | | Easting | 387300 | | Northing: 7857 | 69.6 | Ground | Level: 4.33 | Plant Used: Sonic rig | Scale: 1:25 |
| | | Sample | r Log | | | | | | | 1.00 | | Groundwate |
| TCR | Coring Inf | | FI | Dum | · · | es & In Situ | <u> </u> | .u. Lev | el Depth (m | 0 | Strata Details | Backfill & Installation |
| ICR | SCR | RQD | FI | Run | | ple ID | Test Resu | ult (m Ad | el Depth (m DD) (Thickness | Legend | Strata Description | |
| | | | | | 5.00-5 5.10-5 5.50-5 5.90 6.00-6 6.00-6 6.00-6 6.40-6 6.88 6.80-7 7.50-7 7.50-8 | .45 D11 .10 D12 .40 B13 0 D14 .90 B15 0 D16 .45 D17 .40 B18 0 D20 .50 B21 .50 B21 .95 D22 .30 B23 0 D24 .70 B25 | (S)N=32 (11,10,7,8,8, (S)N=23 (2,4,5,7,5,6) (S)50/143mr (6,19,22,28) | 9) -0.7 -1.0 -2.0 -2.0 | 77 5.10 (0.30) 5.40 (1.00) (1.00) 07 6.40 (0.35) (0.35) 42 6.75 (1.55) 8.30 | | Loose dark brown mottled grey slightly clayey gravelly fine to coarse SAND with low cobble content. Gravel is subangular to rounded fine to coarse of sandstone, quartz and mixed lithologies. Cobbles are subrounded of mixed lithologies. Firm orangish brown slightly gravelly sandy CLAY. Gravel is subangular to subrounded fine to coarse of sandstone, quartz and mixed lithologies. Stiff orangish brown slightly sandy slightly gravelly CLAY. Gravel is subangular to subrounded fine to coarse of sandstone, quartz and mixed lithologies. from 5.90m depth, dark brown in colour. from 6.10m depth, with occasional fine to coarse gravel sized pockets of orangish brown fine to coarse sand. Firm dark brown slightly sandy CLAY with occasional thin laminations. Firm and stiff dark orangish brown sandy gravelly CLAY. Gravel is subangular to subrounded fine to coarse of sandstone, quartz and mixed lithologies. | |
| - | | | | | 8.70-9 | 9.15 D26 | (S)50/241mr (2,3,8,8,30,4 | n | (0.60) | | subangular to subrounded fine to coarse of sandstone, quartz and mixed lithologies. Cobbles are subangular to subrounded of sandstone and mixed lithologies. Very dense dark orangish brown becoming dark brown clayey gravelly fine to coarse SAND with low cobble content. Gravel is | 9- |
| - | | | | | | 5 D27 0.00 B28 | | -4.8 | | | subangular to subrounded fine to coarse of sandstone, quartz and mixed lithologies. Cobbles are subangular to subrounded of mixed lithologies. | |
| - | | | | | | | | | (0.80) | | Firm orangish brown sandy gravelly CLAY. Gravel is subangular to subrounded fine to coarse of sandstone, quartz and mixed lithologies. dark yellowish brown and | |
| | | | | | | | | | | مد المعنية الجا منتقد المحية | Continued next sheet | |
| | | ress & W Boreho | | servation | NS Water | Borehole Depth (m) | Diameter | 0 | Diameter | Remarks: | | |
| Date | Time | Depth (| | pth (m) | Depth (m) | 6.00 10.00 | Diameter (mm) [140 115 | 6.00 | Diameter (mm) | Sonic (3. Ground mins. From 3 Boreho 6. SPT has | dug inspection pit to 1.20m. No serv drilling from 1.20m to 10.00m depth. dwater encountered at 4.00m rising 3.00m depth, limited recovery due to ble backfilled with bentonite upon co ammer id = GS RIG02. Hammer end | to 1.00m after 20 water ingress. mpletion. |
| | | | | | | | | | | Release S | Status: Final | |

| | CESTA | LIN | | | | ven FAS | | | Client: | | deenshire Council | Borehole ID | 14 |
|--------------------|--------------------|-----------------------|------------------------------------|---------------------------|---------------|---------------------------|--------------------|-----------------|-------------------------|---|---|--|---|
| Environ | | | | act Number: 5414 | | Date Started: 22/10 |)/2013 | 3 | Logged E | | Checked By: MJB | Br Sheet 2+ of 2 | -14 |
| Combine & Dynar | ed Rota nic Sar | ary Cor mpler L | ed ^{Eastir} .0g | ^{ng:} 387300 | | Northing: 785 | 769.6 | | Ground L | evel: 4.33 | Plant Used: Sonic rig | Scale: 1:2 | 25 |
| Cor | ing Inforn | nation | | Sampl | es & In Situ | u Testing | | | | | Strata Details | | Groundwater Backfill & Installation |
| TCR S | SCR R | QD I | FI Ru | n San | nple ID | Test Re | sult (m | Level 1 AOD) | Depth (m) (Thickness | Legend | Strata Description | | Installation |
| | | | | | | | | 5.67 | 10.00 | | multicoloured slightly clayey very gravelly fine to coarse SAND with low cobble content. Gravel is subangular to subrounded fine to coarse of sandstone, quartz and mixed lithologies. ;;; 9.30m - 9.30m : from 9.30m depth, with occasional very thin beds (<50mm) of fine sandy clay. End of Borehole at 10.00 m | | |
| | | 20 8 Wot- | r Obaan mt | 0005 | Borobal- | Diamotor | Casia | | motor | Pomorile | | | |
| Boring | g Progres | Borehole Depth (m) | r Observati Casing Depth (m) | ONS Water Depth (m) | Depth (m) | Diameter Diameter (mm) | Casin Depth (m) | | | Remarks: 1. Hand of | dug inspection pit to 1.20m. No servi | ces encounter | ed. |
| | | 2 opur (n) | | Sopari(III) | 6.00 10.00 | 140 115 | 6.00 | | 140 | Sonic of 3. Ground mins. 4. From 3 5. Boreho 6. SPT ha | drilling from 1.20m to 10.00m depth. dwater encountered at 4.00m rising i 3.00m depth, limited recovery due to ole backfilled with bentonite upon co ammer id = GS RIG02. Hammer ene | to 1.00m after water ingress mpletion. | 20 |

| | | STAIN | | Contrac | t Name: | Stonehav | ven FAS | | | Client: | Aber | deenshire Council | Borehole ID |
|--------|--------------------|----------------|----------|-------------------|--------------------|-------------------------------------|------------------------------------|--------|-----------------|-------------------------|---|--|---|
| | L | аткш | | Contrac | t Number: | | Date Started: | | | Logged E | By: | Checked By: | BH5 |
| Enviro | onmen | tal Se | rvices | | 5414 | | 07/1 <i>′</i> | 1/201 | 3 | | CLP | MJB | Sheet 1 of 3 |
| | bined R namic S | | | Easting | 387263 | 5.1 | Northing: 785 | 765.3 | 3 | Ground L | evel: 4.66 | Plant Used: Sonic rig | Scale: 1:25 |
| | Coring In | formation | | | Sampl | es & In Situ | u Testing | | | | | Strata Details | Groundwar Backfill & |
| TCR | SCR | RQD | FI | Run | Sam | nple ID | Test Re | sult (| Level m AOD) | Depth (m) (Thickness | Legend | Strata Description | Installatio |
| 1 | | | | | | | | | | | | MADE GROUND. Asphalt. | |
| - | | | | | | 20 D1 ·1.20 B2 | | | 4.56 4.46 | 0.10 0.20 | | MADE GROUND. Asphalt. MADE GROUND. Brown sandy angular to rounded fine to coarse | |
| - | | | | | | | | | | (1.00) | | gravel of sandstone, quartzite, brick and mixed igneous lithologies with high cobble content. Cobbles are subangular to rounded of sandstone and quartzite. | - - - - - - - - - - - - - - - - - - - |
| - | | | | | | 1.65 D2A 2.00 B3 | (S)N=13 (2,3,2,2,5,4 | 4) | 3.46 | 1.20 | | MADE GROUND. Dark brown and multicoloured slightly clayey very gravelly fine to coarse sand. Gravel is subangular to subrounded fine to coarse of sandstone, quartz and brick. | |
| - | | | | | 2.00- | 2.70 B4 | (S)N=5 (2,1,2,1,1,1 | 1) | 2.66 | 2.00 | | Loose dark orangish brown slightly clayey gravelly fine to coarse SAND. Gravel is subangular to subrounded fine to coarse of sandstone, quartz and mixed lithologies. | |
| - | | | | | | -3.30 B5 | | | 1.96 | 2.70 | | Soft brownish yellow gravelly very sandy CLAY. Gravel is subangular to subrounded fine to coarse of sandstone and quartz. | |
| - | | | | | 3.1 | 3.45 D6 0 W22 EWW22 | (S)N=12 (0,2,1,2,3,6 | 6) | | (0.60) | | | 3- |
| - | | | | | | 3.45 D7) ESD7 | | | 1.36 | 3.30 | <u>116 stile</u> stile stile stile stile s | Dark brown amorphous PEAT with | |
| | | | | | | ·3.80 B8 | | | 1.21 | 3.45 | stra stra stra stra stra x × x x | fine to coarse gravel sized pockets of soft grey slightly sandy clay. | |
| - | | | | | 3.80- | 5.00 B9 | | | 0.86 | (0.35) 3.80 | | Greyish brown slightly silty fine to medium SAND with occasional gravel. Gravel is subangular to subrounded fine to coarse of sandstone, quartz and mixed | - |
| - | | | | | 4.00-4 | 4.45 D10 | (S)N=28 (4,5,6,11,5 | ,6) | | | | lithologies. Dense brown and multicoloured very sandy subangular to subrounded fine to coarse GRAVEL of sandstone, quartz and mixed lithologies. | 4 - - - - |
| | | | | | | | | | | (1.70) | | Continued next sheet | |
| Вс | oring Prog | gress & W | /ater Ob | servatio | ns | Borehole | Diameter | Cas | ing Dia | neter | Remarks: | | |
| Date | Time | Boreh Depth | ole C | Casing pth (m) | Water Depth (m) | Depth (m) 2.00 10.50 13.50 | Diameter (mm) 229 140 115 | | m) Dia | 229 140 | Hand c Sonic c Rotary Ground mins. Boreho Boreho | lug inspection pit to 1.20m. No servic drilling from 1.20m to 10.00m depth. drilling between 10.00m and 13.50m dwater encountered at 2.00m rising to ble complete at 13.50m upon enginee ble backfilled with bentonite upon com ammer id = GS RIG02. Hammer ener | depth. 9 1.84m after 20 r's instruction. pletion. |
| | | | | | | | | | | | Release S | status: Final | |

| Environmental Services 5414 07/11/2013 CLP MJB search at a star at at star at at star at at a star at at a star at at a star at at a star | | | | | Contra | ct Name: | Stoneha | ven FAS | | | Client: | Aber | deenshire Council | Borehole ID | |
|--|-------|--|---------|----------|----------|--|---|---|------------|----------|--------------------------|--|---|---|----------------------|
| Environmental Services Institute Institute <td></td> <td>C</td> <td>STAIN</td> <td></td> <td>Contra</td> <td>ct Number:</td> <td></td> <td>Date Started:</td> <td></td> <td></td> <td>Logged E</td> <td>By:</td> <td>Checked By:</td> <td>BH5</td> <td></td> | | C | STAIN | | Contra | ct Number: | | Date Started: | | | Logged E | By: | Checked By: | BH5 | |
| Combined Rotary Core Same Family 2000 Same Same Family 2000 | Envir | onmen | ital Se | rvices | | 5414 | | 07/11 | 1/201 | 13 | | CLP | MJB | Shoot 2 of 2 | |
| Coring Mormation Samples & In Stur Testing Sinta Details TCR BCR ROD FI Run Samples & In Stur Testing Sinta Details TCR BCR ROD FI Run Samples & In Stur Testing Sinta Details TCR BCR ROD FI Run Samples & In Stur Testing Sinta Details TCR SCR ROD FI Run Samples & In Stur Testing Test Testing South Status South Status South Status South Status Test Testing Test Testing Test Testing Test Testing Test Testing Test Testing Test Test Test Test Test Test Test Test | Comb | bined R | otary (| Cored | Easting | | 5.1 | - | 765.3 | 3 | Ground I | | | | |
| TCR SCR ROD FI Run Sample ID Text Read Length Lington Lington | - | | | - | | Sampl | es & In Situ | u Testina | | | | | Strata Details | Gro | oundwater |
| Image: Subset of the second and the second | | | | | Run | | | - | sult | Leve | Depth (m | Legend | | ln: | ackfill & stallation |
| Boring Progress & Water Observations Borehole Diameter (mm) Depth (m) Diameter (mm) Diameter (mm) 1. Hand dug inspection pit to 1.20m. No services encountered at 2.00m rising to 1.84m after 2. | | | | | Run | Sam 5.00-5 5.00-6 5.00-6 5.00-7 5.60 6.00-6 6.00-7 7.50-7 7.50-7 7.50-8 8.25-8 | nple ID 5.45 D11 5.50 B12 0 W13 0 D14 6.00 B15 6.45 D16 7.50 B17 7.95 D18 0 D19 8.25 B20 9.30 B21 | Test Re (S)N=112 (1,3,10,81, 0) (S)50/277m (3,8,11,14, 0) (S)50/194m (7,15,18,22) | nm 15,1 | -0.85 | 5 5.50 (2.75) 8.25 | | Dense brown and multicoloured very sandy subangular to subrounded fine to coarse GRAVEL of sandstone, quartz and mixed lithologies. Firm becoming stiff dark brown slightly sandy slightly gravelly CLAY with low cobble content. Gravel is subangular to subrounded fine to coarse of sandstone, quartz and mixed lithologies. Cobbles are subangular to subrounded of sandstone, quartz and mixed lithologies. between 7.50m and 7.70m depth, sandy. Very dense yellowish brown becoming dark yellowish brown and multicoloured slightly clayey gravelly fine to coarse SAND with low cobble content. Gravel is subangular to rounded fine to coarse of sandstone, quartz and mixed lithologies. Cobbles are subangular to rounded fine to coarse of sandstone, quartz and mixed lithologies. Cobbles are subangular to subrounded of | | |
| In a stand dug inspection pit to 1.20m. No services encountered at 2.00m rising to 1.84m after 2 In a stand dug inspection pit to 1.20m. No services encountered at 2.00m rising to 1.84m after 2 Date Time Borehole Casing Depth (m) Depth (m) Depth (m) Depth (m) Depth (m) Diameter (mm) Diameter (m | - | | | | | | | | | -4.65 | | | CLAY with low cobble content. Gravel is subangular to subrounded fine to coarse of sandstone, quartz and mixed lithologies. Cobbles are subangular to subrounded of sandstone and mixed lithologies. | | |
| Date Borehole Depth (m) Casing Depth (m) Water Depth (m) Depth (m) Diameter (mm) Diameter (mm) I. Hand dug inspection pit to 1.20m. No services encountered 2. Sonic drilling from 1.20m to 10.00m depth. 0 2.00 229 2.00 229 3. Rotary drilling between 10.00m and 13.50m depth. 10.50 140 10.50 140 4. Groundwater encountered at 2.00m rising to 1.84m after 2.00m | | | | Votor O' | | | Dorot-1 | Diameter | | | ometer | <u>Domerti</u> | | | |
| Date Time Depth (m) Depth (m) Depth (m) Depth (m) Depth (m) 2.00 2.00 2.00 2.00 2.00 2.00 2.00 2.00 2.00 3. Rotary drilling between 10.00m and 13.50m depth. 13.50 115 10.50 140 140 4. Groundwater encountered at 2.00m rising to 1.84m after 2.00m | | <u>т </u> | Borel | hole C | Casing | Water | | | | <u> </u> | | | | ces encountered. | |
| mins. 5. Borehole complete at 13.50m upon engineer's instruction 6. Borehole backfilled with bentonite upon completion. 7. SPT hammer id = GS RIG02. Hammer energy ratio =39% Release Status: Final | Date | Lime | Depth | ι (m) De | ະpīn (m) | ueptn (m) | | 229 140 | 2.0 | 00 | 229 | Sonic (3. Rotary 4. Groun- mins. Boreho 6. Boreho 7. SPT has | drilling from 1.20m to 10.00m depth. drilling between 10.00m and 13.50n dwater encountered at 2.00m rising to ble complete at 13.50m upon engine ble backfilled with bentonite upon co ammer id = GS RIG02. Hammer end | n depth. to 1.84m after 20 er's instruction. mpletion. | |

| | P | STAIN | | Contrac | | Stonehav | /en FAS | | | Client: | Aber | deenshire Council | Borehole ID | |
|-------------------------|---------|--------------------|--------|----------|-------------------|------------------------|---------------------------|-------------|-----------------|-------------------------|---|--|--|----------------------------|
| Envir | | ital Se | rvices | | t Number: 5414 | | Date Started: 07/11 | 1/201 | 3 | Logged E | ^{By:} CLP | Checked By: MJB | BH Sheet 3 of 3 | 1 5 |
| Comb | oined R | Rotary (Sample | Cored | Easting: | 387263 | | Northing: 785 | 765.3 | 3 | Ground L | evel: 4.66 | Plant Used: Sonic rig | Scale: 1:2 | 25 |
| - | | formation | - | | | es & In Situ | | | | | | Strata Details | | Groundwate |
| TCR | SCR | RQD | FI | Run | | iple ID | Test Re | sult | Level (m AOD | Depth (m) (Thickness | Legend | Strata Description | | Backfill & Installation |
| - | | | | | 10.00-1 | 10.50 B27 10 D26 | | | -5.35 | (0.50) |) | Reddish brown mottled greenish grey gravelly fine to medium SAND. Gravel is angular of sandstone. | - | |
| - | | | | 10.50 | | 10.95 D28 -11.21 C | (S)50/75mr (19,6,50) | m | -5.85 | 10.50 | | Extremely weak dark greenish grey coarse grained SANDSTONE. Discontinuities are 70 deg medium spaced rough stepped. | | |
| - 100 - - - | 100 | 100 | | | | -11.90 C | | | | | | | - 11- - - - - - - - - - - - - - - - - - | |
| - | | | 4 | 12.00 | | -12.58 C | | | | (3.00) | | from 12.00m depth, very weak. | 12 - - - - - - | |
| - 100 | 100 | 100 | | | 13.08 | -13.30 C | | | 0.05 | 42.50 | | | - - - - - - - - - - - - - - | |
| - - - | | | | | | | | | -8.85 | 13.50 | | End of Borehole at 13.50 m | - | |
| - | | | | | | | | | | | | | - 14 - - - - | |
| - | | | | | | | | | | | | | - | |
| | | gress & W Boreh | nole C | Casing | Water | Borehole Depth (m) | Diameter Diameter (mm) | | ing Dia | | Remarks: | : dug inspection pit to 1.20m. No serv | ices encounter | red |
| Date | Time | Depth | (m) De | pth (m) | Depth (m) | 2.00 10.50 13.50 | 229 140 115 | 2.0 10.5 | | 229 140 | Sonic Rotary Groun mins. Boreho Boreho SPT h | drilling from 1.20m to 10.00m depth y drilling between 10.00m and 13.50 idwater encountered at 2.00m rising ole complete at 13.50m upon engine ole backfilled with bentonite upon co ammer id = GS RIG02. Hammer en | n. m depth. to 1.84m after eer's instruction ampletion. | 20 1. |
| | | | | | | | | | | | Release | Status: Final | | |

| | | | | Contra | ct Name: | Stonehav | ven FAS | | | Client: | Aber | deenshire Council | Borehole ID | |
|------------|---------|--------------------|-------|------------------------------|--------------------|--|--|------------------------------|------------------|------------------------------------|--|---|---|------------------------|
| | | STAIN | | Contra | ct Number: | | Date Started: | | | Logged E | | Checked By: | BH6 | 5 |
| Enviro | nmen | ital Sei | vices | | 5414 | | 05/11 | 1/201 | 3 | | CLP | MJB | Sheet 1 of 2 | |
| Comb | oined R | Rotary C Sample | Cored | Easting | 。 387160 | .4 | Northing: 7850 | 698.2 | 2 | Ground L | evel: 5.34 | Plant Used: Sonic rig | Scale: 1:25 | |
| | | formation | - | | Sampl | es & In Situ | u Testina | | | | | Strata Details | Gro | oundwate Backfill & |
| TCR | SCR | RQD | FI | Run | · · · | nple ID | Test Re | sult | Level (m AOD) | Depth (m) (Thickness | Legend | Strata Description | E | stallation |
| - | | | | | | 20 D1 0.50 B2 | | | 4.74 | (0.60) | | Grass over dark brown clayey gravelly fine to medium SAND with medium cobble content and frequent roots and rootlets. Gravel is subangular to subrounded fine to coarse of sandstone, quartz and mixed lithologies. Cobbles are subangular to subrounded of sandstone and mixed lithologies. (Possible Made Ground). | - | |
| - | | | | | | 1.20 B3 | | | | | | Medium-dense becoming dense light yellowish brown slightly clayey very gravelly fine to coarse SAND with low cobble content. Gravel is subangular to subrounded fine to coarse of sandstone, quartz and mixed lithologies. Cobbles are subangular to subrounded of | | |
| - | | | | | 1.20 1.20- | 1.65 D4) ESD4 ·2.00 B5 | (S)N=29 (10,5,7,8,7, | 7) | | (1.75) | | sandstone and mixed lithologies. | | |
| - | | | | | 2.00- | 2.35 B6 | (S)N=32 (10,15,13,1 3) | 0,6, | | | | at 2.00m depth, dense. | 2 - | |
| - | | | | | 2.35- | 2.70 B7 | | | 2.99 | 2.35 (0.35) | | Soft dark greyish brown slightly sandy CLAY with frequent gravel sized pockets of dark brown amorphous peat. | | |
| - | | | | | 3.00- | 3.10 B8 3.45 D9 3.80 B10 | (S)N=40 (7,7,7,7,8,1 | 8) | 2.64 2.24 | 2.70 (0.40) 3.10 | | Dark brown slightly clayey gravelly fine to medium SAND with low cobble content. Gravel is subangular to subrounded fine to coarse of sandstone, quartz and mixed lithologies. Cobbles are subangular to subrounded of mixed lithologies. | 3 | |
| - | | | | | | | | | 1.54 | (0.70) | | Light orangish brown slightly clayey very gravelly fine to coarse SAND with low cobble content. Gravel is subangular to subrounded fine to coarse of sandstone, quartz and mixed lithologies. Cobbles are subangular to subrounded of mixed lithologies. | | |
| - | | | | | 4.00-4 | 0 D11 4.45 D12 4.60 B13 | (S)N=33 (2,4,7,8,9,9 |)) | | (0.35) | | Firm reddish brown slightly sandy slightly gravelly CLAY. Gravel is subangular to subrounded fine to coarse of sandstone, quartz and mixed lithologies. | 4 - | |
| - | | | | | | | | | 1.19 | 4.15 (0.45) | | Reddish brown mottled light greenish grey slightly gravelly clayey fine to medium SAND. | | |
| - | | | | | | 0 D14 5.00 B15 | | | 0.74 | 4.60 | | Dense becoming very dense light greenish grey slightly clayey gravelly fine to medium SAND. Gravel is angular to subangular fine | | |
| | | | | | | | | | | <u> </u> | | Continued next sheet | | |
| Bc Date | Time | Boreh | ole C | servatio asing pth (m) | Water Depth (m) | Borehole Depth (m) 2.00 3.00 10.00 | Diameter Diameter (mm) 229 140 115 | Cas Depth (2.0 3.0 | | meter ameter (mm) 229 140 | Sonic of 3. Rotary Ground mins. Boreho 50mm 2.50m | dug inspection pit to 1.20m. No serv drilling from 1.20m to 9.00m depth. drilling between 9.00m and 10.00m dwater encountered at 3.00m rising ble complete at 10.00m upon specifi standpipe installed upon completio and 4.50m depth. ammer id = GS RIG02. Hammer en | depth. to 2.72m after 20 ded depth. n, slotted between | |
| | | | | | | | | | | | Release S | Status: Final | | |

| & Dyna | nmen ined R amic S | tal Sei tal Sei totary C Sample | Cored | | t Number: 5414 | | Date Started: | | | | | | | 10 |
|--------------------------------------|--------------------------|--|-------|--------------------|--------------------|---|--|--------------|-----------------|--------------------------|--|---|--|--------------------------|
| & Dyna c | amic S | Sample | | Eacting | | | 05/11/ | /2013 | 3 | Logged B | CLP | Checked By: MJB | Sheet 2 of 2 | 46 |
| | | ormation | LOG | | : 387160 | | Northing: 7856 | 98.2 | | Ground L | evel: 5.34 | Plant Used: Sonic rig | Scale: 1:2 | 25 |
| TCR | SCR | | | | Sampl | es & In Site | u Testing | | | | | Strata Details | | Groundwate Backfill & |
| - | | RQD | FI | Run | Sam | nple ID | Test Resu | ult (m | Level n AOD) | Depth (m) (Thickness) | Legend | Strata Description | | Installation |
| | | | | | 6.0 | 5.45 D16 6.00 B17 0 D18 6.75 B19 | (S)N=49 (11,14,10,11 ,16) (S)50/165mr (12,13,18,24 | n | | | | to coarse of sandstone. Detail 4.80m - 6.00m : below 4.80m depth, light yellowish brown in colour. from 5.00m depth, with occasional cobble sized pockets of stiff reddish brown very sandy clay. | | |
| | | | | | 7.50-7 | 7.50 B20 7.95 D21 8.00 B22 | (S)50/150mr (13,12,17,33 | n ;) | | (4.40) | | between 7.00m and 9.00m depth, gravelly fine to coarse sand. | - - - - - - - - - - - - - - - - - - - | |
| | | | | 9.00 | 8.00-5 | 9.00 B23 | | | -3.66 | 9.00 | | | - 8- - - - - - - - - - - - - - - - - - | |
| - - - - - - - - | 100 | 93 | 5 | 3.00 | 9.39 | -9.67 C | | | 0.00 | (1.00) | | Very weak dark greenish grey coarse grained SANDSTONE. Discontinuities are 0-10 deg closely to medium spaced rough stepped stained brown. from 9.55m depth, discontinuities are 50 deg closely spaced smooth planar open with clay infill. | | |
| Bor | ring Prog | ress & W | | | | | Diameter | | ng Dian | | Remarks: | | | I |
| Date | Time | Boreh Depth | ole (| Casing epth (m) | Water Depth (m) | Depth (m) 2.00 3.00 10.00 | Diameter (mm) E 229 140 115 | 2.00 3.00 |) Diai | meter (mm) 229 140 | Sonic e Rotary Ground mins. Boreho 50mm SPT has | dug inspection pit to 1.20m. No serv drilling from 1.20m to 9.00m depth. drilling between 9.00m and 10.00m dwater encountered at 3.00m rising ole complete at 10.00m upon specif standpipe installed upon completio and 4.50m depth. ammer id = GS RIG02. Hammer en Btatus: Final | n depth. 1 to 2.72m after iied depth. n, slotted betw | 20 een |

| | | | | Contrac | ct Name: | Stoneha | ven FAS | | | Client: | Aber | deenshire Council | Borehole ID |
|--------------------------|--------------------|----------------|----------|------------------------------|--------------------------|-----------------------------|--------------------------------|----------|-------------------|------------------------|---|--|---|
| | | STAIN | | Contrac | t Number: | | Date Started: | | | Logged I | | Checked By: | BH7 |
| Enviro | onmen | tal Se | vices | | 5414 | | 04/1 ⁻ | 1/20 | 13 | | CLP | MJB | Sheet 1 of 2 |
| | oined R namic S | | | Easting | : 387121 | .2 | Northing: 785 | 678. | 8 | Ground | _evel: 7.86 | Plant Used: Sonic rig | Scale: 1:25 |
| (| Coring Inf | ormation | | | Sampl | es & In Situ | u Testing | | | | | Strata Details | Groundw Backfi |
| TCR | SCR | RQD | FI | Run | Sam | nple ID | Test Re | sult | Level (m AOI | Depth (m (Thickness | Legend | Strata Description | Installa |
| - | | | | | | 20 D1 •0.50 B2 | | | 7.56 | (0.30) | | Grass over dark brown clayey gravelly fine to coarse sand with frequent roots and rootlets. Gravel is subangular to subrounded fine to coarse of sandstone and mixed lithologies. (Possible Made Ground). (Topsoil). Dark brown clayey gravelly fine to | - |
| - | | | | | | 1.20 B3 | | | | (1.10) | | coarse SAND with medium cobble content. Gravel is subangular to subrounded fine to coarse of sandstone, quartz and mixed lithologies. Cobbles are subangular to subrounded of sandstone and mixed lithologies. | - - - 1- 1- |
| - | | | | | 1.3 | 1.65 D4 30 D5 2.00 B6 | (S)N=23 (1,4,2,6,5,1 | 10) | 6.46 | 1.40 | 4 - 4 - 4 | at 1.20m depth, medium-dense. | - |
| - | | | | | 1.40 | | | | 0.40 | | | Light yellowish brown and multicoloured slightly clayey gravelly fine to coarse SAND. Gravel is subangular to subrounded fine to coarse of sandstone, quartz and mixed lithologies. | |
| - | | | | | | 2.45 D7 2.30 B8 | (S)N=38 (1,5,7,7,11 | ,13) | | (0.90) | | at 2.00m depth, dense. | 2- |
| - | | | | | | 3.00 B10 40 D9 | | | 5.56 | 2.30 | | Stiff reddish brown slightly sandy slightly gravelly CLAY. Gravel is subangular to subrounded fine to coarse of sandstone, quartz and mixed lithologies. | |
| - | | | | | | 3.45 D11 3.60 B12 | (S)50/192r (12,11,16,2) | | | (1.30) | | | 3- |
| - | | | | | 3.60-4 | 4.00 B13 | | | 4.26 | 3.60 | | Reddish brown mottled light | |
| - | | | | | | | | | | (0.40) | | greenish grey and multicoloured slightly clayey gravelly fine to coarse SAND. Gravel is angular to subangular fine to coarse of sandstone. | |
| - | | | | 4.00 | 4.00-4 | 4.45 D14 | (S)50/164r (13,12,16,2) | | 3.86 | 4.00 | | Assessed Zone of Core Loss. | 4- |
| - | | | AZCL | | | | | | | (0.65) | | | - |
| 57 | 9 | 9 | NI | | 4.05 | -5.13 C | | | 3.21 | 4.65 | · · · · · · · · · · · · · · · · · · · | Very weak dark greenish brown coarse grained SANDSTONE. Discontinuities are 1) 10-20 deg closely to medium spaced rough Continued next sheet | |
| | | | latar O' | con cette | _ [| 1 | Diamatar | | sing D' | amotor | Pomoriu | | |
| Bo Date | ring Prog Time | Boreh Depth | ole C | servatio asing pth (m) | NS Water Depth (m) | Borehole Depth (m) | Diameter | | sing Dia (m) [| ameter iameter (mm) | Remarks: 1. Hand | dug inspection pit to 1.20m. No servi | ices encountered. |
| 04/11/2013 05/11/2013 | 3 1800 | 3.0 | о : | pth (m) 3.00 3.00 | | 2.00 3.00 9.00 | 229 140 115 | 2. 3. | 00 00 | 229 140 | Sonic Rotary No gro Boreho Boreho | drilling from 1.20m to 4.00m depth. v drilling between 4.00m and 9.00m of pundwater encountered during drilling ole complete at 9.00m depth upon er ole backfilled with bentonite upon co ammer id = GS RIG02. Hammer end | depth. g. ngineer's instruction. mpletion. |
| | | | | | | | | | | | Release S | Status: Final | |

| Environm Combine & Dynam TCR SC - - - - - - - - - - - - - | ed Ro nic Sa | al Sei otary C | Cored r Log | Easting: Run 5.50 | 387121 Sample Sam | | Date Started: 04/11 Northing: 7856 J Testing Test Ret | 678. | | Cogged E Ground L Depth (m) (Thickness) | CLP evel: 7.86 | Checked By: MJB Plant Used: Sonic rig Strata Details Strata Description planar and stepped. 2) 75 deg widely spaced rough planar. Detail 4.65m - 4.95m : between 4.65m and 4.95m depth, recovered non-intact as reddish and greenish brown gravelly very clayey sand, Gravel is angular fine | BH7 Scale: 1:25 Groundwa Backfill Installatio |
|---|------------------------------------|--------------------------------------|-----------------------------------|-------------------------|-------------------------|-------------------------------|--|------------|------------------|--|--|--|---|
| Combine & Dynam | ed Ro nic Sa ing Info ICR | otary C cample prmation RQD | FI 1 NI | Easting: Run 5.50 | 387121 Sample Sam | .2 es & In Situ | Northing: 7856 u Testing | 678. | 8 | | evel: 7.86 | Plant Used: Sonic rig Strata Details Strata Description planar and stepped. 2) 75 deg widely spaced rough planar. Detail 4.65m - 4.95m : between 4.65m and 4.95m depth, recovered non-intact as reddish and greenish brown gravelly very clayey sand, Gravel is angular fine | Scale: 1:25 |
| & Dynam TCR SC | nic Sa ing Info CR | ample ormation RQD | r Log Fl 1 NI 1 NI | Run 5.50 | 387121 Sample Sam | .2 es & In Situ pple ID | 7856 Testing | | | | 7.86 | Sonic rig Strata Details Strata Description planar and stepped. 2) 75 deg widely spaced rough planar. Detail 4.65m - 4.95m : between 4.65m and 4.95m depth, recovered non-intact as reddish and greenish brown gravelly very clayey sand, Gravel is angular fine | 1:25 |
| TCR SC | | RQD | FI 1 NI 1 | 5.50 | Sam | iple ID | <u> </u> | sult | Level (m AOD) | Depth (m) (Thickness) | | Strata Description planar and stepped. 2) 75 deg widely spaced rough planar. Detail 4.65m - 4.95m between 4.65m and 4.95m depth, recovered non-intact as reddish and greenish brown gravelly very clayey sand, Gravel is angular fine | Groundwa Backfill Installatio |
| - 100 52 | | | 1 NI 1 NI | 5.50 | | | Test Res | sult | Level (m AOD) | Depth (m) (Thickness) | | planar and stepped. 2) 75 deg widely spaced rough planar. Detail 4.65m - 4.95m : between 4.65m and 4.95m depth, recovered non-intact as reddish and greenish brown gravelly very clayey sand, Gravel is angular fine | Installatio |
| | 52 | 44 | NI 1 NI | | 5.50- | -5.94 C | | | | | | widely spaced rough planar. Detail 4.65m - 4.95m : between 4.65m and 4.95m depth, recovered non-intact as reddish and greenish brown gravelly very clayey sand, Gravel is angular fine | - |
| | 52 | 44 | | | | | | | | | | to coarse of sandstone. between 5.13m and 5.50m depth, recovered non-intact as reddish and greenish brown gravelly very clayey sand, Gravel is angular fine to coarse of | |
| | | | 7 | ~ | | | | | | | | sandstone. between 5.94m and 6.42m depth, recovered non-intact as reddish and greenish brown gravelly sand, Gravel is angular fine to coarse of sandstone. | - 6 - - - |
| - - - - - - - | | | | 6.50 | 6.78- | -7.06 C | | | | (4.35) | | | |
| - | 84 | 75 - | NI 1 NI | | | | | | | | | between 7.33m and 7.34m depth, 1 no. 20 deg open fracture with red clay infill. | |
| - | | | 3 | 8.00 | 7.75- | -8.00 C | | | | | | from 8.00m depth, strong. | 8- |
| - - - 100 8(| 86 | 79 | 4 | | 8 56- | -9.00 C | | | | | | | |
| - | | | 3 | | | 0.00 0 | | | -1.14 | 9.00 | | | - - - - - |
| | | | | | | | | | | | | End of Borehole at 9.00 m | |
| - | | | | | | | | | | | | | - |
| Boring | | ress & W | ater Oh | servation | ns l | Borehole | Diameter | Са | sing Dia | meter | Remarks: | | |
| | Time | Boreh | ole C | asing | Water Depth (m) | Depth (m) | | Depth | | | 1. Hand o | ug inspection pit to 1.20m. No servi | ces encountered. |
| 04/11/2013 05/11/2013 | 1800 1130 | 3.00 |) ; | 3.00 3.00 | 1.35 | 2.00 3.00 9.00 | 229 140 115 | 2.0 3.0 | 00 | 140 | Rotary No gro Boreho Boreho | drilling from 1.20m to 4.00m depth. drilling between 4.00m and 9.00m c undwater encountered during drilling le complete at 9.00m depth upon er le backfilled with bentonite upon co ammer id = GS RIG02. Hammer ene | g. ngineer's instruction. mpletion. |
| | | | | | | | | | | - | Release S | | |

| | | | | Contra | ct Name: | Stoneha | ven FAS | | | Client: | Abero | deenshire Council | Borehole ID |
|----------------------------------|----------------|-------------------|-----------------|---|------------------------------|--|---------------------------------|-------------------------|-----------------|-----------------------------|---|---|---|
| | C | STAIN | | Contra | ct Number: | | Date Started: | | | Logged E | | Checked By: | BH8 |
| Enviro | onmen | tal Ser | vices | | 5414 | | 02/11 | 1/201 | 3 | | CLP | MJB | Sheet 1 of 3 |
| | | otary C Sample | | Easting | یر 387053 | | Northing: 7850 | 651.5 | 5 | Ground L | .evel: 7.24 | Plant Used: Sonic rig | Scale: 1:25 |
| | Coring Inf | ormation | _ | | Sampl | es & In Situ | u Testing | | | | | Strata Details | Groundwate Backfill & |
| TCR | SCR | RQD | FI | Run | Sam | nple ID | Test Re | sult | Level (m AOD | Depth (m) (Thickness | Legend | Strata Description | Installation |
| - | | | | | 0.3 | 10 D1 30 D2 -0.60 B3 | | | 7.17 6.94 | 0.07 (0.23) 0.30 | | MADE GROUND. Asphalt. MADE GROUND. Reddish brown gravelly fine to coarse sand. Gravel is angular to subangular fine to coarse of brick, clinker, limestone | |
| - | | | | | | 60 D4 •1.20 B5 | | | 6.64 | (0.30) 0.60 | | and mixed lithologies. MADE GROUND. Brown slightly gravelly sandy clay. Gravel is subangular to rounded fine to coarse of brick, sandstone and |] - - |
| | | | | | | 1.65 D6 2.00 B7 | (S)50/269n (1,4,13,13, 0) | | 6.04 | (0.60) | | mixed igneous lithologies. MADE GROUND. Brown sandy subangular to rounded fine to cioarse gravel of limestone, clinker, sandstone and mixed igneous lithologies with low cobble content. Cobbles are subangular to rounded of sandstone and mixed igneous lithologies. Very dense light yellowish brown slightly clayey gravelly fine to coarse SAND with low cobble content. Gravel is subangular to subrounded fine to coarse subangular to subrounded | |
| - | | | | | 2.00 | 2.45 D8) ESD8 2.80 B9 | (S)50/219n (25,19,16,1 | | | (1.60) | | fine to coarse of sandstone, quartz and mixed lithologies. Cobbles are subrounded of sandstone, quartz and mixed lithologies. | 2- |
| - | | | | | 2.80-3 2.9 | 79 EW 3.70 B11 0 D10 3.45 D12 | (S)50/200n (7,8,10,13,2 | | 4.44 | 2.80 | | Stiff reddish brown slightly sandy slightly gravelly CLAY with low cobble content. Gravel is subangular to subrounded fine to coarse of sandstone, quartz and mixed lithologies. Cobbles are subangular to subrounded of sandstone and mixed lithologies. from 3.20m depth, friable. | 3- |
| - | | | | | | 4.00 B13 | | | 3.54 | 3.70 | | Very dense dark orangish brown slightly clayey gravelly fine to coarse SAND. | 4- |
| - | | | | | | 4.45 D14 4.40 B15 | (S)50/85mr (8,14,42,8) | m | | (0.70) | | from 4.20m depth, very clayey. | 4- |
| - | | | | | | 0 D16 5.00 B17 | | | 2.84 | 4.40 | | Stiff locally hard reddish brown slightly sandy slightly gravelly CLAY with closely spaced thin beds of extremely weak light greenish grey sandstone. Gravel is subangular to subrounded fine to coarse of sandstone, quartz and mixed lithologies. Continued next sheet | |
| | | | latar O' | 007 | | Dovela | Diamata | | ina D' | meter 1 | Pom | CONTINUED HEAL SHEEL | |
| Date 02/11/2013 04/11/2013 | Time 3 1800 | | ole C (m) De | servatic asing pth (m) - 7.50 | Water Depth (m) - - | Borehole Depth (m) 7.50 10.50 | Diameter (mm) 140 105 | Cas Depth (r 7.50 | - | meter ameter (mm) 140 | Sonic d Rotary d Ground mins. Borehoo 50mm s 3.50m s 7. SPT hat | lug inspection pit to 1.20m. No serv trilling from 1.20m to 5.00m depth. drilling between 5.00m and 10.50m lwater encountered at 5.00m rising le complete at 10.50m upon specif standpipe installed upon completio and 4.50m depth. Immer id = GS RIG02. Hammer en | i depth. to 4.66m after 20 ied depth. n, slotted between |
| L | | | | | | <u> </u> | L | | | | Release S | tatus: Final | |

| | C | STAIN | | Contrac | S | Stoneha | ven FAS | | | Client: | | deenshire Council | Borehole ID | 10 |
|----------------------------------|------------------|--------------------|----------------|---------------------------------|------------------------------|----------------------------|----------------------------|---------|-----------------|----------|---|--|--|---|
| | | | | | t Number: 5414 | | Date Started: 02/11 | 1/201 | 3 | Logged I | ^{3y:} CLP | Checked By: MJB | - Bł | 18 |
| Enviro | onmen bined R | | | Easting | | | Northing: | | | Ground I | | Plant Used: | Sheet 2 of 3 Scale: | |
| | namic S | | | : | 387053 | .3 | 785 | 651.5 | 5 | | 7.24 | Sonic rig | 1:2 | 25 |
| | Coring In | formatior | 1 | | Sampl | es & In Situ | u Testing | | | | | Strata Details | | Groundwater Backfill & Installation |
| TCR | SCR | RQD | FI | Run | | nple ID | Test Re | sult | Level (m AOI | |) Legend | Strata Description | | |
| - - - - - - - | 28 | 28 | NI 10 | 5.00 | | -6.00 C | (\$)50/150n (14,11,27,2 | | 2.24 | (0.69) | | Strong reddish brown SANDSTONi recovered as clayey sandy very angular to subangular fine to coarse gravel. Very strong reddish brown and grey coarse grained SANDSTONE. Discontinuities are randomly | | |
| | | | | 6.00 | | | | | 1.24 | 6.00 | · · · · · · · · · | orientated very closely to closely spaced planar stepped straight and | 6- | |
| - | | | AZCL | | | | | | | (0.63) | | Assessed Zone of Core Loss. | | |
| | | | | | 6.63 | -6.94 C | | | 0.61 | 6.63 | | Very strong reddish brown and grey | / | |
| 58 | 41 | 18 | 3 | | | | | | | (0.29) | | coarse grained SANDSTONE. Discontinuities are randomly | - | |
| - | | | | | | | | | 0.32 | 6.92 | 00000 | orientated very closely to closely spaced planar stepped straight and rough. | | |
| - | | | NI | | | | | | | | | Very strong reddish brown fine grained CONGLOMERATE. Discontinuities are randomly | 7+ - - | |
| - | | | 12 | | | | | | | | | orientated closely spaced planar stepped and straight, rough infilled | - | |
| - | | | NI | 7.50 | 7.83 | -8.19 C | | | | (1.27) | | (<15mm) with sandy fine to coarse gravel. between 6.94m and 7.17m depth, recovered non-intact. between 7.50m and 7.60m depth, recovered non-intact. | - - - 8- - | |
| - - - - - - | 93 | 93 | 2 | 9.00 | 8.19 | -8.65 C | | | -0.95 | i 8.19 | | Very strong grey coarse grained SANDSTONE. Discontinuities are 1) closely spaced subhorizontal stepped planar rough closed. 2) subvertical undulating stepped rough closed. | - - - - - - - - - - - 9- | |
| - | | | 15 | 9.00 | | | | | | | | | - | |
| - - - 100 - | 88 | 0 | 19 | | 9.81- | 10.03 C | | | | (2.31) | | Continued next sheet | | |
| Bo | oring Prog | gress & V Boret | | | ns Water | | Diameter | | | ameter | Remarks | | nicco | ad |
| Date 02/11/2013 04/11/2013 | | Depth) 1.2 | 1 (m) De 10 | Jasing apth (m) - 7.50 | Water Depth (m) - - | Depth (m) 7.50 10.50 | Diameter (mm) 140 105 | Depth (| | 140 | Sonic Rotary Grour mins. Boreh 50mm 3.50mr SPT h | dug inspection pit to 1.20m. No se drilling from 1.20m to 5.00m depth / drilling between 5.00m and 10.50 dwater encountered at 5.00m risin ole complete at 10.50m upon spec standpipe installed upon completi and 4.50m depth. ammer id = GS RIG02. Hammer e Status: Final | n. m depth. g to 4.66m after ified depth. ion, slotted betwo | 20 een |

| | C | STAIN | | | | Stoneha | ven FAS | | | Client: | | rdeenshire Council | Borehole ID | oL |
|--------------------------|-------------------|-------------------|----------------|------------------------------|-------------------------|-----------------------|---------------------------|------------------|----------------|-------------------------|--|--|---|---|
| Enviro | nment | tal Ser | vices | | ct Number: 5414 | | Date Started: 02/11 | 1/201 | 3 | Logged E | CLP | Checked By: MJB | BH Sheet 3 of 3 | 10 |
| Comb & Dyn | ined R amic S | otary C ample | Cored r Log | Easting | ^{;:} 387053 | | Northing: 7850 | 651.5 | | Ground L | .evel: 7.24 | Plant Used: Sonic rig | Scale: 1:2 | 25 |
| C | Coring Info | ormation | | | Sampl | es & In Situ | u Testing | | | | | Strata Details | | Groundwater Backfill & Installation |
| TCR | SCR | RQD | FI | Run | Sam | nple ID | Test Re | sult (I | Level m AOD | Depth (m) (Thickness | Legend | Strata Description | | Installation |
| - - - | | | | | | | | | -3.26 | 10.50 | | Very strong grey coarse grained SANDSTONE. Discontinuities are 1) closely spaced subhorizontal stepped planar rough closed. 2) subvertical undulating stepped rough closed. End of Borehole at 10.50 m | | |
| | | | | | | | | | | | | | - - - - - - - - - - - - - - - - - - - | |
| | | | | | | | | | | | | | - 12 - - - - - - - - - - - - - - - - - - | |
| - | | | | | | | | | | | | | - - - - - - - - - - - - - - - - - - - | |
| | | | | | | | | | | | | | - - 14 - - - - - - - - - - | |
| | | | atar O | | | Devel | Diorect | | | | Demail | | - | |
| Boı Date | ring Prog Time | Boreho Depth (| | servatio asing pth (m) | Water Depth (m) | Borehole Depth (m) | Diameter Diameter (mm) | Casi Depth (n | | ameter (mm) | Remarks 1. Hand | dug inspection pit to 1.20m. No serv | ices encounter | ed. |
| 02/11/2013 04/11/2013 | 1800 | 1.20 10.50 |) | - 7.50 | | 7.50 10.50 | 140 105 | 7.50 | | 140 | Sonic Rotary Groun mins. Boreh 50mm 3.50m SPT h | drilling from 1.20m to 5.00m depth. y drilling between 5.00m and 10.50m ndwater encountered at 5.00m rising | n depth. to 4.66m after ied depth. n, slotted betwo | 20 een |

| | Contract Name: | tonehave | on FAS | | Client: | Abor | deenshire Council | Borehole ID |
|--|------------------------------------|------------------|--------------------------------|------------------|------------------------------|---|--|---|
| CESTAIN | Contract Number: | | Date Started: | | Logged | | Checked By: | BH9 |
| Environmental Service | 5414 | | 28/10/2 | 2013 | Logged | CLP | MJB | Sheet 1 of 1 |
| Combined Rotary Cored & Dynamic Sampler Log | Easting: 387035. | | lorthing: 7856 | 52.6 | Ground | Level: 7.08 | Plant Used: Sonic rig | Scale: 1:25 |
| Coring Information | Sample | es & In Situ 1 | Testing | | | | Strata Details | Groundwater Backfill & |
| TCR SCR RQD FI | Run Samp | ole ID | Test Resu | ult Lev (m A0 | el Depth (r DD) (Thicknes |) Legend | Strata Description | Installation |
| | | | | | | | MADE GROUND. Asphalt. | |
| | | 0 D1).50 B2 | | 6.9 | (0.50) | | MADE GROUND. Dark brown slightly clayey gravelly fine to coarse sand with low cobble content. Gravel is angular to subangular fine to coarse of asphalt, brick, sandstone and quartz. Cobbles are of sandstone and asphalt. | |
| | 0.80-1 | I.20 B3 | | 0.4 | 0.00 | | Dense becoming very dense dark orangish brown gravelly fine to coarse SAND. Gravel is subangular to subrounded fine to coarse of sandstone, quartz and mixed lithologies. from 1.00m depth, with low cobble content of subangular to | |
| | | 2.00 B5 | (S)N=48 (5,9,10,10,12 6) | 2,1 | (1.80) | | subrounded sandstone, quartz and mixed lithologies. | |
| | 2.00 | | (S)50/182mr (25,26,19,5) | n | | | at 2.00m depth, very dense. | 2- |
| | | 0 D8 3.00 B9 | | 4.6 | 8 2.40 | | Stiff pinkish reddish brown slightly sandy gravelly CLAY with frequent fine to coarse gravel sized pockets of greenish grey fine to coarse sand. Gravel is subangular fine to coarse of sandstone and quartz. | |
| | | | (S)50/175mn (25,25,20,5) | n | (1.60) | | from 3.10m depth, with low cobble content of subangular sandstone. | 3 |
| | | 0 D12 .00 B13 | | | | | between 3.50m and 3.60m depth, sandy. | |
| | 4.20-5. | | (S)50/5mm (25,50) | 3.0 2.8 | | | Greenish grey mottled pinkish brown slightly clayey sandy GRAVEL with medium cobble content. Gravel is angular, fine to coarse of sandstone. Cobbles are | 4 |
| | | | | | (0.80) | | Angular of sandstone. Cooperation angular of sandstone. Strong greenish grey fine to medium grained SANDSTONE. | |
| | | | | | | | | |
| Boring Progress & Water O | | Borehole D | | Casing [| | Remarks: | | I |
| Date Time Depth (m) [| Casing Water epth (m) Depth (m) | 3.00 5.00 | Diameter (mm) D 140 115 | 3.00 | Diameter (mm | Sonic Boreho Boreho Moistu Ground Ground Boreho | dug inspection pit to 1.20m. No servin drilling from 1.20m to 5.00m. ble complete at 5.00m upon schedule re encountered at 1.80m depth. dwater encountered at 3.00m depth, is. ble backfilled with bentonite upon cor ammer id = GS RIG02. Hammer ene | ed depth. rising to 1.87m after npletion. |
| | | | | | | Release S | Status: Final | |

| | P | TA IN | | Contra | ct Name: | Stonehav | ven FAS | | Client: | Aber | deenshire Council | Borehole ID |
|------|------------|-------------------|----|----------|--------------------|-------------------|-----------------------|------------------|---------------------------|--|---|--------------------------|
| | | STAIN | | | ct Number: 5414 | | Date Started: 28/10/2 | 2013 | Logged | By: CLP | Checked By: MJB | BH10 |
| | onmen | | | Easting | - | | Northing: | | Ground | | Plant Used: | Sheet 1 of 1 Scale: |
| | bined R | | | | 387009 | .6 | 78565 | 57.3 | | 7.96 | Sonic rig | 1:25 |
| (| Coring Inf | ormation | | | Sampl | es & In Situ | u Testing | | | | Strata Details | Groundwate Backfill & |
| TCR | SCR | RQD | FI | Run | Sam | nple ID | Test Resul | t Leve (m AC | Depth (m D) (Thickness |) Legend | Strata Description | Installation |
| | | | | | | | | 7.86 | | | MADE GROUND. Asphalt. | |
| - | | | | | | | | | | | MADE GROUND. Dark orangish brown slightly clayey gravelly fine to | , - |
| | | | | | | 30 D1 ·0.50 B2 | | | (0.50) | | coarse sand with low cobble content. Gravel is subangular to | j |
| - | | | | | | | | | | | subrounded fine to coarse of sandstone, quartz and mixed lithologies. Cobbles are subangular | - |
| - | | | | | | | | 7.36 | 0.60 | | to subrounded of sandstone and mixed lithologies. | 7 |
| _ | | | | | 0.80- | 1.20 B3 | | | | | Dark orangish brown gravelly fine to medium SAND with low cobble | |
| - | | | | | | | | | (0.60) | | content. Gravel is subangular to subrounded fine to coarse of | - |
| _ | | | | | | | | | | | sandstone, quartz and mixed lithologies. Cobbles are subangular | 1- |
| - | | | | | 1.20- | 2.00 B4 | (S)N=1 | 6.76 | 5 1.20 | × × × × × | to subrounded of sandstone and mixed lithologies. | 7 |
| - | | | | | | | (0,0,1,0,0,0) | | | $(\times \times$ | Soft dark orangish brown occasionally mottled light orangish | - |
| - | | | | | | | | | | | brown very sandy SILT. | |
| - | | | | | | | | | | $\times \times $ | | - |
| - | | | | | | | | | | : | | |
| - | | | | | | | | | (1.30) | $\begin{array}{c} \times \times \times \times \times \\ \times \times \times \times \\ \times \times \times \times \\ \times \times \times \times \end{array}$ | from 1.80m depth, becoming gravelly with low cobble content. | - |
| - | | | | | 2.50 B5 ESB5 | (S)N=10 | | | : | Gravel is subangular to subrounded fine to coarse of | 2- | |
| - | | | | | 2.00 | 2000 | (3,3,4,3,2,1) | | | $\times \times \times \times \times$ | sandstone, quartz and mixed lithologies. Cobbles are |] |
| - | | | | | | | | | | $\begin{array}{c} \times \times \times \times \times \\ \times \times \times \times \times \\ \times \times \times \times \times \end{array}$ | subangular to subrounded of sandstone and mixed lithologies. | - |
| - | | | | | 2.50 | 2 E0 DC | | EAG | 2.50 | : X X X X X X X X X X X X X X | | - |
| - | | | | | 2.50- | ·3.50 B6 | | 5.46 | 2.50 | | Loose slightly silty gravelly fine to coarse SAND with low cobble | - |
| - | | | | | | | | | | | content. Gravel is subangular to subrounded fine to coarse of | - |
| - | | | | | | | | | | | sandstone, quartz and mixed lithologies. Cobbles are subangular | |
| - | | | | | 3.00- | 3.45 D7 | (S)N=6 | | (1.00) | | to subrounded of sandstone and mixed lithologies. from 3.00m depth, very silty. | 3- |
| - | | | | | | | (0,0,0,0,3,3) | | | | nom 3.00m depin, very sity. | - |
| - | | | | | | | | | | | | - |
| - | | | | | | | | | | | | - |
| - | | | | | 3.50- | 4.30 B8 | | 4.46 | 3.50 | | Loose dark orangish brown silty gravelly fine to coarse SAND. Grave | si - I |
| - | | | | | | | | | | | is subangular to subrounded fine to coarse of sandstone, quartz and | - |
| | | | | | | | | | (0.00) | | mixed lithologies. | |
| | | | | | 4.00- | 4.45 D9 | (S)50/190mm | | (0.80) | | | 4 - |
| - | | | | | | | (12,13,12,20, | | | | | - |
| | | | | | | | ľ | 3.66 | 4.30 | | | |
| | | | | | | | | | | | Very dense green grey mottled pinkish brown slightly clayey sandy | - |
| | | | | | 4.50- | 5.00 B10 | | | | | angular to subangular fine to coarse GRAVEL of sandstone. | |
| | | | | | | | | | (0.70) | | | |
| - | | | | | | | | | | | | |
| İ | | | | | | | | | | | | |
| | oring Prog | ress & W Boreh | | servatio | INS Water | | | Casing D | iameter Diameter (mm) | Remarks: | | |
| Date | Time | Depth | | epth (m) | Depth (m) | Depth (m) 4.00 | 140 | epth (m) 4.00 | Diameter (mm) | 2. Sonic | dug inspection pit to 1.20m. No ser drilling from 1.20m to 5.00m. ble complete at 5.00m upon schedu | |
| | | | | | | 5.00 | 115 | | 1-10 | | dwater encountered at 2.00m depth | |
| | | | | | | | | | | 5. Boreho | ble backfilled with bentonite upon c ammer id = GS RIG02. Hammer ei | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | Release S | Status: Final | |

| COST | TAIN | Ston | act Name: nehaven F <i>i</i> act Number: | AS | Date St | tarted: | | Client: Aberdeen: | shire Council | Borehole I | ^{⊳:} BH11 |
|---------------|----------------|------------------------|--|-----------------|------------|-----------------|-----------------|---|-----------------------------|----------------------|------------------------|
| Invironment | al Servic | | 5414 | | | 22/10/20 | 013 | MC | MJB | Sheet 1 of | |
| Cable Per | | Easting | | | Northin | | | Ground Level: | Plant Used: | Sheet 1 of Scale: | |
| Borehol | | 3 | 86913.8 | | 78 | 85652.3 | 3 | 9.28 | Cut down CP | | 1:25 |
| | es & In Situ T | esting | | | | | | Strata Details | | | Groundwater |
| Sample ID | | Test Resul | lt (r | Level m AOD) | Depth (m | n) Legend s) | | Strata Details | iption | | Water Backfill/ |
| 0.00 D1 | | | | n AOD) | (thickness | ∞ | | | | 1 | Strike(s) Installation |
| | | | | 9.18 | 0.10 | | with ro | GROUND: Brown slightly si otlets. Sand is fine to coarse rounded, fine to coarse of b | e. Gravel is angular | / _ | |
| 0.20 D2 | | | | | | | MADE | GROUND: Brown slightly si | ilty slightly gravelly sand | /[| |
| | | | | | | | with roo | otlets. Sand is fine to coarse rounded, fine to coarse of b | e. Gravel is angular | - | |
| 0.50-0.90 B | 3 | | | | (0.80) | | sandsto | | | - | |
| | | | | | | | ł | | | t I | |
| | | | | | | | í | | | | |
| | | | ; | 8.38 | 0.90 | <u>XXXX</u> | | GROUND: Grey concrete. | | + | |
| | | | | | | | · | Borehole at 0.90 m | | | |
| | | | | | | | I | | | | |
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| | | | | | | | I | | | - | |
| | | | | | | | L | | | | |
| Boring Progre | ess & Water | Ohserva | tions | De | onth/Casi | ng Diame | oter R | emarks: | | | |
| Date Time | Borehole | Depth of Casing (m) | | | pth (m) | Casing | ng r (mm) 1. | Hand dug inspection pit to | 0 90m depth. | | |
| | Depth (m) | Casing (m) | Deptri (m) | + | F | Diameter | 2. | Cut down rig assembled of Borehole terminated on co | n position. | n denth and | |
| | | | | Dent | th/Boreh | ole Diam | | backfilled with arisings up | on completion. | | |
| | | | | - | epth (m) | ole Diame | nole | Cut down rig disassembled | a and moved to new positio | л оп на. | |
| | | | 1 | | | Diameter | (mm) | | | | |
| | | | | | | | | | | | |

| | C | STAIN | | | | toneha | ven FAS | | | ent: | | eens | hire Council | Borehole ID | 111 |
|---|--------------------|----------------------------|--------|-------------------------------|---|-----------------------|---------------------------|---------------------|---|--|----------------------------------|--|---|--------------------|---|
| Enviro | onmen | tal Sei | rvices | | act Number: 5414 | | Date Started: 22/1(|)/2013 | Loç | gged By: | MC | | Checked By: MJB | BH Sheet 1 of 1 | |
| | bined R ble Per | | | Eastin | ^{g:} 386913. | | Northing: 785 | 652.3 | Gro | ound Lev | el: 9.28 | | Plant Used: Cut down CP | Scale: 1:2 | 25 |
| (| Coring Inf | ormation | | | Sample | es & In Site | u Testing | | | | | Str | ata Details | | Groundwater Backfill & Installation |
| TCR | SCR | RQD | FI | Run | Sample ID | | Test Resul | t | Level (m AOD | Depth (r (Thicknes | n) Legend | | Strata Description | | Installation |
| TCR | SCR | RQD | FI | Run | Sample ID 0.00 D1 0.20 D2 0.50-0.90 B3 | S | Test Result | t | Level (<u>m AOD</u> 9.18 8.38 | Depth (r (Thickness 0.10 (0.80) 0.90 | n Legend | silty s rootlet Grave fine to sands MADE silty s rootlet Grave fine to sands MADE | GROUND: Brown slightly ightly gravelly sand with s. Sand is fine to coarse. I is angular to well rounded, coarse of brick and tone. GROUND: Brown slightly ightly gravelly sand with s. Sand is fine to coarse. I is angular to well rounded, coarse of brick, coal and | | |
| - - - - - - - - - - - - - - - - - - - | pring Prog Time | ress & W Boreh Depth | ole C | Servati Casing apth (m) | DNS Water Depth (m) | Borehole Depth (m) | Diameter Diameter (mm) | Casing Depth (m) | Diamete | r (mm) 1. 2. 3. | Cut dow Borehole backfille | n rig as e termi ed with | ection pit to 0.90m depth. ssembled on position. nated on concrete obstruc arisings upon completion sassembled and moved t | ction at 0.90m de | |
| | | | | | | | | | | R | elease St | atus:Fir | nal | | |

| | | | Cont | ract Name: | Stonehav | ven FAS | | Cli | ent: | Abero | leenshire Council | Borehole ID |
|--------------------|----------------|-------------------------------|-----------------------------|---|------------------------|----------------------------------|---------------------|--|----------------------------|---|--|-----------------------------------|
| | C . | STAIN | Cont | ract Number: | | Date Started: | | Lo | gged By: | | Checked By: | BH11A |
| Enviro | onment | tal Servic | es | 5414 | | 22/10 | 0/2013 | | | MC | MJB | Sheet 1 of 2 |
| | | otary Core cussion Lo | | ^{ng:} 386915 | 5.7 | Northing: 785 | 653.2 | Gr | ound Lev | ^{el:} 9.21 | Plant Used: Cut down CP / M.I.2 | Scale: 1:25 |
| (| Coring Inf | ormation | | Sampl | es & In Siti | u Testing | | | | | Strata Details | Groundwat Backfill 8 |
| TCR | SCR | RQD F | l Run | Sample ID | | Test Resul | t | | Depth (r | n) s)Legend | Strata Description | Installatio |
| | | | | 0.00 D1 0.20 D2 0.30 D3 0.50-1.20 B 1.20-1.65 D 1.20 ESD5 1.20-2.00 B | 4 5 (1 6 7 (1 | S)N=2 (1,0,1,0 S)N=2 (1,0,0,1 | 9,1,0) | (<u>m AOD</u> 9.11 8.91 7.31 | 0.10 0.30 (1.60) | | MADE GROUND: Brown slightly silty slightly gravelly fine to coarse sand with occasional rootlets. Gravel is subangular to well rounded fine to medium of sandstone. MADE GROUND: Reddish brown gravelly fine to coarse sand. Gravel is angular to rounded fine to medium of sandstone and brick. MADE GROUND: Reddish brown gravelly sand with medium cobble content. Sand is fine to coarse. Gravel is angular to rounded fine to coarse of sandstone, brick and clinker. | |
| | | | | 3.00-3.45 D 3.00-3.50 B1 | 9 (1 | S)N=6 (0,0,0,1 | ,0,5) | | (1.60) | | at 3.00m depth, loose. | |
| | | | | 3.50-3.70 D1 3.50-4.50 B1 | | 50/120mm (25 | ,20,30) | 5.71 | 3.50 | | Reddish grey SANDSTONE recovered as fine to coarse sand and angular fine to coarse gravel of sandstone. | |
| - | | | | 4.50-4.70 D1 | | 0/150mm (20, | | 4.51 | 4.70 (0.30) | | NO RECOVERY. | |
| Bo | oring Prog | Borehole | Observat Casing | tions Water | | Diameter | - | Diamet | | emarks: | | |
| Date 22/10/2013 | Time 3 1600 | Borehole Depth (m) 4.70 | Casing Depth (m) 4.10 | Water Depth (m) | Depth (m) 4.50 | Diameter (mm) | 9 Depth (m) 4.10 | Diamete 15 | 2. 3. 4. 5. 6. | Cut dov Cable p 4.70m d Chiselli Rotary f SPT ha | ug inspection pit to 1.20m depth. I vn rig assembled on position. vercussion drilling with cut down ri depth. ng 3.70m to 4.50m - 1 hour. follow-on between 4.70m and 10.0 mmer id = WB1. Hammer energy | g between 1.20m and 00m depth. |

| | | | | Conti | ract Name: | toneha | ven FAS | | Cli | ent: | | Abero | lee | nshire Council | Borehole ID | |
|---------------------|--------------------|----------------|------------|--------------------|---------------------------|--------------|---------------|-----------|-----------------|------------------|------------------------------|--|------------------------------------|---|------------------------|---------------------------|
| | C | STAIN | | Cont | ract Number: | | Date Started: | | Loc | ged B | | | | Checked By: | - вн | 11A |
| | | () 0 | | | 5414 | | |)/2013 | | J900 D | | /IC | | MJB | | 1 17 (|
| Enviro | | | | Easti | | | Northing: | | Gro | ound L | | - | | Plant Used: | Sheet 2 of 2 Scale: | |
| | oined R ole Per | | | | 386915 | .7 | 785 | 653.2 | | | 9. | .21 | | Cut down CP / M.I.2 | 1:: | 25 |
| | Coring In | formatior | 1 | | Sample | es & In Situ | u Testing | | | | | | | Strata Details | | Groundwater Backfill & |
| TCR | SCR | RQD | FI | Run | Sample ID | | Test Resul | t | Level (m AOD | Depth (Thickn | (m) iess) | egend | | Strata Description | | Installation |
| - - - | | | NI 12 | 5.00 | 5.45-5.55 C1 | 4 | | | 4.21 | 5.00 |) | | CO Di Ve Clo Clo ro | ery strong grey mottled brown barse grained SANDSTONE. scontunuities are: 1) 90-80 deg, ery closely spaced planar rough osed stained brown. 2) 0-20 deg, osely spaced curved stepped ugh closed stained brown. between 5.00m and 5.78m | | · · · |
| 97 | 52 | 0 | NI | | | | | | | | | | | depth, recovered non-intact. | | |
| - | | | 18 | | | | | | | | | | | | 6- | |
| - | | | NI | 6 50 | 6.47-6.84 C1 | 5 | | | | | • | | | between 6.20m and 6.50m depth, recovered non-intact. | | |
| | | | 10 | 6.50 | | | | | | | | | | | | |
| - | | | NI | | | | | | | | | | | between 6.61m and 6.79m depth, recovered non-intact. | | |
| 100 | 43 | 14 | 10 | | | | | | | | : | | : | between 6.84m and 7.20m | | |
| - | | | NI | 7.20 | | | | | | | • | | | depth, recovered non-intact. | 7 - | |
| - | | | AZCL NI | 1.20 | | | | | | | | | | between 7.25m and 7.37m | | |
| - - 93 - - | 71 | 0 | 13 | | | | | | | (5.00 |)) | | | depth, recovered non-intact. | | |
| - | | | 30 | 8.00 | | | | | | | - | | | | 8- | |
| - | | | | | | | | | | | | | | | | |
| - - - 100 | 38 | 0 | NI 10 | - | | | | | | | • | | | between 8.25m and 8.30m depth, recovered non-intact. | · · | |
| | | | |] | | | | | | | | | | | | 1 |
| | | | NI 20 | 1 | | | | | | | - | | | between 8.70m and 8.83m depth, recovered non-intact. | | |
| | | | 29 NI | | | | | | | | | | | between 8.90m and 9.00m | 9- | |
| - - 100 | 80 | 52 | | 9.00 | 9.25-9.50 C1 | 6 | | | | | • | | | depth, recovered non-intact. below 9.00m depth, discontinuities are medium spaced. | 9- | |
| - | | | 4 | 9.50 | 9.50-10.00 C ⁴ | 17 | | | | | • | | | | | |
| - 100 - | 100 | 40 | | | | | | | | | • | | | | · · | |
| Ro | ring Proc | aress & V | Vater Oh | n servat | ions I | Borehole | Diameter | Casing | Diamete | er | Ren | narks: | E | nd of Borehole at 10.00 m | | 1 |
| Date | Time | Borel Depth | hole (| Casing epth (m) | Water Depth (m) | Depth (m) | Diameter (mm) | Depth (m) | Diamete | r (mm) | 1. 1 | -land d | ug ir | nspection pit to 1.20m depth. g assembled on position. | No services end | countered. |
| 22/10/2013 | 3 1600 | 4.7 | | 4.10 | - | 4.50 | 150 | 4.10 | 15 | 0 | 3. (4. (5. F 6. S | Cable p 4.70m Chiselli Rotary SPT ha | ercu depti ng 3 follo | ussion drilling with cut down h. 8.70m to 4.50m - 1 hour. w-on between 4.70m and 10 er id = WB1. Hammer energ | .00m depth. | m and |
| | | | | | 1 | | | | | | Rel | ease S | tatus | s:Final | | |

| | | | | Contra | ct Name: | | | | | Client: | | | | Borehole ID | |
|--|--------------------------|------------------------------|----------------------------|--|--------------------------------------|------------------------------------|------------------------------------|--------------|------------------------------|--------------------------|---|--|---|------------------------------------|---|
| | C | STAIN | | | S | Stonehav | /en FAS | | | | Aber | deens | hire Council | | 0 |
| | | | | | ct Number: | | Date Started: | 1/20- | 12 | Logged | | | Checked By: | BH1 | 2 |
| Enviro | | | | | 5414 | | 17/10 | JI 20' | 13 | 0 | CLP | | PS | Sheet 1 of 2 | |
| | bined R | | | Easting | ։ 386920 | | Northing: 7856 | 331 | 7 | Ground | Level: 9.88 | | Plant Used: Sonic rig | Scale: 1:25 | |
| | namic S | | • | | | | | JJ 1. | | | 9.00 | | , C | | |
| I | Coring In | | | | | es & In Situ | r – – | | Lava | Denth (n | | Sti | rata Details | - | Froundwater Backfill & Installation |
| TCR | SCR | RQD | FI | Run | Sam | nple ID | Test Res | sult | Level (m AO | Depth (m D) (Thicknes | Legend | | Strata Description | | |
| - | | | | | 0.35-1 | 1.20 LB2 | | | 9.70 9.65 9.60 9.53 | 0.23 0.28 | | MADE fine to igneo | E GROUND. Dark grey angula o coarse gravel of mixed us lithogies. E GROUND. Tarmacadam. | - r - | |
| - | | | | | | | | | 9.08 | (0.45) | | MADE slightl grave | E GROUND. Reddish pink ly sandy angular fine to coarse l of mixed igneous lithologies. E GROUND. Compacted | , | |
| - | | | | | 1.0 | 00 D1 | | | 9.06 | (0.40) | | reddis mediu conte | sh brown very gravelly fine to im sand with high cobble nt. Gravel is subangular to wel led fine to coarse of mixed | - - II 1- | |
| - | | | | | | 1.45 D3 1.50 B4 | (S)N=31 | 1) | 8.68 | 1.20 | | litholo | ogies. Cobbles are subrounded Il rounded of mixed | 1 | |
| | | | | | | | (5,6,6,6,8,1 | '' | | (0.30) | | | ish brown very gravelly fine to um SAND, with medium |] | |
| | | | | | | -1.80 B7 60 D6 | | | 8.38 | 1.50 | | cobbl subro | e content. Gravel is unded to well rounded fine to e of mixed lithologies. | ÷ | |
| - | | | | | 1.0 | | | | | (0.30) | | Cobb | e of mixed lithologies. les are subrounded to well led of mixed lithologies. | | |
| - | | | | | 1.80- | 2.00 B8 | | | 8.08 | 1.80 | | orang | e dark brown becoming dark ish brown gravelly silty fine to e SAND. Gravel is angular to | , | |
| - | | | | | | 2.50 B10 2.45 D9 | (S)50/135m (25,0,37,13 | | | | | subro limest | unded fine to coarse of tone, quartzite, quartz and l lithologies. | 2- | |
| - | | | | | 2.50-3 | 3.00 B11 | | | | (1.30) | | grave Grave fine to quartz | gish brown slightly clayey Ily fine to coarse SAND. el is angular to subrounded o coarse of sandstone, quartz, zite and mixed lithologies. | - | |
| - | | | | | | 3.50 U12 0 U12 | | | | | | slight CLAY pinkis Grave to coa mixed | becoming stiff, orangish brown ly sandy slightly gravelly 'with thick laminations of ih brown fine to medium sand. el is subangular to rounded fine arse of sandstone, quartz, and I lithologies. From 2.00m to 2.45m depth, | | |
| - | | | | | | | | | 6.78 | 3.10 (0.50) | | sar Col lith | ndy with high cobble content. bbles are subangular of mixec ologies. From 2.50m depth, very stiff, | | |
| - | | | | | | 0 D13 4.00 B14 | | | 6.28 | 3.60 | | grave SANE subro sands | dense orangish brown slightly Ily very clayey fine to medium D. Gravel is subangular to unded fine to medium of stone, quartz, quartzite and | - | |
| - | | | | | | 4.45 D15 5.00 B16 | (S)50/233m (6,11,13,15 4) | | | (1.40) | | Very s locally very s subar mediu | I lithologies. stiff friable orangish brown y mottled grey, slightly gravelly sandy CLAY. Gravel is igular to subrounded fine to um of sandstone, quartz and I lithologies. | / 4- - - - - - - | |
| - | | | | | | | | | | | | Conti | inued next sheet | - | |
| Bo | oring Prog | | | servatio | ns | Borehole | Diameter | Cas | sing Di | ameter | Remarks: | | | | |
| Date 17/10/2013 18/10/2013 18/10/2013 | Time 3 1730 3 0800 | Boreh Depth 8.0 8.0 | nole C (m) De 0 0 | Casing epth (m) 3.00 3.00 3.00 3.00 | Water Depth (m) - 5.37 - | Depth (m) 3.00 8.00 10.00 | Diameter (mm) 140 115 105 | Depth 3.0 | (m) [| Diameter (mm | Sonic Rotary Ground of shift Boreho | drilling fr coring f dwater e t. ble backt | ection pit to 1.20m. No ser rom 1.20m to 8.00m. rom 8.00m to 10.00m. incountered overnight . Sitt filled with bentonite on con d = GS RIG02. Hammer et | ting at 5.37m at stan | |
| | | | | | | | | | | | Release S | Status: | Final | | |
| | | _ | | | | • | | | | | | | | | |

| | Г | STAIN | | Contrac | ct Name: | Stoneha | ven FAS | | | Client: | Aber | deenshire Council | Borehole ID | |
|---|--------------------|-----------|-------------|--|--------------------------------------|------------------------------------|-------------------------------------|--------------|---------------|-----------------------------|---|---|----------------------------|--|
| | onmen | tal Sei | | | t Number: 5414 | | Date Started: 17/1(Northing: |)/20′ | 13 | Logged F | CLP | Checked By: PS Plant Used: | Sheet 2 of 2 Scale: | 112 |
| | bined R namic S | | | Easting | : 386920 | | - | 631. | 7 | Ground I | 9.88 | Sonic rig | | 25 |
| | Coring In | formation | | | Sampl | es & In Situ | u Testing | | | | | Strata Details | | Groundwate Backfill & Installation |
| TCR | SCR | RQD | FI | Run | Sam | nple ID | Test Re | sult | Leve (m AO | l Depth (m D) (Thickness | | Strata Description | | Installation |
| - | | | | | | 5.45 D17 6.00 B18 | (\$)50/129n (13,12,26,2 | nm 24) | 4.88 | 5.00 | | Very dense pinkish brown slightly gravelly clayey fine to medium SAND. Gravel is subangular to subrounded fine to medium of sandstone and quartz. | | |
| - | | | | | | 6.45 D19 7.00 B20 | (S)50/75mi (13,12,50) | m | | (3.00) | | | 6 | - |
| | | | | | | 7.45 D21 8.00 B22 | (S)50/99mi (14,11,35,1 | m I5) | | | | from 6.80m depth, thinly laminated with occasional lenses of stiff clay. | 7 - | |
| - - - 100 - - | 0 | 0 | NI | 8.00 | | | | | 1.88 | 8 8.00 (1.00) | | Very weak red brown speckled grey and white fine grained SANDSTONE recovered as non intact clayey sandy angluar fine to coarse gravel. between 8.00m and 9.00m depth, recovered non-intact as clayey sandy angular fine to coarse gravel. | 8 | - |
| - - - - - 100 | 83 | 50 | | | 9.14-9 | 9.34 C23 | | | 0.88 | 9.00 | | Weak red brown speckled grey and white fine grained SANDSTONE. Discontinuities are very closely to closely spaced horizontal stepped closed. | 9 | - |
| - - - - | | | 4 | | 9.65-9 | 9.80 C24 | | | | (1.00) | | | | - |
| В | oring Prog | | | | | | Diameter | | | iameter | Remarks: | End of Borehole at 10.00 m | | Į |
| Date 17/10/201 18/10/201 18/10/201 | 3 0800 | 8.00 | (m) De D | Casing ppth (m) 3.00 3.00 3.00 3.00 | Water Depth (m) - 5.37 - | Depth (m) 3.00 8.00 10.00 | Diameter (mm) 140 115 105 | Depth 3.0 | | Diameter (mm) | Sonic c Rotary Ground of shift Boreho SPT hat | dug inspection pit to 1.20m. No serv drilling from 1.20m to 8.00m. coring from 8.00m to 10.00m. dwater encountered overnight . Sitti le backfilled with bentonite on com ammer id = GS RIG02. Hammer en | ng at 5.37m at pletion. | start |

| | | TT-1 (8) | | Contra | ict Name: | Stonehav | /en FAS | | | Client: | Abero | leenshire Council | Borehole ID |
|-----------------|------------|--------------|--------|------------------|-------------------|-----------------------|---------------------------|------------------|----------------|-------------------------|--|---|---------------------------|
| | LEi | STAIN | | Contra | ct Number: | | Date Started: | | | Logged E | By: | Checked By: | BH13 |
| Enviro | nmen | tal Sei | rvices | | 5414 | | 18/10 |)/201 | 3 | | CLP | PS | Sheet 1 of 2 |
| | oined R | | | Easting | g: | | Northing: | | | Ground L | evel: | Plant Used: | Scale: |
| | namic S | | | | 386957 | '.9 | 785 | 642.3 | 5 | | 8.94 | Sonic rig | 1:25 |
| (| Coring Inf | ormation | | | Sampl | es & In Situ | u Testing | | | | | Strata Details | Groundwat Backfill & |
| TCR | SCR | RQD | FI | Run | ı Sam | nple ID | Test Re | sult (| Level m AOD | Depth (m) (Thickness | Legend | Strata Description | Backfill & Installatio |
| | | | | | | | | | | | | MADE GROUND. Asphalt. | |
| | | | | | | | | | 8.84 | 0.10 | | MADE GROUND. Concrete. | |
| | | | | | 0.3 | 30 D1 | | | 8.69 | 0.25 | | MADE GROUND. Reddish brown | |
| | | | | | 0.30- | 0.70 LB2 | | | | | | very gravelly fine to medium sand. Gravel is subangular to well | |
| | | | | | | | | | | | | rounded, fine to coarse of mixed lithologies. | 1 833 |
| | | | | | | | | | | | | | |
| | | | | | | | | | | (0.95) | | from 0.70m to 0.74m depth, thin layer of tarmacadam (0.37m | |
| | | | | | | | | | | | | back from kerb line). | - |
| | | | | | | | | | | | | | 1- |
| | | | | | 1 20. | -2.00 B3 | (0)50/10 | | 7.74 | 1.20 | | | |
| | | | | | 1.20 | 00 | (S)50/43mi (0,1,50) | n | | | | Very dense orangish brown slightly clayey gravelly fine to coarse | |
| | | | | | | | | | | | 4 | SAND, with low cobble content. Gravel is subangular to subrounded | |
| | | | | | | | | | | (0.00) | | fine to coarse of sandstone, quartz, quartzite and mixed lithologies. With | |
| | | | | | | | | | | (0.80) | هد فرقت ایر اور اور اور اور اور اور اور اور اور اور | occasional roots (possible Made Ground). |]]] |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | 2.00- | ·2.45 D4 ·3.00 B5 | (S)N=9 (0,0,1,3,3,2 | ») | 6.94 | 2.00 | ×××× | Loose dark orangish brown slightly gravelly silty fine to medium SAND. | 2- |
| | | | | | 2.00 | ESD4 | (0,0,1,0,0,0 | -/ | | | × × × × | Gravel is subangular to subrounded fine to coarse of sandstone, quartz | |
| | | | | | | | | | | | ×××× | and mixed lithologies (possible | |
| | | | | | | | | | | (1.00) | X X X X X X X | Made Ground). | |
| | | | | | | | | | | (1.00) | ∩x × × × × × | | |
| | | | | | | | | | | | × × × × | | |
| | | | | | | | | | | | X X X X X X X | | |
| | | | | | 3.00 | -3.45 D6 | | | 5.94 | 3.00 | × × × × | | |
| | | | | | 3.00- | -4.00 D7 04 EW | (S)N=23 (11,7,6,7,6 | ,4) | 0.04 | 0.00 | | Medium dense dark orangish brown slightly clayey very gravelly fine to | |
| | | | | | 3.0 | 04 ⊑ VV | | | | | | coarse SAND. Gravel is subangular to subrounded fine to coarse of | |
| | | | | | | | | | | | | mixed lithologies. | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | (1.70) | | | |
| | | | | | 4.00- | 4.45 D8 | (S)50/194n | | | | | | 4- |
| | | | | | | 4.50 B9 | (8,17,25,16 | 5,9) | | | | from 4.00m depth, clayey. | 4 |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | 4.5 | 0 D10 | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | 4.70- | 5.50 B11 | | | 4.24 | 4.70 | | Firm becoming very stiff thinly laminated light pinkish brown | |
| | | | | | | | | | | | | mottled light grey slightly gravelly | |
| | | | | | | L = | | | | ļ | | Continued next sheet | |
| | oring Prog | Boreh | ole (| Casing | Water | Borehole Depth (m) | Diameter Diameter (mm) | Casi Depth (r | ng Dia | meter ameter (mm) | Remarks: 1. Hand d | ug inspection pit to 1.20m. No serv | ices encountered. |
| Date 18/10/2013 | | Depth 8.5 | 0 | epth (m) 7.00 | Depth (m) 3.36 | 7.00 | 140 | 7.00 | | 140 | 2. Sonic d | rilling from 1.20m to 9.00m. coring from 9.00m to 10.00m. | |
| 19/10/2013 | | 10.0 | 00 | 7.00 | - | 8.50 10.00 | 115 105 | | | | | water encountered at 3.45m rising | to 3.13m after 20 |
| | | | | | | | | | | | 5. 50mm d | diameter standpipe installed with s 00m to 5.00m. | lotted response zone |
| | | | | | | | | | | | 6. 19mm d | diameter piezometer installed with se zone from 6.50m to 7.50m. | tip at 7.00m and |
| 1 | | | | | | | | | | | 7. SPT ha | se zone from 6.50m to 7.50m. mmer id = GS RIG02. Hammer en | ergy ratio =39% |
| 1 | | | | | | | | | | | | | |

| | C. | STAIN | | Contra | ct Name: | Stoneha | ven FAS | | | Client: | Abero | deenshire Council | Borehole ID | |
|----------------------------------|------------|--------------|----------------|--------------|--------------|----------------------------------|----------------------------|-----------------|-----------------|--------------------------|--|--|--|----------|
| | | 01K | | Contra | ct Number: | | Date Started: | | | Logged I | | Checked By: | BH13 | |
| Enviro | onmen | tal Se | rvices | | 5414 | | 18/10 |)/201 | 3 | | CLP | PS | Sheet 2 of 2 | |
| | bined R | | | Easting | g: | | Northing: | | | Ground | _evel: | Plant Used: | Scale: | |
| | namic S | | | | 386957 | '.9 | 7856 | 642.3 | 3 | | 8.94 | Sonic rig | 1:25 | |
| | Coring Inf | formation | ì | | Sampl | les & In Situ | u Testing | | | | | Strata Details | Grou | ndwater |
| TCR | SCR | RQD | FI | Run | Sam | nple ID | Test Re: | sult (| Level (m AOD | Depth (m) (Thickness | Legend | Strata Description | Insta | allation |
| - | | | | | | 5.45 D12 | (S)50/129rr (8,11,11,39 | nm | | (0.80) | | sandy CLAY. Gravel is angular to subangular, fine to medium of sandstone and quartzite. from 5.00m depth, friable. | - | |
| | | | | | 6.00- | 6.00 B13 6.45 D14 6.75 B15 | (S)50/39mr (18,7,50) | n | 3.44 | 5.50 | | Very dense light pinkish brown mottled light grey clayey gravelly fine to medium SAND. Gravel is subangular to subrounded fine to coarse of sandstone and quartz. | - - - 6 - | |
| | | | | | | | (10,7,00) | | | | | | | |
| - | | | | | 6.75- | 7.50 B16 | | | 2.24 | 6.70 | | Orangish brown clayey sandy GRAVEL with low cobble content. Gravel is angular to subrounded fine to coarse of mixed lithologies. Cobbles are angular to subrounded of mixed lithologies. | 7- | |
| - | | | | | 7.50- | 7.95 D17 | (S)50/5mm | | 1.44 | 7.50 | | | | |
| - | | | | | | 8.50 B18 | (25,50) | | | | | Very dense dark orangish brown slightly clayey sandy GRAVEL, with medium cobble content. Gravel is angular to rounded fine to coarse of sandstone and quartz. Cobbles are subangular of sandstone. | | |
| - | | | | | 8.50- | 9.00 B19 | | | | (1.50) | | | | |
| - | | | | 9.00 | 9.00 |)-9.53 C | | | -0.06 | 9.00 | | Strong red brown coarse grained | - - - 9- | |
| | | | 4 | | | | | | | | | SANDSTONE. Discontinuities are closely to medium spaced 45 degree inclined stepped clean. | | |
| - 100 - - - | 90 | 83 | NI 5 NI | | | | | | | (1.00) | | between 9.58m and 9.63m depth, non intact recovered as slightly sandy clayey angular fine to coarse gravel. | | |
| | | | 8 | <u> </u> | | | <u> </u> | | | | | End of Borehole at 10.00 m | | |
| | oring Prog | Boreh | nole (| Casing | ONS Water | Borehole Depth (m) | Diameter | Cas Depth (I | ing Dia | ameter iameter (mm) | Remarks: | Lnd of Borenole at 10.00 m lug inspection pit to 1.20m. No servi | | |
| Date 18/10/2013 19/10/2013 | | Depth 8.5 | i (m) De i0 | 7.00 7.00 | Depth (m) | 7.00 8.50 10.00 | 140 115 105 | 7.00 | | 140 | Sonic d Rotary Ground mins. 50mm of from 3. 19mm of response | Ing inspection pit to 1.20m. No servi trilling from 1.20m to 9.00m. coring from 9.00m to 10.00m. dwater encountered at 3.45m rising diameter standpipe installed with sl 00m to 5.00m. diameter piezometer installed with t se zone from 6.50m to 7.50m. ammer id = GS RIG02. Hammer end | to 3.13m after 20 otted response zone tip at 7.00m and | \$ |
| | | | | | | | | | | | Release S | itatus: Final | | |

| | | | | Contra | ict Name: | Stoneha | /en FAS | | | Client: | Abe | deenshire Cou | ncil | Borehole ID | |
|-------|--------------------|----------------|----------|--------------------|--------------------|--------------------|---------------------------|---------|-----------------|---------------------------|--|---|---------------------------------------|------------------------|------------------------|
| | | STAIN | | Contra | ct Number: | | Date Started: | | | Logged | By: | Checked By: | | BH1 | 4 |
| Envir | onmen | tal Sa | nuinen | | 5414 | | 21/10 |)/201 | 3 | | CLP | n l | ИJВ | | |
| | | | | Eastin | g: | | Northing: | | | Ground | Level: | Plant Used: | | Sheet 1 of 2 Scale: | |
| | bined R namic S | | | | | | - | 637.8 | 3 | | 8.19 | Sonic ri | g | 1:25 | |
| - | | • | | | | | | | | | | Otrata Dataila | | G | roundwate |
| | Coring In | | | | | es & In Situ | <u> </u> | | امىرم ا | Depth (m | | Strata Details | | | Backfill & nstallation |
| TCR | SCR | RQD | FI | Run | i Sarr | nple ID | Test Re | sult | Level (m AOI | Depth (m D) (Thickness | | Strata De | • | | |
| - | | | | | | | | | 8.09 | 0.10 | | MADE GROUND: A | | | |
| - | | | | | | | (S)N=8 | | 7.99 | 0.20 | | MADE GROUND: A MADE GROUND: E | · · · · · · · · · · · · · · · · · · · | | |
| - | | | | | | | (1,1,2,3,2,1 |) | | | | low cobble content. angular, fine to coa | Gravel is | - | |
| | | | | | | | | | 7.79 | 0.40 | | predominantly fine | o medium of |] | |
| - | | | | | | | | | | | | subangular or meta | morphic and | - | |
| - | | | | | | | | | | | | igneous lithologies. below 0.25m c | lepth, high | ł | |
| - | | | | | | 30 D1 •1.20 B2 | | | | (0.80) | | cobble content. Reddish brown slig | ntly gravelly fine | | |
| _ | | | | | 0.00 | 1.20 82 | | | | | 6 ° 0 | to medium SAND v cobble content. Gra | vith medium | 1 | |
| _ | | | | | | | | | | | | subangular to subro | ounded, fine to | '] | |
| ŀ | | | | | | 2.30 B3 | | | 6.99 | 1.20 | 0 6× 7.0 | coarse of mixed lith Cobbles are angula | r to subangular | - | |
| - | | | | | 1.20 |) ESB3 | | | | | | of mixed lithologies below 0.70m of arrough | lepth, very | | |
| - | | | | | | | | | | | | gravelly. at 0.80m deptl | | | |
| | | | | | | | | | | | XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX | concrete extends 0.50m from kerb | line. | ļ | |
| - | | | | | | | | | | (1.10) | | below 1.00m o gravelly. | lepth, slightly | - | |
| - | | | | | | | | | | (1.10) | | Light orangish brow fine to coarse SAN | | | |
| - | | | | | 0.00 | 0.45 0.4 | | | | | | cobble content. Gra | vel is | - | |
| - | | | | | 2.00- | 2.45 D4 | (S)N=47 (15,10,13,1 | 3,10 | | | lix × × x × × × | subangular to subro coarse of sandston | e, quartz and | 2- | |
| - | | | | | | | ,11) | - / - | | | | mixed lithologies. C subangular to subro | | - | |
| - | | | | | | | | | 5.89 | 2.30 | ×.~× | lithologies. Stiff orangish red sl | ightly sandy | | |
| - | | | | | | 40 D5 ·3.00 B6 | | | | | | slightly gravelly CL angular to subround | AY. Gravel is | - | |
| | | | | | 2.10 | 0.00 20 | | | | | | coarse of sandston | | - | |
| - | | | | | | | | | | (0.70) | EEE | mixed lithologies. below 2.50m of | | - | |
| - | | | | | | | | | | | | frequent fine to c sized pockets of | fine to coarse | - | |
| - | | | | | | | | | | | E | greenish grey sa | nd. | - | |
| | | | | | | 3.45 D7 3.40 B8 | (S)50/150n (9,15,19,31 | | 5.19 | 3.00 | | Orangish brown mc grey slightly gravell | | | |
| - | | | | | | | (0,10,10,01 | | | (0.40) | | Gravel is subangula fine to coarse of sa | ar to subrounded, | - | |
| - | | | | | | | | | | | | quartz. | nostone and | - | |
| - | | | | | | | | | 4.79 | 3.40 | | Stiff dark brown and | | | |
| | | | | | | 3.75 D10 50 D9 | | | | (0.35) | | sandy gravelly CLA subangular to subro | ounded, fine to | - | |
| - | | | | | | | | | | | | coarse of sandston mixed lithologies. | e, quartz and | _ | |
| - | | | | | 3.75- | 4.30 B11 | | | 4.44 | 3.75 | | Light pinkish brown | | | |
| | | | | | | | | | | | | greenish grey claye SAND. | y nne to coarse | - | |
| | | | | | | | (C)50/4mm (25,50) | ו ו | | | | below 4.00m o orangish brown. | lepth, dark | 4- | |
| - | | | | | | | | | | | | orangion brown. | | - | |
| ŀ | | | | | 4.3 | 0 D12 | | | | 14.00 | | | | - | |
| | | | | | | | | | | (1.25) | | | | - | |
| | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | - | |
| | | 1 | | 4.80 | 4.8 | 0 D13 | (C)50/34m | m | | | | at 4.80m deptl | n. sandstone | - | |
| | | | | | | | (25,50) | | | | | Continued next s | | - | |
| Bo | oring Proc | aress & W | /ater Oh | servatio | ons | Borehole | Diameter | Cas | ina Di | ameter | Remarks | | | | |
| Date | Time | Boreh Depth | nole (| Casing epth (m) | Water Depth (m) | Depth (m) | Diameter (mm) | Depth (| | Diameter (mm) | 1. Hand | dug inspection pit to drilling from 1.20m to | | ices encountered. | |
| | | | | | | 5.00 7.50 | 140 115 | 6.0 | 0 | 140 | 3. Boreh 5. Boreh | ole complete at 7.50 ole backfilled with be ammer id = GS RIG | m depth, upon o ntonite upon co | ompletion. | ion. |
| | | | | | | | | | | | | | | | |
| | | | | | | | | | | | Release | Status: Final | | | |
| | - | _ | | | | | | | | | | | | | |

| | Ľ | STAIN | | Contrac | t Name: | Stonehav | ven FAS | | | Client: | Abe | rdeer | nshire Council | Borehole ID | |
|-----------|-----------|----------|----------------|----------|-------------------|-----------------------|---------------------------|-------------------|--------------------|------------------------|---|---|--|-------------------------------|----------------------------|
| Enviro | | | rvices | | t Number: 5414 | | Date Started: 21/1(|)/20 ⁻ | 13 | Logged I | ^{3y:} CLP | | Checked By: MJB | BH Sheet 2 of 2 | 14 |
| Com | bined F | Rotary (| Cored | Easting | : 387020 | | Northing: 785 | 637. | 8 | Ground I | _evel: 8.19 | | Plant Used: Sonic rig | Scale: | 25 |
| - | Coring In | | - | | | es & In Situ | | | - | | | | Strata Details | | Groundwate |
| TCR | SCR | RQD | FI | Run | | nple ID | Test Re | sult | Level (m AOD | Depth (m (Thickness | Legend | Ť | Strata Description | | Backfill & Installation |
| - 46 | 29 | 21 | AZCL | | | | | | 3.19 | 5.00 | | Cob C C C C C C C C C C C C C C C C C C | maining Detail : 4.80m - 4.80m : bble - possible bedrock. Detail 4.80m - 5.45m : betweer 4.80m and 5.45m depth, assessed zone of core loss. dium strong to strong light grey arse grained SANDSTONE. |) | |
| - | | | NI 7 | 6.00 | | 5.87 C14 6.17 C15 | | | | (2.50) | | me smi | continuities are closely to dium spaced horizontal planar ooth clean. between 5.45m and 5.65m lepth, recovered non-intact as angular fine to coarse gravel. between 5.65m and 6.85m lepth, occasional 45 degree nclined discontinuities. | 6- | |
| - | | | NI | | | | | | | | | : c | between 6.38m and 6.62m depth, recovered non-intact as angular fine to coarse gravel. | | |
| _ 100 | 85 | 80 . | NI | • | 7.00- | 7.50 C16 | | | | | | : c | between 6.72m and 6.82m lepth, recovered non-intact as angular fine to coarse gravel. | 7 - | |
| - | | | 3 | | | | | | | | | • | | | |
| - | | | | | | | | | 0.69 | 7.50 | | En | d of Borehole at 7.50 m | | |
| - | | | | | | | | | | | | | | 8- | |
| - | | | | | | | | | | | | | | | |
| - | | | | | | | | | | | | | | 9- | |
| - | | | | | | | | | | | | | | | |
| - | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | |
| | oring Pro | Borel | nole C | Casing | Water | Borehole Depth (m) | Diameter Diameter (mm) | | sing Dia (m) Di | meter ameter (mm) | Remarks | dug in: | spection pit to 1.20m. No ser | vices encounte | red. |
| Date | Time | Depth | <u>((m)</u> De | epth (m) | Depth (m) | 5.00 7.50 | 140 115 | - | 00 | 140 | Sonic Borel Borel | c drilling hole cor hole bac | prom 1.20m to 7.50m. nplete at 7.50m depth, upon ckfilled with bentonite upon c r id = GS RIG02. Hammer er | engineer's inst ompletion. | ruction. |
| | | | | | | | | | | | Release | Status: | : Final | | |

| Listing Description Description Brits Environmental Services 5414 24/10/2013 Curp IIII The Multi-Services Services Ser | | | | | Contrac | ct Name: | Stoneha | /en FAS | | | Client: | Aber | deensh | ire Council | Borehole ID | |
|---|----------------------------------|--------------------------|--------------------------------|----------------------|-------------------------------|--|--|--|-------------------|---------------|--|--|--|--|----------------------------|----------------------------|
| Elimited Relatives Testing Testing Consistent of Constraints Section | | | STAIN | | Contrac | ct Number: | | Date Started: | | | Logged | By: | | Checked By: | B⊢ | 115 |
| Combined Reary Coreg Parking Noming Construint Service 10g Said 125 Coreg Informatio Samples & In Still Folding Samples & In Still Folding Status Databilis Filler Status Databilis Filler Status Databilis Filler Status Databilis Filler Filler Status Databilis Filler Filler Status Databilis Filler Filler Filler Filler Status Databilis Filler | Enviro | nmon | tal Sar | vicos | | 5414 | | 24/10 |)/20 [.] | 13 | | | | MJB | | |
| B. Dynamic Sampler Log 387/056.2 786501.1 8.08 Dollin Fig 1.25 Count in Information Samples & h Site Testing State Data/s State Data/s State State Data/s State Data/s< | | | | | Easting | I: | | Northing: | | | Ground | Level: | | Plant Used: | | |
| County Information Bamples & In Stan Testing Stanta Description Stanta Description TOR SCR RCD FI Run Samples & In Stan Testing Lagran Stanta Description Mode GRADUA Report Image: Stanta Description Run Samples & In Stan Testing Total Report Stanta Description Mode GRADUA Report Image: Stanta Description Run Testing Run Testing Run Testing Run Testing Mode GRADUA Report Image: Stanta Description Run Testing Run Testing Run Testing Run Testing Run Testing Run Testing Image: Stanta Description Run Testing | | | | | | 387056 | .2 | 7850 | 631. | 1 | | 8.08 | | Sonic rig | 1:: | 25 |
| TCR BCR RQD FI Run Sample ID Test Result Linear Presentation Mode Genous Construction 100 0.00 1.00 7.38 0.10 MODE Genous Construction MODE Genous Construction 1100 0.80 D1 0.80 D1 1.00 L 05 D0 1.00 MODE Genous Construction Mode Genous Construction 1100 0.80 D1 0.80 D1 0.80 D1 1.00 L 05 D0 1.00 D1 0.80 D1 <td< td=""><td>-</td><td></td><td></td><td></td><td></td><td>Sampl</td><td>es & In Situ</td><td>1 Testing</td><td></td><td></td><td></td><td></td><td>Stra</td><td>ta Details</td><td></td><td>Groundwate</td></td<> | - | | | | | Sampl | es & In Situ | 1 Testing | | | | | Stra | ta Details | | Groundwate |
| Image: Source Program Provide P | | | | FI | Run | | | <u> </u> | cult | Leve | Depth (n | | Olla | | | Backfill & Installation |
| Comp Comp <th< td=""><td></td><td>OOIX</td><td>RQD</td><td></td><td>Tturi</td><td>Can</td><td></td><td>103110</td><td>Suit</td><td>(m AO</td><td>D) (Thicknes)</td><td></td><td></td><td>•</td><td></td><td>- 191 (A)</td></th<> | | OOIX | RQD | | Tturi | Can | | 103110 | Suit | (m AO | D) (Thicknes) | | | • | | - 191 (A) |
| 1 1 3.40 D9 3.50-4.00 B10 Fim becoming stift or anglish brown stifty sandy gravely liss ubangular to subrounded line to subrounded | | | | | | 0.80- 1.20- 1.20- 1.50- 1.5 2.00- 2.00- 2.00- 2.00- 2.00- | 1.00 B2 1.65 D3 1.50 B4 0 EW 3.00 B5 0 EW 2.45 D6 0 ESD6 3.45 D7 | (1,1,2,5,8) (S)N=14 (2,4,2,3,5,4 (S)N=31 | | 6.98 6.88 | (1.00) 1.10 (0.30) 1.50 (1.80) | | MADE (very gra with low angular coarse tarmaca subang lithologi at 0.20r step, at kerbil Appro Brown s coarse i to well r mixed li Medium gravelly low cob subang coarse i subang sandstc at | GROUND. Brown and black welly fine to medium sand cobble content. Gravel is to subrounded fine to of mixed lithologies and udam. Cobbles are ular to subrounded of mixed es. 0.10m depth, extending n from kerbline, concrete 500mm thick. 0.47m depth, 0.30m from ne, concrete step. xximately 130mm thick. lightly gravelly fine to SAND. Gravel is subangular ounded fine to coarse of thologies. redense orangish red and oured fine to coarse SAND. redense dark brown clayey fine to coarse SAND with ble content. Gravel is ular to subrounded fine to of quartz, sandstone and thologies. Cobbles are ular to subrounded of ne. 1.50m depth, moisture noted | 2- | |
| from 2.00m to 3.50m. 6. SPT hammer id = GS RIG02. Hammer energy ratio =39% | Date 23/10/2013 24/10/2013 | Time 3 1400 3 1800 | Boreh Depth 1.20 5.00 | ole C (m) De) | asing pth (m) - 5.00 | 3.50-4 4.00-4 4.00-4 4.50-1 4.50-1 ns Water Depth (m) | 4.00 B10 4.45 D11 4.50 B12 5.00 B13 Borehole Depth (m) 5.00 | (2,7,11,15,) Diameter Diameter (mm) 140 | Cas Depth | sing D (m) | 4.70 ameter | Hand of Sonic Rotary Ground 20 mir | Very de light gr gravelly Contin dug inspec drilling fro corng fro dwater en s. | nse reddish brown mottled eenish grey slightly clayey fine to coarse SAND. Grave ued next sheet clayed | 4- 4- vices encounte | m after |
| Kelease Status: Final | | | | | | | | | | | | from 2 6. SPT h | 2.00m to 3. ammer id | 50m. = GS RIG02. Hammer er | | |

| | C | STAIN | | Contrac | | Stoneha | /en FAS | | | Client: | Aber | deenshire Council | Borehole ID | |
|--|--------------------------|--------------------|-----------------------|--|---------------------------------|--|---|---------------------|---------------|---------------------------------|--|--|--|---------------------------|
| Enviro | | | rvices | | t Number: 5414 | | Date Started: 24/10 |)/20 ⁻ | 13 | Logged E | ^{By:} CLP | Checked By: MJB | BH Sheet 2 of 3 | 15 |
| Comb | pined R | Rotary (Sample | Cored | Easting | 387056 | | Northing: 7850 | 631. | 1 | Ground L | evel: 8.08 | | Scale: 1:2 | 25 |
| - | | formation | - | | Samp | es & In Situ | u Testing | | | | | Strata Details | | Groundwater Backfill & |
| TCR | SCR | RQD | FI | Run | San | nple ID | Test Re | sult | Leve (m AO | Depth (m D) (Thickness | Legend | Strata Description | | Backfill & Installation |
| 77 | 37 | 13 | NI | 5.00 | 5.00- | 5.45 D14 | (S)50/125n (8,13,23,27 | | | (1.25) | | is subangular fine to coarse of sandstone. | - | |
| | | | 5 | | 6.10 | -6.30 C | | | 2.13 | 5.95 | | Weak red brown coarse grained SANDSTONE. Discontinuities are closely spaced 45 degree inclined open clean. | 6- - - - | |
| - - - - - - - - - | 13 | 13 | NI | 6.50 | | | | | | (1.42) | | between 6.50m and 6.80m depth, recovered as slightly gravelly clayey fine to coarse sand. Gravel is angular fine to coarse of sandstone. between 6.80m and 7.37m depth, recovered non intact as claybound sandy angular to subangular fine to coarse gravel of sandstone. | - - - 7- - - | |
| - | | | 6 | 7.50 | | -7.50 C -7.77 C | | | 0.71 | 7.37 | | Weak red brown fine grained SANDSTONE. Discontinuities are closely to medium spaced 45 degree inclined open clean. | - - - | |
| - - - - - - - - | 31 | 31 | NI | 9.00 | | | | | | | | betwen 7.77m and 7.90m depth, recovered non-intact as angular fine to coarse gravel of sandstone. between 7.90m and 8.10m depth, recovered non-intact as clayey gravelly fine to coarse sand. between 8.10m and 8.45m depth, 1no. vertical fracture undulating clay lined. between 8.45m and 9.40m depth, recovered non-intact as very gravelly sand. | - -8 - - - - - - - - - - - - - - - - - | |
| - - - - - - - - | 0 | 0 | | 3.00 | | | | | | (3.93) | | between 9.40m and 10.16m depth, recovered non-intact as slightly sandy clayey angular fine to coarse gravel. Continued next sheet | 9 - - - - - - - - - - - | |
| | ring Dro | | L | | | Borohol- | Diamotor | | | iometer | Pomorlic | Continuou HEAL SHEEL | | |
| Date 23/10/201: 24/10/201: 25/10/201: | Time 3 1400 3 1800 |) 5.0 | nole C (m) De 0 | servation Casing opth (m) - 5.00 5.00 | Mater Depth (m) - 3.50 | Borehole Depth (m) 5.00 13.60 | Diameter Diameter (mm) 140 105 | Cas Depth 5.0 | (m) | iameter Diameter (mm) 140 | Sonic of 3. Rotary Ground 20 min 50mm from 2 | dug inspection pit to 1.20m. No servic drilling from 1.20m to 5.00m. coring from 5.00m to 13.60m. dwater encountered at 2.00m depth, r s. diameter standpipe installed with slo .00m to 3.50m. ammer id = GS RIG02. Hammer ener | ising to 1.44r tted response | n after e zone |
| | | | | | | | | | | | Release S | Status: Final | | |

| | P | | | Contrac | t Name: | Stonehav | /en FAS | | | Clie | ent: | Abe | rdeens | hire Council | Borehole ID | |
|-------------------------------------|------------------|----------------|----------|--------------------|--------------------|---------------|------------------------|-------|---------------|-------------------|--------------------|--|---|---|------------------------|---|
| Envir | | STAIN | nuiaaa | | t Number: 5414 | | Date Started: 24/1(|)/20 | 13 | Log | ged B | y: CLP | | Checked By: MJB | BH | 15 |
| | onmen bined R | | | Easting | : | | Northing: | | | Gro | ound Le | evel: | | Plant Used: | Sheet 3 of 3 Scale: | |
| | namic S | | | | 387056 | 5.2 | 785 | 631. | 1 | | | 8.08 | | Sonic rig | 1:2 | 25 |
| | Coring In | formation | | | Sampl | es & In Situ | u Testing | | | | | | Str | ata Details | | Groundwater Backfill & Installation |
| TCR | SCR | RQD | FI | Run | Sam | nple ID | Test Re | sult | Leve (m AO | el Dep D) (Thi | oth (m) ckness) | Legend | | Strata Description | | Installation |
| - | | | | 10.00 | | | | | | | | | SAND | red brown fine grained DSTONE. Discontinuities are y to medium spaced 45 e inclined open clean. | - | |
| - | | - | NI | | | | | | | | | · · · · · · · · | | between 10.26m and 10.36m oth, recovered non-intact as | | |
| | | - | NI | | 10 50 | 40.00.0 | | | | | | · · · · · · · · · | slig to c | htly sandy clayey angular fine coarse gravel. | | |
| 100 | 52 | 18 | | | 10.53 | -10.63 C | | | | | | | dep | between 10.44m and 10.53m oth, recovered non-intact as htly sandy clayey angular fine coarse gravel. | - | |
| - | | - | | | | | | | | | | · · · · · · · · | t | between 10.78m and 11.10m oth, recovered non-intact as | - | |
| Ĺ | | | | | | | | | | | | · · · · · · · · · | slig | htly sandy clayey angular fine coarse gravel. | - 11 - | |
| - | | | NI | | 11.10 | -11.30 C | | | | | | · · · · · · · · · · · · · · · · · · · | | coarse graver. | | |
| - | | | | | | | | | | | | | • | | - | |
| | | | | 11.30 | | | | | -3.2 | 2 1' | 1.30 | · · · · · · · · | Mediu | Im-strong and strong red brown | | |
| | | | | | | | | | | | | | Disco | rained SANDSTONE. ntinuities are closely to | - | |
| ╟╴ | | | | | | | | | | | | | to und | um spaced horizontal stepped dulating closed clean. | - | |
| | | | | | 11.75 | -11.91 C | | | | | | | dep | between 11.30m and 11.70m oth, 1 no. vertical fracture ooth closed. | | |
| 100 | 100 | 89 | | | | | | | | | | | SIN | ooth closed. | | |
| - | | | | | | | | | | | | · · · · · · · · · · · · · · · · · · · | • • • | | 12- | |
| - | | | | | 12.15 | -12.40 C | | | | | | · · · · · · · · · | | | - | |
| | | | | | | 12110 0 | | | | | | · · · · · · · · · | | | | |
| | | | 5 | 12.40 | | | | | | | | · · · · · · · · · | | | - | |
| - | | | | | | | | | | (2 | .30) | | | | - | |
| - | | | | | 12.60 | -12.81 C | | | | | | | • • • | | | |
| | | | | | | | | | | | | · · · · · · · · · | • | | - | |
| | | | | | | | | | | | | · · · · · · · · · | | between 12.80 and 13.00m oth, discontinuities are at 45 | - | |
| - 100 | 83 | 77 | | | 13.00 | -13.36 C | | | | | | | | grees. | 13 - | |
| - | | | | | | | | | | | | · · · · · · · · | | | | |
| | | | | | | | | | | | | · · · · · · · · | | | - | |
| - | | - | | | | | | | | | | | | petween 13.40m and 13.60m | - | |
| | | | NI | | | | | | | | | | dep | oth, recovered non-intact as gular fine to medium gravel. | - | |
| | | | | | | | | | -5.52 | 2 13 | 3.60 | | | of Borehole at 13.60 m | | |
| | | | | | | | | | | | | | | | - | |
| | | | | | | | | | | | | | | | - | |
| | | | | | | | | | | | | | | | 14 - | |
| | | | | | | | | | | | | | | | - | |
| | | | | | | | | | | | | | | | - | |
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| lt | | | | | | | | | | | | | | | - | |
| | | | | | | | | | | | | | | | - | |
| - | | | | | | | | | | | | | | | - | |
| | | | | | | | | | | | | | | | - | |
| | oring Proc | aress & M | /ater Oh | servatio | าร | Borehole | Diameter | Ca | sina D | liamete | er | Remarks | ۱ <u>ــــــــــــــــــــــــــــــــــــ</u> | | | |
| Date | Time | Boreh Depth | nole C | Casing epth (m) | Water Depth (m) | Depth (m) | Diameter (mm) | Depth | | Diamete | r (mm) | 1. Hand | dug insp | ection pit to 1.20m. No serv | ices encounter | ed. |
| 23/10/201 24/10/201 25/10/201 | 3 1400 3 1800 | 1.2 | 0 | - 5.00 5.00 | 3.50 | 5.00 13.60 | 140 105 | 5. | 00 | 14 | 0 | Rotary Grour 20 mi 50mm from 2 | y coring findwater e ins. n diamete 2.00m to | rom 1.20m to 5.00m. rom 5.00m to 13.60m. incountered at 2.00m depth or standpipe installed with s 3.50m. d = GS RIG02. Hammer en | lotted response | zone |
| | | | | | | | | | | | ┝ | Polococ | Statuc | Final | | |
| L | | | | | | | | | | | | Release | Status: | Final | | |

| | | | | Contrac | ct Name: | Stonehav | /en FAS | | | Client: | Aber | deenshire Council | Borehole ID |
|--------|--------------------|-------------------|--------|----------|---|---|---|-------------------|---|--|--|--|----------------------------------|
| | G | STAIN | | Contrac | t Number: | | Date Started: | | | Logged E | | Checked By: | BH17 |
| Enviro | onmen | tal Ser | vices | | 5414 | | 21/10 |)/20 ⁻ | 13 | | CLP | MJB | Sheet 1 of 1 |
| | bined R namic S | | | Easting | : 387201 | | Northing: 7856 | 685.9 | 9 | Ground L | -evel: 6.41 | Plant Used: Sonic rig | Scale: 1:25 |
| | Coring Inf | ormation | | | Sampl | es & In Situ | u Testing | | | | | Strata Details | Groundwate Backfill & |
| TCR | SCR | RQD | FI | Run | Sam | ple ID | Test Res | sult | Level (m AOD | Depth (m) (Thickness | Legend | Strata Description | Installation |
| TCR | SCR | RQD | FI | Run | 0.2 0.30- 0.50- 1.20- 1.20- 1.20- 2.00- 2.00- 2.00- 2.50-4 3.00-5 | 20 D1 0.50 B2 1.00 B3 1.65 D4 1.55 B5 30 D6 2.00 B7 2.45 D8 2.50 B9 4.00 B10 3.45 D11 4.45 D12 5.00 B13 | (S)N=22 (2,2,2,1,6,13) (S)S0/160m (16,9,22,23) (S)N=28 (3,4,5,8,7,8) | 3) 10,1 ,5) | Level (m AOD 5.41 4.86 4.41 3.91 2.41 |) Depth (m) (1.00) (1.00) (0.55) (0.45) (0.45) (0.50) (0.50) (0.50) (0.50) (1.50) (1.50) (1.50) | | Strata Description Probable MADE GROUND: Dark brown clayey gravelly fine to medium cobble content. Gravel is subangular to subrounded, fine to coarse of sandstone and mixed lithologies. Cobbles are angular to subrangular of sandstone (dressed stone) (Possible Made Ground). Soft dark orangish brown sandy gravelly CLAY. Gravel is subangular to subrounded, fine to carse of sandstone amd mixed lithologies. (Possible Made Ground). Light yellowish brown gravelly fine to coarse of sandstone and mixed lithologies. (Possible Made Ground). Light yellowish brown gravelly fine to coarse of sandstone and mixed lithologies. Dense dark brown clayey gravelly SAND. gravel is subangular to subrounded, fine to coarse of sandstone, quartz and mixed litholiges. Very dense orangish brown mottled light yellowish brown gravelly SAND. gravel is subangular to subrounded, fine to coarse of sandstone, quartz and mixed lithologies. Very dense orangish brown mottled light yellowish brown gravelly SAND with low cobble content. Gravel is subangular to subrounded, fine to coarse of sandstone, quartz and mixed lithologies. Wery dense orangish brown mottled light vellowish brown gravelly SAND with low cobble content. Gravel is subangular to subrounded or sandstone, quartz and mixed lithologies. Wery dense orangish brown wortled response of sandstone, quartz and mixed lithologies. Werdium-dense orangish brown very silty fine to medium SAND. Medium-dense orangish brown very silty fine to medium SAND. | |
| | | | | | | | | | | | | | |
| μ | | | | | | | | | | | × × × × × × | End of Dorahala at 5 00 m | |
| Bo | oring Prog | ress & W Boreh | | servatio | ns Water | | Diameter | | sing Dia | | Remarks: | | |
| Date | Time | Depth | (m) De | pth (m) | Depth (m) | Depth (m) 4.00 5.00 | Diameter (mm) 140 115 | 4.C | | iameter (mm) | Sonic of Boreho No gro Boreho | dug inspection pit to 1.20m. No ser drilling from 1.20m to 5.00m. ole complete at 5.00m upon schedi undwater encountered during drilli ole backfilled with bentonite upon c ammer id = GS RIG02. Hammer ei | uled depth. ng. ompletion. |
| | | | | | | | | | | | Release S | Status: Final | |

| Image: Structure Struchaven FAS Aberdeenshire Council BH Environmental Services Farring Structure Capability CLP MJB Base Structure | | | | | Contrac | ct Name: | topobo | | | | Client: | Abor | doonshiro Council | Borehole ID | |
|--|--------|--------|----------|--------|---------|---------------|-------------------|-------------------------|-------|-------|--------------|---|--|-----------------------------------|----------------------------|
| Environmental Services 5414 21/10/2013 CLP MUB Burn of the construct | | C | STAIN | | Contro | | | | | | Loggod | | | RH | 18 |
| Combined Rolary Correll Earling Non-mail Gaunal Land South | Enviro | onmen | ital Sei | rvices | | | | | 0/201 | 13 | Logged | | | | 10 |
| Coring Information Samples & In Biul Tosting Stratu Database TCR BCR RCD FI Run Samples & In Biul Tosting Logge Stratu Description TCR BCR RCD FI Run Samples & In Biul Tosting Logge Stratu Description TCR BCR RCD FI Run Samples & In Biul Tosting Logge Charles Stratu Description TCR BCR RCD FI Run Samples & In Biul Tosting Logge Charles Stratu Description TCR SCR RCD FI Run Stratu Description Data Execution Stratup Strat | Comb | ined R | Rotary C | Cored | Easting | | | - | 733.0 | 6 | Ground | | | | 5 |
| TCR SCR ROD FI Run Sample ID Test Report Logical Indexemity (a) (a) (a) (a) (a) (a) (a) (b) (b) (b) (b) (b) (b) (b) (b) (b) (b | - | | • | - | | Sampl | es & In Situ | u Testing | | | | | Strata Details | I | Groundwate |
| Image: Second | | - | | | Run | - | | - | sult | | Depth (m | Legend | | | Backfill & Installation |
| L Loub D1 Loub | - | | | | | 0.00- | 0.40 B2 | | | | | | Dark brown clayey gravelly fine to medium SAND with low cobble | | |
| Image: Second | - | | | | | | | | | 2.85 | | | Gravel is subangular to rounded fine to coarse of sandstone, quartz and mixed lithologies. Cobbles are subangular to subrounded of | - | |
| 1.20 EBSS 1.20-2.00 BS (1.12,1,7,18) (1.12,1,7,18) 1.25 2.00 1.85 EW 2.00-3.00 B7 (1.1,0,0,1) 1.25 2.00 2.00-3.00 B7 (1.1,0,0,1) 1.25 2.00 Soft dark troumsh grey slightly sandy organic SLT with frequent corport netter with slight organic matter is rea. | - | | | | | | | (5)N=28 | | | (1.60) | | medium-dense dark orangish brown mottled multicoloured slightly silty gravelly SAND with low cobble content. Gravel is subangular to subrounded fine to coarse of mixed lithologies. Cobbles are subangular | | |
| 2.00 ESD6 2.00 3.00 B7 (11,0,0,0,1) Soft dark blows in give signify sandy organic SLT with Inpartie order and the line laders 3.00 3.45 D8 (S)N=2 (0,1,1,0,0) (1,0) (1,0) 3.00 3.45 D8 (S)N=2 (0,1,1,0,0) (1,0) 3.00 3.45 D8 (S)N=2 (0,1,1,0,0) (1,0) 3.00 4.00 B10 -0.05 3.00 3.30 4.00 B10 -0.05 3.30 4.00 4.45 D11 (S)N=30 (1,6,10,3,7,4) -1.25 4.00 4.50 B13 -1.25 4.50 Boring Progress & Water Observations Borehole Diameter Casing Diameter minimum Boring Progress & Water Observations Borehole Diameter Casing Diameter minimum Date Time Event the press encounter of the top | - | | | | | 1.20 1.20- |) ESB5 2.00 B5 | | 8) | | (| | | - - - - - - - | |
| Image: Signed State Image: Signed St | - | | | | | 2.00 |) ESD6 | |) | 1.25 | 2.00 | × × × × × × × × × × × × × × × × × × × | sandy organic SILT with frequent organic matter with a slight organic odour and thin laminations of fine to medium grey sand. at 2.00m depth, moisture noted | | |
| 1 3.30-4.00 B10 -0.05 3.30 1 4.00-4.45 D11 (S)N=30 4.00-4.45 D11 (S)N=30 4.00-4.50 B12 (1.6,10,9,7,4) 4.50-5.00 B13 -1.25 4.50 0 -1.25 4.50 0 -1.25 4.50 0 -1.25 -1.25 0 -1.25 -1.25 0 -1.25 -1.25 0 -1.25 -1.25 0 -1.25 -1.25 0 -1.25 -1.25 0 -1.25 -1.25 0 -1.25 -1.25 0 -1.25 -1.25 0 -1.25 -1.25 0 -1.25 -1.25 0 -1.25 -1.25 0 -1.25 -1.25 0 -1.25 -1.25 0 -1.25 -1.25 0 -1.25 -1.25 0 -1.25 -1.25 0 -1.25 -1.25 0 -1.25 <td>-</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>))</td> <td></td> <td>(1.30)</td> <td>X X X X X X X X X X X X X X</td> <td></td> <td>- - - 3- - - -</td> <td></td> | - | | | | | | | |)) | | (1.30) | X X X X X X X X X X X X X X | | - - - 3- - - - | |
| August | - | | | | | 3.30-4 | 4.00 B10 | | | -0.05 | 3.30 | | gravelly fine to coarse SAND. Gravel is subangular to subrounded fine | | |
| Boring Progress & Water Observations Borehole Diameter Casing Diameter (mm) Casing Diameter (mm) Di | - | | | | | | | (S)N=30 (1,6,10,9,7, | ,4) | | (1.20) | | | 4 | |
| Boring Progress & Water Observations Borehole Diameter Casing Diameter Remarks: Date Time Borehole Casing Depth (m) Depth (m) Depth (m) Diameter (mm) Diameter (mm) 1. Hand dug inspection pit to 1.20m. No services encounterer 2 Sonic drilling from 1.20m to 5.00m. 3. Borehole complete at 5.00m upon scheduled depth. 4.00 140 4.00 140 3. Borehole complete at 5.00m upon scheduled depth. 4 5.00 115 4.00 140 5.00 140 5.00 5.00mins. 5 50mm diameter standpipe installed with slotted response from 3.50m to 4.50m. 5.00mins. 5.00mins. 5.00mins. | - | | | | | 4.50- | 5.00 B13 | | | -1.25 | | | clayey very sandy GRAVEL with low to medium cobble content. Gravel is subangular to subrounded fine to coarse of sandstone, quartz and mixed lithologies. cobbles are | V - | |
| Date Borehole Depth (m) Casing Depth (m) Water Depth (m) Depth (m) Diameter (mm) Diameter (mm) I. Hand dug inspection pit to 1.20m. No services encounterer 2 Sonic drilling from 1.20m to 5.00m. 4.00 140 3. Borehole complete at 5.00m upon scheduled depth. 3. Borehole complete at 5.00m upon scheduled depth. 4.00 115 4.00 140 5.00m upon scheduled depth. 5.00m upon scheduled de | | | | | | <u> </u> | | <u> </u> | | | | | | | |
| from 3.50m to 4.50m. | | | Boreh | ole C | asing | Water | Depth (m) | Diameter (mm) 140 | Depth | (m) [| iameter (mm) | Hand of Sonic of Boreho Ground Ground Omin | dug inspection pit to 1.20m. No sen drilling from 1.20m to 5.00m. ole complete at 5.00m upon schedu dwater encountered at 4.00m depth Is. | lled depth. I, rising to 3.25m | n after |
| Release Status: Final | | | | | | | | | | | | from 3 6. SPT ha | .50m to 4.50m. ammer id = GS RIG02. Hammer en | | |

| CESTAIN | | SUTETIAN | ven FAS | | | Aber | deenshire Council | | |
|--|-------------|---|--------------------|------------------|----------------------------|---|---|---|---|
| | Contract N | | Date Started: | | Logged E | | Checked By: | BH | 18 |
| Environmental Service | | 5414 | 21/10/2 | 2013 | | CLP | MJB | Sheet 1+ of 1 | |
| Combined Rotary Core & Dynamic Sampler Lo | | 87240.4 | Northing: 78573 | 3.6 | Ground L | .evel: 3.25 | Plant Used: Sonic rig | Scale: 1:2 | 25 |
| Coring Information | | Samples & In Site | u Testing | | | | Strata Details | | Groundwater Backfill & Installation |
| TCR SCR RQD FI | Run | Sample ID | Test Resul | t Level (m AO | Depth (m) D) (Thickness | Legend | Strata Description | | Installation |
| | | | | -1.75 | | | subangular to subrounded of sandstone, quartz and mixed lithologies. End of Borehole at 5.00 m | - - - - - - - - - - - - - - - - - - - | |
| | | | | | | | | - - - - - - - - - - - - - - - - - - - | |
| Boring Progress & Water (| hservations | Borahelo | Diameter | Casing Di | ameter | Remarks | | - 9 - - - - - - - - - - - - - - - - - - | |
| Borehole | Casing | Water Depth (m) | | | | 1. Hand | dug inspection pit to 1.20m. No ser | vices encounter | ed. |
| Date Time Depth (m) | Jepth (m) D | Depth (m) Expanding 4.00 5.00 | 140 115 | 4.00 | 140 | Sonic Boreho Groun 20 mir 50mm from 3 SPT h | drilling from 1.20m to 5.00m. ole complete at 5.00m upon schedu dwater encountered at 4.00m depth | uled depth. n, rising to 3.25r slotted response | n after e zone |

| | | | | Contrac | ct Name: | Stoneha | /en FAS | | | Client: | Aber | deenshire Council | Borehole ID | |
|-------|-----------|-----------------------------|----------|-------------------------------|---|---|--|-------------------|---------------|--------------------------------|---|---|---|---------------------------|
| | G | STAIN | | Contrac | t Number: | | Date Started: | | | Logged | By: | Checked By: | BH | 19 |
| Envir | onmen | tal Sei | vices | | 5414 | | 31/10 |)/20 [,] | 13 | | CLP | MJB | Sheet 1 of 1 | |
| Com | oined R | otary C Sample | Cored | Easting | : 387282 | | Northing: 785 | 748. | 0 | Ground | Level: 4.75 | Plant Used: Sonic rig | Scale: 1:2 | 25 |
| | Coring In | formation | | | Sampl | es & In Situ | u Testing | | | _ | | Strata Details | | Groundwater Backfill & |
| TCR | SCR | RQD | FI | Run | Sam | nple ID | Test Re | sult | Leve (m AO | Depth (m D) (Thickness | Legend | Strata Description | | Installation |
| | | | | - Team | 0.2 0.30- 0.80- 1.20- 1.20- 1.20- 1.20- 1.20- 1.90 2.00- | 20 D1 0.50 B2 1.20 B3 1.65 D4 2.00 B5 0 W15 EWW15 2.45 D6 2.80 B8 | (S)N=18 (4,4,4,5,6,3) (S)N=12 (4,4,4,4,2,2) | 3) | <u>(m AO</u> | (0.30) | | Dark brown slightly clayey gravelly fine to medium SAND with low cobble content and with frequent rootlets and roots. Dark orangish brown slightly clayey gravelly fine to coarse SAND with low cobble content. Gravel is subangular to subrounded fine to coarse of sandstone and mixed lithologies. Cobbles are subangular to subrounded of sandstone and mixed lithologies. | - - - - - - - - - - - - - - - - - - - | |
| - | | | | | 2.80- 2.80 | 50 W7 3.00 D9) ESD9 3.45 D10 | (S)N=6 | | 1.95 | | 30 30 30 30 40 40 40 40 40 40 40 40 40 4 | Plastic blackish brown slightly sandy clayey amorphous PEAT. | - - - - - - - - - - - | |
| - | | | | | 3.00-4 | 4.00 B11 | (1,2,1,1,1,3 | 3) | | (1.00) | | Loose black slightly clayey fine to coarse SAND. | - | |
| - | | | | | | 4.45 D12 4.80 B13 | (S)N=34 (6,6,7,9,9,9 | 9) | 0.75 | 4.00 | | Dense dark brown mottled multicolours slightly clayey gravelly fine to coarse SAND. | | |
| - | | | | | 4.80- | 5.00 B14 | | | -0.05 | 4.80 | | Firm becoming stiff reddish brown | | |
| | | | lator Ob | con offic | | Borohol- | Diamotor | | | ametar | Boncris | Continued next sheet | | |
| Date | Time | gress & W Boreh Depth | | servatio casing pth (m) | NS Water Depth (m) | Borehole Depth (m) 4.00 5.00 | Diameter Diameter (mm) 140 115 | | (m) I | ameter Diameter (mm) 140 | Sonic Boreho Groun Groun Soreho | dug inspection pit to 1.20m. No ser drilling from 1.20m to 5.00m. ole complete at 5.00m upon schedu dwater encountered at 3.00m depth | uled depth. n, rising to 2.00r ompletion. | n after |
| | | | | | | | | | | | Release S | Status: Final | | |

| CESTAIN | Contract Name: | Stonehaven FAS | | Client: | Abero | deenshire Council | Borehole ID | |
|--|----------------------------------|---|--------------------------------|----------------------------------|--|---|----------------------------------|---|
| Environmental Services | Contract Number: 5414 | Date Started: 31/1 | 0/2013 | Logged B | ^{y:} CLP | Checked By: MJB | BH Sheet 1+ of 1 | 19 |
| Combined Rotary Cored & Dynamic Sampler Log | Easting: 387282 | Northing: | 5748.0 | Ground L | evel: 4.75 | Plant Used: Sonic rig | Scale: 1:2 | 25 |
| Coring Information | Sample | es & In Situ Testing | | | | Strata Details | | Groundwater |
| TCR SCR RQD FI | | nple ID Test R | esult Level | Depth (m) | Legend | Strata Description | | Groundwater Backfill & Installation |
| TCR SCR RQD FI - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - | | - | esult Level (m AOD -0.25 | Depth (m) (Thickness) 5.00 | Legend | Strata Description slightly sandy slightly gravelly CLAY. Gravel is subangular to subrounded fine to coarse of sandstone, quartz and mixed lithologies. End of Borehole at 5.00 m | | Installation |
| | | | | | | | - - - | |
| Boring Progress & Water Ob Borehole | | Borehole Diameter Depth (m) Diameter (mm | Casing Dia | | Remarks: | lug inspection pit to 1.20m. No serv | ices encountor | red |
| Date Time Borehole C Depth (m) De | asing Water pth (m) Depth (m) | 4.00 140 5.00 115 | 4.00 | 140 | Sonic d Boreho Ground Ground 20 min: Boreho SPT ha | Irilling from 1.20m to 5.00m. le complete at 5.00m upon schedu Iwater encountered at 3.00m depth | lled depth. , rising to 2.00r | n after |

| | Contract Name: | Stoneha | ven FAS | | Client: | Abero | deenshire Council | Borehole ID |
|--|--|---|---|------------------------|--|---|---|--|
| CESTAIN | Contract Number: | | Date Started: | | Logged I | | Checked By: | BH20 |
| Environmental Service | 541/ | 1 | 23/10/2 | 013 | | CLP | MJB | |
| | E a a tha a | | Northing: | | Ground | Level: | Plant Used: | Sheet 1 of 2 Scale: |
| Combined Rotary Core & Dynamic Sampler Lo | | 8.9 | 78561 | 0.4 | | 8.39 | Sonic rig | 1:25 |
| Coring Information | Samp | oles & In Situ | u Testing | | | | Strata Details | Groundwate Backfill & Installation |
| TCR SCR RQD FI | Run Sa | mple ID | Test Result | Level (m AOI | Depth (m) (Thickness |) Legend | Strata Description | Installation |
| ICK SCK RQD FI - - - - < | 0 0.20 0.50 0.90 1.20 1.20 1.20 2.00 2.00 2.00 3.00 3.00 3.00 3.00 3 | mple ID .10 D1 0.50 B2 .0-0.90 B3 .0-1.20 B4 .0-1.65 D5 1.65 D5 1.65 B6 65 D7 2.00 B8 2.45 D9 3.00 B10 3.00 B10 3.50 B12 3.50 B12 4.00 B14 4.50 U15 4.50 U15 5.00 B17 | (S)N=28 (5,11,10,7,5,6) (S)N=8 (9,10,4,2,1,1) (S)N=35 (8,9,8,8,9,10) | 8.19 7.89 7.49 |) (Thickness 0.20 (0.30) 0.50 (0.40) 0.90 (1.10) 2.00 (1.50) 3.50 (1.70) | | Strata Description MADE GROUND. Dark brown slightly clayey gravelly fine to coarse sand with frequent roots and rootlets. Gravel is subangular to subrounded fine to coarse of sandstone, quartz and mixed lithologies. (Topsoil). MADE GROUND. Dark orangish brown gravelly fine to coarse sand with low cobble content. Gravel is subangular to subrounded fine to coarse of sandstone, quartz and mixed lithologies. Cobbles are subangular to subrounded of sandstone. MADE GROUND. Black and reddish brown slightly clayey very sandy gravel with medium cobble content. Gravel is subangular to subrounded fine to coarse of sandstone and quartz. Cobbles are angular to subangular of sandstone. Medium-dense orangish brown slightly gravelly clayey fine to medium SAND with occasional roots and rootlets. from 1.20m depth, slightly clayey gravelly with no roots/rootlets. between 1.65m and 1.80m depth, very clayey. Loose orangish brown occasionaly mottled dark brown silty gravelly fine to coarse SAND with low cobble content. Gravel is subangular to rounded fine to coarse of sandstone, quartz and mixed lithologies. Cobbles are rounded of mixed lithologies. at 3.00m depth, moisture noted. between 2.00m and 3.00m depth, poor recovery as cobble pushed through sand. at 3.00m depth, dense. | |
| | | | | | | | Continued next sheet | |
| | | Borobolo | Diamotor | Caeina Di | ametor | Remarke | Continued Heat Sheet | |
| Boring Progress & Water (Date Time Borehole Depth (m) | Depth (m) | Depth (m) | | Casing Di pth (m) [| ameter Diameter (mm) | | ug inspection pit to 1.20m. No serv | ices encountered. |
| | | 5.00 10.00 | 140 115 | 5.00 | 140 | Rotary Ground 20 min: Boreho SPT hat | Irilling from 1.20m to 7.50m. coring from 7.50m to 10.00m. lwater encountered at 3.00m depth s. le backfilled with bentonite on com mmer id = GS RIG02. Hammer en tatus: Final | pletion. |

| | | | | Contrac | ct Name: | Stonehav | ven FAS | | | Client: | Aber | deenshire Council | Borehole ID | |
|---------------------------|------------|----------------------------|------------|------------------------------|--------------------------|--|---|--------------------------|-----------------|-------------------------|---|---|--------------------------------------|----------------------------|
| | | STAIN | | Contrac | t Number: | | Date Started: | | | Logged E | | Checked By: | BH | 20 |
| Enviro | onmen | tal Se | rvices | | 5414 | | 23/10/ | /201 | 3 | | CLP | MJB | Sheet 2 of 2 | |
| Comb | bined R | otary (| Cored | Easting | : 387078 | | Northing: 7856 | 10.4 | | Ground L | evel: 8.39 | Plant Used: Sonic rig | Scale: | 25 |
| - | Coring Inf | | - | | Sampl | es & In Situ | u Testina | | | | | Strata Details | | Groundwate |
| TCR | SCR | RQD | FI | Run | · · | nple ID | Test Resu | ult (| Level m AOD) | Depth (m) (Thickness | Legend | Strata Description | | Backfill & Installation |
| - | | | | | | 5.45 D18 5.60 B19 | (S)50/176mr (4,10,16,24,7 | m 10) | 3.19 | 5.20 | | Firm and stiff red and orange brown slightly sandy slightly gravelly CLAY. Gravel is subangular to subrounded fine to medium of sandstone, quartz and mixed lithologies. | - | |
| - | | | | | 5.60-6 | 6.00 B20 | | | | | | Very dense orangish brown and greenish grey mottled multicolour slightly clayey slightly gravelly fine to coarse SAND. Gravel is subangular to subrounded fine to medium of sandstone, quartz and mixed lithologies. from 5.60m depth, reddish | - - - - | |
| - | | | | | 6.0 | 6.45 D21 0 D22 6.75 B23 | (S)50/115mr (8,17,31,19) | | | | | brown and multicoloured. moistur noted. between 6.00m and 6.75m depth, clayey. | e 6 - - | |
| - | | | | | 6.75-7 | 7.30 B24 | | | | (2.30) | | between 6.75m and 7.20m depth, moisture noted. | - - - - - - - - | |
| - | | | | 7.50 | | 7.50 B25 7.95 D26 | (S)50/64mm (25,50) | | 0.89 | 7.50 | | | 7 | |
| - | | - | AZCL 12 | 1.00 | | 7.93 C27 | | 1 | 0.00 | 1.00 | 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 | Moderately weak brown coarse grained SANDSTONE. Discontinuities are very closely to closely spaced horizontal to 45 degree inclined stepped clean. | - | |
| - 83 | 73 | - 50 | NI | | | | | | | | 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 | between 7.93m and 8.13m depth, 1no. 45 deg fracture, stepped open and infilled with brown fine to coarse sand. | 8 - - - | |
| - | | | | | 8.34-8 | 8.49 C28 | | | | (2.50) | | | - - - - | |
| - | | | 4 | 9.00 | 9.14-{ | 9.55 C29 | | | | | | | - 9 - - | |
| - - 100 - - - | 99 | 86 | | | 9.55-9 | 9.95 C30 | | | | | | | - - - - - | |
| | = D | | | | | Dent | Diamati | | | h l | | End of Borehole at 10.00 m | | |
| Date | Time | ress & W Boreh Depth | nole C | servatio asing pth (m) | NS Water Depth (m) | Borehole Depth (m) 5.00 10.00 | Diameter Diameter (mm) I 140 115 | Casi Depth (n 5.00 | | imeter (mm) 140 | Sonic of Rotary Ground Ground Boreho | dug inspection pit to 1.20m. No ser drilling from 1.20m to 7.50m. coring from 7.50m to 10.00m. dwater encountered at 3.00m dept | n, rising to 2.56r | n after |
| | | | | | | | | | | | Release S | Status: Final | | |

| CUSTAIN | Contract Name: Stoneh | aven FAS | Client: Abero | deenshire Council | Borehole ID |
|--|---|--|---|---|----------------------------|
| Environmental Services | Contract Number: 5414 | Date Started: 30/10/2013 | Logged By: CLP | Checked By: MJB | BH21 Sheet 1 of 1 |
| Combined Rotary Cored & Dynamic Sampler Log | Easting: 387076.7 | Northing: 785591.3 | Ground Level: 8.66 | Plant Used: Sonic rig | Scale: 1:25 |
| Coring Information | Samples & In S | Situ Testing | | Strata Details | Groundwater Backfill & |
| TCR SCR RQD FI | Run Sample ID | Test Result (m AOE | Depth (m) (Thickness) Legend | Strata Description | Backfill & Installation |
| Boring Progress & Water Obs | 0.20 D1 0.20-0.50 B2 0.50-1.00 B3 | 8.06 | | MADE GROUIND. Grass over dark orangish brown slightly clayey slightly gravelly fine to medium sand with low cobble content and frequent roots and rootlets. Gravel is subangular to subrounded fine to coarse of sandstone, quartz, ceramic pipe fragments and mixed lithologies. Cobbles are subrounded of sandstone and mixed lithologies. MADE GROUIND. Dark brown sandy gravelly clay with low cobble content. Gravel is subangular to subrounded fine to coarse of sandstone, quartz and mixed lithologies. Cobbles are subangular to subrounded of sandstone and mixed lithologies. at 0.70m depth, plastic sheet (possible membrane). at 0.90m depth, plastic sheet (possible membrane). End of Borehole at 1.10 m | |
| Boring Progress & Water Obs | | Diameter Casing Dia Diameter (mm) Depth (m) D | | dug inspection pit to 1.10m depth. | |
| Date Time Depth (m) Dep | asing Water Depth (m pth (m) Depth (m) | , Diameter (mm) Depth (m) D | 2. Boreho backfill 3. Boreho Burn of | Jug inspection pit to 1.10m depth. Je terminated on boulder obstructio led with arisings upon completion. Je BH21A undertaken 2m north to a f Glaslaw. Status: Final | |

| CESTAIN | Contract Name: Stoneha | ven FAS | Client: Abero | deenshire Council | Borehole ID |
|--|---------------------------|---------------------------------------|-----------------------------------|--|--|
| Environmental Services | Contract Number: 5414 | Date Started: 30/10/2013 | Logged By: CLP | Checked By: MJB | BH21A |
| Combined Rotary Cored & Dynamic Sampler Log | Easting: 387079.9 | Northing: 785595.6 | Ground Level: 8.30 | Plant Used: Sonic rig | Scale: 1:25 |
| Coring Information | Samples & In Sit | u Testing | | Strata Details | Groundwate |
| TCR SCR RQD FI | Run Sample ID | | Depth (m) (Thickness) Legend | Strata Description | Groundwate Backfill & Installation |
| | 0.20 D1 0.30-0.50 B2 | 8.00 7.40 | | MADE GROUND. Grass over dark orangish brown slightly clayey slightly gravelly fine to medium sand with frequent roots and rootlets. (Topsoil). MADE GROUND. Dark brown slightly gravelly clayey fine to coarse sand. Gravel is subangular to subrounded fine to coarse of sandstone, quartz and mixed lithologies. — at 0.30m depth, piece of broken paving slab. End of Borehole at 0.90 m | |
| Boring Progress & Water Ob | | Diameter Casing Dia | | | |
| Date Time Borehole C Depth (m) De | asing Water Depth (m) | Diameter (mm) Depth (m) Diameter (mm) | 2. Boreho backfill 3. BH21B | lug inspection pit to 0.90m depth. le terminated on concrete obstructi ed with arisings upon completion. undertaken 1.5m north and 0.5m w | on at 0.90m depth and vest. |

| URNAL Description Description <thdescripion< th=""> <thdescription< th=""> <thdes< th=""><th></th><th></th><th></th><th></th><th>Contrac</th><th>t Name:</th><th>Stoneha</th><th>ven FAS</th><th></th><th></th><th>Client:</th><th>Aber</th><th>rdeensł</th><th>nire Council</th><th>Borehole ID</th><th></th></thdes<></thdescription<></thdescripion<> | | | | | Contrac | t Name: | Stoneha | ven FAS | | | Client: | Aber | rdeensł | nire Council | Borehole ID | |
|---|------------|--------|----------|--------|---------|-----------|--------------|------------------|---------|----------|------------|---|-------------------|---|------------------|--------------|
| El MUNIMIPUICIA Satri Vices Internet Participa Paritipa | | G | ISTAIN | | Contrac | t Number: | | Date Started: | | | Logged E | By: | | Checked By: | BH2 | 21B |
| Combined Robuy Cores Parking Native 3807076.6 Parking Sould Read Robin (1) Sould Read Robin (1) Sould Read Robin (1) Robin (1) <throbin (1)<="" th=""> <throbin (1)<="" th=""> Robin (1)<</throbin></throbin> | Enviro | nmer | tal Se | rvices | | 5414 | | 30/10 | /2013 | 3 | | CLP | | MJB | Shoot 1 of 2 | |
| 8. Dynamic Sampler Log 387076.6 745596.1 8.64 2000 mg 1.25 Samples & n Stur Teeting Samples & non- | | | | | | : | | Northing: | | | Ground L | evel: | | | | |
| Contig Information Somplex & its Dim. Texting. Source ID Source ID <t< td=""><td></td><td></td><td></td><td></td><td></td><td>387076</td><td>.6</td><td>7855</td><td>596.1</td><td></td><td></td><td>8.64</td><td></td><td>Sonic rig</td><td>1:2</td><td>5</td></t<> | | | | | | 387076 | .6 | 7855 | 596.1 | | | 8.64 | | Sonic rig | 1:2 | 5 |
| TCR SCR ROD P Run Samue D Test Result ArtWG, Refund Description Mediate control 1 No COUNT Count Count Count Count No Status Description No N | - | | · · | - | | Sampl | es & In Situ | u Testina | | | | | Stra | ata Details | | Groundwater |
| Image: Second | | - | | | Run | | | | ult ult | Level | Depth (m) | Legend | | | | Installation |
| L U | 1 | | | | | | | | (11 | TAOD) | (Thickness | | MADE | • | | |
| L L L L D | - | | | | | | | | | | (0.30) | | orangis | sh brown slightly clayey | | |
| L L L L L L Moder-construction for setting and the construction of setting and the constructing and the construe of and the const | | | | | | | | | | 8 34 | 0.30 | | sand w | ith frequent roots and | - | |
| Builty Progress & Water Observations Barrier Mark Case 1 (S) N=15 (S) N=16 (S) N=15 (S) N=16 (S) N= | - | | | | | 0.00 | 0.00 B2 | | | 0.04 | 0.00 | | ` | · · · · | | |
| Image: Second | - | | | | | | | | | | | | | | e _ | |
| Image: Section and the section of the secti | - | | | | | 0.60- | 1.20 B3 | | | | | | subrou | nded fine to coarse of | - | |
| L L <thl< th=""> L <thl< th=""> <thl< th=""></thl<></thl<></thl<> | | | | | | | | | | | (0.90) | | | | | |
| L L <thl< th=""> L <thl< th=""> <thl< th=""></thl<></thl<></thl<> | - | | | | | | | | | | | | | | - | |
| L L <thl< th=""> L <thl< th=""> <thl< th=""></thl<></thl<></thl<> | - | | | | | | | | | | | | | | 1- | |
| L L <thl< th=""> L <thl< th=""> <thl< th=""></thl<></thl<></thl<> | - | | | | | | . | | | | 1.00 | | | | - | |
| L L <thl< th=""> <thl< th=""> <thl< th=""> <thl< th=""></thl<></thl<></thl<></thl<> | | | | | | | | | | 1.44 | 1.20 | | Mediur | n-dense orangish brown | | |
| L L <thl< th=""> <thl< th=""> <thl< th=""> <thl< th=""></thl<></thl<></thl<></thl<> | - | | | | | | | (1,0, 1,2, 1,0) | , | | | م محمد م محمد محمد مد محمد م | to med | ium SAND with low cobble | - | |
| Image: Second | - | | | | | | | | | | | | subrou | nded fine to coarse of | - | |
| Image: Second | - | | | | | | | | | | (0.80) | وسند. محمر مد ف عد م سند محمد | litholog | ies. Cobbles are subangular | - | |
| Image: Second | | | | | | 1 80- | 200 B6 | | | | | ہ۔ مد ہے۔ مسلح کہ | sandst | one and mixed lithologies. | - | |
| End End End End End End Medium-dates complet hown and model between a corres (GAVEL of sandstates to the corres (GAVEL of sandstates to | | | | | | | | | | | | | | | | |
| End End <td>-</td> <td></td> <td></td> <td></td> <td></td> <td>2.00-</td> <td>2.45 D7</td> <td>(S)N=20</td> <td></td> <td>6.64</td> <td>2.00</td> <td></td> <td>Mediur</td> <td>n-dense orangish brown and</td> <td>2-</td> <td></td> | - | | | | | 2.00- | 2.45 D7 | (S)N=20 | | 6.64 | 2.00 | | Mediur | n-dense orangish brown and | 2- | |
| Image: Section of the section of th | - | | | | | 2.00- | ·3.00 B8 | (11,9,6,5,4,5 | 5) | | | × × × × × × | multico | bloured slightly silty very | | |
| 1 | | | | | | | | | | | | × × × × × × | coarse | GRAVEL of sandstone, | , J | |
| Boring Progress & Water Observations Borehole Diameter Casing Diameter Remarks: Logical information of the cosine of subconded fine to any services encountered. 2 Time Reminity Solo 5.37 5.00 100 100 2012213 1800 5.00 5.37 5.00 140 Diameter (m) Diameter (m) 2012213 1800 5.00 5.37 5.00 140 Solo complete at 10.00 Meght. 2012213 1800 5.00 5.37 5.00 140 Solo complete at 20.00 meght and 20.00 meght. 2012213 1800 10.00 5.00 6.37 5.00 140 Solo complete at 10.00 meght. 2012213 1800 10.00 5.00 6.37 5.00 140 Solo Solo complete at 10.00 meght. 2012213 1800 10.00 5.00 6.37 5.00 140 5.00 140 201221 1800 10.00 5.00 5.37 5.00 140 5.00 140 5.00 10.00 5.00 5.00 140 5.00 140 5.00 201221 1800 10.00 5.00 5.00 140 5.00 140 5.00 10.00 5.00 | - | | | | | | | | | | | × × × * | quanz | | - | |
| Boring Progress & Water Observations Borehole Diameter Casing Diameter Remarks: Logical information of the cosine of subconded fine to any services encountered. 2 Time Reminity Solo 5.37 5.00 100 100 2012213 1800 5.00 5.37 5.00 140 Diameter (m) Diameter (m) 2012213 1800 5.00 5.37 5.00 140 Solo complete at 10.00 Meght. 2012213 1800 5.00 5.37 5.00 140 Solo complete at 20.00 meght and 20.00 meght. 2012213 1800 10.00 5.00 6.37 5.00 140 Solo complete at 10.00 meght. 2012213 1800 10.00 5.00 6.37 5.00 140 Solo Solo complete at 10.00 meght. 2012213 1800 10.00 5.00 6.37 5.00 140 5.00 140 201221 1800 10.00 5.00 5.37 5.00 140 5.00 140 5.00 10.00 5.00 5.00 140 5.00 140 5.00 201221 1800 10.00 5.00 5.00 140 5.00 140 5.00 10.00 5.00 | - | | | | | | | | | | | × × × × | | | - | |
| Image: Second | - | | | | | | | | | | (1.30) | × × × × × × | | | - | |
| Image: Second | | | | | | | | | | | | x x x x x x x | | | - | |
| Image: Second | - | | | | | | | | | | | × × × × | | | - | |
| Image: Solution of the state of the sta | - | | | | | | | | | | | × × × × | | | 3- | |
| Boring Progress & Water Observations Borehole Diameter Casing Diameter Mining form 1.20m. No services encountered. Soft orangish brown slightly gravelly sandy SILT. Gravel is subangular to subconded fine to coarse of sandstone, quart and mixed lithologies. Boring Progress & Water Observations Borehole Diameter Casing Diameter Mining Depth (m) Diameter (m) Remarks: Bate Time Depth (m) Diameter (m) Diameter (m) Diameter (m) Diameter (m) Diameter (m) 30/10/2013 1000 5.00 6.37 10.00 115 5.00 140 30/10/2013 1000 5.00 6.37 10.00 115 5.00 140 Soft orangish brown slightly gravelly class Soft orangish brown slightly gravelly sandy subtravel is subangular to subconded fine to coarse of sandstone, quart and mixed lithologies. Stiff orangish brown slightly gravelly class. Boring Progress & Water Observations Borehole Diameter Casing Diameter (m) Remarks: Date Time Depth (m) Diameter (m) Diameter (m) Diameter (m) 30/10/2013 1895 10.00 5.00 6.37 5.00 140 1. Soft orangish brown slightly gravelly class the ethole Soft o | - | | | | | 3.00-3 | 3.30 B10 | (5,11,4,7,3,2 | 2) | | | × × × × × | | | - | |
| Boring Progress & Water Observations Borehole Diameter Casing Diameter Mining form 1.20m. No services encountered. Soft orangish brown slightly gravelly sandy SILT. Gravel is subangular to subconded fine to coarse of sandstone, quart and mixed lithologies. Boring Progress & Water Observations Borehole Diameter Casing Diameter Mining Depth (m) Diameter (m) Remarks: Bate Time Depth (m) Diameter (m) Diameter (m) Diameter (m) Diameter (m) Diameter (m) 30/10/2013 1000 5.00 6.37 10.00 115 5.00 140 30/10/2013 1000 5.00 6.37 10.00 115 5.00 140 Soft orangish brown slightly gravelly class Soft orangish brown slightly gravelly sandy subtravel is subangular to subconded fine to coarse of sandstone, quart and mixed lithologies. Stiff orangish brown slightly gravelly class. Boring Progress & Water Observations Borehole Diameter Casing Diameter (m) Remarks: Date Time Depth (m) Diameter (m) Diameter (m) Diameter (m) 30/10/2013 1895 10.00 5.00 6.37 5.00 140 1. Soft orangish brown slightly gravelly class the ethole Soft o | | | | | | 3 30-4 | 4.00 B11 | | | 5 34 | 3 30 | ~ × × | | | - | |
| Boring Progress & Water Observations Borehole Diameter Casing Diameter (mn) Remarks: Date Tme Borehole (m) Depth (m) Depth (m) Demeter (mn) Demeter (mn) 30/10/2013 1805 10.00 5.00 6.97 5.00 140 5.00 140 30/10/2013 1805 10.00 5.00 6.97 5.00 140 5.00 140 Soft orangish brown slightly gravelly sandy silphily gravelly class. Soft orangish brown slightly sandy silphily gravelly class. Soft orangish brown slightly sandy silphily gravelly class. Soft orangish brown slightly sandy silphily gravelly class. 4.24 4.40 4.40 4.50 D14 4.50.50.0 140 4.50 D14 4.50.50.0 Borehole Diameter Casing Diameter Casing Diameter Continued next sheet Date Tme Borehole Diameter (m) Demeter (m) Demeter (m) Demeter (m) Demeter (m) 30/10/2013 1805 10.00 5.00 6.97 5.00 140 5.00 140 5.00 115 5.00 115 5.00 140 5.00 140 | - | | | | | 0.00 | 4.00 BTT | | | 0.04 | 0.00 | × × × × × × × | Mediur very si | n-dense light orangish brown lty fine SAND. | - | |
| August and the second secon | - | | | | | | | | | | | × × × × × × × × | | | - | |
| Boring Progress & Water Observations Borehole Diameter (mm) Depth (m) | - | | | | | | | | | | (0.70) | × × × × × × × | | | - | |
| Boring Progress & Water Observations Borehole Diameter (mm) Depth (m) | | | | | | | | | | | | $\begin{pmatrix} x & x \\ x $ | | | - | |
| Boring Progress & Water Observations Borehole Diameter (mm) Depth (m) | | | | | | | | | | | | $\mathbf{x} \mathbf{x} \mathbf{x} \mathbf{x} \mathbf{x} \mathbf{x} \mathbf{x} \mathbf{x} $ | | | - | |
| Image: Subscription of the state of the | - | | | | | | | | | 4.64 | 4.00 | x × x x X X X X X | Soft or | angish brown slightly gravelly | 4 - | |
| Boring Progress & Water Observations Borehole Diameter Casing Diameter Continued next sheet Boring Progress & Water Observations Borehole Diameter Casing Diameter Remarks: Continued next sheet 0.00 5.00 6.97 5.00 140 30/10/2013 0815 10.00 5.00 6.97 5.00 140 140 Stiff or anglish brown slightly sandy slightly gravely CLAY. Gravel is subangular to subrounded fine to coarse of sandstone, quartz and mixed lithologies. Stiff or anglish brown slightly sandy slightly gravely CLAY. Gravel is subangular to subrounded fine to coarse of sandstone, quartz and mixed lithologies. Date Time Borehole Diameter Casing Diameter Remarks: 30/10/2013 1800 10.00 5.00 6.97 5.00 140 31/10/2013 0815 10.00 5.00 6.97 5.00 140 3.00 Storehole complete at 10.00m upon specified depth. 5.00 6.97 10.00 115 5.00 140 4.00 Storehole complete at 10.00m upon specified depth. 5.00 5.00 140 5.00 80 6.87 Storehole complete at 10.00m upon specified depth. 5.00 5.00 < | | | | | | 4.00-4 | +.40 DIJ | (1,2,2,3,5,5) | | | (0.40) | $(\times \times $ | sandy | SILT. Gravel is subangular to | | |
| A 100 A 100 <td< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>(0.40)</td><td>$\overbrace{\times \times \times \times}^{\cong} \times \times$</td><td>sandst</td><td>one, quartz and mixed</td><td>-</td><td></td></td<> | | | | | | | | | | | (0.40) | $\overbrace{\times \times \times \times}^{\cong} \times \times$ | sandst | one, quartz and mixed | - | |
| A.50 D14 4.50 D14 5.00 D14 1.00 D12 1.00 D12 <td< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>4.24</td><td>4.40</td><td>× × × × × × × × × ×</td><td></td><td>·</td><td></td><td></td></td<> | | | | | | | | | | 4.24 | 4.40 | × × × × × × × × × × | | · | | |
| Boring Progress & Water Observations Borehole Diameter Casing Diameter Remarks: Date Time Borehole Depth (m) Diameter (mm) Depth (m) Diameter (mm) No 1. Hand dug inspection pit to 1.20m. No services encountered. 2. Sonic drilling from 1.20m to 10.00m depth. 30/10/2013 1800 10.00 5.00 6.97 5.00 140 115 5.00 140 Sone hole complete at 10.00m upon specified depth. 5.00m mins. 4. Borehole complete at 10.00m upon specified depth. 5.00m mins. 4. Borehole complete at 0.00m upon specified depth. 5.00m mins. 6. SPT hammer id = GS RIG02. Hammer energy ratio =39% | | | | | | | | | | | | | slightly | gravelly CLAY. Gravel is | - | |
| Boring Progress & Water Observations Borehole Diameter Casing Diameter Remarks: Date Time Borehole Depth (m) | | | | | | 4.50-3 | 0.00 013 | | | | | | coarse | of sandstone, quartz and | - | |
| Boring Progress & Water Observations Borehole Diameter Casing Diameter Remarks: Date Time Borehole Depth (m) Diameter (mm) D | | | | | | | | | | | | | mixed | nunologies. | - | |
| Boring Progress & Water Observations Borehole Diameter Casing Diameter Remarks: Date Time Borehole Depth (m) Diameter (mm) D | | | | | | | | | | | | | | | - | |
| Date Borehole Depth (m) Casing Depth (m) Water Depth (m) Depth (m) Diameter (mm) Diameter (m | | | | | | | | | | | | <u>kossi</u> | | iuea next sheet | | |
| Date Inne Depth (m) | | | Boreh | ole C | Casing | Water | | | | <u> </u> | | | | ction pit to 1.20m. No ser | vices encounter | ed. |
| 31/10/2013 0815 10.00 5.00 6.97 10.00 115 mins. 4. Borehole complete at 10.00m upon specified depth. 5. 50mm diameter standpipe installed upon completion, slotted between 2.00m and 3.50m depth. 6. SPT hammer id = GS RIG02. Hammer energy ratio =39% | 30/10/2013 | 3 1800 |) 10.0 | 00 | 5.00 | - | | 140 | 5.00 | | 140 | 2. Sonic | drilling fro | om 1.20m to 10.00m dept | า. | |
| 5. 50mm diameter standpipe installed upon completion, slotted between 2.00m and 3.50m depth. 6. SPT hammer id = GS RIG02. Hammer energy ratio =39% | 31/10/2013 | 3 0815 | 5 10.0 | 00 | 5.00 | 6.97 | 10.00 | 115 | | | | mins. | | | | |
| 6. SPT hammer id = GS RIG02. Hammer energy ratio =39% | | | | | | | | | | | | 5. 50mm | n diameter | standpipe installed upon | completion, slot | ted |
| Release Status: Final | | | | | | | | | | | | | | | nergy ratio =39% | 5 |
| Release Status: Final | | 1 | | | | | | | | | | | | | | |
| | | | | | | | | | | | | Release S | Status: | Final | | |

| | C. | STAIN | | Contrac | ct Name: | Stoneha | ven FAS | | Client: | Aber | deenshire Council | Borehole ID | |
|----------------------------------|--------------------------|---------------------|-------|--------------|----------------------------|--|---|----------------------|------------------------------|---|---|---|--------------------------|
| Envir | | tal Ser | vices | | ct Number: 5414 | | Date Started: 30/10/2 | 2013 | Logged | By: CLP | Checked By: MJB | BH2 | 21B |
| Comb | oined R | totary C Sampler | ored | Easting | 387076 | | Northing: 78559 | 96.1 | Ground | Level: 8.64 | Plant Used: Sonic rig | Sheet 2 of 2 Scale: 1:2 | 25 |
| | Coring Inf | ormation | - | | Sampl | es & In Situ | u Testing | | | | Strata Details | | Groundwate Backfill & |
| TCR | SCR | RQD | FI | Run | Sam | nple ID | Test Resul | t Lev (m A | el Depth (r DD) (Thicknes | m) ss) Legend | Strata Description | | Installation |
| | | | | | 5.00-6 6.00-6 6.00-6 | 5.45 D16 6.00 B17 6.45 D18 6.35 B19 7.50 B20 | (S)N=44 (2,6,11,10,10, 3) (S)N=44 (2,7,7,10,12,1) | 1 | (1.95) | | Stiff orangish brown slightly sandy slightly gravelly CLAY. Gravel is subangular to subrounded fine to coarse of sandstone, quartz and mixed lithologies. Very dense yellowish brown mottled pinkish brown slightly gravelly fine to coarse SAND. Gravel is angular of sandstone. | | |
| | | | | | 7.50-8 | 7.95 D21 8.00 B22 9.00 B23 | (S)50/122mm (13,12,32,18) | | (3.65) | | from 7.00m depth, gravelly. | - - - - - - - - - - - - - - - - - - - | |
| | | | | | | 9.45 D24 0.00 B25 | (S)50/104mm (14,11,32,18) | | | | End of Borehole at 10.00 m | - - - - - - - - - - - - - - - - - - - | |
| | | ress & Wa | ole C | Casing | Water | Borehole Depth (m) | - | Casing epth (m) | Diameter Diameter (mm | Remarks: | End of Borehole at 10.00 m dug inspection pit to 1.20m. No serv | vices oncounter | ed |
| Date 30/10/201: 31/10/201: | Time 3 1800 3 0815 | Depth (| m) De | 5.00 5.00 | Depth (m) - 6.97 | 5.00 10.00 | 140 115 | 5.00 | 140 | Sonic Groun mins. Borehi 50mm betwe SPT h | dug inspection pit to 1.20m. No service drilling from 1.20m to 10.00m depth dwater encountered at 2.00m rising ole complete at 10.00m upon specif diameter standpipe installed upon en 2.00m and 3.50m depth. ammer id = GS RIG02. Hammer en Status: Final | n. 9 to 1.98m after fied depth. completion, slo | 20 tted |

| | | | | Contra | ct Name: | Stonehay | ven FAS | | | Client: | Aber | deenshire Council | Borehole ID |
|----------|-------|--------------------|--------|--------------------|---|---|--|---------|---|--|---|---|--|
| | C | STAIN | | Contra | ct Number: | | Date Started: | | | Logged | | Checked By: | BH22 |
| Enviro | onmen | ital Sei | rvices | | 5414 | | 31/10 | 0/201 | 3 | Logged | CLP | MJB | Sheet 1 of 3 |
| | | Rotary C Sample | | Eastinę | ^{9:} 387070 | | Northing: 785 | 570.4 | 1 | Ground | Level: 8.82 | Plant Used: Sonic rig | Scale: 1:25 |
| | | formation | - | | Sampl | es & In Situ | u Testing | | | _ | | Strata Details | Groundwate Backfill & |
| TCR | SCR | RQD | FI | Run | Sam | ple ID | Test Re | sult | | Depth (m | Legend | Strata Description | Installation |
| TCR | SCR | RQD | FI | Run | 0.3 0.30- 0.80- 1.20- 2.00- 2.00- 2.00- 2.00- 2.00- 2.00- 3.00- 3.00- 3.00- 3.00- 3.00- 3.00- 3.00- | 20 D1 0.50 B2 1.20 B3 2.00 B4 2.00 B4 2.45 D5 0.0 D6 2.80 B7 90 D8 3.45 D9 3.40 B10 4.00 B11 | (S)N=13 (0,0,4,4,4,1 (S)N=7 (1,2,1,1,2,3 (S)N=28 (7,10,11,11) | 1) | Level (m AOD 8.52 7.62 6.72 6.72 5.72 5.42 | Depth (rr (0.30) 0.30 0.30 (0.90) 1.20 (0.90) 2.10 (0.70) 2.80 (0.30) 3.10 (0.30) 3.40 | Legend Image: state | Strata Description Dark orangish brown slightly clayey gravelly fine to coarse SAND with low cobble content and occasional rootlets and roots. Gravel is subangular to subrounded fine to coarse of sandstone, quartz and mixed lithologies. (Copsoil). (Possible Made Ground). Light orangish brown slightly clayey gravelly fine to coarse of SAND with low cobble content and frequent gravel sized pockets of soft clay. Gravel is subangular to subrounded fine to coarse of sandstone, quartz and mixed lithologies. Cobbles are subrounded of mixed lithologies. Cobbles are subrounded of mixed lithologies. Soft orangish brown slightly clayey gravelly CLAY. Gravel is subangular to subrounded fine to coarse of sandstone, quartz and mixed lithologies. Soft orangish brown slightly clayey very sandy subangular to subrounded fine to coarse GRAVEL of sandstone, quartz and mixed lithologies. Loose orangish brown slightly clayey very sandy subangular to subrounded fine to coarse GRAVEL of sandstone, quartz and mixed lithologies. Firm reddish brown slightly clayey very sandy subangular to subrounded fine to coarse GRAVEL of sandstone, quartz and mixed lithologies. Firm reddish brown slightly clayey very sandy subangular to subrounded fine to coarse GRAVEL of sandstone, quartz and mixed lithologies. Firm becoming stiff slightly sandy slightly gravelly CLAY. Gravel is subangular to subrounded fine to coarse of sandstone, quartz and mixed lithologies. | - |
| - | | | | | | 0 D13 5.00 B14 | | | | | | | |
| <u> </u> | | | | | | | | | | | | Continued next sheet | |
| Bo | | gress & W Boreh | | servatic Casing | ons Water | | Diameter | | ing Dia | | Remarks: | | |
| Date | Time | Depth | (m) De | ipth (m) | Depth (m) | Depth (m) 5.00 10.00 | Diameter (mm) 140 115 | Depth (| | ameter (mm) | Sonic Boreho Ground Ground 20 min Boreho | dug inspection pit to 1.20m. No serv drilling from 1.20m to 10.45m. ole complete at 10.45m upon sched dwater encountered at 4.00m depth is. ole backfilled with bentonite upon co ammer id = GS RIG02. Hammer en | uled depth. , rising to 3.23m after ompletion. |
| | | | | | | | | | | | Release S | Status: Final | |

| | | | | Contrac | | Stonehav | /en FAS | | | Client: | Aber | rdeenshire Council | Borehole ID | |
|-------|------------|-------------------|-----------------|-------------------|--|---|---|--------------------------|-----------------|---------------------------|--|---|----------------------------------|--|
| | C | STAIN | | Contrac | t Number: | | Date Started: | | | Logged | By: | Checked By: | BH | 22 |
| Envir | onmen | tal Ser | vices | | 5414 | | 31/10 |)/20 [,] | 13 | | CLP | MJB | Sheet 2 of 3 | |
| | | otary C | | Easting | | | Northing: | | | Ground | | Plant Used: | Scale: | |
| & Dyı | namic S | Sample | r Log | : | 387070 | .3 | 785 | 570. | 4 | | 8.82 | Sonic rig | 1:2 | 25 |
| | Coring In | | | | Sampl | es & In Situ | u Testing | | | | . 1 | Strata Details | | Groundwate Backfill & Installation |
| TCR | SCR | RQD | FI | Run | | | Test Re | | Level (m AOI | Depth (m D) (Thickness | | Strata Description | | |
| | | | | | 5.00-6 6.00-6 6.00-6 6.50-7 7.50-7 7.50-7 8.25-8 8.80-5 8.80-5 8.80-5 | 5.45 D15 5.00 B16 5.00 B16 7.50 B18 7.50 B19 7.50 B19 7.50 B19 7.50 B19 7.50 B19 7.95 D20 3.25 D20 3.25 B21 3.80 B22 9.20 B24 0 D25 0.00 B26 | (S)N=43 (9,11,10,12 2) (S)50/260n (8,7,9,15,1 (8,7,9,15,1) (S)50/252n (4,7,10,15,0) (S)50/256n (10,11,10,1 ,10) | nm 7,9) nm 15,1 | -0.38 | (5.80) | | Firm becoming stiff slightly sandy slightly gravelly CLAY. Gravel is subangular to subrounded fine to coarse of sandstone, quartz and mixed lithologies. from 6.00m depth, gravelly with low cobble content of subangular sandstone. | | |
| | | | | | | | | | | / | | Continued next sheet | | |
| Во | oring Prog | ress & W | | | | | Diameter | | | ameter | Remarks | | | |
| Date | Time | Boreho Depth (| ole C (m) De | casing pth (m) | Water Depth (m) | Depth (m) 5.00 10.00 | Diameter (mm) 140 115 | Depth 5.0 | | Diameter (mm) | Sonic Borehi Groun Groun and the second se | ole backfilled with bentonite upon co ammer id = GS RIG02. Hammer en | uled depth. , rising to 3.23r | n after |
| | | | | | | | | | | | Release | Status: Final | | |

| CESTAIN | | Stonehaven FAS | | Client: | | leenshire Council | | 22 |
|---|-------------------------------------|---|------------------------|-------------------------|--|---|--------------------|---|
| Environmental Services | Contract Number: 5414 | Date Starte | ≞ 10/2013 | Logged E | | Checked By: MJB | BH Sheet 3 of 3 | 22 |
| Combined Rotary Cored & Dynamic Sampler Log | Easting: 387070 | Northing: 0.3 78 | 5570.4 | Ground L | .evel: 8.82 | Plant Used: Sonic rig | Scale: 1:2 | :5 |
| Coring Information | Sample | les & In Situ Testing | | | | Strata Details | | Groundwater Backfill & Installation |
| TCR SCR RQD FI | Run Sam | nple ID Test | Result Level (m AOE | Depth (m) (Thickness | Legend | Strata Description | | Installation |
| ICK SCR RQD FI - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -< | | nple ID Test 10.45 D27 (S)50/79 (14,11,4) | mm | | | Strata Description Very dense light yellowish brown mottled light pinkish brown very sandy angular fine to coarse GRAVEL of sandstone. End of Borehole at 10.45 m | | |
| | | | | | | | - | |
| | | Develop D' | | | | | | |
| Boring Progress & Water Ob Date Time Borehole C Depth (m) De | Casing Water Pepth (m) Depth (m) | Borehole Diameter Depth (m) Diameter (m | | iameter (mm) | Remarks: 1. Hand d | ug inspection pit to 1.20m. No serv | ices encounter | ed. |
| | - · · · · | 5.00 140 10.00 115 | 5.00 | 140 | Borehol Ground 20 mins Borehol SPT ha | rilling from 1.20m to 10.45m. le complete at 10.45m upon sched water encountered at 4.00m depth, s. le backfilled with bentonite upon co mmer id = GS RIG02. Hammer en tatus: Final | mpletion. | |

| | | | | Contrac | ct Name: | Stoneha | ven FAS | | | Client: | Aber | deenshire Council | Borehole ID | |
|-------|------------|-----------------|----------------|------------------|--------------------|----------------------------------|-----------------------------|-------------------|------------------|-------------------------|--|---|---|--|
| | L | STAIN | ł | Contrac | ct Number: | | Date Started: | | | Logged E | By: | Checked By: | BH | 23 |
| Envir | nmon | tal Ser | vicos | | 5414 | | 21/10 |)/20 [,] | 13 | | CLP | MJB | Observed | |
| | | totary C | | Easting | I: | | Northing: | | | Ground L | .evel: | Plant Used: | Sheet 1 of 1 Scale: | |
| | | Sample | | | 387072 | .5 | 785 | 532. | 2 | | 9.10 | Sonic rig | 1:2 | |
| | Coring Inf | formation | | | Sampl | es & In Situ | u Testing | | | | | Strata Details | | Groundwate Backfill & Installation |
| TCR | SCR | RQD | FI | Run | Sam | nple ID | Test Re | sult | Level (m AOD) | Depth (m) (Thickness | Legend | Strata Description | | Installation |
| - | | | | | 0.20- | 20 D1 0.50 B2 1.00 B3 | | | 8.80 | (0.30) 0.30 | | Grass over dark orangish brown slightly gravelly clayey fine to medium SAND with frequent roots and rootlets (TOPSOIL). Gravel is subangular to subrounded fine to coarse of sandstone, quartz and mixed lithologies. | - | |
| - | | | | | | 1.65 D4 | | | | (0.95) | | Dark orangish brown slightly gravelly silty fine to medium SAND with low cobble cotent. Gravel is subangular to subrounded fine to coarse of sandstone, quartz and mixed litholiges. Cobbles are subangular to subrounded of sandstone, quartz and mixed lithologies. | - - - 1- - | |
| - | | | | | 1.20- | .2.40 B5) ESD4 | (S)N=28 (2,7,5,8,8,7 | 7) | 7.85 | 1.25 | | Medium-dense orangish brown mottled multicoloured slightly silty sandy GRAVEL. Gravel is subangular to subrounded fine to coarse of sanstone, quartz and mixed lithologies. | | |
| - | | | | | 2.00- | 2.45 D6 | (S)N=5 (4,1,0,0,2,3 | 3) | | | | | 2- | |
| - | | | | | | 50 D7 -3.00 B8 | | | 6.70 | 2.40 (0.95) | MX MX< | Soft orangish brown slightly sandy slightly gravelly CLAY with low cobble content. Gravel is subangular to surounded fine to coarse of sandstone, quartz and mixed lithologies. Cobbles are subangular to subrounded of mixed lithologies. between 2.40m and 2.55m | - | |
| - | | | | | | ·3.35 B9 | | | 5.75 | 3.35 | | depth, with thin laminations of silt below 3.00m depth, very sandy | | • |
| - | | | | | 3.50-3 3.50-3 | 0 D10 3.95 D11 3.75 B12 | (S)N=35 (5,6,7,8,9,1 | 1) | | (0.40) | | Dense orangish brown clayey gravelly fine to coarse SAND. Grave is subangular to subrounded fine to coarse of sandstone, quartz and mixed lithologies. below 3.50m depth, very claye | - | |
| - | | | | | 4.00-4 | 4.00 B13 4.45 D14 5.00 B15 | (S)N=44 (2,6,8,11,1) | 2,13 | 5.35 5.10 | 3.75 (0.25) 4.00 | | Soft orangish brown slightly gravelly sandy SILT. Gravel is subangular to subrounded fine to coarse of sandstone, quartz and mixed lithologies. | , – | |
| - | | | | | | |) | , - | | (1.00) | | Stiff orangish brown slightly sandy slightly gravelly CLAY. Gravel is subangular to subrounded fine to coarse of mixed lithologies. | | |
| - | | | | | | | | | | | | | - | |
| Bo | oring Prog | gress & W | | | | Borehole | Diameter | Ca | sing Dia | meter | Remarks: | End of Borehole at 5.00 m | | |
| Date | Time | Boreho Depth | ole C m) De | asing pth (m) | Water Depth (m) | Depth (m) 4.00 5.00 | Diameter (mm) 140 115 | Depth 4.0 | | ameter (mm) | Sonic of Boreho Ground Ground Boreho | dug inspection pit to 1.20m. No ser drilling from 1.20m to 5.00m. ole complete at 5.00m upon schedi dwater encountered at 3.50m depti is. ole backfilled with bentonite upon c ammer id = GS RIG02. Hammer en | uled depth. h, rising to 3.29m ompletion. | n after |
| | | | | | | | | | | | Release S | Status: Final | | |

| | | Contract N | | onehav | /en FAS | | | Client: | Abero | deenshire Council | Borehole ID |
|---|-----------------------------|------------|--|-----------------------|--|-------------------|--------------------------------|--|--|---|---|
| C | STAIN | Contract N | Number: | | Date Started: | | | Logged E | By: | Checked By: | BH24 |
| Environment | al Services | | 5414 | | 26/10/ | /2013 | 3 | | CLP | MJB | Sheet 1 of 2 |
| Combined R | | Easting: | | | Northing: | | | Ground L | evel: | Plant Used: 5 | Scale: |
| & Dynamic S | | 3 | 87035.5 | 5 | 7855 | 06.5 | | | 10.49 | Sonic rig | 1:25 |
| Coring Info | ormation | | Samples | s & In Situ | u Testing | | | | | Strata Details | Groundwater Backfill & |
| TCR SCR | RQD FI | Run | Samp | le ID | Test Resu | ult (r | Level n AOD) | Depth (m) (Thickness | Legend | Strata Description | Installation |
| ICK SCK - - <td></td> <td>KUN</td> <td>0.20 0.30-0 0.50-1 1.00-1 1.20-1 1.20-1 1.70-2 2.00-2</td> <td>) D1 .50 B2</td> <td>(S)N=21 (16,9,7,6,5,3 (S)N=18 (2,2,3,3,6,6)</td> <td>3)</td> <td><u>n AOD)</u> 10.19 8.49</td> <td>(0.30) 0.30 (1.70) 2.00 (1.00)</td> <td></td> <td>MADE GROUND. Dark orangish brown slightly clayey slightly gravelly fine to coarse sand with frequent roots and rootlets. Gravel is subangular to subrounded fine to coarse of sandstone, quartz and mixed lithologies. (Topsoil). MADE GROUND. Dark brown slightly clayey gravelly fine to coarse sand with low cobble content. Gravel is subangular to rounded fine to coarse of sandstone, quartz and mixed lithologies. Cobbles are subangular to rounded of sandstone, quartz and mixed lithologies. from 0.60m depth, clayey with medium cobble content and rare wood fragments. from 1.70m depth, very clayey. Medium-dense dark orangish brown silty gravelly fine to coarse SAND. Gravel is subangular to subrounded, fine to coarse of sandstone, quartz and mixed lithologies.</td> <td></td> | | KUN | 0.20 0.30-0 0.50-1 1.00-1 1.20-1 1.20-1 1.70-2 2.00-2 |) D1 .50 B2 | (S)N=21 (16,9,7,6,5,3 (S)N=18 (2,2,3,3,6,6) | 3) | <u>n AOD)</u> 10.19 8.49 | (0.30) 0.30 (1.70) 2.00 (1.00) | | MADE GROUND. Dark orangish brown slightly clayey slightly gravelly fine to coarse sand with frequent roots and rootlets. Gravel is subangular to subrounded fine to coarse of sandstone, quartz and mixed lithologies. (Topsoil). MADE GROUND. Dark brown slightly clayey gravelly fine to coarse sand with low cobble content. Gravel is subangular to rounded fine to coarse of sandstone, quartz and mixed lithologies. Cobbles are subangular to rounded of sandstone, quartz and mixed lithologies. from 0.60m depth, clayey with medium cobble content and rare wood fragments. from 1.70m depth, very clayey. Medium-dense dark orangish brown silty gravelly fine to coarse SAND. Gravel is subangular to subrounded, fine to coarse of sandstone, quartz and mixed lithologies. | |
| - - - - - | | | 3.00 3.20-4.1 | D10 00 B11 | (S)N=2 (1,0,0,0,1,1) | | 7.49 | 3.00 | | Soft thinly laminated reddish brown slightly sandy SILT with occasional thin partings of fine sand. | - - 3- - - - - - |
| - | | | | 50 U12 U12 | | | 6.19 | (1.30) | | from 3.60m depth, slightly gravelly. Gravel is subangular to subrounded fine to coarse of sandstone, quartz and mixed lithologies. from 3.90m depth, clayey SILT. | 4- |
| | | | 4.50-4.9 | D13 90 B14 D15 | | | | | | Soft brown slightly gravelly sandy CLAY. Gravel is subangular to subrounded fine to coarse of sandstone and quartz. | |
| | | | 7.00 | 2.0 | | | | | | Continued next sheet | |
| | ress & Water Ob Borehole | Casing | | Borehole Depth (m) | Diameter Diameter (mm) | Casii Depth (m | ng Dian | neter meter (mm) | Remarks: | lug inspection pit to 1.20m. No service | es encountered |
| Date Time 26/10/2013 1500 28/10/2013 1100 | Depth (m) D 6.00 | | - - | 6.00 10.00 | 140 115 | 6.00 | | 140 | Sonic d Slight s 2.00m d Ground of shift. Boreho SPT hat | Irilling from 1.20m to 10.00m. eepage noted at 1.00m depth, moistu depth. Iwater encountered overnight . Sitting | are observed from at 5.60m at start ad depth. etion. |

| | P | STAIN | | Contrac | ct Name: | Stoneha | ven FAS | | | Client: | Abei | rdeenshire Council | Borehole ID | |
|----------------------------------|---------|--------------------|-------------|---------------|---------------------|----------------------------------|---------------------------|--------------------|----------------|--------------------------|--|---|--|----------------------------|
| Enviro | | | nvioon | | ct Number: 5414 | | Date Started: 26/10 |)/2013 | 3 | Logged B | CLP | Checked By: MJB | BH | 24 |
| Comb | bined R | Rotary (Sample | Cored | Easting | : 387035 | | Northing: 785 | 506.5 | | Ground L | evel: 10.49 | Plant Used: Sonic rig | Sheet 2 of 2 Scale: 1:2 | 25 |
| - | | formation | - | | Sampl | es & In Situ | u Testing | | | | | Strata Details | | Groundwate Backfill & |
| TCR | SCR | RQD | FI | Run | Sam | nple ID | Test Re | sult (m | Level 1 AOE | Depth (m) (Thickness) | Legend | Strata Description | | Backfill & Installatior |
| - | | | | | 5.00- | 5.45 D16 5.50 B17 6.00 B18 | (S)50/258n (5,7,9,14,1 | | | | | Remaining Detail : 4.90m - 4. from 4.90m depth, very sar from 5.10m depth, slight sandy. | ndy. · | |
| - | | | | | | 6.45 D19 6.75 B20 | (S)N=46 (7,7,9,9,11, | ,17) | | | | from 5.60m depth, becon stiff and very stiff. bewteeen 6.00m and 6.3 depth, sandy. | | |
| | | | | | 6.75- | 7.50 B21 | | | | | | | - - - - - - - - - - - - - | |
| - | | | | | | 7.95 D22 8.25 B23 | | | | (5.70) | | from 7.30m depth, grave | - - - - - - - - | |
| - | | | | | 8.25-5 | 9.00 B24 | | | | | | | - 8- - - - - - - - - - - - | |
| - | | | | | | 9.45 D25 0.00 B26 | | | | | | | - - 9- - - | |
| - | | | | | | | | | | | | | - | |
| | | gress & W Boreh | | servatio | NS Water | Borehole Depth (m) | Diameter Diameter (mm) | Casin Depth (m) | | | Remarks | | | her |
| Date 26/10/2013 28/10/2013 | | Depth 6.0 | (m) De 0 | 6.00 10.00 | Depth (m) - - | 6.00 10.00 | 140 115 | 6.00 | , 0 | 140 | Sonic Slight 2.00rr Grour of shil Boreh Boreh SPT h | dug inspection pit to 1.20m. N drilling from 1.20m to 10.00m seepage noted at 1.00m dept n depth. ndwater encountered overnigh ft. iole complete at 10.00m upon iole backfilled with bentonite o nammer id = GS RIG02. Ham Status: Final | . moisture observed t . Sitting at 5.60m at scheduled depth. n completion. | from start |

| | | | | Contra | ct Name: | Stoneha | ven FAS | | | Client: | Aber | deenshire Council | Borehole ID |
|--------------------|---------------------------------|----------|--------------|---|--|--|---------------------------------------|--------|-----------------|------------------------|-----------|---|--------------------|
| | G | STAIN | | Contra | ct Number: | | Date Started: | | | Logged | By: | Checked By: | BH25 |
| Enviro | onmen | tal Sei | vices | | 5414 | | 16/10 |)/201 | 3 | | CLP | PS | Sheet 1 of 2 |
| | bined R | | | Easting | j: | | Northing: | | | Ground | _evel: | Plant Used: | Scale: |
| | namic S | | | | 386977 | .5 | 7854 | 466.3 | 3 | | 14.03 | Sonic rig | 1:25 |
| | Coring Inf | ormation | | | Sampl | es & In Situ | u Testing | | | • | | Strata Details | Groundw Backfil |
| TCR | SCR | RQD | FI | Run | Sam | iple ID | Test Re: | sult | Level m AOE) | Depth (m (Thickness |) Legend | Strata Description | Installat |
| _ | | | | | 0.2 | 20 D1 | | | | (0.30) | | Soft dark brown slightly gravelly sandy CLAY, with frequent roots and rootlets. Gravel is subangular to subraunded fine to coarse of | |
| - | | | | | | 0.50 B2 | | | 13.73 | 0.30 | | to subrounded fine to coarse of sandstone, quartz and mixed lithologies. (Topsoil). | 1 |
| - | | | | | 0.50- | 1.00 B3 | | | 13.33 | (0.40) | | Soft dark orangish brown slightly gravelly very sandy CLAY with occasional roots. Gravel is subangular to subrounded fine to | - |
| - | | | | | | | | | | | | coarse of sandstone, quartz and mixed lithologies. Medium dense dark orangish brov slightly clayey very sandy GRAVE | |
| - | | | | | 1 20 | 1.65 D4 | | | | | | with medium cobble content. Gra is subangular to subrounded fine t coarse of sandstone, guartz and | vel 1- |
| - | | | | | | 2.00 B5 | (S)N=12 (3,6,1,2,4,5 |) | | | | mixed lithologies. Cobbles are subangular to subrounded of sandstone and mixed lithologies. | - |
| - | | | | | 1.6 | 60 D6 | | | | (1.90) | | | |
| - | | | | | | | | | | | | | |
| - | | | | | | 2.45 D7 2.50 B8 | (S)N=15 (2,9,6,5,2,2 |) | | | | | 2- |
| - | | | | | | | | | | | | | - |
| - | | | | | | 50 D9 3.00 B10 | | | 11.43 | 2.60 | | Soft locally firm orangish brown slightly sandy slightly gravelly | |
| - | | | | | 0.00 | | | | | | | CLAY with low cobble content. Gravel is subangular to subrounde fine to coarse of sandstone, quart and mixed lithologies. Cobbles are | Z - |
| - | | | | | | 3.50 U11 0 U11 | | | | | | subangular to subrounded of sandstone, quartz and mixed lithologies. between 2.60m and 4.55m | 3- |
| - | | | | | 25 | 0 D12 | | | | | | depth, moisture noted. | |
| - | | | | | | 4.00 B13 | | | | (1.95) | | | - |
| - | | | | | 4 00-4 | 4.45 D14 | | | | | | from 3.80m Sandy. | |
| - | | | | | | 4.50 B15 | (S)N=24 (1,2,4,2,7,1 | 1) | | | | | |
| - | | | | | 4.5 | 0 D16 | | | | | | | |
| - | | | | | | 5.00 B17 | | | 9.48 | 4.55 | | Stiff locally hard orangish brown slightly sandy slightly gravelly CLAY. Gravel is subangular to subangular to | - |
| - | | | | | | | | | | | | subrounded fine to coarse of sandstone, quartz and mixed Continued next sheet | - |
| Bo | Boring Progress & Water Observa | | INS Water | Borehole Depth (m) | Diameter | | | ameter | Remarks: | | I | | |
| Date 16/10/2013 | Time 3 1645 | Depth | (m) De | Depth (m) Depth (m) <thdepth (m)<="" th=""> Depth (m) <thdepth (m)<="" th=""> Depth (m) <thdepth (m)<="" th=""> <thdepth (m)<="" th=""> <thdep< td=""><td> Sonic Groun mins. Boreho </td><td>dug inspection pit to 1.20m. No s drilling from 1.20m to 10.00m. dwater encountered at 7.50m risi ole complete at 10.00m upon sch</td><td>ng to 7.37m after 20 eduled depth.</td></thdep<></thdepth></thdepth></thdepth></thdepth> | Sonic Groun mins. Boreho | dug inspection pit to 1.20m. No s drilling from 1.20m to 10.00m. dwater encountered at 7.50m risi ole complete at 10.00m upon sch | ng to 7.37m after 20 eduled depth. | | | | | | |
| | | | | | | | | | | | 5. Boreho | Borenole complete at 10.00m upon scheduled de 5. Borehole backfilled with bentonite on completion. 6. SPT hammer id = GS RIG02. Hammer energy ra | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | Release S | Status: Final | |

| | CUSTAIN | | | | ct Name: | Stoneha | /en FAS | | | Client: | Aber | deenshire Council | Borehole ID | |
|------------|----------------------|--------------------|-------|------------------------------|--|--|--|-----------------------|-----------------|---|---|--|---|--------------------------|
| | C | STAIN | ŀ | Contrac | t Number: | | Date Started: | | | Logged E | | Checked By: | B⊢ | 25 |
| Enviro | onment | tal Ser | vices | | 5414 | | 16/10 |)/201 | 13 | | CLP | PS | Sheet 2 of 2 | |
| Comb | bined R binamic S | otary C | ored | Easting | : 386977 | | Northing: 7854 | 466.3 | 3 | Ground L | evel: 14.03 | Plant Used: Sonic rig | Scale: 1:2 | 25 |
| - | Coring Info | | | | Sampl | es & In Situ | u Testing | | | | | Strata Details | | Groundwate Backfill & |
| TCR | SCR | RQD | FI | Run | Sam | ple ID | Test Re | sult | Level (m AOI | Depth (m) (Thickness | Legend | Strata Description | | Installation |
| | SCR | RQD | FI | Run | 5.00-4 5.00-4 5.00-4 5.55 5.60-4 6.00-4 6.00-4 6.00-4 6.00-4 7.00 7.20-5 7.50-3 7.50-3 8.00 8.00-4 8.00-4 8.00-4 8.50-5 8.50-5 | nple ID 5.50 U18 5.50 U18 0 D19 5.00 B20 5.45 D21 5.50 B22 7.00 B23 0 D24 7.50 B25 7.95 D26 3.00 B27 0 D28 3.50 B29 0 D30 9.45 D32 9.50 B33 0.00 B34 | (S)50/188n (25,28,14,8 (S)50/212n (4,8,12,24, (S)50/215n (3,9,9,12,2) | nm 3) nm 14) | 8.03 |)) [Thickness (1.45) 6.00 (1.00) 7.00 (3.00) | | Strata Description lithologies. Very dense orangish brown slightly clayey gravelly fine to coarse SAND with low cobble content. Gravel is subangular to subrounded fine to coarse of sandstone, quartzite and mixed lithologies. Stiff locally hard dark orangish brown slightly gravelly sandy CLAY with low cobble content. Gravel is angular to subrounded fine to coarse of sandstone, quartz and mixed lithologies. Cobbles are subangular to subrounded of mixed lithologies. between 7.00m and 7.50m depth, moisture noted. | | |
| | | | | | | | | | | | | | - | |
| | | | | | | | <u> </u> | | <u> </u> | | | End of Borehole at 10.00 m | | |
| Bo | oring Prog | Boreho Depth (i | le C | servatio asing pth (m) | NS Water Depth (m) | Borehole Depth (m) | Diameter Diameter (mm) | | | ameter ^{liameter} (mm) | Remarks: 1. Hand | : dug inspection pit to 1.20m. No serv | ices encounte | red. |
| 16/10/201: | - | 10.00 | | 2.00 | - - | 2.00 10.00 | 229 115 | 2.0 | 00 | 229 | Sonic Groun mins. Boreho Boreho SPT h | drilling from 1.20m to 10.00m. dwater encountered at 7.50m rising ole complete at 10.00m upon sched ole backfilled with bentonite on com ammer id = GS RIG02. Hammer en | to 7.37m after uled depth. pletion. | 20 |
| | | | | | | | | | | | Release | Status: Final | | |

| Stonehaven FAS Aberdeenshire Council BH Environmental Services 5414 07/11/2013 CLP MUB Denviron Denviron Sorie 1 Combined Rotary Cored 387511.1 Nortrix Tork Services Sorie 3.34 Sonie for 3.34 Sonie for Sorie 1 Comparatic Sampler Log Strutter Nortrix Strutter 3.34 Sonie for 3.34 Sonie for 1 1 Sorie 1 | |
|--|----------|
| Environmental Services 5414 07/11/2013 CLP MJB Services Combined Rotary Cored & Dynamic Sampler Log Sampler Log 387511.11 Nerving 387511.11 Divard Leve: 705673.9 3.34 Sonio frig 5010 if g 12 Compiler Rotary Cored & Dynamic Sampler Log Sampler Log Sampler Log Sampler Log Strata Details TCR SCR ROD FI Run Sampler Log Sampler Log Strata Details TCR SCR ROD FI Run Sampler Log Sampler | 126 |
| Combined Rotary Cored & Dynamic Sampler Log Testing 387511.1 Noming 785673.9 Grant Level 3.34 Part Level Solic rig Solic rig Solic rig Coring Information Samples & In Stu Testing Strate Details Strate Details TOR SCR R0D FI Run Samples & In Stu Supples & In Stu Supple | |
| & Dynamic Sampler Log 387511.1 785673.9 3.34 Somicing 11: Coring Information Sumples & In Stru Testing Strata Details Strata Details Image: Strata Details <td></td> | |
| Coring Information Samples & In Stu Testing Strata Details TCR SCR ROD FI Run Service ID Test Heaut Lindog Details Market Million TCR SCR ROD FI Run Service ID Test Heaut Lindog Details Market Million TCR SCR ROD FI Run Service ID Test Heaut Lindog Market Million Market | 25 |
| TCR SCR RQD FI Run Sample ID Test Resul Lagend Lagend 3.24 Logend 0.00 (0.30) Sinta Description 0.40 D2 0.40 0.80 B3 0.10 D1 3.28 3.24 0.06 3.24 0.06 3.24 MADE GRUNUS Returns thick services studies 0.40 D2 0.40 0.80 B3 0.40 D2 0.40 0.80 B3 2.94 0.40 0.40 0.80 L2 0.40 0.80 L2 2.94 0.40 MADE GRUNUS Returns the construct grade of instance, quartice and the construct grade of instan | Groundwa |
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| 1.20-2.00 B7 1.20-2.00 B7 1.20-2.00 B7 Very derse yellowsh from slightly change way sandy sandy sandy sandy sandstone quote, yellowsh and mixed lithologies. Very derse yellowsh from slightly change way sandy sandy sandy sandstone quote, yellowsh and mixed lithologies. 2.00-2.45 D8 2.00 W13 (S)50/175mm (8,9,11,30.9) (1.10) Image: sand mixed lithologies. 2 2.00-2.45 D8 2.00 W13 (S)50/175mm (8,9,11,30.9) (1.10) Image: sand mixed lithologies. 2 2.40 D10 2.40 ESD10 1.04 2.30 Soft reddish brown slightly sandy SILT. Soft reddish brown slightly sandy SILT. Soft reddish brown slightly sandy SILT. Image: sand mixed lithologies. 4.00-4.50 U15 4.00 U15 4.00-4.50 U15 4.00 U15 (3.30) Image: sand mixed lithologies. Image: sand mixed lithologies. 4.00-4.50 U15 4.50 D16 4.50 D16 Image: sand mixed lithologies. Image: sand mixed lithologies. Image: sand mixed lithologies. | |
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| 2.00-245 D8 (S)50/175mm (1.10) mixed lithologies. 2.00-230 B9 2.00 W13 (3.01,1,30.9) 2.30-3.00 B11 1.04 2.30-3.00 B11 1.04 2.30 Soft reddish brown slightly sandy SILT. 2.40 ESD10 3.00-3.45 D12 (S)N=7 Soft reddish brown slightly sandy SILT. 3.00-3.45 D12 (S)N=7 (1.1,1,2,3) | |
| 2.00-2.45 D8 2.00-2.30 B9 2.00 W13 2.30-3.00 B11 2.40 D10 2.40 ESD10 3.00-3.45 D12 3.00-4.00 B14 4.00-4.50 U15 4.00 U15 4.00 U15 4.50 D16 4.50 D16 4.50 D16 4.50 D16 | |
| 2.00-2.45 DB 2.00-2.30 B3 2.00-2.30 B3 2.00-2.30 B3 2.00-2.30 B1 2.40 D10 2.40 ESD10 3.00-3.45 D12 3.00-4.00 B14 4.00-4.50 U15 4.00 U15 4.00 U15 4.50 D16 4.50 D16 4.50 D16 4.50 D16 4.50 D16 4.50 D16 4.50 D16 | |
| 2.00-230 B9 2.00 W13 2.30-3.00 B11 2.40 ESD10 3.00-3.45 D12 3.00-4.00 B14 4.00-4.50 U15 4.50 D16 4.50 D16 4.50 D16 4.50 D16 4.50 D16 4.50 D16 4.50 D16 4.50 D16 4.50 D16 | |
| 2.00-230 B9 2.00 W13 2.30-3.00 B11 2.40 ESD10 3.00-3.45 D12 3.00-4.00 B14 4.00-4.50 U15 4.00 U15 4.50 D16 4.50 D16 4.50 D16 4.50 D16 4.50 D16 4.50 D16 4.50 D16 4.50 D16 | |
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| 4.00-4.50 U15 4.00 U15 4.00 U15 4.00 U15 4.50 D16 4.50 D16 4.50 D16 4.50 D16 | |
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| 4.00-4.50 U15 4.00 U1 | |
| 4.50 D16 4.50 B17 | |
| 4.50 D16 4.50 b17 4.50 b17 | |
| 4.50 D16 4.50-5.00 B17 | |
| 4.50 D16 4.50-5.00 B17 | |
| | |
| | |
| | |
| Continued next sheet | |
| | |
| Boring Progress & Water Observations Borehole Diameter Casing Diameter Remarks: Date Time Borehole Casing Water Depth (m) Depth (m) D | red. |
| 07/11/2013 1800 7.50 6.00 - 2.00 229 2.00 229 3 Rotary coring from 7.50m to 13.00m | |
| 08/11/2013 08/00 7.50 6.00 3.13 7.50 140 7.50 140 4. Groundwater encountered at 2.00m depth, rising to 1.430 20 mins. | m after |
| 5. Borehole backfilled with bentonite on completion. 6. SPT hammer id = GS RIG02. Hammer energy ratio =399 | % |
| | |
| | |
| Release Status: Final | |

| | ₽∎ | STAIN | | Contract | | Stoneha | /en FAS | | | Client: | Aber | rdeenshire Council | Borehole ID | |
|---|------------------------------------|----------------|---------------------|----------------------|-----------------|-------------------------------|---------------------------------|--------------------|-----------------|--------------------------|---|---|---|--------------------------|
| | | | | | Number: 5414 | | Date Started: 07/11 | /2012 | 2 | Logged B | | Checked By: MJB | BH | 26 |
| | onmen | | | Easting: | | | Northing: | /2010 | , | Ground L | | Plant Used: | Sheet 2 of 3 Scale: | |
| | bined R namic S | | | - | 387511 | | - | 673.9 | | Ground E | 3.34 | Sonic rig | 1:2 | 25 |
| | Coring In | formatior | ı | | Sampl | es & In Situ | u Testing | | | | | Strata Details | | Groundwate Backfill & |
| TCR | SCR | RQD | FI | Run | Sam | ple ID | Test Res | sult (m | Level n AOD) | Depth (m) (Thickness) | Legend | Strata Description | | Installation |
| - | | | | | 5.00-5 | 5.45 D18 5.60 B19 | (S)N=10 (0,2,2,2,3,3) | | | | X | Remaining Detail : 4.80m - 5.00m : 1. no sandstone cobble. | - - - - | |
| | | | | | 5.7 | 6.00 B21 0 D20 7.00 B22 | (S)50/261m (8,9,13,16,1) | ım | -2.26 | 5.60 | હ્યું. નિર્વેષ્ઠ br>સ્વિકે જે બુદ્ધારે કે બુદ્ધારે નિર્વેષ્ઠ નિર્વેષ્ઠ નિર્વેષ્ઠ નિર્વેષ્ઠ નિર્વેષ્ઠ નિર્વેષ્ઠ નિર્વેષ્ઠ નિર્વેષ્ઠ સ્વિકે સ્વિકે નિર્વેષ્ઠ નિર્વેષ્ઠ નિર્વેષ્ઠ નિર્વેષ્ઠ નિર્વેષ્ઠ નિર્વેષ્ઠ નિર્વેષ્ઠ નિર્વેષ્ઠ નિર્વેષ્ઠ નિર્વેષ | Firm becoming stiff reddish brown slightly sandy slightly gravelly CLAY with low cobble content. Gravel is subangular to subrounded fine to coarse of sandstone, quartz and mixed lithologies. Cobbles are subangular of mixed lithologies. from 6.00m depth, sandy. | - - - - - - - - - - - - - - - - - - - | |
| - | | | | | 7.1 | 7.50 B24 0 D23 | | - | -3.66 | 7.00 | | Reddish brown mottled greenish grey gravelly fine to medium SAND. Gravel is angular fine to coarse of sandstone. | | |
| - - - - 67 | 47 | 41 | 1 <u>NI</u> 4 | 7.50 | | 7.95 D25 -7.92 C | (S)50/6mm (25,50) | - | -4.16 | 7.50 | | Medium strong brown and greenish grey medium grained SANDSTONE. Discontinuities are 1) subhorizontal medium spaced rough planar. 2) 50 deg widely spaced rough planar. between 7.92m and 7.98m depth, recovered non-intact as | - - - 8- | |
| - | | | NI | | | | | - | -4.83 | 8.17 | | gravel. between 8.12m and 8.17m depth, recovered non-intact as clayey gravel. Assessed Zone of Core Loss. | | |
| - | | | AZCL | 8.50 | | | | | | (0.63) | | | - - - | |
| | 54 | 45 | 2 NI 2 | | | -9.00 C -9.68 C | | | -5.46 | 8.80 | | Medium strong brown and greenish grey medium grained SANDSTONE. Discontinuities are 1) subhorizontal medium spaced rough planar. 2) 50 deg widely spaced rough planar. between 9.10m and 9.17m depth, recovered non-intact as clayey gravel. | - 9 - - - - - - | |
| - - - | | | NI 1 | | | | | | | | | between 9.68m and 9.92m depth, recovered non-intact as clayey sandy gravel. Continued next sheet | | |
| | oring Prog | Bore | hole C | Casing | Water | Borehole Depth (m) | Diameter Diameter (mm) | Casir Depth (m) | ng Diar | | Remarks | : dug inspection pit to 1.20m. No servi | ces encounter | ed |
| Date 07/11/201 08/11/201 08/11/201 | Time 3 1800 3 0800 3 1200 | Depth) 7.5 | n (m) De | 6.00 6.00 7.50 | | 2.00 7.50 13.00 | 229 140 115 | 2.00 7.50 | | 229 140 | Sonic Rotary Groun Grouning Boreho | drilling from 1.20m to 7.50m. y coring from 7.50m to 13.00m. ndwater encountered at 2.00m depth, | rising to 1.43r letion. | n after |
| | | | | | | | | | | | Release | Status: Final | | |

| | Γ∎ | STAIN | | Contract | | ehave | en FAS | | | Client: | Ab | erdee | enshire Council | Borehole ID | |
|--|--|-----------------------|------------------|----------|----------------------------|-----------|--|----------------------------|---------------|--------------------------------------|---|--|--|--|--------------------------|
| Enviro | | | rvices | | Number: 5414 | | ate Started: 07/11 | /20 ⁻ | 13 | Logged | CLF |) | Checked By: MJB | Sheet 3 of 3 | 126 |
| | bined R namic S | | | Easting: | 387511.1 | N | lorthing: 7856 | 673. | 9 | Ground | Level: 3.34 | Ļ | Plant Used: Sonic rig | Scale: 1:2 | 25 |
| - | Coring Inf | | - | | Samples & I | In Situ T | Testing | | | | | | Strata Details | | Groundwate Backfill & |
| TCR | SCR | RQD | FI | Run | Sample ID | | Test Res | sult | Leve (m AO | Depth (n D) (Thicknes |) Legen | t l | Strata Description | | Installation |
| - | | | AZCL | 10.00 | | | | | -6.60 | (0.56) | | | ssessed Zone of Core Loss. | - | |
| 63 | 38 | 33 | 4 | | 10.60-10.80 | 10 C | | | | | 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 | gr gr S/ 1) | ledium strong brown and greenish rey medium grained ANDSTONE. Discontinuities are s subhorizontal medium spaced bugh planar. 2) 50 deg widely baced rough planar. | | - |
| - | | - | NI | | 11.16-11.5 | 60 C | | | | | | · · · | between 10.60m and 10.95m depth, 1 no. discontinuity. 80 dep rough planar. between 10.95m and 11.16m depth, recovered non-intact as | g | |
| • | | | 1 | 11.50 | | | | | | | | · · · · · · · · · · · · · · · · · · · | gravel. from 11.16m depth, extremely strong. | | |
| - | | - | NI 1 | . 1.00 | | | | | | (2.44) | | | between 11.50m and 11.60m depth, recovered non-intact as gravel. | | |
| - | | | <u>NI</u> 2 | | | | | | | (2.44) | | · · · | between 11.83m and 11.88m depth, recovered non-intact as clayey gravel. | - 12- | |
| 97 | 77 | 67 | NI | | 12.23-12.7 | 0 C | | | | | | · · · · · · · · · · · · · · · · · · · | between 11.88m and 12.18m depth, 1 no. fracture. subvertical rough stepped. between 12.18m and 12.23m depth, recovered non-intact as clayey gravel. | | |
| - | | | 2 | | | | | | | | | | uayey glavei. | - | |
| - - - - - - | | | | | | | | | -9.66 | 3 13.00 | | E | nd of Borehole at 13.00 m | | |
| | | | | | | | | | | | | | | 14 - - - - - - - - - - - - - - - - - - - | |
| | | | | | <u> </u> | | | | | | | | | | |
| Bc Date 07/11/2013 08/11/2013 08/11/2013 | Time Time 3 1800 3 0800 3 1200 | Boreh Depth 7.5 | nole C (m) De | Casing | Water Dept Depth (m) 2. | | Diameter Diameter (mm) 229 140 115 | Cas Depth 2.0 7.5 | (m) [| ameter Diameter (mm 229 140 | 2. Son 3. Rota 4. Gro 20 r 5. Bore | arks: and dug inspection pit to 1.20m. No services encountered. onic drilling from 1.20m to 7.50m. otary coring from 7.50m to 13.00m. roundwater encountered at 2.00m depth, rising to 1.43m after 0 mins. orehole backfilled with bentonite on completion. PT hammer id = GS RIG02. Hammer energy ratio =39% | | | m after |
| | | | | | | | | | | | Releas | e Status | s: Final | | |

| | CUSTAIN | | | | ct Name: | Stoneha | /en FAS | | | Client: | Abero | deenshire Council | Borehole ID |
|-------------------------------------|------------|----------------|----------|--------------------|--------------------|---------------------------|---------------------------|--------------|-----------------|-------------------------|---|---|---------------------------|
| | | SIRIN | | Contra | ct Number: | | Date Started: | | | Logged E | By: | Checked By: | BH27 |
| Envir | onmen | tal Sei | rvices | | 5414 | | 28/10 |)/201 | 3 | | CLP | MJB | Sheet 1 of 3 |
| | bined R | | | Easting | | | Northing: | | | Ground L | | Plant Used: | Scale: |
| & Dy | namic S | Sample | er Log | | 387531 | .0 | 7856 | 607.4 | 1 | | 3.02 | Sonic rig | 1:25 |
| | Coring In | ormation | | | Sampl | es & In Situ | u Testing | | | | | Strata Details | Groundwater Backfill & |
| TCR | SCR | RQD | FI | Run | Sam | ple ID | Test Res | sult | Level (m AOD | Depth (m) (Thickness | Legend | Strata Description | Installation |
| - | | | | | 0.1 | 06 D1 10 D2 0.50 B3 | | | 2.96 2.92 | 0.06 0.10 (0.40) | | MADE GROUND. Paving slab. MADE GROUND. Grey slightly gravelly fine to coarse sand. Gravel is subangular to subrounded fine to coarse of sandstone. | |
| - | | | | | | 50 D4 1.20 B5 | | | 2.52 | 0.50 | | MADE GROUND. Brown gravelly fit to coarse sand. Gravel is angular to rounded fine to coarse of sandstone and mixed igneous lithologies. | |
| - | | | | | | 1.65 D6 2.00 B7 | (S)N=42 (3,8,10,12,1 | 10 1 | 1.82 | (0.70) | | MADE GROUND. Dark brown slightly gravelly sandy clay. Gravel angular to rounded fine to coarse of sandstone, coal and mixed igneous lithologies. | |
| - | | | | | | 2.00 D1 | (3,8,10,12,1 0) | 10,1 | | (1.20) | | multicoloured slightly clayey gravelly fine to coarse SAND with low cobbe content. Gravel is subangular to rounded fine to coarse of mixed lithologies. Cobbles are subrounded to rounded of mixed lithologies. | |
| - | | | | | | 2.45 D8 2.40 B9 | (S)50/105m (5,9,29,21) | ım | | (1.20) | | | 2- |
| - | | | | | | 0 D10 3.40 B11 | | | 0.62 | 2.40 | | Soft slightly sandy slightly gravelly SILT. Gravel is subangular to subrounded fine to coarse of sandstone and mixed lithologies. from 2.60m depth, very thinly laminated with closely spaced thin laminations of fine sand. | |
| - | | | | | | 3.45 D12 4.00 B13 | (S)N=10 (0,1,2,2,2,4 |) | -0.38 | 3.40 | | | 3- |
| | | | | | 4 00-4 | 4.50 U14 | | | | (0.90) | x px(x) px(| Fim becoming stiff reddish brown slightly sandy slightly gravelly CLAY with low cobble content. Gravel is subangular to subrounded fine to coarse of sandstone and mixed lithologies. Cobbles are subangular to subrounded of sandstone and mixed lithologies. | |
| | | | | | 4.0 | 0 U14 | | | -1.28 | 4.30 | | Firm reddish brown slightly gravelly very sandy CLAY. Gravel is subangular to subrounded fine to | |
| - | | | | | | 0 D15 5.00 B16 | | | | (0.70) | | Coarse of sandstone, quartz and mixed lithologies. | |
| B | oring Prop | ress & W | /ater Ob | servatio | ns | Borehole | Diameter | Cas | ing Dia | meter | Remarks: | | |
| Date | Time | Boreh Depth | ole C | Casing epth (m) | Water Depth (m) | Depth (m) | Diameter (mm) | Depth (| | ameter (mm) | 1. Hand d | lug inspection pit to 1.20m. No se drilling from 1.20m to 9.00m. | rvices encountered. |
| 28/10/201 29/10/201 30/10/201 | 3 1800 | 11.5 | 60 | - 9.00 9.00 | - 1.53 1.61 | 4.00 9.00 15.00 | 229 140 115 | 4.00 9.00 | 0 | 229 140 | Rotary (Sonic d Ground 20 mins Boreho | coring from 9.00m to 11.50m. drilling from 11.50m to 15.00m dep dwater encountered at 1.20m dept | h, rising to 1.10m after |
| | | | | | | | | | | | Release S | itatus: Final | |

| | CIIISTAIN | | | | ct Name: | Stonehav | ven FAS | | | Client: | Aber | rdeenshire Council | Borehole ID | |
|---|------------|-------------------|---------------------|-------------------------------|---|------------------------------------|---------------------------|---------------------|-----------------|------------------------|--|--|---|----------------------------|
| | L | alkiii | | Contra | ct Number: | | Date Started: | | | Logged E | Ву: | Checked By: | BH | 27 |
| Envir | onmen | tal Se | rvices | | 5414 | | 28/10 |)/20 [,] | 13 | | CLP | MJB | Sheet 2 of 3 | |
| | oined R | | | Easting | 5 | | Northing: | | | Ground I | | Plant Used: | Scale: | |
| | namic S | | | | 387531 | .0 | 785 | 607. | 4 | | 3.02 | Sonic rig | 1:2 | 25 |
| | Coring In | formatior | <u>ו</u> | | Sampl | es & In Situ | u Testing | | | | | Strata Details | | Groundwater |
| TCR | SCR | RQD | FI | Run | · · · | ple ID | Test Re | sult | Level (m AOI | Depth (m (Thickness | Legend | Strata Description | | Backfill & Installation |
| - | | | | | | 5.45 D17 6.00 B18 | (S)50/86mi (25,30,20) | m | -1.98 | 5.00 | | Very dense orangish brown and multicoloured slightly clayey very gravelly fine to coarse SAND with low coble content. Gravel is subangular to subrounded fine to coarse of sandstone, quartz and mixed lithologies. Cobbles are subangular to subrounded of sandstone and mixed lithologies. | - | |
| - | | | | | 6.00-6 | 6.45 D19 6.20 B20 | (S)50/225n (20,5,18,15 | | -3.18 | | | from 6.00m depth, becoming clayey. Firm locally stiff and friable dark | - - - 6 | |
| - | | | | | | 0 D21 7.30 B22 | | | | | | orangish brown gravelly very sandy CLAY. Gravel is subangular to subrounded fine to coarse of sandstone, quartz and mixed lithologies. | - - - - - - - - - - 7- | |
| - | | | | | 7.50-7 | 7.50 B23 7.95 D24 8.50 B25 | (S)50/12mi (25,50) | m | | (2.30) | | from 7.30m depth, friable, slightly sandy with fine to coarse gravel sized pockets of sand and sandstone. | | |
| - - - - - | | | | 9.00 | | 9.00 B26 -9.24 C | | | -5.48 -5.98 | (0.50) | | Reddish brown and light greenish grey thinly interbedded hard friable sandy CLAY and fine to medium grained SANDSTONE. | - - - - - - - - - - - | |
| - - - - 100 | 68 | 39 | 10 | | 9.00-9 | -9.60 C | (S)50/3mm (25,50) | 1 | . 0.90 | (1.50) | | Weak reddish brown coarse grained SANDSTONE. Discontinuities are 1) Closely to medium spaced horizontal planar rough closed stained brown. 2) Random planar rough closed stained brown. | 1 - - - - - - | |
| | | | | | | | | | | | | | - | |
| | | | <u> </u> | <u> </u> | | | | | | | | Continued next sheet | | |
| Bo | oring Proc | gress & V Bore | | oservatio | ons Water | | Diameter | | | ameter | Remarks | | | |
| Date 28/10/201 29/10/201 30/10/201 | 3 1800 | Depth 1.2 | n (m) D 20 50 | epth (m) - 9.00 9.00 | Water Depth (m) - 1.53 1.61 | Depth (m) 4.00 9.00 15.00 | Diameter (mm) 229 140 115 | Depth 4.(9.0 | 00 | 229 140 | Sonic Rotary Sonic Groun Groun Boreh SPT h | dug inspection pit to 1.20m. No ser drilling from 1.20m to 9.00m. y coring from 9.00m to 11.50m. drilling from 11.50m to 15.00m dep idwater encountered at 1.20m deptins. ole backfilled with bentonite on con nammer id = GS RIG02. Hammer en Status: Final | oth. h, rising to 1.10r npletion. | m after |

| | P | ISTAIN | | Contrac | t Name: | Stoneha | /en FAS | | | Client: | Aber | deenshire Council | Borehole ID | |
|--|--------------------------|-----------------------------------|--------------------------------|---|---|------------------------------------|------------------------------------|---------------------------|--------------|--------------------------|--|---|---|------------|
| Enviro | onmen | ital Se | | | t Number: 5414 | | |)/2013 | | Logged B | CLP | Checked By: MJB | BH27 Sheet 3 of 3 | 7 |
| | | Rotary (Sample | | Easting | 387531 | .0 | Northing: 7850 | 607.4 | | Ground L | evel: 3.02 | Plant Used: Sonic rig | Scale: 1:25 | |
| | Coring In | formatior | 1 | | Sampl | es & In Situ | u Testing | | | | | Strata Details | B | oundwate |
| TCR | SCR | RQD | FI | Run | San | nple ID | Test Re | sult (m | evel AOD) | Depth (m) (Thickness) | Legend | Strata Description | In | stallation |
| | | | NI 17 | | | -10.38 C | | | | | | Remaining Detail : 9.99m - 10.10m : between 9.99m and 10.10m depth, recovered non-intact. below 10.10m depth, moderately strong. | | |
| - | | | NI | 10.50 | | | | -7 | 7.48 | 10.50 | | Weak reddish brown coarse grained SANDSTONE with occasional bands of weak cemented slightly clayey fine to coarse sand. Discontinuities are closely spaced horizontal planar rough infilled with | - | |
| - 98 | 57 | 39 | | - | | | | -7 | 7.98 | 11.00 | · · · · · · · · · · | clayey fine to coarse sand. between 10.50m and 11.00m depth, recovered non-intact. | 11- | |
| - | | | 8 | | | -11.50 C | | | | | | Strong reddish brown coarse grained SANDSTONE. Discontinuities are closely to medium spaced horizontal planar rough. | | |
| - | | | | 11.50 | | | | | | | | | | |
| - - 96 - - | 85 | 51 | | | 12.03 | -12.15 C | | | | | | | - 12 - - - | |
| - | | | 7 | 12.50 | | | | | | | | between 12.50m and 13.34m depth, 1 no. 85 degree inclined fracture, planar rough stained brown. | | |
| - - 100 - | 66 | 12 | | | | | | | | (4.00) | | | 13- | |
| - | | | | 13.50 | | -13.50 C -13.78 C | | | | | | | - | |
| - - - 100 | 31 | 31 | NI | | | | | | | | | between 13.78m and 14.40m depth, recovered non-intact. | | |
| - | | | 5 | | 14.40 | -14.60 C | | | | | | | - | |
| - | | | NI | | | | | | | | | between 14.60m and 15.00m depth, recovered non-intact as ver gravelly clayey sand. | y - | |
| I⊥ Rr | oring Prog | gress & V | Vater Oh | servation | ns | Borehole | Diameter | Casing | n Diar | neter T | Remarks: | End of Borehole at 15.00 m | | |
| Date 28/10/201: 29/10/201: 30/10/201: | Time 3 1800 3 1800 | Borel Depth) 1.2) 11.3 | hole C n (m) De 20 50 | 2asing apth (m) - 9.00 9.00 | Water Depth (m) - 1.53 1.61 | Depth (m) 4.00 9.00 15.00 | Diameter (mm) 229 140 115 | Depth (m) 4.00 9.00 | <u> </u> | meter (mm) 229 140 | Hand e Sonic e Rotary Sonic e Ground Ground Boreho | dug inspection pit to 1.20m. No sen drilling from 1.20m to 9.00m. coring from 9.00m to 11.50m. drilling from 11.50m to 15.00m depit dwater encountered at 1.20m depth | h. , rising to 1.10m aft pletion. | ter |
| | Release Status: Final | | | | | Status: Final | | | | | | | | |

| | CIIS | TAIN | | Contrac | ct Name: | Stoneha | ven FAS | | | Client: | Aber | deenshire Council | Borehole ID | |
|--|--------------------------|--|----------------|--|---|--|--------------------------------|------------------|------------------|-------------------------|--|---|---|--------------------------|
| | | | ľ | Contrac | ct Number: 5414 | | Date Started: 01/11 | /204 | 3 | Logged E | ^{3y:} CLP | Checked By: MJB | — B⊦ | 128 |
| | onment | | | Fastiss | | | | /201 | 3 | Crewerd | | Plant Used: | Sheet 1 of 2 Scale: | |
| | bined Ro namic S | | | Easting | 387347 | | Northing: 7857 | 741.7 | 7 | Ground L | 3.88 | Sonic rig | | 25 |
| - | Coring Info | ormation | | | Sampl | es & In Situ | u Testing | | | | | Strata Details | | Groundwate Backfill & |
| TCR | SCR | RQD | FI | Run | Sam | nple ID | Test Res | sult (| Level (m AOD) | Depth (m) (Thickness | Legend | Strata Description | า | Installation |
| | | | | | 0.2 0.30- 0.50- | 0.30 B2 20 D1 0.50 B3 0.80 B4 | | | 3.78 3.58 | 0.10 | | MADE GROUND. Red brick MADE GROUND. Orangish and multicoloured fine to coa sand. MADE GROUND. Dark brow red and black slightly clayey gravelly fine to coarse sand medium cobble content. Gra subangular to subrounded fin coarse of sandstone, quartz concrete and mixed lithologi | brown arse n mottled / with vel is ne to , brick, es. | |
| | | | | | | 1.65 D6 2.00 B7 | (S)N=45 (3,8,22,12,6 | 6,5) | | (1.70) | | from 0.80m depth, clay | ey. 1- | |
| - | | | | | 2.2 | 2.45 D8 20 D9) ESD9 | (S)N=44 (1,10,10,10, 12) | ,12, | 1.88 | 2.00 (0.40) | <u>ables ables</u> <u>ables ables</u> <u>ables ables</u> <u>ables ables</u> <u>ables ables</u> <u>ables ables</u> <u>ables ables</u> | Plastic dark brown slightly cl amorphous PEAT. | ayey 2- | |
| - | | | | | 2.40-3 | 3.00 B10 | | | 1.48 | 2.40 | shka shka shka h shka shka shka shka h shka shka shka shka h shka shka shka shka h shka shka shka shka shka h shka shka shka shka shka shka shka shk | Dark brown clayey gravelly f coarse SAND. Gravel is sub to subrounded fine to coarse sandstone, quartz and mixe lithologies. | angular of | |
| - | | | | | | 3.45 D11 3.50 B12 | (S)N=11 (1,1,1,2,7) | | 0.88 | 3.00 | | Soft orangish brown slightly SILT. | sandy 3 | |
| - | | | | | 2.50 | 4 00 814 | | | 0.29 | (0.50) | × | at 3.40m depth, 1 no. c | obble. | |
| - | | | | | 3.6 | 4.00 B14 0 D13 4.45 D15 | | | 0.38 | 3.50 | | Firm locally stiff slightly sand slightly gravelly CLAY. Grav subangular to subrounded fir coarse of sandstone, quartz mixed lithologies. | el is ne to | |
| - | | | | | | 5.00 B16 | (S)N=25 (3,4,8,4,6,7) |) | | | | from 4.00m depth, beco sandy. | ming | |
| | | | | | | | | | | | | Continued next sheet | | |
| Bo | pring Progr | ess & Wa | ater Obs | servatio | ns | Borehole | Diameter | Cas | ing Dia | neter | Remarks: | | | |
| Date 01/11/201: 02/11/201: 02/11/201: | Time 3 1800 3 0800 | Borehol Depth (n 3.00 3.00 10.00 | le C n) Dej | asing pth (m) 3.00 3.00 7.50 | Water Depth (m) - 1.67 1.75 | Depth (m) 7.50 10.00 | | Depth (1 7.50 | m) Dia | 140 | Hand c Sonic c Borehc Ground Ground Borehc | lug inspection pit to 1.20m. drilling from 1.20m to 10.00r le complete at 10.00m upor dwater encountered at 2.50r s. le backfilled with bentonite ammer id = GS RIG02. Ham | n. n scheduled depth. n depth, rising to 2.40 upon completion. | m after |
| | | | | | | | | | | | Release S | itatus: Final | | |

| | Contract Name: Stoneha | ven FAS | (| Client: | Aberdee | enshire Council | Borehole ID | |
|---|--|---|----------------------|-------------------------|---|--|---|---------------------------|
| CESTAIN | Contract Number: | Date Started: | | Logged By | /: | Checked By: | BH | 28 |
| Environmental Services | 5414 | 01/11/20 ⁻ | 13 | | CLP | MJB | Sheet 2 of 2 | |
| Combined Rotary Cored | Easting: | Northing: | | Ground Le | | Plant Used: | Scale: | |
| & Dynamic Sampler Log | 387347.8 | 785741. | 7 | | 3.88 | Sonic rig | 1:2 | 5 |
| Coring Information | Samples & In Sit | u Testing | | | | Strata Details | | Groundwater Backfill & |
| TCR SCR RQD FI | Run Sample ID | Test Result | Level [(m AOD) (| Depth (m) Thickness) | Legend | Strata Description | | Installation |
| | 5.00-5.45 D17 5.00-5.80 B18 5.90 D19 6.00-6.45 D20 6.00-6.60 B21 | (S)50/236mm (4,8,13,18,16,3) (S)50/255mm (7,11,12,14,17, 7) | | (3.10) | s s s | Firm locally stiff slightly sandy slightly gravelly CLAY. Gravel is subangular to subrounded fine to xoarse of sandstone, quartz and nixed lithologies. from 5.80m depth, sandy occasionally very sandy. | - - - - - - - - - - - - - - - - - - - | |
| | 6.60-7.25 B22 | | -2.72 | 6.60 (0.65) | s s c | Stiff reddish brown slightly sandy slightly gravelly CLAY. Gravel is subangular to subrounded fine to parse of sandstone, quartz and nixed lithologies. | - - - 7 - | |
| | 7.25-8.00 B23 7.50-7.95 D24 | (S)50/95mm (18,7,40,10) | -3.37 | 7.25 | a s f | Stiff becoming hard reddish brown and multicoloured slightly gravelly sandy CLAY. Gravel is subangular ine to coarse of sandstone, quartz and mixed lithologies. | | |
| | 8.00-8.60 B25 | | | (1.35) | | | - 8 - - - - - | |
| | 8.60-9.00 B26 9.00-9.45 D27 9.00-10.00 B28 | (S)50/130mm (2,1,20,30) | -4.72 | 8.60 | r C | ight yellowish brown and nulticoloured gravelly very sandy CLAY. Gravel is subangular to subrounded fine to coarse of sandstone, quartz and mixed thologies. | - - - - 9- - | |
| | | | | (1.40) | | | - - - - - - - - - - - - - - - - - - - | |
| Boring Progress & Water Ob | servations Borehole | Diameter Cas | sing Diame | eter | Remarks: | End of Borehole at 10.00 m | | |
| Date Time Depth (m) De 01/11/2013 1800 3.00 | Sasing pth (m) Water Depth (m) Depth (m) 3.00 - 7.50 3.00 1.67 10.00 7.50 1.75 10.00 | Diameter (mm) Depth 140 7.5 115 | (m) Diame | eter (mm) 140 | Sonic drilli Borehole c Groundwa 20 mins. Borehole b | inspection pit to 1.20m. No serv ng from 1.20m to 10.00m. complete at 10.00m upon sched ter encountered at 2.50m depth packfilled with bentonite upon co ner id = GS RIG02. Hammer en | uled depth. , rising to 2.40n ompletion. | n after |
| | | | | | Release Statu | us: Final | | |

| | CUSTAIN | | | | ct Name: | Stonebay | ven FAS | | | Client: | Aber | deenshire Council | Borehole ID |
|--------------------|------------|----------------|------------------|----------------------------|-------------------------|---------------------------|-----------------------------|-----------|---------------|---------------------------|--|--|---|
| | C | STAIN | | Contra | ct Number: | | Date Started: | | | Logged | | Checked By: | BH29 |
| Enviro | nmen | tal Sei | rvices | | 5414 | | 17/10 |)/20 | 13 | -33 | CLP | PS | |
| | | totary C | | Eastinę | g: | | Northing: | | | Ground | Level: | Plant Used: | Sheet 1 of 2 Scale: |
| | | Sample | | | 386997 | .5 | 7854 | 470. | 2 | | 16.23 | Sonic rig | 1:25 |
| (| Coring In | formation | | | Sampl | es & In Situ | u Testing | | | | | Strata Details | Groundwa Backfill |
| TCR | SCR | RQD | FI | Run | Sam | ple ID | Test Res | sult | Leve (m AO | Depth (m D) (Thickness |) Legend | Strata Description | Installati |
| | | | | | | 20 D1 0.50 B2 | | | 15.9 | (0.30) | | Dark brown slightly clayey slightly gravelly fine to medium SAND, with frequent roots and rootlets. Gravel is subangular of sandstone (Topsoil). | |
| _ | | | | | | 1.00 B3 | | | 15.9 | | به منعنه به محمد محمد به به منعنه به به منعنه به به منعنه به | Dark orangish brown clayey gravelly fine to medium SAND, with low | / |
| - | | | | | | | | | | | | cobble content. Gravel is subangular to subrounded, fine to coarse of sandstone, quartz, quartzite and mixed lithologies. Cobbles are subangular to subrounded of sandstone, quartzite and mixed lithologies. | |
| - | | | | | | 1.65 D4 2.00 B5 | (S)N=25 (0,1,1,4,6,1 | 4) | | (2.10) | | Medium dense locally loose, orangish brown slightly gravelly ven clayey fine to medium SAND, with low cobble content. Gravel is subangular to subrounded, fine to coarse of sandstone, quartz and mixed lithologies. Cobbles are subangular to subrounded of sandstone, quartz and mixed lithologies. With occasional roots | 1- / - |
| - | | | | | | 2.45 D6 2.50 B7 | (S)N=4 (1,1,0,1,2,1 |) | | | | and rootlets. from 2.00m depth, with pockets of dark brown clayey sand. | s 2- |
| - | | | | | | 60 D8 3.00 B9 | | | 13.6 | 3 2.60 | | Soft thinly interlaminated orangish brown slightly gravelly CLAY and fine SAND. Gravel is subangular to | |
| - | | | | | | 3.45 D10 3.40 B11 | (S)N=12 (0,2,2,2,2,6 |) | | (0.80) | | rounded, fine to coarse of sandstone, quartz and mixed lithologies. at 2.70m depth, fine to coarse gravel sized pockets of yellowish brown fine to coarse sand. | 3- |
| - | | | | | | 0 D12 4.00 B13 | | | 12.8 | 3 3.40 | | Dense orangish brown and multicoloured, slightly clayey very | |
| - - - | | | | | | 4.70 B15 | (S)N=39 | | | (1.30) | | gravelly fine to coarse SAND, with low cobble content. Gravel is subangular to subrounded, fine to coarse of sandstone, quartz and mixed lithologies. Cobbles are subangular to subrounded of sandstone. | 4 |
| - - - - | | | | | 4.10-4 | 4.45 D14 | (2,6,8,8,9,1 | <i>4)</i> | | | | | |
| - | | | | | 4.70- | 5.00 B16 | | | 11.5 | 3 4.70 | | Firm becoming stiff orangish brown slightly sandy slightly gravelly CLAY. Gravel is subangular to Continued next sheet | |
| Во | oring Prog | gress & W | | | | Borehole | Diameter | Ca | sing D | ameter | Remarks: | | |
| Date 17/10/2013 | Time | Boreh Depth | iole C (m) De | Casing apth (m) 5.00 | Water Depth (m) - | Depth (m) 5.00 6.00 | Diameter (mm) 140 115 | Depth | | Diameter (mm) | Sonic Groun mins. Boreho Boreho | dug inspection pit to 1.20m. No ser drilling from 1.20m to 6.45m. dwater encountered at 4.00m rising ole terminated at 6.45m by Enginee ole backfilled with bentonite on con ammer id = GS RIG02. Hammer en | g to 2.43m after 20 er. npletion. |
| | | | | | | | | | | | Release \$ | Status: Final | |

| CUSTAIN | | Stonehave | | | Client: | | deenshire Council | Borehole ID | |
|--|---------------------|--|-------------------------------|-------------------|-------------------------|---|---|--|---|
| Environmental Services | | | Date Started: 17/10/2 | 2013 | Logged E | CLP | Checked By: PS | BH Sheet 2 of 2 | 29 |
| Combined Rotary Cored & Dynamic Sampler Log | Easting: 386997 | | Northing: 78547 | 0.2 | Ground L | .evel: 16.23 | Plant Used: Sonic rig | Scale: | 25 |
| Coring Information | Samp | les & In Situ | Testing | | | | Strata Details | | Groundwater Backfill & Installation |
| TCR SCR RQD FI | Run Sar | mple ID | Test Result | t Level (m AOD | Depth (m) (Thickness | Legend | Strata Description | | Installation |
| | 5.00- 5.0 5.5 | 5.50 U17 20 U17 50 D18 6.00 B19 6.45 D20 | (S)50/223mm (6,9,14,15,21) | | (1.75) 6.45 | | subrounded, fine to medium of sandstone, quartz and mixed lithologies. from 5.30m depth, with thin beds of fine to coarse sand. | | |
| | | | | | | | | 7- - - - - - - - - - - - - - - - - - - | |
| Boring Progress & Water Ob | | Borehole [| | Casing Dia | | Remarks: | | 9 - - - - - - - - - - - - - - - - - - | od |
| | epth (m) Depth (m) | | | | | 2. Sonic | dug inspection pit to 1.20m. No ser drilling from 1.20m to 6.45m. | | |
| 17/10/2013 1130 6.45 | 5.00 - | 5.00 6.00 | 140 115 | 5.00 | | Groun- mins. Boreho Boreho SPT h | dwater encountered at 4.00m rising ole terminated at 6.45m by Enginee ole backfilled with bentonite on com ammer id = GS RIG02. Hammer en Status: Final | er. Apletion. | |





Appendix 4.3 - Observation Pit Logs

| COSTAIN | Contrac | | | naven | FAS | Client: Aberdee | enshire Council | Trial Pit ID: | ~ | | | |
|---|-------------|---------------|-----------------------|--------|--|--|--|------------------------|------|--|--|--|
| Environmental Se | Contrac | | ^{er:} 114 | Date | Started: 04/11/201 | Logged By: I3 PS | Checked By: MJB | Sheet 1 of 1 | 2 | | | |
| Trial Pit Log | Easting: | | - | North | ing: – | Ground Level: | Plant Used: Hand Tools | Scale: 1:50 | | | | |
| | | _ | 1 | | | | | | 1 | | | |
| Samples & In Si | - | Water | Reduced Level | Lagand | Depth (m) | Strata De | etails Strata Description | | Back | | | |
| Sample ID 0.10 D1 | Test Result | - | Level | Legend | Depth (m) (thickness) | MADE GROUND. Dark brown slightly gravelly fine to coarse ash sand. Gravel is subangular to rounded fine to coarse of sandstone, brick | | | | | | |
| 0.10-0.60 B2 0.60 D3 0.60-1.00 B4 1.00 D5 1.00 ESB6 1.00-1.50 B6 | | | | | (0.60) 0.60 (0.40) 1.00 (0.50) | and mixed lithologies. MADE GROUND. Brown gravelly fine to coarse sand with high cobble content. Gravel is subangular to rounded fine to coarse of sandstone, quartzite and mixed lithologies. Cobbles are subangular to rounded of quartzite. Reddish brown sandy subangular to rounded fine to coarse GRAVEL of | | | | | | |
| | | | | | 1.50 | sandstone, guartzite and mix | ged igneous lithologies with hi gular to rounded of sandstone | gh cobble and mixed | | | | |
| Dimensions: Final Depth: 1.50m | | | | | | | rom GL to 1.50m. Terminated | due to boulder | | | | |
| | Ler | FACE Angth (1 | m) —— | | | obstruction with engineer's 2. No groundwater encounter 3. All sides stable. 4. Photgraphs taken of side fi 5. Trial pit backfilled on comp | red. aces and spoil. | | | | | |
| FACE B → Width (m) 0.30 | Orient | ation: | | | FAC | | | | | | | |

| COSTAIN | 1 | Contract N | | | aven | FAS | | Aberdee | enshire Council | Trial Pit ID: | | |
|-----------------------------|----------|-------------------|-------|------------------|--------|--------------------------|--|--|--|-------------------------------|--------|--|
| GUƏTAIN | | Contract N | | | Date | Started: | | Logged By: | Checked By: | TP1 | | |
| Environmental S | Services | | 54 | 14 | Neat | 06/11/20 |)13 | PS | MJB Plant Used: | Sheet 1 of 1 | | |
| Trial Pit Log | g | Easting: 3 | 874 | 409.0 | North | 785740 | Hand Tools | | | | | |
| | | | | | | | | | | | -1 | |
| Samples & In S | | | Water | Reduced Level | Legend | Depth (m) (thickness) | | Strata De | | | Back | |
| Sample ID | Test R | esult | É | Level 3.29 | Legena | (thickness) 0.10 | | GROUND. Concrete. | Strata Description | | 411100 | |
| | | | | 3.19 | | 0.20 | Angul | E GROUND. Dark brow ar to subangular fine to sbestos sheeting. of Trial Pit at 0.20 m | n gravelly fine to coarse ash o coarse of sandstone, limest | sand. Gravel is one, brick | | |
| Final Depth: 0.20m | | | | | | | 1. Tria | I Pit hand excavated fr | | | | |
| FACE B Width (m) 0.30 | • | FAI Leng 0. | 40 | | | FACE D | 2. Trial pit terminated at 0.20m depth due to presence of asbestos. Trial pit cancelled with engineer's agreement. 3. No groundwater encountered. 4. All sides stable. 5. Photgraphs taken of side faces and spoil. 6. Trial pit backfilled on completion. | | | | | |
| L | | FACE C | | | | | 1 | | | | | |
| | | FACE C | | | | | | Release Status: Final | | | | |

| COSTAIN | | Contract N | | | naven | FAS | | Client: Aberdeer | nshire Council | Trial Pit ID: |
|---|------------------|--------------------------|-------|----------------------|--------|--|--|--|--|--|
| | | Contract N | | er: 14 | Date | Started: 05/11/20 |)13 | Logged By: PS | Checked By: MJB | TP2 |
| Environmental S | | Easting: | 54 | | Nort | | /15 | Ground Level: | Plant Used: | Sheet 1 of 1 Scale: |
| Trial Pit Lo | g | 3 | 887: | 310.6 | | 785749 | .0 | 4.42 | Hand Tools | 1:50 |
| Samples & In S | Situ Test | tina | 5 | | | | | Strata Del | ails | |
| Sample ID | Test R | | Water | Reduced Level | Legend | Depth (m) (thickness) | | Oliala Del | Strata Description | Back |
| · | 100111 | looun | | | | (0.30) | MADE | GROUND. Dark brown | slightly gravelly fine to coarse ine to coarse of sandstone. (1 | e sand. Gravel |
| 0.30 D1 0.30-0.80 LB2 0.80 D3 0.80-1.00 B4 1.00 D5 1.00-1.60 LB6 | | | | 4.12 3.62 3.42 | | 0.30 (0.50) 0.80 1.00 (0.60) | conten concre and co betw depth of 0.30 MADE | it. Gravel is angular to s tet and sandstone. Cobi oncrete. ween 0.60m depth, to th in the southern edge of m width. GROUND. Reddish bro | elly fine to coarse sand with n ubangular fine to coarse of br oles are angular to subangula ne northern edge of the pit, to the pit, sloping rough concret pown clayey gravelly fine to coa | ick, r of brick 0.80m e footing urse sand. |
| | | | | 2.82 | | 1.60 | MADE fine to litholog | ite and mixed lithologies GROUND. Reddish bro coarse gravel of sandst | own slightly clayey sandy angutone, quartzite, brick and mixed mix | ular to rounded |
| - - Dimensions: | | | | | | | Gene | ral Remarks: | | |
| Final Depth: 1.60m | | | | | | | 1. Trial | Pit hand excavated from | m GL to 1.60m. Terminated d | ue to boulder |
| FACE B Midth (m) 0.50 | ۔۔۔ اب | Leng | 50 | | | FACE D | No g All si Phot | ruction with engineer's a roundwater encountere ides stable. graphs taken of side fac pit backfilled on comple | d. ces and spoil. | |
| | | FACE C | | | | | | | | |
| | | FA | CE C | | | | | | | |

| CODTEN | | Contract N | | Stoneł | naver | n FAS | S | Client: | perdeen | shire Council | Trial Pit ID: | | | | | |
|-----------------------------------|-----------|--------------|--------------|------------------|-------|----------------|-------------------|--|--------------------------------|--|----------------------------|--|--|--|--|--|
| COSTAIN | - | Contract N | Numb | er: | Da | ate Starteo | d: | Logged By: | | Checked By: | TP3 | | | | | |
| Environmental Se | ervices | | 54 | 14 | | 24/ | 10/201 | 3 | PS | MJB | Sheet 1 of 1 | | | | | |
| Trial Pit Log | | Easting: | | | No | orthing: | | Ground Leve | | Plant Used: Hand Tools | Scale: | | | | | |
| | | 3 | 8872 | 293.2 | | 78 | 35766.0 | 4 | .40 | | 1:50 | | | | | |
| Samples & In S | itu Testi | ng | er | | | | Strata Details | | | | | | | | | |
| Sample ID | Test Re | - | Water | Reduced Level | Legen | d Dep (thic | oth (m) kness) | | | Strata Description | Ba | | | | | |
| 0.10 D1 0.20 D2 | | | | 4.33 4.30 | | ¥ 0 | | | | | | | | | | |
| 0.20 D2 0.20-0.80 LB3 | | | | 4.20 | | 8 0 | .20 | \ | - | own fine to coarse sand. | / | | | | | |
| | | | | 3.60 | | 8 <u> </u> | .80 | MADE GROUND. to rounded fine to and limestone. | Brown gravel coarse of mix | lly fine to coarse sand. Grav ced lithologies including san | el is subangular dstone | | | | | |
| - | | | | | | | | MADE GROUND. | Brown sandy | angular to subangular fine tet and mixed lithologies wit | to coarse gravel | | | | | |
| | | | | | | | | cobble and boulde | r content. Co | bbles and boulders are sub and mixed lithologies. | angular to | | | | | |
| | | | | | | | | at 0.35m depth. | base of river | r wall exposed. 2 no. boulde tely below base of wall, pos | rs from | | | | | |
| | | | | | | | | utilised as a footin base of wall. | g. Boulders e | extend 0.20m out into trial pit | t from | | | | | |
| | | | | | | | | End of Trial Pit a | t 0.80 m | | i | | | | | |
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| imonoiono: | | | | | | | | General Rema | rko | | | | | | | |
| Dimensions: Final Depth: 0.80m | | | | | | | | | | GL to 0.80m. Terminated d | lue to underminina | | | | | |
| | | | CE A | ~) | | | 2 | of river wall with Difficult excavation | engineer's a on 0.00m to 0 | greement.).80m - 2.5 hours. | 5 | | | | | |
| 4 | | – Leng 0. | jtn (r 80 | ···) | | - | 3 | . No groundwater . All sides stable. | encountered. | | | | | | | |
| | | | | | | | 5 | Photgraphs take Trial pit backfille | n of side face d on complet | es and spoil. ion. | | | | | | |
| ↑ | | | | | | | | | , | | | | | | | |
| | | | | | | | | | | | | | | | | |
| \sim | | Orienta | tion: | - | | | D | | | | | | | | | |
| се в h (m) 40 | | | | | | | FACE | | | | | | | | | |
| FACE B Width (m) 0.40 | '∢ | | | | | | 1 | | | | | | | | | |
| FACE B — Width (m) 0.40 | '∢ | | | | | | | | | | | | | | | |
| FACE B Midth (m) 0.40 | '∢ | | | | | | | | | | | | | | | |
| FACE B Midth (m) 0.40 | '◀ | | CEC | | | | | | | | | | | | | |

| COSTAIN | | Contract I | | | naven | FAS | | Aberdee | nshire Council | Trial Pit ID: | | | | |
|--|---------|------------|------------------|--------------|--------|--------------------------|--|--|---|------------------------|--|--|--|--|
| | | Contract I | | er: 14 | Date | • Started: 05/11/20 |)13 | Logged By: PS | Checked By: MJB | TP4 | | | | |
| Environmental Se | ervices | Easting: | | | Nort | hing: | | Ground Level: | Plant Used: | Sheet 1 of 1 Scale: | | | | |
| Trial Pit Log | | | 387 ⁻ | 143.1 | | 785687 | <i>.</i> 2 | 5.57 | Hand Tools | 1:50 | | | | |
| | (| • | 1. | I | | | Strata Details | | | | | | | |
| Samples & In Si | | | Water | Reduced | Legend | Depth (m) (thickness) | | Strata De | Strata Description | Bac | | | | |
| Sample ID | Test R | esult | - | Level | | | MADE | GROUND. Brown clay | rey fine to coarse sand. | | | | | |
| 0.20 D1 0.20-0.50 LB2 0.50 D3 0.50-1.20 LB4 | | | | 5.37 5.07 | | 0.20 (0.30) 0.50 | 0.20 (0.30) MADE GROUND. Dark brown slightly clayey slightly gravelly fine to | | | | | | | |
| | | | | 4.37 | | (0.70) | Gravel quartz | is subangular to round ite and mixed igneous l | o coarse SAND with high cobb led fine to coarse of sandstone lithologies. Cobbles are subang ite and mixed igneous lithologi | e, gular to | | | | |
|) Dimensions: Final Depth: 1.20m | | | | | | | 1. Trial | ral Remarks: Pit hand excavated fro pit complete upon sch | | | | | | |
| FACE B Width (m) 0.30 | | — Leng | 30 | n) —— | | FACE D | 3. No g 4. All si 5. Phot | pit complete encountere des stable. graphs taken of side fa pit backfilled on compl | ed. ces and spoil. | | | | | |
| ↓ ↓ | | | | | | | | | | | | | | |

| COSTAIN | Contra | ct Name | | naven | FAS | | Aberdee | nshire Council | Trial Pit ID: | | | |
|-----------------------------|-------------|---------------------------|----------------------|--------|--------------------------|---|--|---|------------------------|------|--|--|
| | | ct Numb | ^{er:} 14 | Date | Started: 29/10/20 |)13 | Logged By: PS | Checked By: MJB | TP5 | | | |
| Environmental Se | Easting | J: | | North | ning: | | Ground Level: | Plant Used: | Sheet 1 of 1 Scale: | | | |
| Trial Pit Log | | 387 | 016.4 | | 785651 | .4 | 9.68 | Hand Tools | 1:50 | | | |
| Samples & In Si | itu Testing | er | | | | Strata Details | | | | | | |
| Sample ID | Test Result | Water | Reduced Level | Legend | Depth (m) (thickness) | | | Strata Description | | Back | | |
| 0.10 D1 0.10-0.50 LB2 | | | | | (0.50) | MADE is ang | GROUND. Dark brow ular to subangular fine | n slightly gravelly fine to coarse to coarse of sandstone. | e sand. Gravel | | | |
| 0.50 D3 0.50-1.30 LB4 | | | 9.18 | | 0.50 (0.80) | conter | nt. Gravel is subangula | r fine to coarse SAND with low r to rounded fine to coarse of s ubangular to subrounded of qu | sandstone | | | |
| 1.30 D5 1.30-1.50 B6 | | | 8.38 8.18 | | 1.30 1.50 | Brown gravelly fine to coarse SAND with high cobble content. Gravel | | | | | | |
| - | | | | | | ····· | of Trial Pit at 1.50 m | jies. | | | | |
| | | | | | | | | | | | | |
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| | | | | | | | | | | | | |
| Dimensions: | | | | | | Gene | ral Remarks: | | | | | |
| Final Depth: 1.50m | | | | | | 1. Tria | I Pit hand excavated fro | om GL to 1.50m. Terminated d | lue to boulder | | | |
| • | Le | FACE A ngth (1 0.40 | | | | No g All s Phot | ruction with engineer's roundwater encounter ides stable. graphs taken of pit and | ed. I spoil. | | | | |
| ▲ | | | | | | 5. Trial | pit backfilled on comp | ietion. | | | | |
| | | | | | D | | | | | | | |
| FACE B Width (m) 0.40 | Orien | itation: | | | FACE | | | | | | | |
| FACE B Midth (m) 0.40 | Orien | itation: | - | | FAC | | | | | | | |

| COETLU | | Contract N | | | aven | FAS | | Client: Aberdee | nshire Council | Trial Pit ID: | | | | |
|--------------------------|---------|--------------------------|-------|------------------|--------|--------------------------|--|---|-------------------------------|------------------------|------|--|--|--|
| COSTAIN | | Contract N | | | Date | Started: | 12 | Logged By: | Checked By: | TP6 | | | | |
| Environmental Se | ervices | Easting: | 54 | 14 | North | 19/10/20 | //3 | MJB Ground Level: | Plant Used: | Sheet 1 of 1 Scale: | | | | |
| Trial Pit Log | | _ | 870 | 016.9 | North | 785649 | Hand Tools | | | | | | | |
| | | | 1 | 1 | | | Strata Details | | | | | | | |
| Samples & In S | | | Water | Reduced Level | Legend | Depth (m) (thickness) | | Strata De | | | Back | | | |
| Sample ID | Test R | esult | - | Level | | (thickness) | Strata Description MADE GROUND. Brown silty gravelly fine to medium sand, with medium cobble content. Gravel is angular, fine to coarse of mixed lithologies. Cobbles are subangular of mixed lithologies. | | | | | | | |
| 0.30 D1 0.30-0.70 LB2 | | | | 5.86 | | (1.40) | | of Trial Pit at 1.40 m | ingular of mixed lithologies. | | | | | |
| Dimensions: | | | | | | | | ral Remarks: | m CL to 1 40m. Torminated di | in the trace read | | | | |
| Final Depth: 1.40m | | Leng | 50 | n) —— | | FACE D | obsi 2. No g 3. All s 4. Pho | I Pit hand excavated fro truction with engineer's groundwater encountere ides stable. tgraphs taken of pit and I pit backfilled on compl | ed. spoil. | je to tree root | | | | |
| L | | FA | CE C | | | | | | | | | | | |
| Inclination: 90 | | | | | | | Relea | ase Status: Final | | | | | | |

| Control Number Environmental Services Sati 4 Device Services Trial Pit Log 338822.4 735633.6 9.9.4 Hand Tools Samples & In Situ Testing Image: Service Ser | COSTAIN | | Contract N | | | aven | FAS | | Client: Aberdee | nshire Council | Trial Pit ID: | | | | |
|---|----------------------------|----------|--------------------------|--------|---------|--------|-----------|-------------------------------------|--|-----------------------------------|-------------------|--|--|--|--|
| Lenvin Uniter in the second formation in the second formati | GOOTAIN | | Contract N | | | Date | | | | | TP7 | | | | |
| Trial Pit Log 386928.4 785638.6 9.94 Hand Tools 1:50 Samples & In Situ Testing # # Strata Details # # Supples & In Situ Testing # # # # # # U.20:0.50 B2 # | Environmental Se | ervices | | 54 | 14 | | | 13 | | | | | | | |
| Sample D Test Result P 0.20 D1 0.20.050 B2 0.41 9.40 0.53 0.54 MADE GROUND Red sity very gravely fine sampler in the costre of made ignores. Introduced. Inset to costre of made ignores. Introduced in the costre of made ignores. Introduced in the costre of made ignores. Introduced in the costre of made ignores. Introduced is anything in the costre of made introduced incostre. I sampler in the costre of made introduced incostre. I sampler in the costre of made introduced incostre. I sampler in the costre of made introduced incostre introduced incostre. I sampler in the costre of made introduced incostre of the costre of the costre of the cost interview engineer is anythic. I sampler in the cost of the cost interview engineer is anything in the cost of the cost of the cost interview engineer is anything in the cost of the cost of the cost is anything in the cost of the cost of the cost of the cost is anything in the cost of the cost of the cost of the cost is anything in the cost of the cost of the cost of the cost is anything in the cost of the cost of the cost of the cost is anything in the cost of the cost of the cost of the cost is anything in the cost of the cost of t | Trial Pit Log | | - | 8869 | 928.4 | North | - | .6 | | | | | | | |
| Sample D Test Result S Proceed Component 0.20 D1 0.24:0.50 B2 0.41 9.40 0.53 9.41 9.40 (0.53) 0.54 (0.53) 0.54 MADE GROUND. Rud sity very granely fine same thir foquent ingenus lithologies. 0.20 D1 0.24:0.50 B2 9.41 9.40 0.53 9.54 (0.53) 0.54 (0.53) 0.54 0.51 0.54 9.41 9.40 0.53 0.54 (0.53) 0.54 (0.53) 0.54 0.51 0.54 0.54 (0.53) 0.54 (0.53) 0.54 (0.53) 0.54 0.51 0.52 0.54 (0.53) 0.54 (0.53) 0.54 (0.53) 0.54 0.51 0.52 0.54 (0.53) 0.54 (0.53) 0.54 (0.53) 0.54 0.51 0.52 0.54 (0.53) 0.54 (0.54) 0.54 (0.54) 0.54 0.51 0.51 0.54 (0.54) 0.54 (0.54) 0.54 (0.54) 0.54 0.52 0.54 1.30 (0.54) 0.54 (0.54) 0.54 0.52 0.54 (0.54) 0.54 (0.54) 0.54 (0.54) 0.54 0.54 1.30 (0.54) 0.54 (0.54) 0.54 (0.54) | Samplas 8 In Si | itu Toot | ina | | | | | Strata Details | | | | | | | |
| Dimensions: Ceneral Remarks: Image: State S | | | - | Wate | Reduced | Legend | Depth (m) | | Strata De | | Ba | | | | |
| 0.20-0.50 B2 9.40 0.037 9.40 improvisitilitologies. 0.54 | | Test R | esult | | Level | | | MADI | E GROUND. Red silty v | erv gravelly fine sand with frequ | uent | | | | |
| Vimensions: Ceneral Remarks: inal Depth: 0.54m 1.30 FACE A Ying public state of the second structure 1.30 Trial Pit hand excave for QL to U54m. Terminated due to obstruction Wing public state of the second structure 1.30 | 0.20 DT 0.20-0.50 B2 | | | | | | 0.53 | igneo | us lithologies. 0.50m depth. tarmacad | am obstruction (25mm thick) e | xtending | | | | |
| imensions: General Remarks: imensions: General Remarks: inclusion: 1.30 | | | | | 9.40 | | 0.54 | 1 | | | i | | | | |
| Final Depth: 0.54m FACE A Length (m) 1.30 FACE A Length (m) 1.30 I. Trial Pit hand excavated from GL to 0.54m. Terminated due to obstruction with engineer's agreement. 2. No groundwater encountered. 3. All sides stable. 4. Photgraphs taken of side faces and spoil. 5. Trial pit backfilled on completion. | | | | | | | | litholo | ogies (road base). | 5 | | | | | |
| inal Depth: 0.54m FACE A Length (m) 1.30 1. Trial Pit hand excavated from GL to 0.54m. Terminated due to obstruction with engineer's agreement. No groundwater encountered. All sides stable. Photgraphs taken of side faces and spoil. Trial pit backfilled on completion. | | | | | | | | | | | | | | | |
| inal Depth: 0.54m FACE A Length (m) 1.30 Trial Pit hand excavated from GL to 0.54m. Terminated due to obstruction with engineer's agreement. No groundwater encountered. All sides stable. Photgraphs taken of side faces and spoil. Trial pit backfilled on completion. | | | | | | | | | | | | | | | |
| inal Depth: 0.54m FACE A Length (m) 1.30 Trial Pit hand excavated from GL to 0.54m. Terminated due to obstruction with engineer's agreement. No groundwater encountered. All sides stable. Photgraphs taken of side faces and spoil. Trial pit backfilled on completion. | | | | | | | | | | | | | | | |
| inal Depth: 0.54m FACE A Length (m) 1.30 1. Trial Pit hand excavated from GL to 0.54m. Terminated due to obstruction with engineer's agreement. 2. No groundwater encountered. 3. All sides stable. 4. Photgraphs taken of side faces and spoil. 5. Trial pit backfilled on completion. | | | | | | | | | | | | | | | |
| inal Depth: 0.54m FACE A Length (m) 1.30 1. Trial Pit hand excavated from GL to 0.54m. Terminated due to obstruction with engineer's agreement. 2. No groundwater encountered. 3. All sides stable. 4. Photgraphs taken of side faces and spoil. 5. Trial pit backfilled on completion. | | | | | | | | | | | | | | | |
| inal Depth: 0.54m FACE A Length (m) 1.30 1. Trial Pit hand excavated from GL to 0.54m. Terminated due to obstruction with engineer's agreement. 2. No groundwater encountered. 3. All sides stable. 4. Photgraphs taken of side faces and spoil. 5. Trial pit backfilled on completion. | | | | | | | | | | | | | | | |
| inal Depth: 0.54m FACE A Length (m) 1.30 1. Trial Pit hand excavated from GL to 0.54m. Terminated due to obstruction with engineer's agreement. 2. No groundwater encountered. 3. All sides stable. 4. Photgraphs taken of side faces and spoil. 5. Trial pit backfilled on completion. | | | | | | | | | | | | | | | |
| FACE A FACE A Length (m) Image: A line of the second s | | | | | | | | | | | | | | | |
| inal Depth: 0.54m FACE A Length (m) 1.30 1. Trial Pit hand excavated from GL to 0.54m. Terminated due to obstruction with engineer's agreement. 2. No groundwater encountered. 3. All sides stable. 4. Photgraphs taken of side faces and spoil. 5. Trial pit backfilled on completion. | | | | | | | | | | | | | | | |
| FACE A Length (m) 1.30 FACE A Length (m) FACE A Solution (m) FACE A Sol | imensions: | | | | | | | | | | | | | | |
| Orientation: - Budget Guide Guide Guide Budget Guide Budget Guide Budget Guide Budget Guide Budget Guide Budget Guide Budget Guide | ïnal Depth: 0.54m ◀ | | Leng | gth (r | n) | | | with 2. No 3. All s 4. Pho | n engineer's agreement. groundwater encounter sides stable. otgraphs taken of side fa | ed. aces and spoil. | ue to obstruction | | | | |
| | FACE B Midth (m) - 0.50 | '∢ | Orienta | tion: | - | | FACE D | | | | | | | | |
| FACE C Release Status: Final | | | FA | CE C | | | | | | | | | | | |

| COSTAIN | Contract Name | | naven | FAS | | Client: Aberdeer | nshire Council | Trial Pit ID: | | |
|-----------------------------------|---|------------------|--------|---------------------------|---|---|--|-----------------|--------|--|
| Environmental Services | Contract Numb | ^{ber:} | Date | Started: 22/10/20 |)13 | Logged By: MJB | Checked By: MJB | Sheet 1 of 1 | | |
| Trial Pit Log | Easting: | 032.2 | North | ^{ing:} 785636 | .0 | Ground Level: 8.00 | Plant Used: Hand Tools | Scale: 1:50 | | |
| Samples & In Situ Test | ing Mater | | | Strata Details | | | | | | |
| Sample ID Test R | esult | Reduced Level | Legend | Depth (m) (thickness) | | | Strata Description | | Backfi | |
| 0.20 D1 0.20-0.40 B2 | | 7.94 7.60 | | 0.06 (0.34) 0.40 | MADE round bet Exten End C | ed fine to coarse of mixe ween 0.06m and 0.40m ne and concrete step. | elly fine to coarse sand. Graved lithologies. depth, rough concrete extend n kerbline, 300mm width con | ls between | | |
| Dimensions: Final Depth: 0.40m | | | | | 1. Tria | I Pit hand excavated fror | m GL to 0.40m. Terminated | due to concrete | | |
| FACE B 0.32 0.32 | FACE # - Length (1.10 Orientation | (m) | | FACE D | 2. Diffi 3. No (4. All s 5. Pho | truction with engineer's a cult excavation 0.00-0.4(groundwater encounterer ides stable. tgraphs taken of side fac l pit backfilled on comple | Dm - 2 hours. d. ces and spoil. | | | |
| | | | | | | | | | | |

| COCTAIN | Contract Name | Stoneha | ven FA | AS | | Client: Aberdeen: | shire Council | Trial Pit ID: |
|------------------------------|--|------------|----------------|-----------------------|---|--|---|------------------------|
| COSTAIN | Contract Numb | | Date Star | | 40 | Logged By: | Checked By: | TP9 |
| Environmental Services | D4 Easting: | 14 | ∠ Northing: | 6/10/20 | 13 | PS Ground Level: | MJB Plant Used: | Sheet 1 of 1 Scale: |
| Trial Pit Log | | 054.0 | _ | 785632 | .3 | 8.10 | Hand Tools | 1:50 |
| Samples & In Situ Test | ing to the second se | | | | | Strata Deta | ails | |
| Sample ID Test R | <a l<="" td=""><td>Reduced Le</td><td>egend (t</td><td>epth (m) hickness)</td><td></td><td>Olidid Doli</td><td>Strata Description</td><td>Bac</td> | Reduced Le | egend (t | epth (m) hickness) | | Olidid Doli | Strata Description | Bac |
| - 0.06 D1 - 0.06-0.40 LB2 | | 8.04 | XX | 0.06 (0.34) | <u> </u> | GROUND. Asphalt. | | |
| | | 7.70 | | 0.40 | sandst at 0 Extend betw kerblin | one, brick and mixed ign .15m depth, 0.65m from Is to base of pit. | vangular to rounded fine to o leous lithologies. kerbline, 300mm width conc epth, rough concrete extends | rete step. |
| - | | | | | | | | |
| Dimensions: | | | | | ral Remarks: | | | |
| Final Depth: 0.40m | FACE A — Length (r 1.75 | | • | FACE D | obstr 2. Diffic 3. No gr 4. All si 5. Phote | Pit hand excavated from ruction with engineer's ag uit excavation 0.00m-0.4 roundwater encountered des stable. graphs taken of side face pit backfilled on complet | 0m depth - 2 hours. es and spoil. | ue lo concrete |
| Inclination: 90 | FACE C | | | | Relea | se Status: Final | | |

| | Contract Name | Stoneha | aven | FAS | | | nshire Council | Trial Pit ID: |
|---------------------------|-------------------------------|------------------|--------|----------------------------|--|---|---|-----------------|
| COSTAIN | Contract Numb | | | Started: | | Logged By: | Checked By: | |
| Environmental Service | 5/ | 114 | Duito | 31/10/20 | 13 | PS | MJB | Sheet 1 of 1 |
| Trial Pit Log | Easting: 3872 | 211.5 | North | ^{ing:} 785707. | .6 | Ground Level: 5.85 | Plant Used: Hand Tools | Scale: 1:50 |
| Samples & In Situ Tes | tina 5 | | | | | Strata De | tails | |
| • | ting | Reduced Level | Legend | Depth (m) (thickness) | | | Strata Description | Back |
| 0.10 D1 0.10-0.60 LB2 | | 5.79 | | 0.06 | MADE | GROUND. Asphalt. | | / |
| 0.60 D3 0.60-1.40 LB4 | | 5.25 | | (0.54) 0.60 (0.80) | conten limesto subano betv trial pit | It. Gravel is angular to sone, brick, asphalt, cera gular to subrounded of ween 0.30m and 0.60m | n gravelly fine to coarse sand w subangular fine to coarse of amics and pottery. Cobbles are brick and concrete. depth, wall footing. Extends 0 | e 0.05m into |
| 1.40 D5 1.40-1.70 B6 | | 4.45 | | 1.40 (0.30) 1.70 | rounde litholog Brown sandst subang | ed fine to coarse of san gies. (Possible Made G very sandy subangular tone and guartz with me | dstone, quartzite and mixed ig | AVEL of |
| - | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| limensions: | | | | | Gene | ral Remarks: | | |
| Final Depth: 1.70m | FACE A — Length (I 0.70 | | | | obstr 2. No g 3. All si 4. Phote | Pit hand excavated fro ruction with engineer's roundwater encountere des stable. graphs taken of pit and pit backfilled on compl | ed. spoil. | ue to boulder |
| FACE B Width (m) -0.45 | Orientation: | : - | | FACE D | | | | |
| | FACE C | | | | | | | |

| COCTUN | Contract Na | ^{ame:} Stoneł | naven | FAS | | Client: Aberdeer | nshire Council | Trial Pit ID: | | | | |
|-------------------------------|---------------|--------------------------|----------|--------------------------|---|---|---|--------------------------|--|--|--|--|
| COSTAIN | Contract Nu | | Date | Started: | | Logged By: | Checked By: | | | | | |
| Environmental Servi | ICES | 5414 | | 29/10/20 |)13 | PS | MJB | Sheet 1 of 1 | | | | |
| Trial Pit Log | Easting: | 37269.3 | North | 785739 | .2 | Ground Level: 4.94 | Plant Used: Hand Tools | Scale: 1:50 | | | | |
| Samples & In Situ 1 | Testing | er | | | Strata Details | | | | | | | |
| | Fest Result | Kate Reduced Level | Legend | Depth (m) (thickness) | | | Strata Description | Back | | | | |
| 0.10 D1 0.10-1.00 LB2 | | 4.88 | | 0.06 | MADE | GROUND. Asphalt. | | | | | | |
| 1.00 D3 1.00-1.70 LB4 | | 3.94 | | (0.94) 1.00 (0.70) | to coa litholo from to roum bet trial pi from subrom | rse gravel of sandstone gies. m 0.20m depth, with low nded of quartzite and mi ween 0.30m and 0.60m t. m 0.60m depth, with hig unded to rounded of sar | ntly clayey sandy subangular to , quartzite and mixed igneous v cobble content. Cobbles are ixed igneous lithologies. depth, wall footing. Extends C h cobble content. Cobbles are dstone, quartzite and mixed ig | subrounded 0.10m into | | | | |
| | | 3.24 | | 1.70 | litholo Reddi mixed rounde | gies. sh brown sandy subrour | nded to rounded fine to coarse bble content. Cobbles are sub | GRAVEL of | | | | |
| Dimensions: | | | | | Gene | ral Remarks: | | | | | | |
| Final Depth: 1.70m | | | | | 1. Tria | I Pit hand excavated from | m GL to 1.70m. Terminated w | rith engineer's | | | | |
| ▲ | FAC Lengtl | h (m) —— | → | | 2. No g 3. All s 4. Phot | eement. groundwater encountere ides stable. Igraphs taken of pit and I pit backfilled on comple | spoil. | | | | | |
| FACE B → Width (m) 0.40 | Orientation | on: - | | FACE | | | | | | | | |

| COSTAIN | | Contract | | | naven | FAS | | Client: Aberdeer | nshire Council | Trial Pit ID: | _ |
|--------------------------|-----------|----------|----------------------|------------------|--------|----------------------------|--|---|---|--------------------------------|-----|
| Environmental S | | Contract | | er: •14 | Date | Started: 18/10/20 |)13 | Logged By: MJB | Checked By: PS | - TP1: | 3 |
| Trial Pit Log | | Easting: | 3869 | 976.0 | North | ^{iing:} 785469 | .5 | Ground Level: 14.29 | Plant Used: Hand Tools | Sheet 1 of 1 Scale: 1:50 | |
| Samples & In S | Situ Test | ina | 5 | | | | | Strata Det | ails | | |
| Sample ID | Test R | | Water | Reduced Level | Legend | Depth (m) (thickness) | | 0.000 2.00 | Strata Description | | Bac |
| | | | | 40.00 | | (0.30) | Soft bl to coa | ack very gravelly CLAY. | Gravel is angular to subroun (Topsoil). | ded, fine | |
| 0.40 D1 0.40-0.80 B2 | | | | 13.99 | | 0.30 (0.50) | Soft re | | ry sandy CLAY. Gravel is sub | | |
| 0.90 D3 0.90-1.20 LB4 | | | | 13.49 12.59 | | 0.80 (0.90) 1.70 | conter litholo litholo | nt. Gravel is angular to w gies. Cobbles are subar gies. | ne to medium SAND, with hig rell rounded fine to coarse of igular to well rounded of mixe | mixed | |
| Dimensions: | | | | | | | Gene | ral Remarks: | | | |
| Final Depth: 1.70m | • | — Leng | ce a gth (r 80 | n) —— | | | obst 2. No g 3. All s 4. Phot | Pit hand excavated fror ruction with engineer's a roundwater encountered ides stable. graphs taken of pit and pit backfilled on comple | d. spoil. | ue to boulder | |
| A Midth (m) − 0.50 | '∢- | Orienta | tion: | - | | FACE D | | | | | |
| | | FA | CE C | | | | L | | | | |
| | | | | | | | | se Status: Final | | | |





Appendix 5 - Photographs





Appendix 5.1 – Rotary Core Photographs



| COSTAIN | Contract ID: | 5414 | Borehole ID: | BH05 |
|------------------------|----------------|--------------------------|--------------|-----------------|
| | Contract Name: | Stonehaven FAS | Box No: | 1 |
| Environmental Services | Client: | Aberdeenshire Council | Depth: | 10.50m – 12.00m |



| COSTAIN | Contract ID: | 5414 | Borehole ID: | BH05 |
|------------------------|----------------|--------------------------|--------------|-----------------|
| | Contract Name: | Stonehaven FAS | Box No: | 2 |
| Environmental Services | Client: | Aberdeenshire Council | Depth: | 12.00m – 13.50m |



| | Contract ID: | 5414 | Borehole ID: | BH06 |
|------------------------|----------------|--------------------------|--------------|----------------|
| COSTAIN | Contract Name: | Stonehaven FAS | Box No: | 1 |
| Environmental Services | Client: | Aberdeenshire Council | Depth: | 9.00m – 10.00m |



| COSTAIN | Contract ID: | 5414 | Borehole ID: | ВН07 |
|------------------------|----------------|--------------------------|--------------|---------------|
| | Contract Name: | Stonehaven FAS | Box No: | 1 |
| Environmental Services | Client: | Aberdeenshire Council | Depth: | 4.00m – 6.50m |



| COSTAIN | Contract ID: | 5414 | Borehole ID: | BH07 |
|------------------------|----------------|--------------------------|--------------|---------------|
| | Contract Name: | Stonehaven FAS | Box No: | 2 |
| Environmental Services | Client: | Aberdeenshire Council | Depth: | 6.50m – 8.00m |



| | Contract ID: | 5414 | Borehole ID: | BH07 | |
|------------------------|----------------|--------------------------|--------------|--------------|--|
| COSTAIN | Contract Name: | Stonehaven FAS | Box No: | 3 | |
| Environmental Services | Client: | Aberdeenshire Council | Depth: | 8.00m –9.00m | |



| | Contract ID: | 5414 | Borehole ID: | BH08 |
|------------------------|----------------|--------------------------|--------------|---------------|
| COSTAIN | Contract Name: | Stonehaven FAS | Box No: | 1 |
| Environmental Services | Client: | Aberdeenshire Council | Depth: | 5.00m – 7.50m |



| COSTAIN | Contract ID: | 5414 | Borehole ID: | BH08 |
|------------------------|----------------|--------------------------|--------------|---------------|
| | Contract Name: | Stonehaven FAS | Box No: | 2 |
| Environmental Services | Client: | Aberdeenshire Council | Depth: | 7.50m – 9.00m |



| COSTAIN | Contract ID: | 5414 | Borehole ID: | BH08 |
|------------------------|----------------|--------------------------|--------------|----------------|
| | Contract Name: | Stonehaven FAS | Box No: | 3 |
| Environmental Services | Client: | Aberdeenshire Council | Depth: | 9.00m – 10.50m |



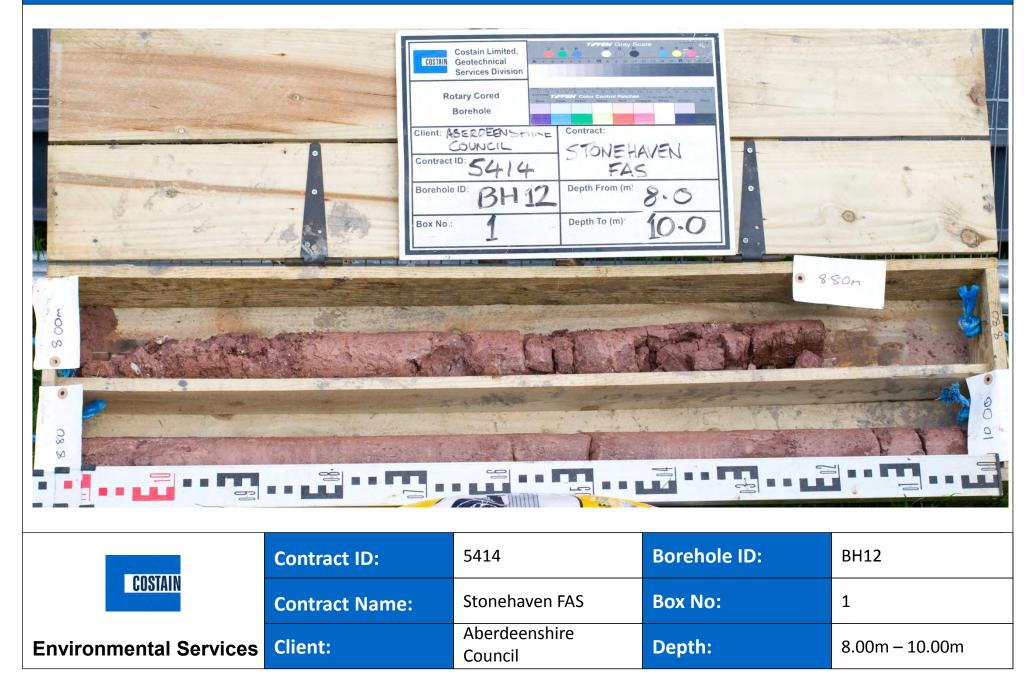
| COSTAIN | Contract ID: | 5414 | Borehole ID: | BH11A |
|------------------------|----------------|--------------------------|--------------|---------------|
| | Contract Name: | Stonehaven FAS | Box No: | 1 |
| Environmental Services | Client: | Aberdeenshire Council | Depth: | 5.00m – 7.20m |



| COSTAIN | Contract ID: | 5414 | Borehole ID: | BH11A |
|------------------------|----------------|--------------------------|--------------|---------------|
| | Contract Name: | Stonehaven FAS | Box No: | 2 |
| Environmental Services | Client: | Aberdeenshire Council | Depth: | 7.20m – 9.00m |



| COSTAIN | Contract ID: | 5414 | Borehole ID: | BH11A |
|------------------------|----------------|--------------------------|--------------|----------------|
| | Contract Name: | Stonehaven FAS | Box No: | 3 |
| Environmental Services | Client: | Aberdeenshire Council | Depth: | 9.00m – 10.00m |





| COSTAIN | Contract ID: | 5414 | Borehole ID: | BH13 |
|------------------------|----------------|--------------------------|--------------|----------------|
| | Contract Name: | Stonehaven FAS | Box No: | 1 |
| Environmental Services | Client: | Aberdeenshire Council | Depth: | 9.00m – 10.00m |



| COSTAIN | Contract ID: | 5414 | Borehole ID: | BH14 |
|------------------------|----------------|--------------------------|--------------|---------------|
| | Contract Name: | Stonehaven FAS | Box No: | 1 |
| Environmental Services | Client: | Aberdeenshire Council | Depth: | 4.80m – 7.50m |



| and the second | Contract ID: | 5414 | Borehole ID: | BH15 |
|--|----------------|--------------------------|--------------|---------------|
| COSTAIN | Contract Name: | Stonehaven FAS | Box No: | 1 |
| Environmental Services | Client: | Aberdeenshire Council | Depth: | 5.00m – 7.50m |



| COSTAIN | Contract ID: | 5414 | Borehole ID: | BH15 |
|------------------------|----------------|--------------------------|--------------|---------------|
| | Contract Name: | Stonehaven FAS | Box No: | 2 |
| Environmental Services | Client: | Aberdeenshire Council | Depth: | 7.50m – 9.80m |



| COSTAIN | Contract ID: | 5414 | Borehole ID: | BH15 |
|------------------------|----------------|--------------------------|--------------|----------------|
| | Contract Name: | Stonehaven FAS | Box No: | 3 |
| Environmental Services | Client: | Aberdeenshire Council | Depth: | 9.80m – 11.70m |



| COSTAIN | Contract ID: | 5414 | Borehole ID: | BH15 |
|------------------------|----------------|--------------------------|--------------|-----------------|
| | Contract Name: | Stonehaven FAS | Box No: | 4 |
| Environmental Services | Client: | Aberdeenshire Council | Depth: | 11.70m – 13.60m |



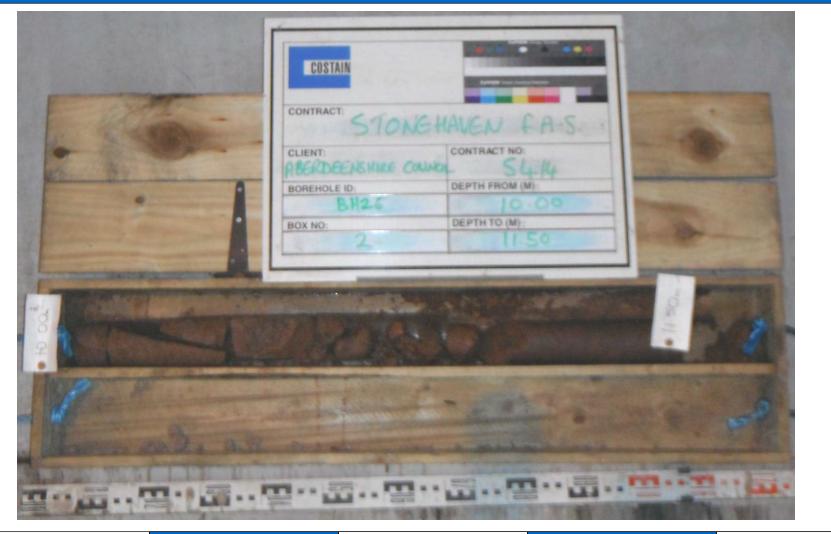
Depth:

7.50m – 10.00m

Environmental Services Client: Council



| COSTAIN | Contract Name: | Stonehaven FAS | Box No: | 1 |
|------------------------|----------------|--------------------------|---------|----------------|
| Environmental Services | Client: | Aberdeenshire Council | Depth: | 7.50m – 10.00m |



| COSTAIN | Contract ID: | 5414 | Borehole ID: | BH26 |
|------------------------|----------------|--------------------------|--------------|-----------------|
| | Contract Name: | Stonehaven FAS | Box No: | 2 |
| Environmental Services | Client: | Aberdeenshire Council | Depth: | 10.00m – 11.50m |



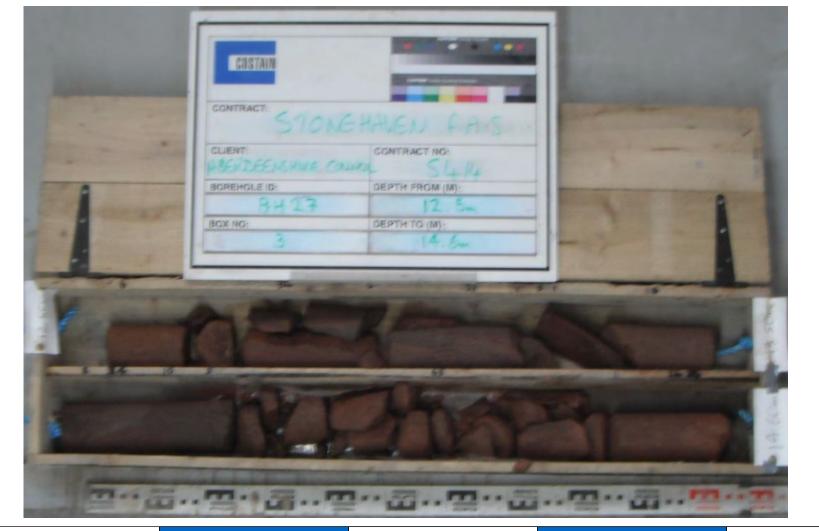
| COSTAIN | Contract ID: | 5414 | Borehole ID: | BH26 |
|------------------------|----------------|--------------------------|--------------|-----------------|
| | Contract Name: | Stonehaven FAS | Box No: | 3 |
| Environmental Services | Client: | Aberdeenshire Council | Depth: | 11.50m – 13.00m |



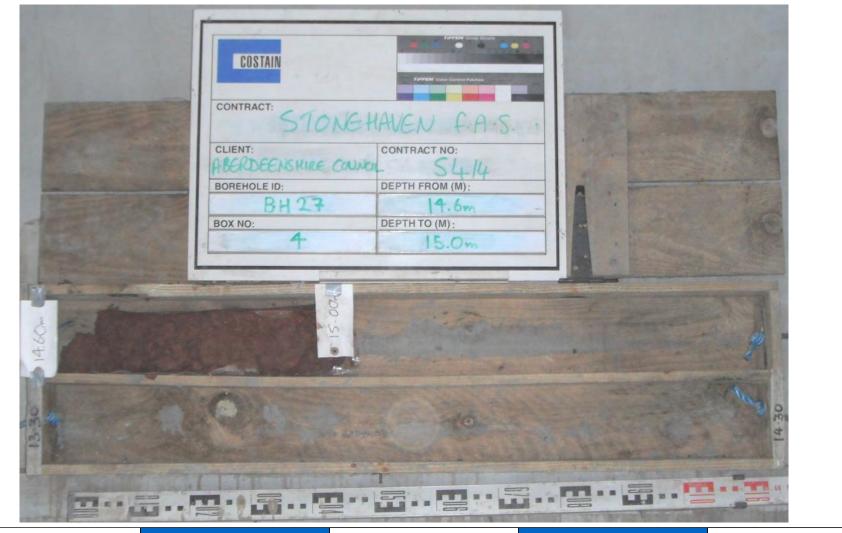
| COSTAIN | Contract ID: | 5414 | Borehole ID: | BH27 |
|------------------------|----------------|--------------------------|--------------|----------------|
| | Contract Name: | Stonehaven FAS | Box No: | 1 |
| Environmental Services | Client: | Aberdeenshire Council | Depth: | 9.00m – 10.50m |



| COSTAIN | Contract ID: | 5414 | Borehole ID: | BH27 |
|------------------------|----------------|--------------------------|--------------|-----------------|
| | Contract Name: | Stonehaven FAS | Box No: | 2 |
| Environmental Services | Client: | Aberdeenshire Council | Depth: | 10.50m – 12.50m |



| COSTAIN | Contract ID: | 5414 | Borehole ID: | BH27 |
|------------------------|----------------|--------------------------|--------------|-----------------|
| | Contract Name: | Stonehaven FAS | Box No: | 3 |
| Environmental Services | Client: | Aberdeenshire Council | Depth: | 12.50m – 14.60m |



| COSTAIN | Contract ID: | 5414 | Borehole ID: | BH27 |
|------------------------|----------------|--------------------------|--------------|-----------------|
| | Contract Name: | Stonehaven FAS | Box No: | 4 |
| Environmental Services | Client: | Aberdeenshire Council | Depth: | 14.60m – 15.00m |

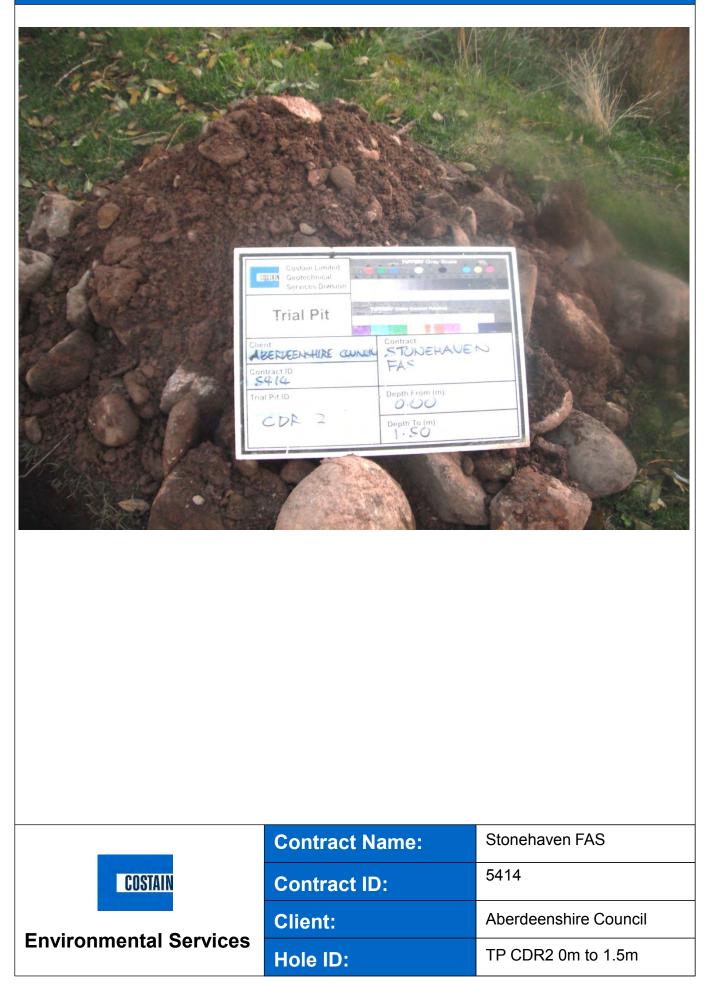




Appendix 5.2 – Observation Pit Photographs



| | | | Contract Name: | Stonehaven FAS |
|------------------------|---------|-----------------------|----------------|---------------------|
| | COSTAIN | | Contract ID: | 5414 |
| Environmental Services | Client: | Aberdeenshire Council | | |
| Environ | imental | Services | Hole ID: | TP CDR2. 0m to 1.5m |





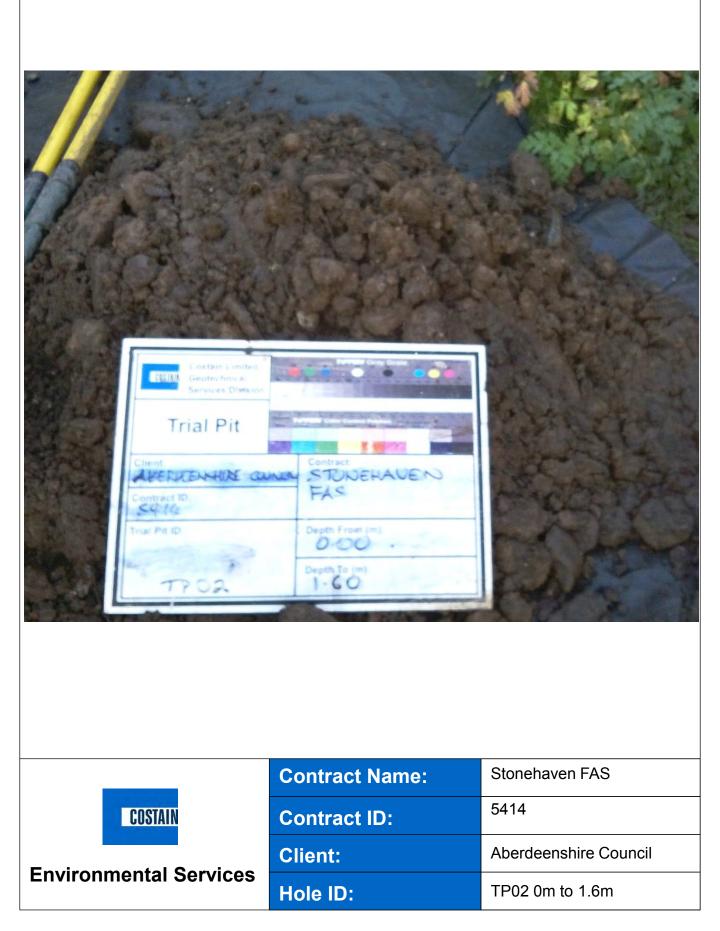
| | | Contract Name: | Stonehaven FAS |
|---------|-----------------|----------------|-----------------------|
| | COSTAIN | Contract ID: | 5414 |
| | | Client: | Aberdeenshire Council |
| Environ | mental Services | Hole ID: | TP01 0m to 0.2m |



| | Contract Name: | Stonehaven FAS |
|------------------------|----------------|-----------------------|
| COSTAIN | Contract ID: | 5414 |
| | Client: | Aberdeenshire Council |
| Environmental Services | Hole ID: | TP01 0m to 0.2m |



| | Contract Name: | Stonehaven FAS |
|-----------------------|----------------|-----------------------|
| COSTAIN | Contract ID: | 5414 |
| | Client: | Aberdeenshire Council |
| Environmental Service | Hole ID: | TP02 0m to 1.6m |





| | | Contract Name: | Stonehaven FAS |
|------------------------|---------|----------------|-----------------------|
| | COSTAIN | Contract ID: | 5414 |
| Environmental Services | | Client: | Aberdeenshire Council |
| | | Hole ID: | TP03 0m to 0.8m |



| | | Contract Name: | Stonehaven FAS |
|------------------------|---------|----------------|-----------------------|
| | COSTAIN | Contract ID: | 5414 |
| F using a | | Client: | Aberdeenshire Council |
| Environmental Services | | Hole ID: | TP03 0m to 0.8m |



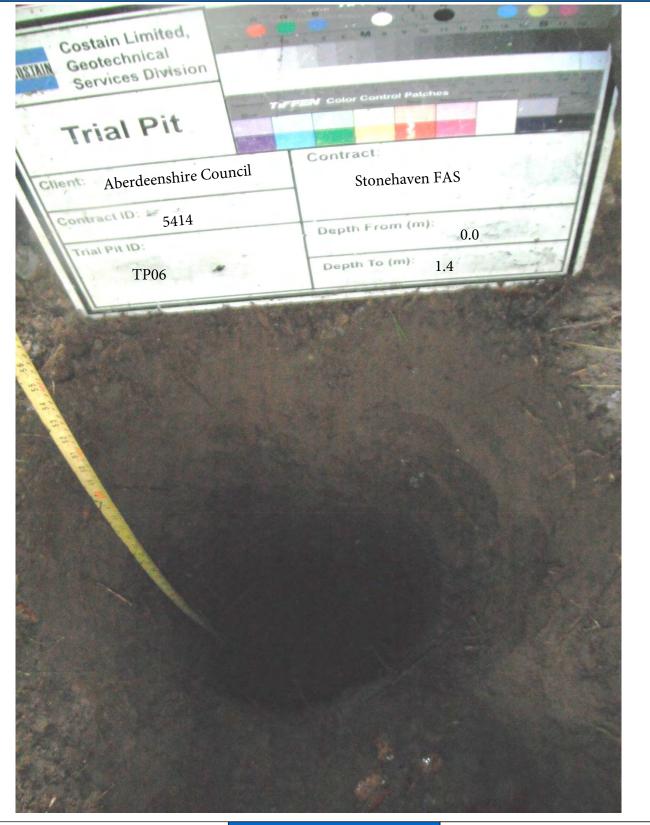
| | | Contract Name: | Stonehaven FAS |
|------------------------|---------|----------------|-----------------------|
| | COSTAIN | Contract ID: | 5414 |
| Environmental Services | | Client: | Aberdeenshire Council |
| | | Hole ID: | TP04 0m to 1.2m |

| | Costain Limited, Geotrophical Services Division | | |
|-----------------|---|--|------|
| | maren | Contract: STONEHAVEN | |
| | Contract ID SY ID Trial Pit ID | FAS | |
| | TP04 | Depth From (m): Depth To (m): 1-20 | |
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| | Contract Name: | Stonehaven FAS |
|------------------------|----------------|-----------------------|
| COSTAIN | Contract ID: | 5414 |
| | Client: | Aberdeenshire Council |
| Environmental Services | Hole ID: | TP04 0m to 1.2m |



| | Contract Name: | Stonehaven FAS |
|-----------------------|----------------|-----------------------|
| COSTAIN | Contract ID: | 5414 |
| | Client: | Aberdeenshire Council |
| Environmental Service | Hole ID: | TP05 0m to 1.5m |



| | Contract Name: | Stonehaven FAS |
|------------------------|----------------|-----------------------|
| COSTAIN | Contract ID: | 5414 |
| | Client: | Aberdeenshire Council |
| Environmental Services | Hole ID: | TP06 0m to 1.4m |



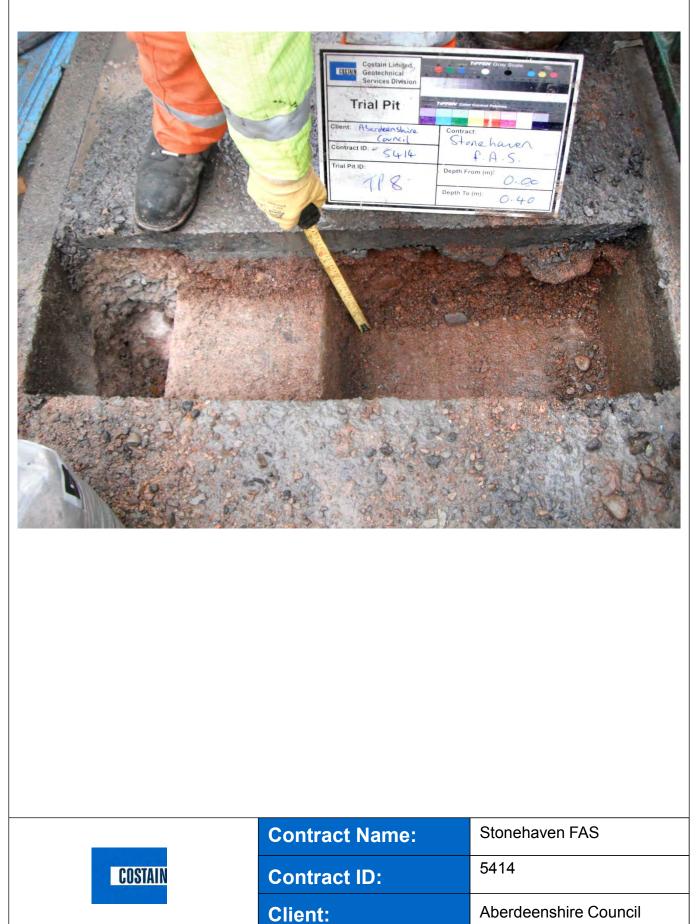
| | | Contract Name: | Stonehaven FAS |
|---------|-----------------|----------------|-----------------------|
| | COSTAIN | Contract ID: | 5414 |
| | | Client: | Aberdeenshire Council |
| EUVILOU | mental Services | Hole ID: | TP06 0m to 1.4m |



| | | Contract Name: | Stonehaven FAS |
|------------------------|---------|----------------|-----------------------|
| | COSTAIN | Contract ID: | 5414 |
| - | | Client: | Aberdeenshire Council |
| Environmental Services | | Hole ID: | TP07 0m to 0.54m |



| | | Contract Name: | Stonehaven FAS |
|------------------------|--|----------------|-----------------------|
| COSTAIN | | Contract ID: | 5414 |
| Environmental Services | | Client: | Aberdeenshire Council |
| | | Hole ID: | TP07 0m to 0.54m |



Environmental Services Hole ID:

TP08 0m to 0.40m



| | | Contract Name: | Stonehaven FAS |
|---------|-----------------|----------------|-----------------------|
| | COSTAIN | Contract ID: | 5414 |
| | | Client: | Aberdeenshire Council |
| Environ | mental Services | Hole ID: | TP09 0m to 0.40m |



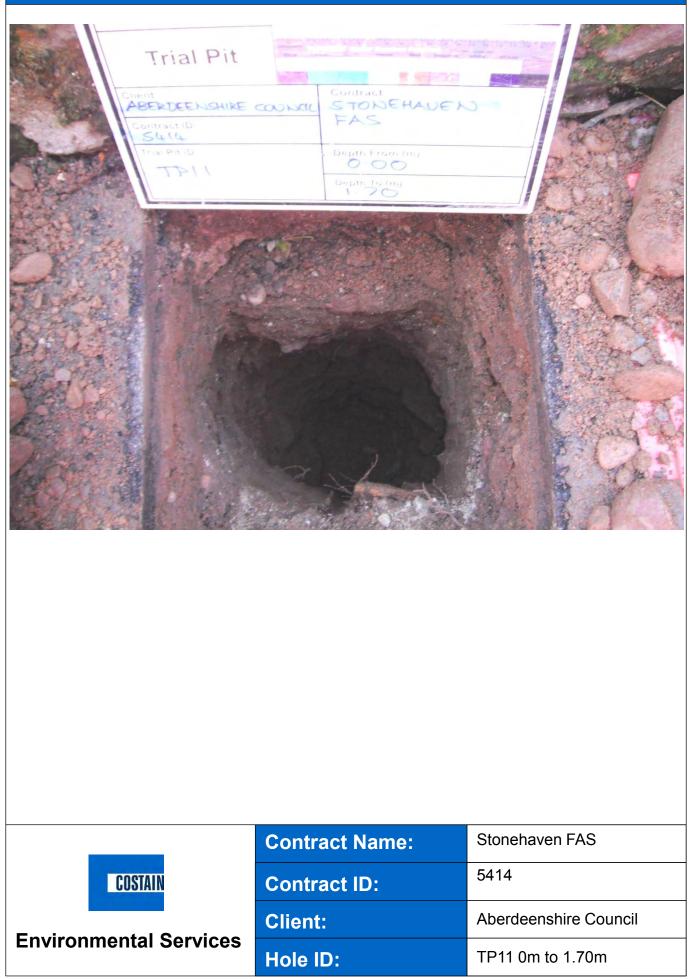
| | Contract Name: | Stonehaven FAS |
|------------------------|----------------|-----------------------|
| COSTAIN | Contract ID: | 5414 |
| | Client: | Aberdeenshire Council |
| Environmental Services | Hole ID: | TP09 0m to 0.40m |



| | Contract Name: | Stonehaven FAS |
|------------------------|----------------|-----------------------|
| COSTAIN | Contract ID: | 5414 |
| | Client: | Aberdeenshire Council |
| Environmental Services | Hole ID: | TP10 0m to 1.70m |



| | Contract Name: | Stonehaven FAS |
|------------------------|----------------|-----------------------|
| COSTAIN | Contract ID: | 5414 |
| | Client: | Aberdeenshire Council |
| Environmental Services | Hole ID: | TP10 0m to 1.70m |





| | | Contract Name: | Stonehaven FAS |
|------------------------|---------|----------------|-----------------------|
| | COSTAIN | Contract ID: | 5414 |
| Environmental Services | | Client: | Aberdeenshire Council |
| | | Hole ID: | TP11 0m to 1.70m |

| 414 Contract: 414 Depth From (m): 0.0 | |
|---|----------------|
| Contract Name: | Stonehaven FAS |

| | Contract Name: | Stonehaven FAS |
|------------------------|----------------|-----------------------|
| COSTAIN | Contract ID: | 5414 |
| | Client: | Aberdeenshire Council |
| Environmental Services | Hole ID: | TP13 0m to 1.70m |



| | Contract Name: | Stonehaven FAS |
|------------------------|----------------|-----------------------|
| COSTAIN | Contract ID: | 5414 |
| | Client: | Aberdeenshire Council |
| Environmental Services | Hole ID: | TP13 0m to 1.70m |





Appendix 6 - In Situ Test Results

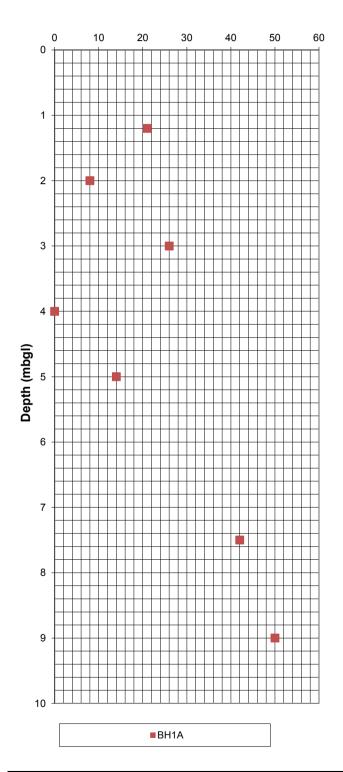


Appendix 6.1

Appendix 6.1 - SPT N Value Graphical Presentation & SPT Hammer Energy Measurement Report

| SPT Vs Depth | | | | Hole | BH1A | | |
|--------------|--------------------|------------|----------|------------|------------|--------------|--------|
| Client | Aberdeens | hire Counc | il | | | Job No. | 5414 |
| Site | ite Stonehaven FAS | | | Date Drawn | 06/01/2014 | | |
| Easting | 387458.5 | Northing | 785756.2 | G.L. | 4.228 | Energy Ratio | 39.00% |
| | | | | | | Hammer ID | |

SPT N Value

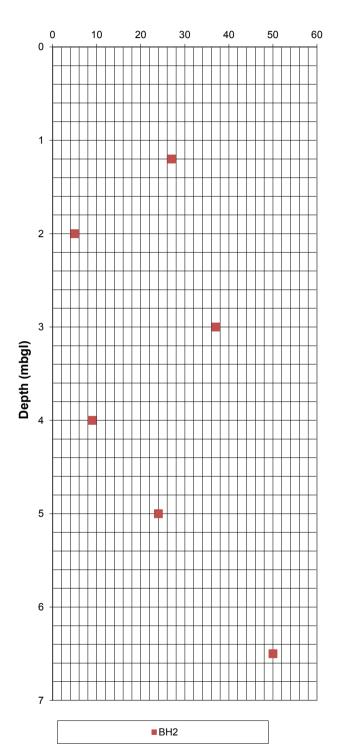


| Depth | Uncorrected N value | Casing Depth | Water Depth |
|-------|----------------------------|-----------------|----------------|
| 1.20 | N=21 (0,0,3,8,5,5) | | |
| 2.00 | N=8 (1,1,3,2,2,1) | | |
| 3.00 | N=26 (5,6,8,9,6,3) | | |
| 4.00 | N=0 (0,0,0,0,0,0) | | |
| 5.00 | N=14 (0,1,1,2,3,8) | | |
| 7.50 | N=42 (4,9,10,10,10,12) | | |
| 9.00 | 50/203mm (5,8,20,17,13) | | |
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Remarks

COSTAIN Environmental Services

| SPT Vs Depth | | | Hole | BH2 | | | |
|--------------|------------------------------|----------|----------|------------|------------|--------------|--------|
| Client | Client Aberdeenshire Council | | | Job No. | 5414 | | |
| Site | Site Stonehaven FAS | | | Date Drawn | 06/01/2014 | | |
| Easting | 387409 | Northing | 785737.4 | G.L. | 3.433 | Energy Ratio | 74.00% |
| | | | | | | Hammer ID | |

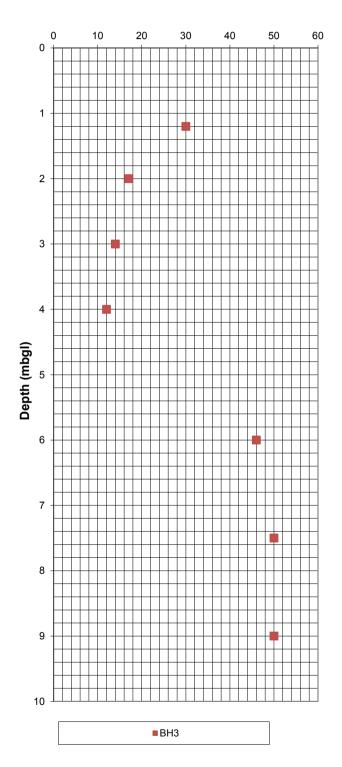


| Depth | Uncorrected N value | Casing Depth | Water Depth |
|-------|----------------------------|-----------------|----------------|
| 1.20 | N=27 (4,4,4,12,6,5) | | |
| 2.00 | N=5 (3,2,2,1,1,1) | 1.50 | |
| 3.00 | N=37 (14,11,10,10,10,7) | 3.00 | |
| 4.00 | N=9 (5,4,3,2,2,2) | 3.00 | |
| 5.00 | N=24 (8,2,5,5,5,9) | 4.70 | |
| 6.50 | 50/100mm (15,12,25,25) | 4.70 | |
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Remarks

COSTAIN Environmental Services

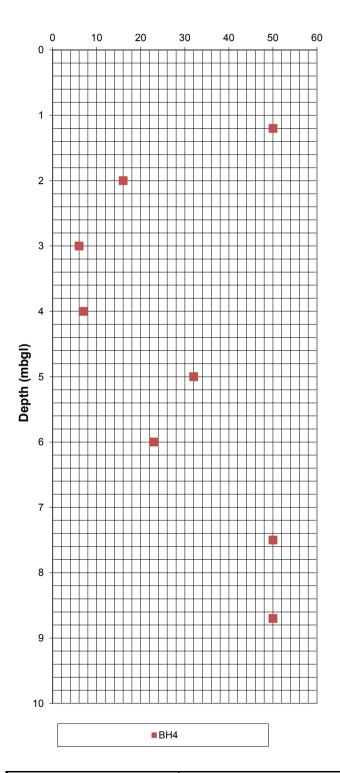
| | | SP | T Vs De | Hole | BH3 | | |
|---------|-----------------------|----------|----------|------|-------|--------------|------------|
| Client | Aberdeenshire Council | | | | | Job No. | 5414 |
| Site | Stonehaven FAS | | | | | Date Drawn | 06/01/2014 |
| Easting | 387314.9 | Northing | 785746.4 | G.L. | 4.476 | Energy Ratio | 39.00% |
| | | | | | | Hammer ID | |



| Depth | Uncorrected N value | Casing Depth | Water Depth |
|-------|----------------------------|-----------------|----------------|
| 1.20 | N=30 (5,5,7,7,7,9) | | |
| 2.00 | N=17 (4,3,3,4,6,4) | | |
| 3.00 | N=14 (0,0,1,1,4,8) | | |
| 4.00 | N=12 (1,3,2,2,5,3) | | |
| 6.00 | N=46 (4,9,10,11,12,13) | | |
| 7.50 | 50/225mm (2,8,16,16,18) | | |
| 9.00 | 50/145mm (13,12,28,22) | | |
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Remarks

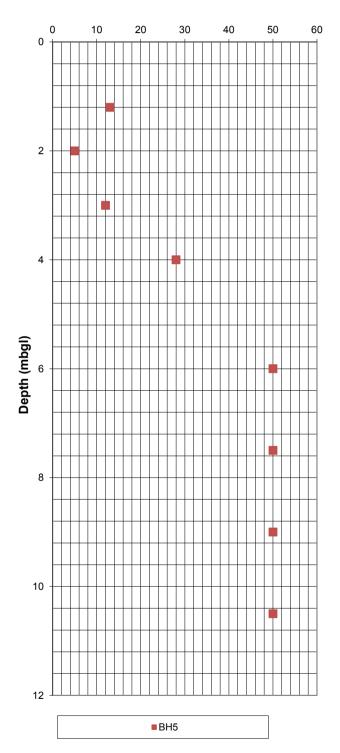
| | | SP | ΓVs De | Hole | BH4 | | |
|---------|-----------------------|----------|----------|------|-------|--------------|------------|
| Client | Aberdeenshire Council | | | | | Job No. | 5414 |
| Site | Stonehaven FAS | | | | | Date Drawn | 06/01/2014 |
| Easting | 387300.2 | Northing | 785769.6 | G.L. | 4.332 | Energy Ratio | 39.00% |
| | | | | | | Hammer ID | |



| Depth | Uncorrected N value | Casing Depth | Water Depth |
|-------|----------------------------|-----------------|----------------|
| 1.20 | N=50 (8,9,12,15,13,10) | | |
| 2.00 | N=16 (16,7,4,5,4,3) | | |
| 3.00 | N=6 (11,6,2,1,1,2) | | |
| 4.00 | N=7 (2,1,2,2,1,2) | | |
| 5.00 | N=32 (11,10,7,8,8,9) | | |
| 6.00 | N=23 (2,4,5,7,5,6) | | |
| 7.50 | 50/143mm (6,19,22,28) | | |
| 8.70 | 50/241mm (2,3,8,8,30,4) | | |
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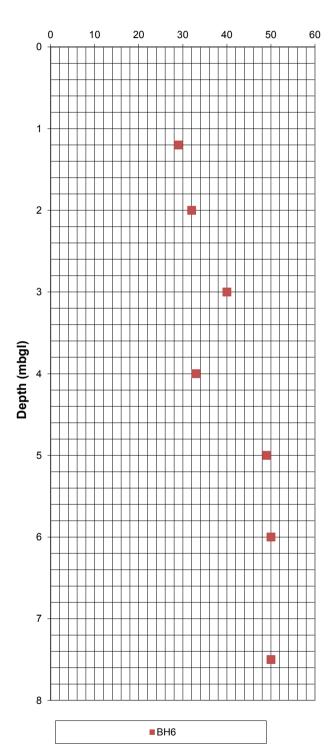
| | | SP | ΓVs De | Hole | BH5 | | |
|---------|-----------------------|----------|----------|------|------------|--------------|--------|
| Client | Aberdeenshire Council | | | | | Job No. | 5414 |
| Site | Stonehave | n FAS | | | Date Drawn | 06/01/2014 | |
| Easting | 387263.1 | Northing | 785765.3 | G.L. | 4.655 | Energy Ratio | 39.00% |
| | | | | | | Hammer ID | |



| Depth | Uncorrected N value | Casing Depth | Water Depth |
|-------|-------------------------------|-----------------|----------------|
| 1.20 | N=13 (2,3,2,2,5,4) | | |
| 2.00 | N=5 (2,1,2,1,1,1) | | |
| 3.00 | N=12 (0,2,1,2,3,6) | | |
| 4.00 | N=28 (4,5,6,11,5,6) | | |
| 5.00 | N=112 (1,3,10,81,11,10) | | |
| 6.00 | 50/277mm (3,8,11,14,15,10) | | |
| 7.50 | 50/194mm (7,15,18,22,10) | | |
| 9.00 | 50/219mm (6,12,9,10,31) | | |
| 10.50 | 50/75mm (19,6,50) | | |
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Remarks

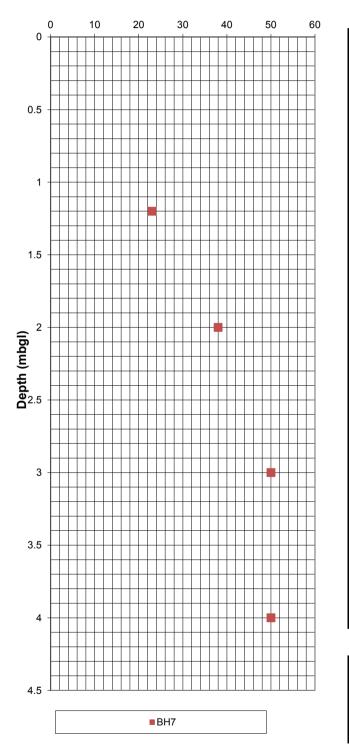
| | | SP | T Vs De | Hole | BH6 | | |
|---------|-----------------------|----------|----------|------|-------|--------------|------------|
| Client | Aberdeenshire Council | | | | | Job No. | 5414 |
| Site | Stonehaven FAS | | | | | Date Drawn | 06/01/2014 |
| Easting | 387160.4 | Northing | 785698.2 | G.L. | 5.341 | Energy Ratio | 39.00% |
| | | | | | | Hammer ID | |



| SPT | Ν | Value |
|-----|---|-------|
|-----|---|-------|

| Depth | Uncorrected N value | Casing Depth | Water Depth |
|-------|-----------------------------|-----------------|----------------|
| 1.20 | N=29 (10,5,7,8,7,7) | | |
| 2.00 | N=32 (10,15,13,10,6,3) | | |
| 3.00 | N=40 (7,7,7,7,8,18) | | |
| 4.00 | N=33 (2,4,7,8,9,9) | | |
| 5.00 | N=49 (11,14,10,11,12,16) | | |
| 6.00 | 50/165mm (12,13,18,24,8) | | |
| 7.50 | 50/150mm (13,12,17,33) | | |
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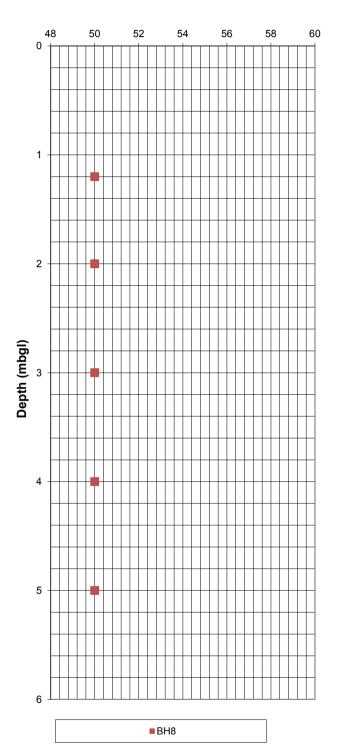
| | | SP | T Vs De | Hole | BH7 | | |
|---------|-----------------------|----------|----------|------|-------|--------------|------------|
| Client | Aberdeenshire Council | | | | | Job No. | 5414 |
| Site | Stonehaven FAS | | | | | Date Drawn | 06/01/2014 |
| Easting | 387121.2 | Northing | 785678.8 | G.L. | 7.863 | Energy Ratio | 39.00% |
| | | | | | | Hammer ID | |



| Depth | Uncorrected N value | Casing Depth | Water Depth |
|-------|------------------------------|-----------------|----------------|
| 1.20 | N=23 (1,4,2,6,5,10) | | |
| 2.00 | N=38 (1,5,7,7,11,13) | | |
| 3.00 | 50/192mm (12,11,16,22,12) | | |
| 4.00 | 50/164mm (13,12,16,24,10) | | |
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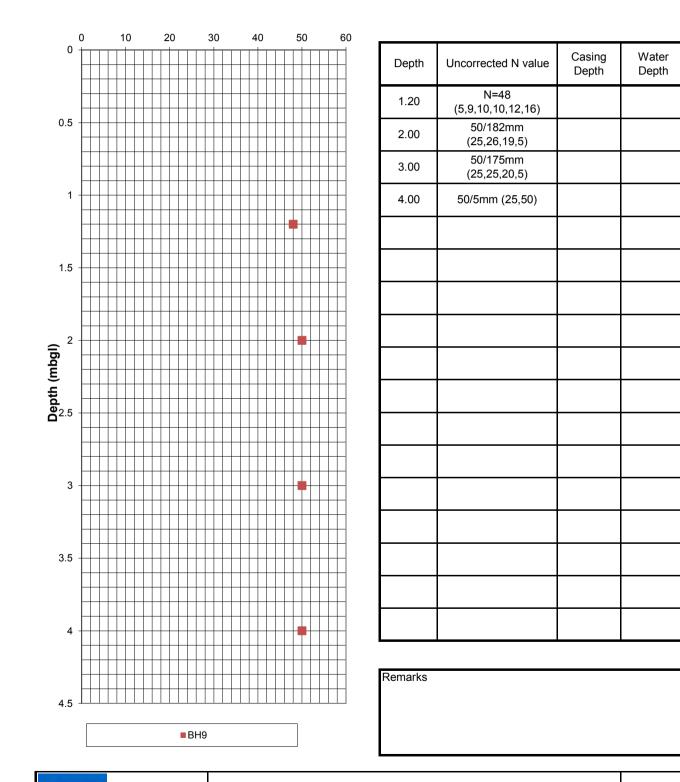
| | | SP | T Vs De | Hole | BH8 | | |
|---------|-----------------------|----------|----------|------|-------|--------------|------------|
| Client | Aberdeenshire Council | | | | | Job No. | 5414 |
| Site | Stonehaven FAS | | | | | Date Drawn | 06/01/2014 |
| Easting | 387053.3 | Northing | 785651.5 | G.L. | 7.244 | Energy Ratio | 39.00% |
| | | | | | | Hammer ID | |



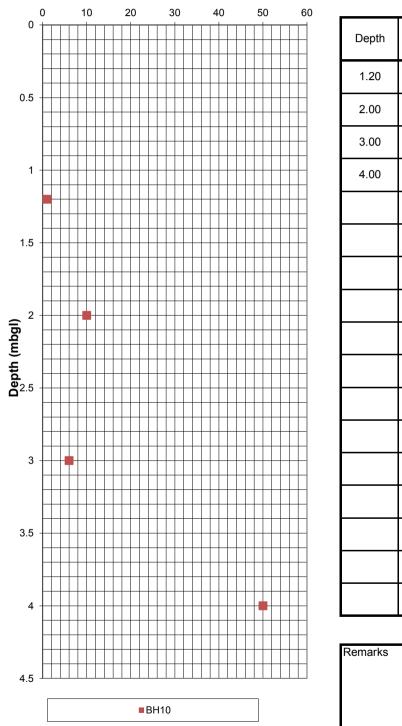
| | | Cooing | Water |
|-------|-------------------------------|-----------------|----------------|
| Depth | Uncorrected N value | Casing Depth | Water Depth |
| 1.20 | 50/269mm (1,4,13,13,14,10) | | |
| 2.00 | 50/219mm (25,19,16,15) | | |
| 3.00 | 50/200mm (7,8,10,13,27) | | |
| 4.00 | 50/85mm (8,14,42,8) | | |
| 5.00 | 50/150mm (14,11,27,23) | | |
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COSTAIN Environmental Services

| SPT Vs Depth | | | | | | Hole | BH9 |
|--------------|-----------------------|----------|----------|------|---------|--------------|------------|
| Client | Aberdeenshire Council | | | | Job No. | 5414 | |
| Site | Stonehaven FAS | | | | | Date Drawn | 06/01/2014 |
| Easting | 387035.5 | Northing | 785652.6 | G.L. | 7.076 | Energy Ratio | 39.00% |
| | | | | | | Hammer ID | |

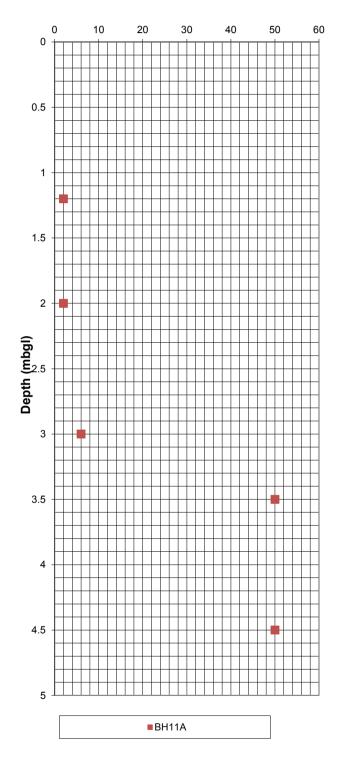


| SPT Vs Depth | | | | | Hole | BH10 | |
|--------------|-----------------------|----------|----------|------|------------|--------------|-------|
| Client | Aberdeenshire Council | | | | Job No. | 5414 | |
| Site | Stonehaven FAS | | | | Date Drawn | 06/01/2014 | |
| Easting | 387009.6 | Northing | 785657.3 | G.L. | 7.959 | Energy Ratio | 0.00% |
| | | | | | | Hammer ID | |



| Depth | Uncorrected N value | Casing Depth | Water Depth |
|-------|------------------------------|-----------------|----------------|
| 1.20 | N=1 (0,0,1,0,0,0) | | |
| 2.00 | N=10 (3,3,4,3,2,1) | | |
| 3.00 | N=6 (0,0,0,0,3,3) | | |
| 4.00 | 50/190mm (12,13,12,20,18) | | |
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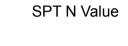
| SPT Vs Depth | | | | | Hole | BH11A | |
|--------------|-----------------------|----------|----------|------|-------|--------------|------------|
| Client | Aberdeenshire Council | | | | | Job No. | 5414 |
| Site | Stonehaven FAS | | | | | Date Drawn | 06/01/2014 |
| Easting | 386915.7 | Northing | 785653.2 | G.L. | 9.207 | Energy Ratio | 74.00% |
| | | | | | | Hammer ID | |

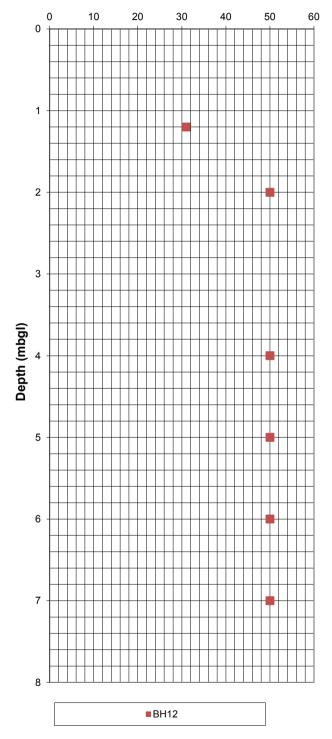


| Depth | Uncorrected N value | Casing Depth | Water Depth |
|-------|--------------------------|-----------------|----------------|
| 1.20 | N=2 (1,0,1,0,1,0) | | |
| 2.00 | N=2 (1,0,0,1,0,1) | 1.50 | |
| 3.00 | N=6 (0,0,0,1,0,5) | 3.00 | |
| 3.50 | 50/120mm (25,20,30) | 3.30 | 3.00 |
| 4.50 | 50/150mm (20,5,20,30) | 4.10 | |
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Remarks

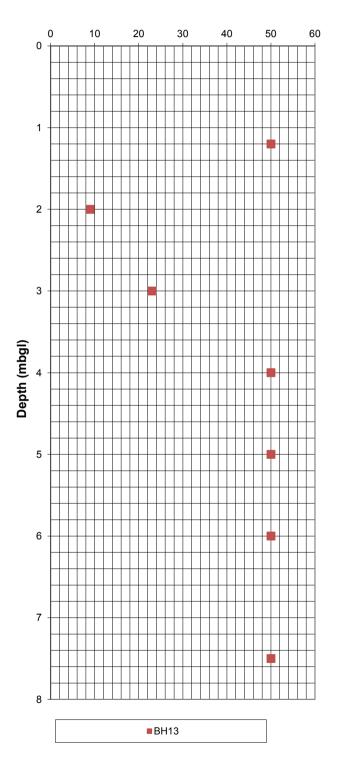
| SPT Vs Depth | | | | | | Hole | BH12 |
|--------------|-----------------------|----------|----------|------|-------|--------------|------------|
| Client | Aberdeenshire Council | | | | | Job No. | 5414 |
| Site | Stonehaven FAS | | | | | Date Drawn | 06/01/2014 |
| Easting | 386920.4 | Northing | 785631.7 | G.L. | 9.881 | Energy Ratio | 39.00% |
| | | | | | | Hammer ID | |





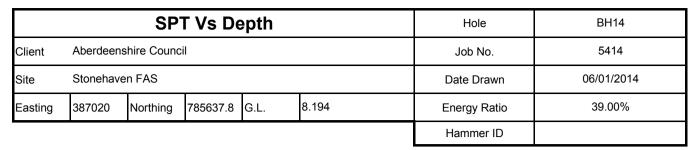
| Depth | Uncorrected N value | Casing Depth | Water Depth |
|-------|-------------------------------|-----------------|----------------|
| 1.20 | N=31 (5,6,6,6,8,11) | | |
| 2.00 | 50/135mm (25,0,37,13) | | |
| 4.00 | 50/233mm (6,11,13,15,18,4) | | |
| 5.00 | 50/129mm (13,12,26,24) | | |
| 6.00 | 50/75mm (13,12,50) | | |
| 7.00 | 50/99mm (14,11,35,15) | | |
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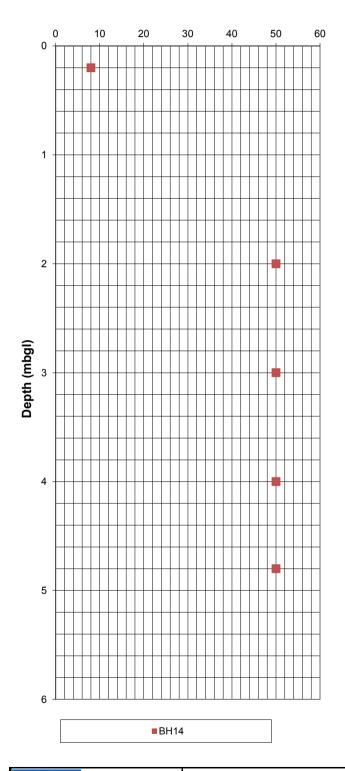
| SPT Vs Depth | | | | | | Hole | BH13 |
|--------------|-----------------------|----------|----------|------|---------|--------------|------------|
| Client | Aberdeenshire Council | | | | Job No. | 5414 | |
| Site | Stonehaven FAS | | | | | Date Drawn | 06/01/2014 |
| Easting | 386957.9 | Northing | 785642.3 | G.L. | 8.938 | Energy Ratio | 39.00% |
| | | | | | | Hammer ID | |



| SPT | Ν | Va | lue |
|-----|---|----|-----|
|-----|---|----|-----|

| Depth | Uncorrected N value | Casing Depth | Water Depth |
|-------|----------------------------|-----------------|----------------|
| 1.20 | 50/43mm (0,1,50) | | |
| 2.00 | N=9 (0,0,1,3,3,2) | | |
| 3.00 | N=23 (11,7,6,7,6,4) | | |
| 4.00 | 50/194mm (8,17,25,16,9) | | |
| 5.00 | 50/129mm (8,11,11,39) | | |
| 6.00 | 50/39mm (18,7,50) | | |
| 7.50 | 50/5mm (25,50) | | |
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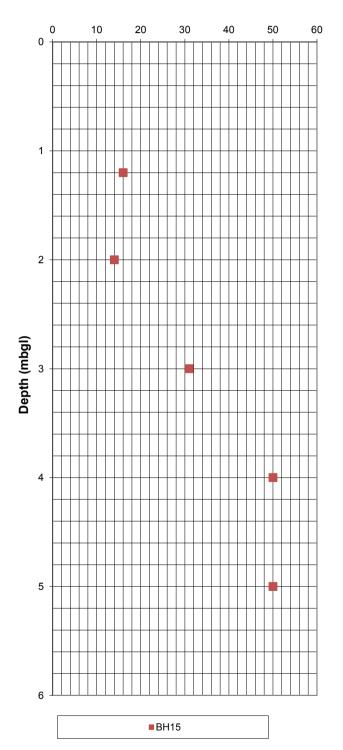




| Depth | Uncorrected N value | Casing Depth | Water Depth |
|-------|-----------------------------|-----------------|-------------|
| 0.20 | N=8 (1,1,2,3,2,1) | | |
| 2.00 | N=47 (15,10,13,13,10,11) | | |
| 3.00 | 50/150mm (9,15,19,31) | | |
| 4.00 | 50/4mm (25,50) | | |
| 4.80 | 50/34mm (25,50) | | |
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Remarks

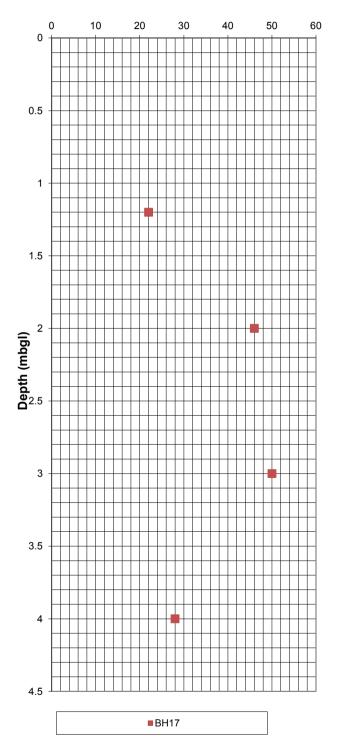
| | | SP | T Vs De | Hole | BH15 | | |
|---------|-----------|-------------|----------|---------|-------|--------------|------------|
| Client | Aberdeens | shire Counc | il | Job No. | 5414 | | |
| Site | Stonehave | n FAS | | | | Date Drawn | 06/01/2014 |
| Easting | 387056.2 | Northing | 785631.1 | G.L. | 8.076 | Energy Ratio | 39.00% |
| | | | | | | Hammer ID | |



| SPT | Ν | Value |
|-----|---|-------|
|-----|---|-------|

| Depth | Uncorrected N value | Casing Depth | Water Depth |
|-------|------------------------------|-----------------|----------------|
| 1.20 | N=16 (1,1,2,5,8) | | |
| 2.00 | N=14 (2,4,2,3,5,4) | | |
| 3.00 | N=31 (1,4,8,9,7,7) | | |
| 4.00 | 50/257mm (2,7,11,15,16,8) | | |
| 5.00 | 50/125mm (8,13,23,27) | | |
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| | | SP | ۲Vs De | Hole | BH17 | | |
|---------|-----------|-------------|----------|------|---------|--------------|------------|
| Client | Aberdeens | shire Counc | I | | Job No. | 5414 | |
| Site | Stonehave | n FAS | | | | Date Drawn | 06/01/2014 |
| Easting | 387201.6 | Northing | 785685.9 | G.L. | 6.408 | Energy Ratio | 39.00% |
| | | | | | | Hammer ID | |



| Depth | Uncorrected N value | Casing Depth | Water Depth |
|-------|----------------------------|-----------------|----------------|
| 1.20 | N=22 (2,2,2,1,6,13) | | |
| 2.00 | N=46 (2,6,10,15,10,11) | | |
| 3.00 | 50/160mm (16,9,22,23,5) | | |
| 4.00 | N=28 (3,4,5,8,7,8) | | |
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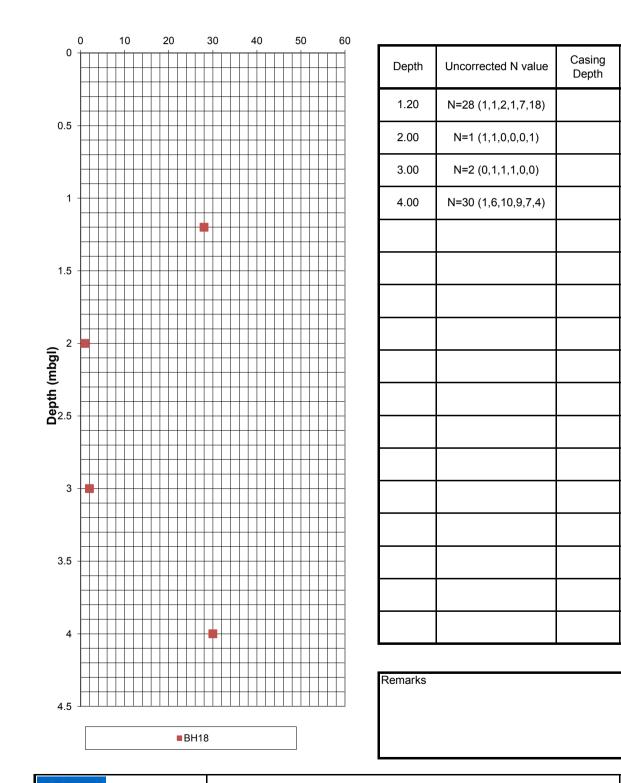
Remarks

| | | SP | ΓVs De | Hole | BH18 | | |
|---------|-----------|-------------|----------|---------|------------|--------------|--------|
| Client | Aberdeens | shire Counc | il | Job No. | 5414 | | |
| Site | Stonehave | en FAS | | | Date Drawn | 06/01/2014 | |
| Easting | 387240.4 | Northing | 785733.6 | G.L. | 3.247 | Energy Ratio | 39.00% |
| | | | | | | Hammer ID | |

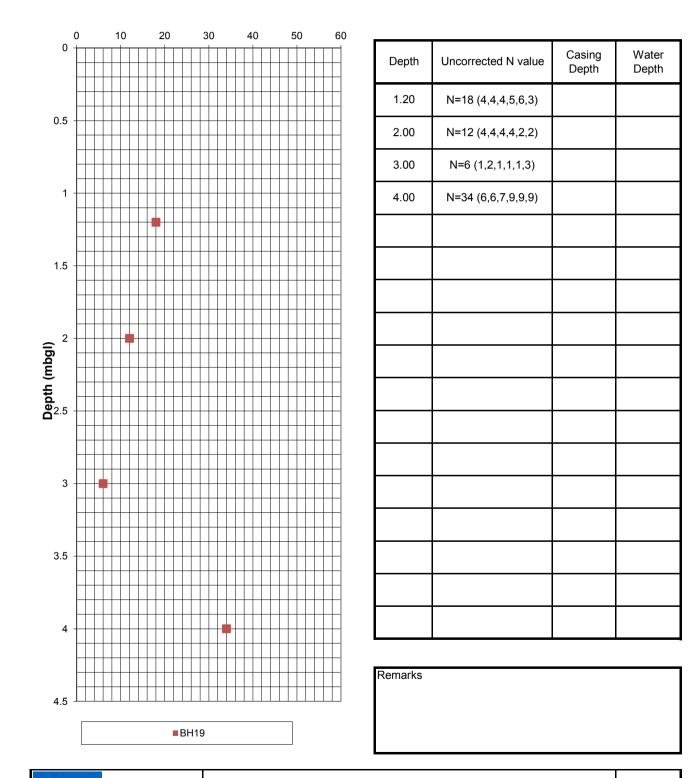
Water

Depth

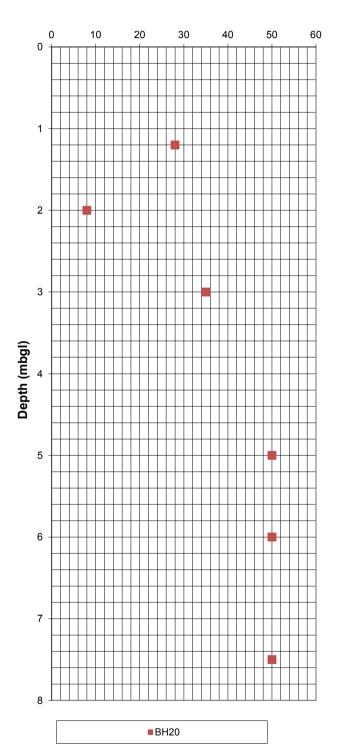
SPT N Value



| | | SP | ΓVs D | Hole | BH19 | | |
|---------|-----------|-------------|--------|------|---------|--------------|------------|
| Client | Aberdeens | shire Counc | il | | Job No. | 5414 | |
| Site | Stonehave | en FAS | | | | Date Drawn | 06/01/2014 |
| Easting | 387282.6 | Northing | 785748 | G.L. | 4.753 | Energy Ratio | 39.00% |
| <u></u> | | - | - | - | | Hammer ID | |



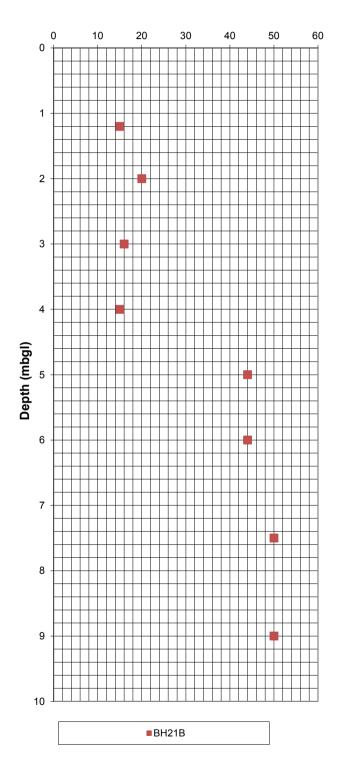
| | | SP | T Vs De | Hole | BH20 | | |
|---------|-----------|-------------|----------|---------|-------|--------------|------------|
| Client | Aberdeens | shire Counc | il | Job No. | 5414 | | |
| Site | Stonehave | en FAS | | | | Date Drawn | 06/01/2014 |
| Easting | 387078.9 | Northing | 785610.4 | G.L. | 8.393 | Energy Ratio | 39.00% |
| | | - | - | - | | Hammer ID | |



| SPT | N١ | /alu | е |
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| Depth | Uncorrected N value | Casing | Water |
|--------|-----------------------------|--------|-------|
| Deptil | Unconfected in value | Depth | Depth |
| 1.20 | N=28 (5,11,10,7,5,6) | | |
| 2.00 | N=8 (9,10,4,2,1,1) | | |
| 3.00 | N=35 (8,9,8,8,9,10) | | |
| 5.00 | 50/176mm (4,10,16,24,10) | | |
| 6.00 | 50/115mm (8,17,31,19) | | |
| 7.50 | 50/64mm (25,50) | | |
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| | | SP | T Vs De | Hole | BH21B | | |
|---------|-----------|-------------|----------|---------|-------|--------------|------------|
| Client | Aberdeens | shire Counc | il | Job No. | 5414 | | |
| Site | Stonehave | en FAS | | | | Date Drawn | 06/01/2014 |
| Easting | 387076.6 | Northing | 785596.1 | G.L. | 8.639 | Energy Ratio | 39.00% |
| | | | | | | Hammer ID | |



| Depth | Uncorrected N value | Casing Depth | Water Depth |
|-------|---------------------------|-----------------|----------------|
| 1.20 | N=15 (4,8,4,2,4,5) | | |
| 2.00 | N=20 (11,9,6,5,4,5) | | |
| 3.00 | N=16 (5,11,4,7,3,2) | | |
| 4.00 | N=15 (1,2,2,3,5,5) | | |
| 5.00 | N=44 (2,6,11,10,10,13) | | |
| 6.00 | N=44 (2,7,7,10,12,15) | | |
| 7.50 | 50/122mm (13,12,32,18) | | |
| 9.00 | 50/104mm (14,11,32,18) | | |
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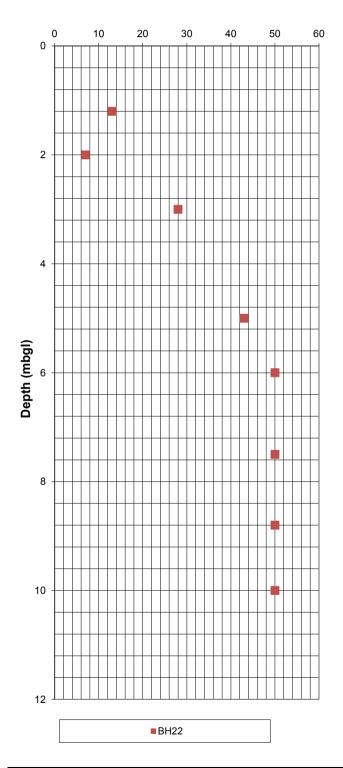
Remarks

COSTAIN Environmental Services

SPT N Values to BS EN ISO 22476-3:2005

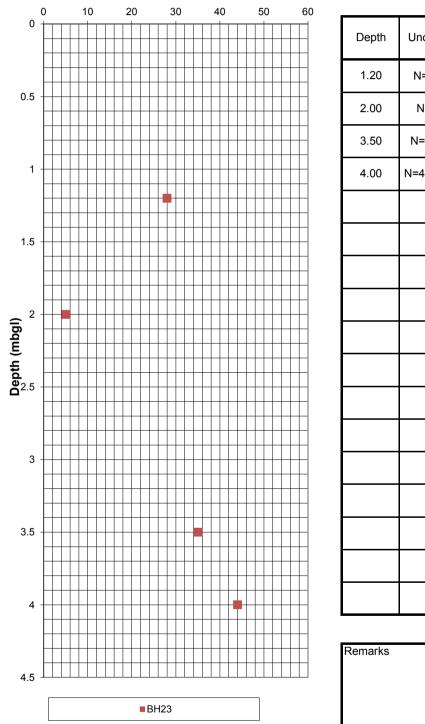
| | | SP | T Vs De | Hole | BH22 | | |
|---------|-----------------------------|----------|----------|------------|------------|--------------|--------|
| Client | lient Aberdeenshire Council | | | | | Job No. | 5414 |
| Site | Stonehave | en FAS | | Date Drawn | 06/01/2014 | | |
| Easting | 387070.3 | Northing | 785570.4 | G.L. | 8.818 | Energy Ratio | 39.00% |
| | | | | | | Hammer ID | |





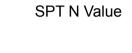
| Depth | Uncorrected N value | Casing Depth | Water Depth |
|-------|---------------------------------|-----------------|----------------|
| 1.20 | N=13 (0,0,4,4,4,1) | | |
| 2.00 | N=7 (1,2,1,1,2,3) | | |
| 3.00 | N=28 (7,10,11,11,4,2) | | |
| 5.00 | N=43 (9,11,10,12,9,12) | | |
| 6.00 | 50/260mm (8,7,9,15,17,9) | | |
| 7.50 | 50/252mm (4,7,10,15,15,10) | | |
| 8.80 | 50/256mm (10,11,10,12,18,10) | | |
| 10.00 | 50/79mm (14,11,46,4) | | |
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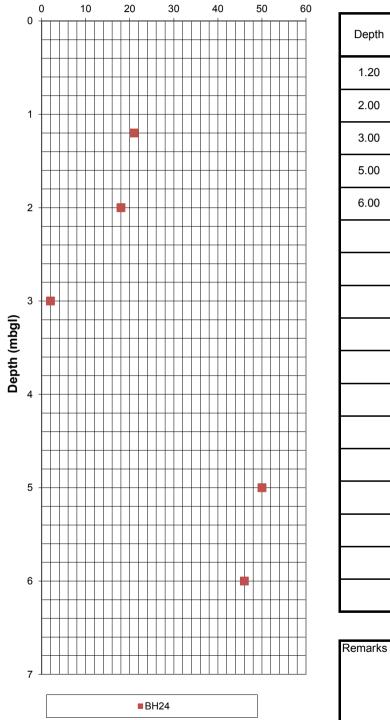
| | SPT Vs Depth | | | | | | BH23 |
|---------|-----------------------|----------|----------|------------|------------|--------------|--------|
| Client | Aberdeenshire Council | | | | | Job No. | 5414 |
| Site | Stonehave | n FAS | | Date Drawn | 06/01/2014 | | |
| Easting | 387072.5 | Northing | 785532.2 | G.L. | 9.103 | Energy Ratio | 39.00% |
| | | | | | | Hammer ID | |



| Uncorrected N value | Casing Depth | Water Depth |
|-----------------------|--|--|
| N=28 (2,7,5,8,8,7) | | |
| N=5 (4,1,0,0,2,3) | | |
| N=35 (5,6,7,8,9,11) | | |
| N=44 (2,6,8,11,12,13) | | |
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| | N=28 (2,7,5,8,8,7) N=5 (4,1,0,0,2,3) N=35 (5,6,7,8,9,11) | Depth Depth N=28 (2,7,5,8,8,7) N=5 (4,1,0,0,2,3) N=35 (5,6,7,8,9,11) N=35 (5,6,7,8,9,11) |

| | | SP | T Vs De | Hole | BH24 | | |
|---------|-----------------------|----------|----------|------------|------------|--------------|--------|
| Client | Aberdeenshire Council | | | | | Job No. | 5414 |
| Site | Stonehave | en FAS | | Date Drawn | 06/01/2014 | | |
| Easting | 387035.5 | Northing | 785506.5 | G.L. | 10.494 | Energy Ratio | 39.00% |
| | | | | | | Hammer ID | |

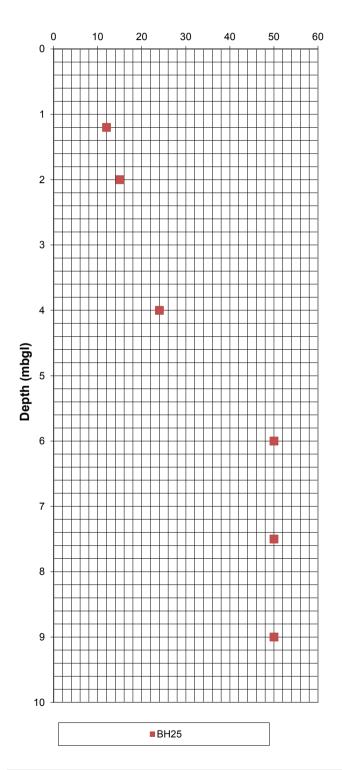




| Depth | Uncorrected N value | Casing Depth | Water Depth |
|-------|-----------------------------|-----------------|----------------|
| 1.20 | N=21 (16,9,7,6,5,3) | | |
| 2.00 | N=18 (2,2,3,3,6,6) | | |
| 3.00 | N=2 (1,0,0,0,1,1) | | |
| 5.00 | 50/258mm (5,7,9,14,18,9) | | |
| 6.00 | N=46 (7,7,9,9,11,17) | | |
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Environmental COSTAIN Services

| | | SP | T Vs De | Hole | BH25 | | |
|---------|---------------------------|----------|----------|------------|------------|--------------|--------|
| Client | ent Aberdeenshire Council | | | | | Job No. | 5414 |
| Site | Stonehave | n FAS | | Date Drawn | 06/01/2014 | | |
| Easting | 386977.5 | Northing | 785466.3 | G.L. | 14.034 | Energy Ratio | 39.00% |
| | | | | | | Hammer ID | |

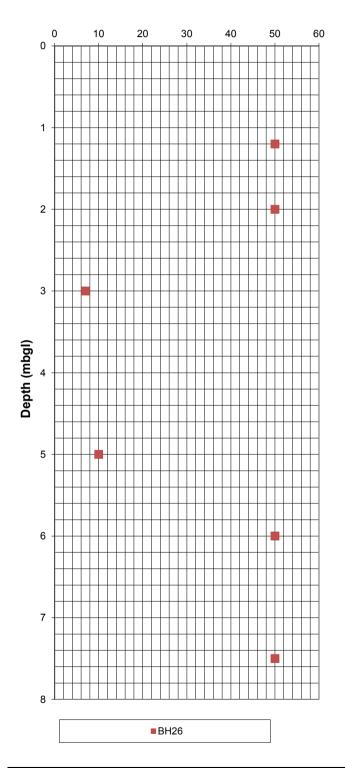


| Depth | Uncorrected N value | Casing Depth | Water Depth |
|-------|----------------------------|-----------------|----------------|
| 1.20 | N=12 (3,6,1,2,4,5) | | |
| 2.00 | N=15 (2,9,6,5,2,2) | | |
| 4.00 | N=24 (1,2,4,2,7,11) | | |
| 6.00 | 50/188mm (25,28,14,8) | | |
| 7.50 | 50/212mm (4,8,12,24,14) | | |
| 9.00 | 50/215mm (3,9,9,12,29) | | |
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Remarks

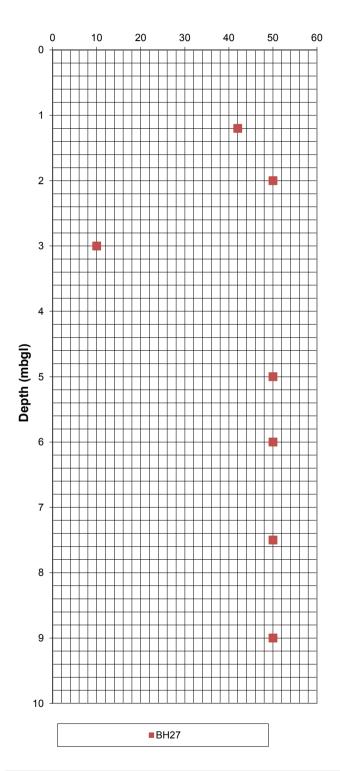
| SPT Vs Depth | | | | | | Hole | BH26 |
|--------------|--------------------------|----------|----------|------------|------------|--------------|--------|
| Client | nt Aberdeenshire Council | | | | | Job No. | 5414 |
| Site | Stonehave | en FAS | | Date Drawn | 06/01/2014 | | |
| Easting | 387511.1 | Northing | 785673.9 | G.L. | 3.339 | Energy Ratio | 39.00% |
| | | | | | | Hammer ID | |





| Depth | Uncorrected N value | Casing Depth | Water Depth |
|-------|-------------------------------|-----------------|----------------|
| 1.20 | 50/274mm (4,10,13,17,12,8) | | |
| 2.00 | 50/175mm (8,9,11,30,9) | | |
| 3.00 | N=7 (0,1,1,1,2,3) | | |
| 5.00 | N=10 (0,2,2,2,3,3) | | |
| 6.00 | 50/261mm (8,9,13,16,15,6) | | |
| 7.50 | 50/6mm (25,50) | | |
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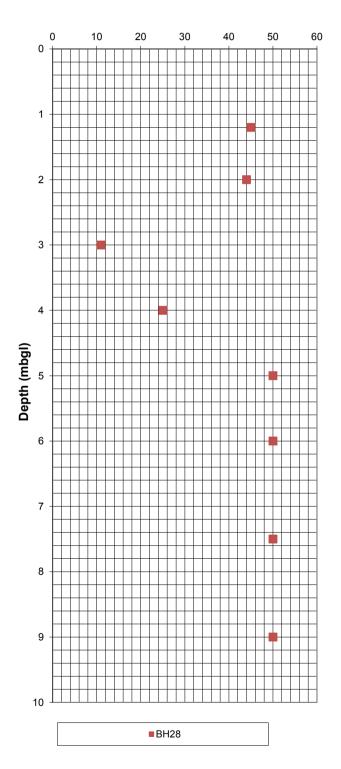
| | SPT Vs Depth | | | | | | BH27 |
|---------|------------------------------|----------|----------|------------|------------|--------------|--------|
| Client | Client Aberdeenshire Council | | | | | Job No. | 5414 |
| Site | Stonehav | en FAS | | Date Drawn | 06/01/2014 | | |
| Easting | 387531 | Northing | 785607.4 | G.L. | 3.019 | Energy Ratio | 39.00% |
| | | | | | | Hammer ID | |



| Depth | Uncorrected N value | Casing Depth | Water Depth |
|-------|-----------------------------|-----------------|----------------|
| 1.20 | N=42 (3,8,10,12,10,10) | | |
| 2.00 | 50/105mm (5,9,29,21) | | |
| 3.00 | N=10 (0,1,2,2,2,4) | | |
| 5.00 | 50/86mm (25,30,20) | | |
| 6.00 | 50/225mm (20,5,18,15,17) | | |
| 7.50 | 50/12mm (25,50) | | |
| 9.00 | 50/3mm (25,50) | | |
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Remarks

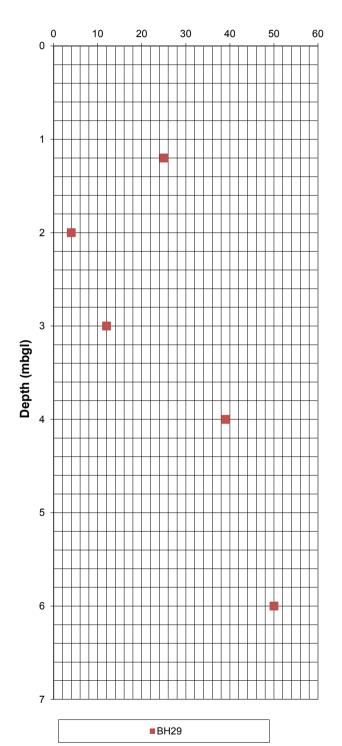
| SPT Vs Depth | | | | | | Hole | BH28 |
|--------------|-----------------------|----------|----------|------|---------|--------------|------------|
| Client | Aberdeenshire Council | | | | Job No. | 5414 | |
| Site | Stonehaven FAS | | | | | Date Drawn | 06/01/2014 |
| Easting | 387347.8 | Northing | 785741.7 | G.L. | 3.884 | Energy Ratio | 39.00% |
| | | | | | | Hammer ID | |



| Depth | Uncorrected N value | Casing Depth | Water Depth |
|-------|-------------------------------|-----------------|----------------|
| 1.20 | N=45 (3,8,22,12,6,5) | | |
| 2.00 | N=44 (1,10,10,10,12,12) | | |
| 3.00 | N=11 (1,1,1,2,7) | | |
| 4.00 | N=25 (3,4,8,4,6,7) | | |
| 5.00 | 50/236mm (4,8,13,18,16,3) | | |
| 6.00 | 50/255mm (7,11,12,14,17,7) | | |
| 7.50 | 50/95mm (18,7,40,10) | | |
| 9.00 | 50/130mm (2,1,20,30) | | |
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Remarks

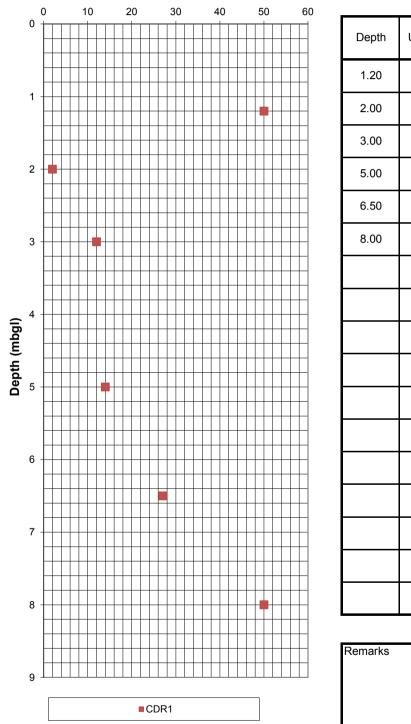
| SPT Vs Depth | | | | | | Hole | BH29 |
|--------------|-----------------------|----------|----------|------|---------|--------------|------------|
| Client | Aberdeenshire Council | | | | Job No. | 5414 | |
| Site | Stonehaven FAS | | | | | Date Drawn | 06/01/2014 |
| Easting | 386997.5 | Northing | 785470.2 | G.L. | 16.228 | Energy Ratio | 39.00% |
| | | | | | | Hammer ID | |



| SPT | Ν | Value |
|-----|---|-------|
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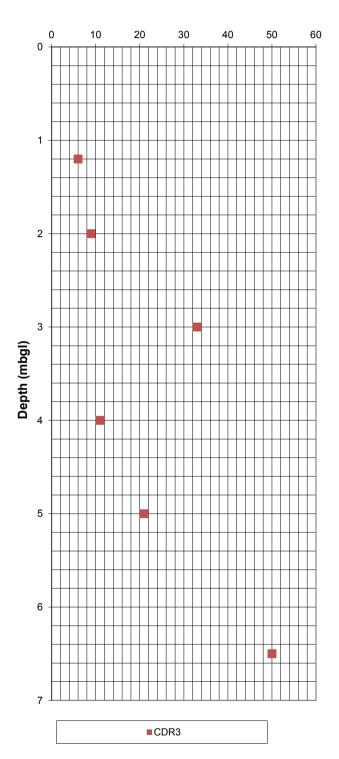
| Depth | Uncorrected N value | Casing Depth | Water Depth |
|-------|----------------------------|-----------------|----------------|
| 1.20 | N=25 (0,1,1,4,6,14) | | |
| 2.00 | N=4 (1,1,0,1,2,1) | | |
| 3.00 | N=12 (0,2,2,2,2,6) | | |
| 4.00 | N=39 (2,6,8,8,9,14) | | |
| 6.00 | 50/223mm (6,9,14,15,21) | | |
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| SPT Vs Depth | | | | | | Hole | CDR1 |
|--------------|-----------------------|----------|----------|------|---------|--------------|------------|
| Client | Aberdeenshire Council | | | | Job No. | 5414 | |
| Site | Stonehaven FAS | | | | | Date Drawn | 06/01/2014 |
| Easting | 387424.5 | Northing | 785750.2 | G.L. | 2.944 | Energy Ratio | 74.00% |
| | | | | | | Hammer ID | |



| Depth | Uncorrected N value | Casing Depth | Water Depth |
|-------|---------------------------|-----------------|----------------|
| 1.20 | N=50 (11,8,11,10,7,22) | | |
| 2.00 | N=2 (3,2,1,0,1,0) | 1.50 | |
| 3.00 | N=12 (1,1,4,4,1,3) | 3.00 | |
| 5.00 | N=14 (3,2,2,3,4,5) | 4.80 | |
| 6.50 | N=27 (3,4,5,7,7,8) | 6.00 | |
| 8.00 | 50/150mm (17,8,20,30) | 6.00 | 4.85 |
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| SPT Vs Depth | | | | | | Hole | CDR3 |
|--------------|-------------------------|----------|----------|------|---------|--------------|------------|
| Client | t Aberdeenshire Council | | | | Job No. | 5414 | |
| Site | Stonehaven FAS | | | | | Date Drawn | 06/01/2014 |
| Easting | 387337.4 | Northing | 785754.9 | G.L. | 3.36 | Energy Ratio | 74.00% |
| | | | | | | Hammer ID | |



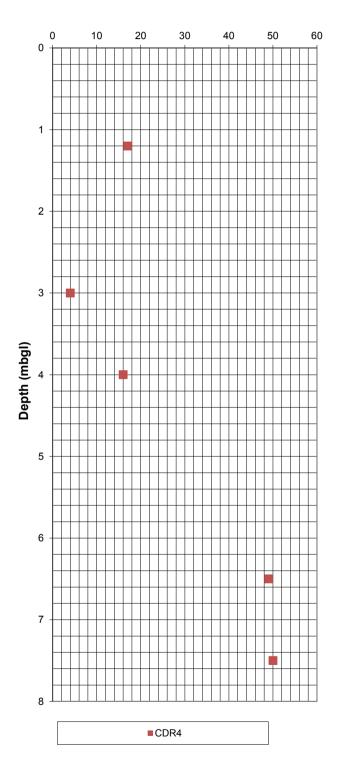
| SPT | N Va | lue |
|-----|------|-----|
|-----|------|-----|

| Depth | Uncorrected N value | Casing Depth | Water Depth |
|-------|----------------------------|-----------------|----------------|
| 1.20 | N=6 (3,3,4,1,1,0) | | |
| 2.00 | N=9 (1,2,2,3,2,2) | 1.50 | 1.80 |
| 3.00 | N=33 (6,10,12,9,6,6) | 3.00 | 2.70 |
| 4.00 | N=11 (2,2,2,2,3,4) | 4.00 | |
| 5.00 | N=21 (4,5,6,6,4,5) | 4.50 | 4.80 |
| 6.50 | 50/170mm (3,22,22,20,8) | 4.50 | 5.00 |
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COSTAIN Environmental Services

SPT N Values to BS EN ISO 22476-3:2005

| SPT Vs Depth | | | | | | Hole | CDR4 |
|--------------|-----------------------|----------|----------|------|---------|--------------|------------|
| Client | Aberdeenshire Council | | | | Job No. | 5414 | |
| Site | Stonehaven FAS | | | | | Date Drawn | 06/01/2014 |
| Easting | 387387.1 | Northing | 785737.7 | G.L. | 3.307 | Energy Ratio | 74.00% |
| | | | | | | Hammer ID | |



| Depth | Uncorrected N value | Casing Depth | Water Depth |
|-------|------------------------------|-----------------|----------------|
| 1.20 | N=17 (5,5,4,6,3,4) | | 1.10 |
| 3.00 | N=4 (4,4,2,1,1,0) | 3.00 | |
| 4.00 | N=16 (3,3,3,3,3,7) | 4.00 | |
| 6.50 | N=49 (6,6,8,13,13,15) | 4.50 | |
| 7.50 | 50/200mm (10,15,18,18,14) | 4.50 | |
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GeoSonic

Environmental & Geotechnical Drilling Specialists

GeoSonic Drilling Ltd Unit D, Greenfield Complex Greenfield Street Alloa Clackmannanshire FK10 2AL

Instrumented Rod Data

Diameter dr (mm):76Wall Thickness tr (mm):3.7Assumed Modulus Ea (GPa):208Accelerometer No.1:4Accelerometer No.2:7

SPT Hammer Energy Test Report

in accordance with BSEN ISO 22476-3:2005

| SPT Hammer Ref: | GS RIG02 |
|-----------------|--------------|
| Test Date: | 05/06/2013 |
| Report Date: | 05/06/2013 |
| File Name: | GS RIG02.spt |
| Test Operator: | DC |
| | |

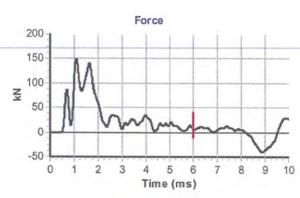
SPT Hammer Information

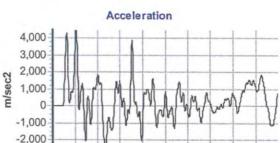
| Hammer Mass | m (kg): | 63.0 |
|-----------------|------------|------|
| Falling Height | h (mm): | 760 |
| SPT String Leng | gth L (m): | 18.6 |

Comments / Location

m/sec

Test undertaken at GeoSonic test facility





4

5 6 7 8

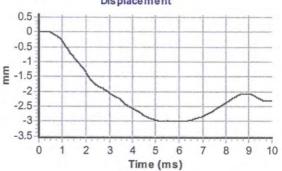
Time (ms)

9 10



10

Velocity



Calculations

0

Area of Rod A (mm2):840Theoretical Energy E
theor473Measured Energy E
meas(J):185

2 3

Energy Ratio E_r (%): 39

The recommended calibration interval is 12 months

Signed: Duncan Campbell Title: Operation Coordinator

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SPT Hammer Energy Test Report

in accordance with BSEN ISO 22476-3:2005

Testconsult Limited 40A Hardwick Grange Warrington Cheshire WA1 4RF

Instrumented Rod Data

| Diameter dr (mm): | 54 |
|---------------------------|------|
| Wall Thickness tr (mm): | 6.6 |
| Assumed Modulus Ea (GPa): | 208 |
| Accelerometer No.1: | 5677 |
| Accelerometer No.2: | 5833 |

| SPT Hammer Ref: | WB1 |
|-----------------|------------|
| Test Date: | 22/02/2013 |
| Report Date: | 22/02/2013 |
| File Name: | WB1.spt |
| Test Operator: | TS |

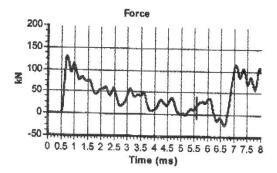


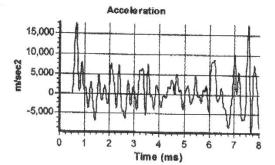
SPT Hammer Information

| Hammer Mass m (kg): | 63.5 |
|--------------------------|------|
| Falling Height h (mm): | 760 |
| SPT String Length L (m): | 14.0 |

Comments / Location

Client: Williams Brothers Drilling Ltd Location: Testconsult Laboratory Type: Trip Hammer

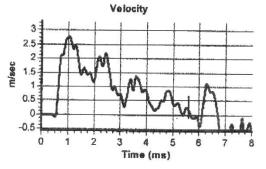


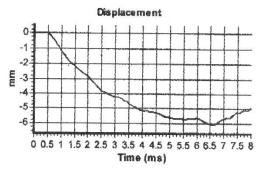


Calculations

| Energy Ratio E _r (% | 6): | 74 |
|-----------------------------------|------|-----|
| Measured Energy E _{meas} | (J): | 349 |
| Theoretical Energy Etheor | (J): | 473 |
| Area of Rod A (mm2): | | 983 |

The recommended calibration interval is 12 months











Appendix 6.2 – Variable Head Permeability Testing

| | | | | Fallin | g Head Perr | neability Te | est in a Sta | ndpipe | |
|--|---|---|------------------------------|--|--------------------|--------------------|--------------------|----------------------|-------------|
| | COSTAIN | | Project Name | | Stonehaven | | | Borehole ID | BH06 |
| | UUUIAIN | | - | | 5414 | | | | |
| | | | Project ID Date of Test | | 08/11/2013 | | | Operative Checked | PS/CP AP |
| Envir | onmental Se | rvices | | | 00/11/2010 | | | | |
| | | | | - | | | | | |
| | on of permeal | | | Ground | Level | 4 | d ➡► | | |
| Section | 25.4.6.1 (19 ממפ | 99+A2:2010 roach |) - general | | | | Í | //// | //// |
| | | | | İ | | | | | |
| A | $\times \ln \left(\frac{n}{L} \right) $ | I_2 | 1 | | | | | | |
| k = - | $\frac{1}{F \times (t_2 - t_2)} = \frac{H_1}{F}$ | $\overline{\left(\begin{array}{c} \\ 1 \end{array} \right)}$ | $A = pi \times d^{-}/4$ | H1 | | | | | |
| Where: | | - | | 1 | | | | | |
| A = cross s | ectional area | | е | 1 | | | | | |
| | of water at tin | | | | | | | | |
| | of water at tin | ne t ₂ | | H2 | 2 5 | 7 | | | |
| F = Intake F | 2.32 m | $\times L$ | | 1 | | | | | |
| F = | $\frac{1}{2.32 \text{ pr}}$ | ()2 | 0.5 | Rest Gro | undwater Le | vel | | | |
| ln 1.1 | $\left(\frac{L}{D}\right) + \left(1 + \frac{L}{D}\right)$ | $1.1 \left(\frac{L}{D} \right)^2$ | | | | | | | |
| | | | ,) | 1 | | | 0 | | |
| Time at Sta | art of Test | | | 16:00 | 1 | ↑ o | | | |
| Depth of B | orehole Belo | | | 10.00 | 1 | 0 | | | |
| Depth of Borehole Below Ground Level (m) Initial Groundwater Level (m BGL) Diameter of borehole, D (m) | | | | 1.63 | | LO | | Filter zone | |
| | of borehole, I of standpipe, | | | 0.12 0.050 | ł | 0 | | | |
| | ponse zone | a (iii) | | 2.50 | 1 | ▼ | L | | |
| Bottom of response zone | | | | 4.50 | 1 | • | — | | |
| | Filter Zone, L | . (m) | | 2.00 | ł | | D | | |
| Intake Fact | tor, F | | | 4.03 | J | | | | |
| | | Water | | | | | | | |
| Time | Elapsed Time (s) | depth (m | Differential Head, H (m) | | Chang | ge in Head ag | ainst Elapsed | Time | |
| | | BGL) | | | 0 | | | | |
| | 0 | | 1.63 1.58 | 1.8 1.6 | | | | | |
| | 20 | 0.230 | 1.40 | 1.0 | | | | | |
| | 30 | | 1.33 | 1.2 | . | | | | |
| | 60 90 | 0.370 0.470 | 1.26 1.16 | | | | | | |
| | 120 | 0.470 | 1.10 | 8.0 ea | 0 | | | | |
| | 150 | 0.620 | 1.01 | 9.0 <u>a</u> | 0 | | | | |
| L | 180 | 0.700 | 0.93 | 0.1 (J) 8.0 (J) 9.0 Uitlerential Head 9.0 2.0 | 0 | . | | | |
| | 210 240 | 0.780 0.860 | 0.85 0.77 | 0.2 Dif | | - | | | |
| | 270 | 0.940 | 0.69 | 0.0 | | 00 10 | 00 15 | 2000 | 2500 |
| | 300 | 0.990 | 0.64 | | - U | | apsed Time (s | | 2000 |
| | 360 420 | 1.090 | 0.54 | | | _10 | | , | |
| | 420 | 1.190 1.280 | 0.44 0.35 | | | | | | |
| | 540 | 1.340 | 0.29 | 1 | | Calcula | tion of Per | meability (k) | |
| | | | |] | t ₁ (s) | t ₂ (s) | H ₁ (m) | H ₂ (m) | k (ms⁻¹) |
| | 600 | 1.380 | 0.25 | | 20 | 070 | 1 50 | 0.00 | |
| | 900 | 1.480 | 0.15 | | 30 | 270 | 1.58 | 0.69 | >1.68E-06 |
| | 900 1200 | 1.480 1.540 | 0.15 0.09 | | 270 | 270 1500 | 0.77 | 0.69 | >1.08E-06 |
| | 900 | 1.480 1.540 1.60 | 0.15 | Remark: | | 1500 | | | |
| | 900 1200 1500 | 1.480 1.540 | 0.15 0.09 0.03 | Remark: | 270 | 1500 | | | |
| | 900 1200 1500 1800 | 1.480 1.540 1.60 1.63 | 0.15 0.09 0.03 0.00 | Remark: | 270 | 1500 | | | |
| | 900 1200 1500 1800 | 1.480 1.540 1.60 1.63 | 0.15 0.09 0.03 0.00 | Remark: | 270 | 1500 | | | |
| | 900 1200 1500 1800 | 1.480 1.540 1.60 1.63 | 0.15 0.09 0.03 0.00 | Remark: | 270 | 1500 | | | |
| | 900 1200 1500 1800 | 1.480 1.540 1.60 1.63 | 0.15 0.09 0.03 0.00 | Remark: | 270 | 1500 | | | |

| | | | | Fallin | g Head Pern | neability Te | est in a Sta | ndpipe | |
|---|---|------------------------|-------------------------|----------------------------|--------------------|----------------|--------------------|----------------------|-----------------------|
| | COSTAIN | | Project Name | | Stonehaven | | | Borehole ID | BH08 |
| | ooonnin | | Project ID | | 5414 | | | | PS/CP |
| | | | Date of Test | | 08/11/2013 | | | Operative Checked | AP |
| Envir | onmental Se | rvices | | | | | | | |
| | | | | 1 | | | | | |
| | on of permeal 25.4.6.1 (19 | | per BS 5930, | Ground | Level | (| d → | | |
| Section | • | roach | y - yeneral | | | 77 j | | //// | //// |
| | | | | | | | | | |
| k = | $\frac{1}{F} \times \ln \left(\frac{H_1}{H_2} \right)$ | I_2 | $A - ni \times d^2 / A$ | | | | | | |
| $\kappa =$ | $\overline{r} \times (t_2 - t)$ | · · · · · · | n - p n / u / 4 | H1 | | | | | |
| Where: | | | | | | | | | |
| | ectional area | | e | | | | | | |
| | of water at tin of water at tin | | | | | _ | | | |
| F = Intake F | actor | | | H2 | 2 | | | | |
| F = | $\frac{1}{2.32 \text{ pr}}$ | $i \times L$ | | | | |] | | |
| $r = \frac{1}{\ln \left(1 + 1\right)}$ | (L/), (1) | $\frac{1}{1} (L/)^{2}$ | $)^{0.5}$ | Rest Gro | undwater Lev | /el | | | |
| m [1.] | $\nabla D^{+} (1+$ | D^{\prime} | | | | | | | |
| È | | | | l | _ | | 0 | | |
| Time at Sta | | | | 16:30 |] | | 0 | | |
| Depth of Borehole Below Ground Level (m) Initial Groundwater Level (m BGL) | | | | 10.50 2.78 | - | | | Filter zone | |
| | | |) | 0.14 | | | | | |
| Diameter of borehole, D (m) Diameter of standpipe, d (m) | | | 0.050 | 1 | | | | | |
| Top of response zone | | | | 3.50 | 1 | | | | |
| Bottom of response zone Length of Filter Zone, L (m) | | | | 4.50 1.00 | | | D | | |
| Intake Fact | | | | 2.66 | 1 | | | | |
| | | | | - | 4 | | | | |
| Time | Elapsed | Water | Differential | | Chan | ae in Head ag | ainst Eleneor | 1 Time | |
| Time | Time (s) | depth (m BGL) | Head, H (m) | | Chang | je in neau aga | amar Eidhseo | | |
| | 0 | 0.000 | 2.78 | 3.0 | 0 | | | | |
| | 10 | | 2.08 | 2.5 | 0 | | | | |
| | 20 30 | | 1.87 1.58 | | | | | | |
| | 60 | 1.750 | 1.03 | 2.0 E | 0 | | | | |
| | 90 | 1.900 | 0.88 | <u>р</u> 1.50 | o 🛉 📃 | | | | |
| | 120 150 | 1.980 1.980 | 0.80 0.80 | Head | | | | | |
| | 130 | 1.980 | 0.80 | jutia | Summer | | | | |
| | 210 | 1.980 | 0.80 | 1.5، Differential Head (m) | 0 | | | | |
| ┣──── | 240 270 | 1.980 1.980 | 0.80 0.80 | ت 0.0 | | 1 | | | |
| | 300 | 1.980 | 0.80 | | 0 | 1000 | 2000 | 3000 | 4000 |
| | 360 | 1.980 | 0.80 | | | Ela | psed Time (s | 5) | |
| | 420 | 1.980 | 0.80 | | | | | | |
| | 480 540 | 1.980 2.080 | 0.80 0.70 | | | Calcula | tion of Per | rmeability (k) | |
| | 600 | 2.000 | 0.70 | | t ₁ (s) | t_2 (s) | H ₁ (m) | $H_2(m)$ | k (ms ⁻¹) |
| | 900 | 2.160 | 0.62 | | 90 | 540 | 0.88 | 0.62 | > 5.73E-07 |
| | 1200 | 2.200 | 0.58 | | 900 | 3000 | 0.62 | 0.05 | >8.83E-07 |
| ┣──── | 1500 1800 | 2.30 2.43 | 0.48 0.35 | Remark: | 10 Gallons a | dded | | | |
| | 2100 | 2.43 | 0.33 | Nonia N. | | | | | |
| | 3000 | 2.73 | 0.05 | | | | | | |
| | 3300 | 2.78 | 0.00 | | | | | | |
| | 3600 | 2.78 | 0.00 | | | | | | |
| l | 1 | | | | | | | | |
| | | | | | | | | | |

| | | | | Falling Head Permeability Test in a Standpipe |
|--|--|---|---|---|
| | COSTAIN | | Project Name | |
| | GUDIAIN | | | |
| | | | Project ID | 5414 Operative CP/F |
| F | montal C- | nuises | Date of Test | 08/11/2013 Checked AP |
| Environ | mental Se | IVICES | | |
| | 5.4.6.1 (19 | | per BS 5930,)) - general | Ground Level |
| $k = \frac{A \times 1}{F}$ | $\frac{\ln \left(\frac{H_{1}}{H_{2}} + \frac{H_{2}}{H_{2}} + \frac{H_{1}}{H_{2}} + H$ | $\left(\frac{1}{2}\right)$ | $A=pi\times d^2/4$ | Н1 |
| Where: | ional | of ot | | ┫ │ │ │ │ │ |
| A = cross sect H ₁ = Head of v | | | e | |
| $H_1 = Head of V$ $H_2 = Head of V$ | | | | |
| F = Intake Fac | ctor | | | H2 |
| F | 2.32 pi | $\times L$ | |] |
| $F = \frac{1}{\ln\left(1.1\left(\frac{L}{2}\right)\right)}$ | (D) + (1 + | $1.1 \left(\frac{L}{D} \right)^2$ |) ^{0.5}) | Rest Groundwater Level |
| Ì | | | | |
| Time at Start | | | | |
| Depth of Borehole Below Ground Level (m) | | | | |
| Initial Groundwater Level (m BGL) Diameter of borehole, D (m) | | | | |
| Diameter of standpipe, d (m) | | | | |
| Top of response zone | | | | 3.00 |
| Bottom of response zone | | | | 5.00 |
| Length of Filter Zone, L (m) | | | | 2.00 D |
| Intake Factor | | | | 4.26 |
| | | | | |
| | Elapsed Time (s) | Water depth (m BGL) | Differential Head, H (m) | Change in Head against Elapsed Time |
| | 0 | 0.000 | 3.03 | 3.50 |
| | 10 | | 0.03 | 3.00 |
| | 20 | 3.020 | 0.01 | |
| ┣───┼ | 30 | 3.020 | 0.01 | 2.50 |
| ┣───┼ | 60 90 | 3.030 3.030 | 0.00 | Ē 2.00 |
| | 90 120 | 3.030 | 0.00 | 1.50 |
| | 120 | 3.030 | 0.00 | 1 문 |
| | 180 | 3.030 | 0.00 | 1.00 |
| | | | | je 0.50 |
| | 210 | 3.030 | 0.00 | E 0.00 |
| | 240 | 3.030 3.030 | 0.00 0.00 | |
| | 240 270 | 3.030 3.030 3.030 | 0.00 0.00 0.00 | |
| | 240 270 300 | 3.030 3.030 3.030 3.030 | 0.00 0.00 0.00 0.00 | |
| | 240 270 | 3.030 3.030 3.030 3.030 3.030 3.030 | 0.00 0.00 0.00 | |
| | 240 270 300 360 | 3.030 3.030 3.030 3.030 | 0.00 0.00 0.00 0.00 0.00 | |
| | 240 270 300 360 420 480 540 | 3.030 3.030 3.030 3.030 3.030 3.030 3.030 3.030 3.030 | 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0 | 0.00 0 200 400 600 800 1000 Elapsed Time (s) Calculation of Permeability (k) |
| | 240 270 300 360 420 480 | 3.030 3.030 3.030 3.030 3.030 3.030 3.030 3.030 | 0.00 0.00 0.00 0.00 0.00 0.00 0.00 | 0.00 0 200 400 600 800 1000 Elapsed Time (s) Calculation of Permeability (k) t ₁ (s) t ₂ (s) H ₁ (m) H ₂ (m) k (ms |
| | 240 270 300 360 420 480 540 | 3.030 3.030 3.030 3.030 3.030 3.030 3.030 3.030 3.030 | 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0 | 0.00 0 200 400 600 800 1000 Elapsed Time (s) Calculation of Permeability (k) |
| | 240 270 300 360 420 480 540 | 3.030 3.030 3.030 3.030 3.030 3.030 3.030 3.030 3.030 | 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0 | 0.00 0 200 400 600 800 1000 Elapsed Time (s) Calculation of Permeability (k) t ₁ (s) t ₂ (s) H ₁ (m) H ₂ (m) k (ms |
| | 240 270 300 360 420 480 540 | 3.030 3.030 3.030 3.030 3.030 3.030 3.030 3.030 3.030 | 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0 | $\begin{array}{c ccccccccccccccccccccccccccccccccccc$ |
| | 240 270 300 360 420 480 540 | 3.030 3.030 3.030 3.030 3.030 3.030 3.030 3.030 3.030 | 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0 | $\begin{array}{c ccccccccccccccccccccccccccccccccccc$ |
| | 240 270 300 360 420 480 540 | 3.030 3.030 3.030 3.030 3.030 3.030 3.030 3.030 3.030 | 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0 | $\begin{array}{c ccccccccccccccccccccccccccccccccccc$ |
| | 240 270 300 360 420 480 540 | 3.030 3.030 3.030 3.030 3.030 3.030 3.030 3.030 3.030 | 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0 | $\begin{array}{c ccccccccccccccccccccccccccccccccccc$ |
| | 240 270 300 360 420 480 540 | 3.030 3.030 3.030 3.030 3.030 3.030 3.030 3.030 3.030 | 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0 | $\begin{array}{c ccccccccccccccccccccccccccccccccccc$ |
| | 240 270 300 360 420 480 540 | 3.030 3.030 3.030 3.030 3.030 3.030 3.030 3.030 3.030 | 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0 | $\begin{array}{c ccccccccccccccccccccccccccccccccccc$ |

| | | Falling Head Permeability Test in a Standpipe |
|---|--|--|
| COSTAIN | Project Name | |
| GUSTAIN | | |
| | Project ID | 5414 Operative PS/C |
| Environmental Services | Date of Test | 08/11/2013 Checked AP |
| Environmental Services | | |
| Calculation of permeability (k) as Section 25.4.6.1 (1999+A2:201 | | Ground Level |
| approach | | |
| $k = \frac{A \times \ln \left(\frac{H_1}{H_2} \right)}{F \times \left(t_2 - t_1 \right)}$ | $A=pi\times d^2/4$ | н1 |
| Where: | _ | _ |
| A = cross sectional area of standpip H ₁ = Head of water at time t_1 | e | |
| H_2 = Head of water at time t_2 | | |
| F = Intake Factor | | H2 |
| $\overline{F} = \text{Intake Factor}$ $F = \frac{2.32 pi \times L}{\ln\left(1.1 \left(\frac{L}{D}\right) + \left(1+1.1 \left(\frac{L}{D}\right)^2\right)\right)}$ | | ┓ |
| $\Gamma = \frac{1}{1 \left(1 + \left(\frac{1}{2}\right)\right) \left(1 + \left(\frac{1}{2}\right)\right)^2}$ | $)^{0.5})$ | Rest Groundwater Level |
| $\ln\left(1.1(L_D) + (1+1.1(L_D))\right)$ | | |
| | 1 | |
| Time at Start of Test | | |
| Depth of Borehole Below Ground | Level (m) | |
| Initial Groundwater Level (m BGL | | 13.60 0 0 0 0 Filter zone 1.50 L 0 O Filter zone O O O Filter zone |
| Diameter of borehole, D (m) | | 0.14 |
| Diameter of standpipe, d (m) | | |
| Top of response zone | | 2.00 |
| Bottom of response zone | | 3.50 D |
| Length of Filter Zone, L (m) Intake Factor, F | | 1.50 |
| Intake Factor, F | | 3.48 |
| _, , Water | | 1 |
| Time Elapsed donth (m | Differential | Change in Head adainst Elabsed Time |
| Time (s) | Head, H (m) | |
| Time (s) Geptin (m BGL) 0 1.400 | Head, H (m) | 0.12 |
| Time (s) BGL) 0 1.400 10 1.450 | | 0.12 |
| Time (s) BGL) 0 1.400 10 1.450 20 1.450 | 0.10 0.05 0.05 | |
| Time (s) BGL) 0 1.400 10 1.450 20 1.450 30 1.460 | 0.10 0.05 0.05 0.04 | 0.12 |
| Time (s) BGL) 0 1.400 10 1.450 20 1.450 30 1.460 60 1.470 | 0.10 0.05 0.05 0.04 0.03 | 0.12 0.10 0.08 |
| Time (s) BGL) 0 1.400 10 1.450 20 1.450 30 1.460 60 1.470 90 1.480 | 0.10 0.05 0.05 0.04 0.03 0.02 | 0.12 0.10 0.08 |
| Time (s) BGL) 0 1.400 10 1.450 20 1.450 30 1.460 60 1.470 90 1.480 120 1.480 | 0.10 0.05 0.05 0.04 0.03 0.02 0.02 | 0.12 0.10 0.08 |
| Time (s) BGL) 0 1.400 10 1.450 20 1.450 30 1.460 60 1.470 90 1.480 | 0.10 0.05 0.05 0.04 0.03 0.02 | 0.12 0.10 0.08 |
| Time (s) BGL) 0 1.400 10 1.450 20 1.450 30 1.460 60 1.470 90 1.480 120 1.480 120 1.480 120 1.480 120 1.480 120 1.490 180 1.490 210 1.490 | 0.10 0.05 0.05 0.04 0.03 0.02 0.02 0.02 0.01 0.01 | 0.12 0.10 0.08 |
| Time (s) BGL) 0 1.400 10 1.450 20 1.450 30 1.460 60 1.470 90 1.480 120 1.480 150 1.490 180 1.490 210 1.490 240 1.490 | 0.10 0.05 0.05 0.04 0.03 0.02 0.02 0.02 0.01 0.01 0.01 | 0.12 0.10 0.08 0.06 0.04 0.04 0.02 |
| Time (s) BGL) 0 1.400 10 1.450 20 1.450 30 1.460 60 1.470 90 1.480 120 1.480 120 1.480 120 1.480 120 1.480 120 1.490 180 1.490 210 1.490 240 1.490 270 1.490 | 0.10 0.05 0.05 0.04 0.03 0.02 0.02 0.02 0.01 0.01 0.01 0.01 | 0.12 0.10 0.08 |
| Time (s) BGL) 0 1.400 10 1.450 20 1.450 30 1.460 60 1.470 90 1.480 120 1.480 120 1.480 120 1.480 120 1.480 120 1.490 210 1.490 210 1.490 270 1.490 300 1.500 | 0.10 0.05 0.05 0.04 0.03 0.02 0.02 0.01 0.01 0.01 0.01 0.01 0.01 | 0.12 0.10 0.08 0.06 0.04 0.04 0.02 0.00 |
| Time (s) BGL) 0 1.400 10 1.450 20 1.450 30 1.460 60 1.470 90 1.480 120 1.480 120 1.480 150 1.490 210 1.490 210 1.490 210 1.490 210 1.490 210 1.490 210 1.490 210 1.490 210 1.490 210 1.490 210 1.490 210 1.490 210 1.490 210 1.490 300 1.500 | 0.10 0.05 0.05 0.04 0.03 0.02 0.02 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.00 0.00 | 0.12 0.10 0.08 0.06 0.04 0.04 0.02 0.00 0.00 0.00 0.00 0.00 |
| Time (s) BGL) 0 1.400 10 1.450 20 1.450 30 1.460 60 1.470 90 1.480 120 1.480 120 1.480 150 1.490 210 1.490 210 1.490 210 1.490 210 1.490 210 1.490 210 1.490 210 1.490 210 1.490 210 1.490 210 1.490 210 1.490 210 1.490 210 1.490 210 1.500 | 0.10 0.05 0.05 0.04 0.03 0.02 0.02 0.01 0.01 0.01 0.01 0.01 0.01 0.00 0.00 0.00 0.00 | 0.12 0.10 0.08 0.06 0.04 0.04 0.02 0.00 0.00 0.00 0.00 0.00 |
| Time (s) BGL) 0 1.400 10 1.450 20 1.450 20 1.450 30 1.460 60 1.470 90 1.480 120 1.480 150 1.490 150 1.490 210 1.490 210 1.490 210 1.490 210 1.490 210 1.490 210 1.490 210 1.490 210 1.490 240 1.500 300 1.500 420 1.500 480 1.500 | 0.10 0.05 0.05 0.04 0.03 0.02 0.02 0.01 0.01 0.01 0.01 0.01 0.01 0.00 0.00 0.00 0.00 0.00 | 0.12 0.10 0.08 0.06 0.04 0.02 0.00 0.00 |
| Time (s) BGL) 0 1.400 10 1.450 20 1.450 20 1.450 30 1.460 60 1.470 90 1.480 120 1.480 150 1.490 150 1.490 210 1.490 210 1.490 210 1.490 210 1.490 210 1.490 210 1.490 210 1.490 210 1.490 240 1.500 300 1.500 420 1.500 480 1.500 | 0.10 0.05 0.05 0.04 0.03 0.02 0.02 0.01 0.01 0.01 0.01 0.01 0.01 0.00 0.00 0.00 0.00 | 0.12 0.10 0.08 0.04 0.02 0.00 0.02 0.00 0.02 0.00 0.02 0.00 0.02 0.00 0.02 0.00 0.02 0.00 0.02 0.00 0.02 0.00 0.02 0.00 0.02 0.00 0.02 0.00 0.02 0.00 0.02 0.00 0.02 0.00 0.02 0.00 0.02 0.00 0.00 0.02 0.00 0.02 0.00 |
| Time (s) BGL) 0 1.400 10 1.450 20 1.450 30 1.460 30 1.460 60 1.470 90 1.480 120 1.480 150 1.490 120 1.480 120 1.480 120 1.490 210 1.490 210 1.490 210 1.490 210 1.490 210 1.490 210 1.490 210 1.490 210 1.490 210 1.490 210 1.490 210 1.490 210 1.500 300 1.500 480 1.500 480 1.500 540 1.500 | 0.10 0.05 0.05 0.04 0.03 0.02 0.02 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.02 0.02 0.02 0.02 0.02 0.02 0.01 0.02 0.02 0.01 0.02 0.02 0.01 0.00 0.01 0.01 0.01 0.00 0.01 0.00 0.00 0.01 0.01 0.00 0.00 0.00 0.01 0.01 0.00 0.00 0.00 0.01 0.00 0.00 0.00 0.01 0.00 | Calculation of Permeability (k) |
| Time (s) BGL) 0 1.400 10 1.450 20 1.450 30 1.460 30 1.460 60 1.470 90 1.480 120 1.480 150 1.490 120 1.480 120 1.480 120 1.490 210 1.490 210 1.490 210 1.490 210 1.490 210 1.490 210 1.490 210 1.490 210 1.490 210 1.490 210 1.490 210 1.490 210 1.500 300 1.500 480 1.500 480 1.500 540 1.500 | 0.10 0.05 0.05 0.04 0.03 0.02 0.02 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.02 0.02 0.02 0.02 0.02 0.02 0.01 0.02 0.02 0.01 0.02 0.02 0.01 0.00 0.01 0.01 0.01 0.00 0.01 0.00 0.00 0.01 0.01 0.00 0.00 0.00 0.01 0.01 0.00 0.00 0.00 0.01 0.00 0.00 0.00 0.01 0.00 | $\begin{array}{c c} 0.12 \\ 0.10 \\ 0.08 \\ 0.06 \\ 0.02 \\ 0.00 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 $ |
| Time (s) BGL) 0 1.400 10 1.450 20 1.450 30 1.450 30 1.460 60 1.470 90 1.480 120 1.480 150 1.490 150 1.490 210 1.490 210 1.490 210 1.490 210 1.490 210 1.490 210 1.490 210 1.490 210 1.490 210 1.490 210 1.490 210 1.490 210 1.490 210 1.490 210 1.500 300 1.500 480 1.500 480 1.500 540 1.500 | 0.10 0.05 0.05 0.04 0.03 0.02 0.02 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.02 0.02 0.02 0.02 0.02 0.02 0.01 0.02 0.02 0.01 0.02 0.02 0.01 0.00 0.01 0.01 0.01 0.00 0.01 0.00 0.00 0.01 0.01 0.00 0.00 0.00 0.01 0.01 0.00 0.00 0.00 0.01 0.00 0.00 0.00 0.01 0.00 | $ \begin{array}{c} 0.12 \\ 0.08 \\ 0.06 \\ 0.04 \\ 0.02 \\ 0.02 \\ 0.02 \\ 0.02 \\ 0.00 \\ 0.02 \\ 0.00 \\ 0.02 \\ 0.00 \\ 0.00 \\ $ |
| Time (s) BGL) 0 1.400 10 1.450 20 1.450 30 1.450 30 1.460 60 1.470 90 1.480 120 1.480 150 1.490 150 1.490 210 1.490 210 1.490 210 1.490 210 1.490 210 1.490 210 1.490 210 1.490 210 1.490 210 1.490 210 1.490 210 1.490 210 1.490 210 1.490 210 1.500 480 1.500 480 1.500 480 1.500 540 1.500 | 0.10 0.05 0.05 0.04 0.03 0.02 0.02 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.02 0.02 0.02 0.02 0.02 0.02 0.01 0.02 0.02 0.01 0.02 0.02 0.01 0.00 0.01 0.01 0.01 0.00 0.01 0.00 0.00 0.01 0.01 0.00 0.00 0.00 0.01 0.01 0.00 0.00 0.00 0.01 0.00 0.00 0.00 0.01 0.00 | $ \begin{array}{c} 0.12 \\ 0.08 \\ 0.06 \\ 0.04 \\ 0.02 \\ 0.00 \\ 0.00 \\ $ |
| Time (s) BGL) 0 1.400 10 1.450 20 1.450 30 1.450 30 1.460 60 1.470 90 1.480 120 1.480 150 1.490 150 1.490 210 1.490 210 1.490 210 1.490 210 1.490 210 1.490 210 1.490 210 1.490 210 1.490 210 1.490 210 1.490 210 1.490 210 1.490 210 1.490 210 1.500 300 1.500 480 1.500 480 1.500 540 1.500 | 0.10 0.05 0.05 0.04 0.03 0.02 0.02 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.02 0.02 0.02 0.02 0.02 0.02 0.01 0.02 0.02 0.01 0.02 0.02 0.01 0.00 0.01 0.01 0.01 0.00 0.01 0.00 0.00 0.01 0.01 0.00 0.00 0.00 0.01 0.01 0.00 0.00 0.00 0.01 0.00 0.00 0.00 0.01 0.00 | $ \begin{array}{c} 0.12 \\ 0.08 \\ 0.06 \\ 0.04 \\ 0.02 \\ 0.02 \\ 0.02 \\ 0.02 \\ 0.00 \\ 0.02 \\ 0.00 \\ 0.02 \\ 0.00 \\ 0.00 \\ $ |
| Time (s) BGL) 0 1.400 10 1.450 20 1.450 30 1.460 30 1.460 60 1.470 90 1.480 120 1.480 150 1.490 120 1.480 120 1.480 120 1.490 210 1.490 210 1.490 210 1.490 210 1.490 210 1.490 210 1.490 210 1.490 210 1.490 210 1.490 210 1.490 210 1.490 210 1.500 300 1.500 480 1.500 480 1.500 540 1.500 | 0.10 0.05 0.05 0.04 0.03 0.02 0.02 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.02 0.02 0.02 0.02 0.02 0.02 0.01 0.02 0.02 0.01 0.02 0.02 0.01 0.00 0.01 0.01 0.01 0.00 0.01 0.00 0.00 0.01 0.01 0.00 0.00 0.00 0.01 0.01 0.00 0.00 0.00 0.01 0.00 0.00 0.00 0.01 0.00 | $ \begin{array}{c} 0.12 \\ 0.08 \\ 0.06 \\ 0.04 \\ 0.02 \\ 0.00 \\ 0.00 \\ $ |
| Time (s) BGL) 0 1.400 10 1.450 20 1.450 30 1.460 30 1.460 60 1.470 90 1.480 120 1.480 150 1.490 120 1.480 120 1.480 120 1.490 210 1.490 210 1.490 210 1.490 210 1.490 210 1.490 210 1.490 210 1.490 210 1.490 210 1.490 210 1.490 210 1.490 210 1.500 300 1.500 480 1.500 480 1.500 540 1.500 | 0.10 0.05 0.05 0.04 0.03 0.02 0.02 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.02 0.02 0.02 0.02 0.02 0.02 0.01 0.02 0.02 0.01 0.02 0.02 0.01 0.00 0.01 0.01 0.01 0.00 0.01 0.00 0.00 0.01 0.01 0.00 0.00 0.00 0.01 0.01 0.00 0.00 0.00 0.01 0.00 0.00 0.00 0.01 0.00 | $ \begin{array}{c} 0.12 \\ 0.08 \\ 0.06 \\ 0.04 \\ 0.02 \\ 0.00 \\ 0.00 \\ $ |
| Time (s) BGL) 0 1.400 10 1.450 20 1.450 30 1.460 30 1.460 60 1.470 90 1.480 120 1.480 150 1.490 120 1.480 120 1.480 120 1.490 210 1.490 210 1.490 210 1.490 210 1.490 210 1.490 210 1.490 210 1.490 210 1.490 210 1.490 210 1.490 210 1.490 210 1.500 300 1.500 480 1.500 480 1.500 540 1.500 | 0.10 0.05 0.05 0.04 0.03 0.02 0.02 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.02 0.02 0.02 0.02 0.02 0.02 0.01 0.02 0.02 0.01 0.02 0.02 0.01 0.00 0.01 0.01 0.01 0.00 0.01 0.00 0.00 0.01 0.01 0.00 0.00 0.00 0.01 0.01 0.00 0.00 0.00 0.01 0.00 0.00 0.00 0.01 0.00 | $ \begin{array}{c} 0.12 \\ 0.08 \\ 0.06 \\ 0.04 \\ 0.02 \\ 0.00 \\ 0.00 \\ $ |
| Time (s) BGL) 0 1.400 10 1.450 20 1.450 30 1.460 60 1.470 90 1.480 120 1.480 120 1.480 120 1.480 120 1.490 120 1.490 120 1.490 150 1.490 210 1.490 210 1.490 210 1.490 210 1.490 210 1.490 210 1.490 210 1.490 210 1.490 210 1.490 210 1.500 360 1.500 480 1.500 480 1.500 540 1.500 | 0.10 0.05 0.05 0.04 0.03 0.02 0.02 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.02 0.02 0.02 0.02 0.02 0.02 0.01 0.02 0.02 0.01 0.02 0.02 0.01 0.00 0.01 0.01 0.01 0.00 0.01 0.00 0.00 0.01 0.01 0.00 0.00 0.00 0.01 0.01 0.00 0.00 0.00 0.01 0.00 0.00 0.00 0.01 0.00 | $ \begin{array}{c} 0.12 \\ 0.08 \\ 0.06 \\ 0.04 \\ 0.02 \\ 0.00 \\ 0.00 \\ $ |

| | | | Falling Head Permeability Test in a Standpipe | | | | | | | | |
|---|---|---|---|------|--|--|--|--|--|--|--|
| COST | AIN | Project Name | | 3H18 | | | | | | | |
| 0001 | 111 | , | | | | | | | | | |
| | | Project ID | 5414 Operative PS/0 | | | | | | | | |
| Environmente | l Convicco | Date of Test | 08/11/2013 Checked AF | | | | | | | | |
| Environmenta | I SELVICES | | | | | | | | | | |
| Calculation of perr Section 25.4.6.1 | | | Ground Level | / | | | | | | | |
| $k = \frac{A \times \ln\left(\frac{H}{F}\right)}{F \times (t_2)}$ Where: | | $A=pi\times d^2/4$ | Н1 | | | | | | | | |
| A = cross sectional a | rea of standpin | e | ┫ │ │ │ │ │ | | | | | | | | |
| H_1 = Head of water a | it time t ₁ | | | | | | | | | | |
| H ₂ = Head of water a | | | H2 H2 | | | | | | | | |
| F = Intake Factor | | | | | | | | | | | |
| $F = \frac{1.3}{\ln\left(1.1\left(\frac{L}{D}\right) + \frac{1.3}{D}\right)}$ | $\frac{2 p l \times L}{\left(1 + 1.1 \left(\frac{L}{D}\right)^2\right)}$ |)0.5) | Rest Groundwater Level | | | | | | | | |
| Time at Start of Tes | 4 | | | | | | | | | | |
| Depth of Borehole | | Level (m) | | | | | | | | | |
| Initial Groundwater | | | 5.00 0 0 Filter zone 1.89 L 0 0 Filter zone | | | | | | | | |
| Diameter of boreho | le, D (m) | | 0.12 | | | | | | | | |
| Diameter of standp | | | | | | | | | | | |
| Top of response zo | | | 3.50 ← → | | | | | | | | |
| Bottom of response Length of Filter Zor | | | 4.50 1.00 D | | | | | | | | |
| Intake Factor, F | , <u>-</u> (m) | | 2.49 | | | | | | | | |
| | | | | | | | | | | | |
| Time Elapso | | Differential Head, H (m) | Change in Head against Elapsed Time | | | | | | | | |
| | 0 0.000 | 1.89 | 2.00 | | | | | | | | |
| | | 1.87 | 1.80 | | | | | | | | |
| | 10 <u>0.020</u> | | | | | | | | | | |
| | 20 0.150 | 1.74 | 1.60 | | | | | | | | |
| | 200.150300.420 | 1.74 1.47 | 1.40 | | | | | | | | |
| | 200.150300.420600.800 | 1.74 1.47 1.09 | | | | | | | | | |
| | 20 0.150 30 0.420 60 0.800 90 1.100 | 1.74 1.47 1.09 0.79 | | | | | | | | | |
| | 20 0.150 30 0.420 60 0.800 90 1.100 | 1.74 1.47 1.09 | | | | | | | | | |
| | 20 0.150 30 0.420 60 0.800 90 1.100 120 1.390 150 1.620 180 1.730 | 1.74 1.47 1.09 0.79 0.50 0.27 0.16 | | | | | | | | | |
| | 20 0.150 30 0.420 60 0.800 90 1.100 120 1.390 150 1.620 180 1.730 210 1.780 | 1.74 1.47 1.09 0.79 0.50 0.27 0.16 0.11 | | | | | | | | | |
| | 20 0.150 30 0.420 60 0.800 90 1.100 120 1.390 150 1.620 180 1.730 210 1.850 | 1.74 1.47 1.09 0.79 0.50 0.27 0.16 0.11 0.04 | 1.40 E 1.20 1.00 H 1.20 0.80 H 1.20 0.80 0.80 0.40 0.40 0.20 0.00 | | | | | | | | |
| | 20 0.150 30 0.420 60 0.800 90 1.100 120 1.390 150 1.620 180 1.730 210 1.780 240 1.850 270 1.870 | 1.74 1.47 1.09 0.79 0.50 0.27 0.16 0.11 0.04 0.02 | 1.40 1.20 1.00 1.00 1.00 0.80 0.80 0.60 0.40 0.200 400 600 800 1000 | | | | | | | | |
| | 20 0.150 30 0.420 60 0.800 90 1.100 120 1.390 150 1.620 180 1.730 210 1.850 | 1.74 1.47 1.09 0.79 0.50 0.27 0.16 0.11 0.04 | 1.40 E 1.20 1.00 H 1.20 0.80 H 1.20 0.80 0.80 0.40 0.40 0.20 0.00 | | | | | | | | |
| | 20 0.150 30 0.420 60 0.800 90 1.100 120 1.390 150 1.620 180 1.730 210 1.780 240 1.850 270 1.870 300 1.890 360 1.890 | 1.74 1.47 1.09 0.79 0.50 0.27 0.16 0.11 0.04 0.02 0.00 | 1.40 1.20 1.00 1.00 1.00 0.80 0.80 0.60 0.40 0.200 400 600 800 1000 | | | | | | | | |
| | 20 0.150 30 0.420 60 0.800 90 1.100 120 1.390 150 1.620 180 1.730 210 1.780 240 1.850 270 1.870 300 1.890 420 1.890 480 1.890 | 1.74 1.47 1.09 0.79 0.50 0.27 0.16 0.11 0.04 0.02 0.00 0.00 0.00 0.00 | L 40 1.20 1.00 0.80 0.80 0.40 0.20 0.00 0 200 400 600 800 1000 Elapsed Time (s) | | | | | | | | |
| | 20 0.150 30 0.420 60 0.800 90 1.100 120 1.390 150 1.620 180 1.730 210 1.780 240 1.850 270 1.870 300 1.890 420 1.890 480 1.890 540 1.890 | 1.74 1.47 1.09 0.79 0.50 0.27 0.16 0.11 0.04 0.02 0.00 0.00 0.00 0.00 0.00 | 1.40 1.20 1.00 0.80 0.80 0.40 0.20 0.00 0.200 400 600 800 1000 Elapsed Time (s) | | | | | | | | |
| | 20 0.150 30 0.420 60 0.800 90 1.100 120 1.390 150 1.620 180 1.730 210 1.780 240 1.850 270 1.870 360 1.890 420 1.890 480 1.890 540 1.890 | 1.74 1.47 1.09 0.79 0.50 0.27 0.16 0.11 0.04 0.02 0.00 0.00 0.00 0.00 0.00 0.00 | $\begin{array}{c ccccccccccccccccccccccccccccccccccc$ | | | | | | | | |
| | 20 0.150 30 0.420 60 0.800 90 1.100 120 1.390 150 1.620 180 1.730 210 1.780 240 1.850 270 1.870 300 1.890 420 1.890 480 1.890 540 1.890 | 1.74 1.47 1.09 0.79 0.50 0.27 0.16 0.11 0.04 0.02 0.00 0.00 0.00 0.00 0.00 | $\begin{array}{c ccccccccccccccccccccccccccccccccccc$ | E-06 | | | | | | | |
| | 20 0.150 30 0.420 60 0.800 90 1.100 120 1.390 150 1.620 180 1.730 210 1.780 240 1.850 270 1.870 360 1.890 420 1.890 480 1.890 540 1.890 | 1.74 1.47 1.09 0.79 0.50 0.27 0.16 0.11 0.04 0.02 0.00 0.00 0.00 0.00 0.00 0.00 | $\begin{array}{c ccccccccccccccccccccccccccccccccccc$ | E-06 | | | | | | | |
| | 20 0.150 30 0.420 60 0.800 90 1.100 120 1.390 150 1.620 180 1.730 210 1.780 240 1.850 270 1.870 360 1.890 420 1.890 480 1.890 540 1.890 | 1.74 1.47 1.09 0.79 0.50 0.27 0.16 0.11 0.04 0.02 0.00 0.00 0.00 0.00 0.00 0.00 | $\begin{array}{c ccccccccccccccccccccccccccccccccccc$ | E-06 | | | | | | | |
| | 20 0.150 30 0.420 60 0.800 90 1.100 120 1.390 150 1.620 180 1.730 210 1.780 240 1.850 270 1.870 360 1.890 420 1.890 480 1.890 540 1.890 | 1.74 1.47 1.09 0.79 0.50 0.27 0.16 0.11 0.04 0.02 0.00 0.00 0.00 0.00 0.00 0.00 | $\begin{array}{c ccccccccccccccccccccccccccccccccccc$ | E-06 | | | | | | | |
| | 20 0.150 30 0.420 60 0.800 90 1.100 120 1.390 150 1.620 180 1.730 210 1.780 240 1.850 270 1.870 360 1.890 420 1.890 480 1.890 540 1.890 | 1.74 1.47 1.09 0.79 0.50 0.27 0.16 0.11 0.04 0.02 0.00 0.00 0.00 0.00 0.00 0.00 | $\begin{tabular}{ c c c c c c c c c c c c c c c c c c c$ | E-06 | | | | | | | |
| | 20 0.150 30 0.420 60 0.800 90 1.100 120 1.390 150 1.620 180 1.730 210 1.780 240 1.850 270 1.870 360 1.890 420 1.890 480 1.890 540 1.890 | 1.74 1.47 1.09 0.79 0.50 0.27 0.16 0.11 0.04 0.02 0.00 0.00 0.00 0.00 0.00 0.00 | $\begin{tabular}{ c c c c c c c c c c c c c c c c c c c$ | E-06 | | | | | | | |
| | 20 0.150 30 0.420 60 0.800 90 1.100 120 1.390 150 1.620 180 1.730 210 1.780 240 1.850 270 1.870 360 1.890 420 1.890 480 1.890 540 1.890 | 1.74 1.47 1.09 0.79 0.50 0.27 0.16 0.11 0.04 0.02 0.00 0.00 0.00 0.00 0.00 0.00 | $\begin{tabular}{ c c c c c c c c c c c c c c c c c c c$ | E-06 | | | | | | | |
| | 20 0.150 30 0.420 60 0.800 90 1.100 120 1.390 150 1.620 180 1.730 210 1.780 240 1.850 270 1.870 360 1.890 420 1.890 480 1.890 540 1.890 | 1.74 1.47 1.09 0.79 0.50 0.27 0.16 0.11 0.04 0.02 0.00 0.00 0.00 0.00 0.00 0.00 | $\begin{tabular}{ c c c c c c c c c c c c c c c c c c c$ | E-06 | | | | | | | |

| | | Falling Head Permeability Test in a Standpipe | | | | | | | | |
|--|---|--|------------------------|--|--|--|--|--|--|--|
| COSTAIN | Project Name | | 1R | | | | | | | |
| GOSTAIN | | | | | | | | | | |
| | Project ID | 5414 Operative PS/0 | | | | | | | | |
| Environmental Services | Date of Test | 08/11/2013 Checked AF | _ | | | | | | | |
| Environmental Services | | | | | | | | | | |
| Calculation of permeability (k) as Section 25.4.6.1 (1999+A2:2010 approach | | Ground Level | | | | | | | | |
| $k = \frac{A \times \ln \left(\frac{H_1}{H_2} \right)}{F \times \left(t_2 - t_1 \right)} $ | $A=pi\times d^2/4$ | н1 | | | | | | | | |
| Where: A = cross sectional area of standpip | 0 | ┥ │ │ │ │ │ | | | | | | | | |
| H_1 = Head of water at time t_1 | 6 | | | | | | | | | |
| H_2 = Head of water at time t_2 | | | | | | | | | | |
| F = Intake Factor | | H2 | | | | | | | | |
| $\overline{F} = \text{Intake Factor}$ $F = \frac{2.32 pi \times L}{\ln\left(1.1\left(\frac{L}{D}\right) + \left(1 + 1.1\left(\frac{L}{D}\right)^2\right)^2\right)}$ | $)^{0.5}$ | Rest Groundwater Level | | | | | | | | |
| | ,) , | | | | | | | | | |
| Time at Start of Test | | | | | | | | | | |
| Depth of Borehole Below Ground | Level (m) | | | | | | | | | |
| Initial Groundwater Level (m BGL) | | 10.00 0 0 0 Filter zone 1.93 L 0 0 Filter zone | | | | | | | | |
| Diameter of borehole, D (m) | | 0.14 | | | | | | | | |
| Diameter of standpipe, d (m) Top of response zone | | | | | | | | | | |
| Bottom of response zone | | 2.00 3.50 | | | | | | | | |
| Length of Filter Zone, L (m) | | 1.50 D | | | | | | | | |
| Intake Factor, F | | 3.48 | | | | | | | | |
| | | | | | | | | | | |
| Time Elapsed Water Time (s) BGL) | Differential Head, H (m) | Change in Head adainst Elabsed Time | | | | | | | | |
| 0 0.000 | 1.93 | 2.50 | | | | | | | | |
| | | | | | | | | | | |
| 10 0.300 | 1.63 | | | | | | | | | |
| 10 0.300 20 1.020 | 1.63 0.91 | 2.00 | | | | | | | | |
| 10 0.300 20 1.020 30 1.400 | 1.63 0.91 0.53 | | | | | | | | | |
| 10 0.300 20 1.020 30 1.400 60 1.570 90 1.650 | 1.63 0.91 | | | | | | | | | |
| 10 0.300 20 1.020 30 1.400 60 1.570 90 1.650 120 1.720 | 1.63 0.91 0.53 0.36 0.28 0.21 | | | | | | | | | |
| 10 0.300 20 1.020 30 1.400 60 1.570 90 1.650 120 1.720 150 1.760 | 1.63 0.91 0.53 0.36 0.28 0.21 0.17 | | | | | | | | | |
| 10 0.300 20 1.020 30 1.400 60 1.570 90 1.650 120 1.720 150 1.760 180 1.810 | 1.63 0.91 0.53 0.36 0.28 0.21 0.17 0.12 | | | | | | | | | |
| 10 0.300 20 1.020 30 1.400 60 1.570 90 1.650 120 1.720 150 1.760 180 1.810 210 1.850 | 1.63 0.91 0.53 0.36 0.28 0.21 0.17 | (j) 1.50 H agg 1.00 0.50 0.50 | | | | | | | | |
| 10 0.300 20 1.020 30 1.400 60 1.570 90 1.650 120 1.720 150 1.760 180 1.810 210 1.850 240 1.880 270 1.910 | 1.63 0.91 0.53 0.36 0.28 0.21 0.17 0.12 0.08 0.05 0.02 | | | | | | | | | |
| 10 0.300 20 1.020 30 1.400 60 1.570 90 1.650 120 1.720 150 1.760 180 1.810 210 1.850 240 1.880 270 1.910 300 1.930 | 1.63 0.91 0.53 0.36 0.28 0.21 0.17 0.12 0.08 0.05 0.05 0.02 | D.00 | | | | | | | | |
| 10 0.300 20 1.020 30 1.400 60 1.570 90 1.650 120 1.720 150 1.760 180 1.810 210 1.850 240 1.880 270 1.910 300 1.930 360 1.930 | 1.63 0.91 0.53 0.36 0.28 0.21 0.17 0.12 0.08 0.05 0.02 0.00 | E 1.50 1.00 0.00 0 200 400 600 800 1000 | | | | | | | | |
| 10 0.300 20 1.020 30 1.400 60 1.570 90 1.650 120 1.720 150 1.760 180 1.810 210 1.850 240 1.880 270 1.910 300 1.930 420 1.930 | 1.63 0.91 0.53 0.36 0.28 0.21 0.17 0.12 0.08 0.05 0.02 0.00 0.00 0.00 | E 1.50 1.00 0.00 0 200 400 600 800 1000 | | | | | | | | |
| 10 0.300 20 1.020 30 1.400 60 1.570 90 1.650 120 1.720 150 1.760 180 1.810 210 1.850 240 1.880 270 1.910 300 1.930 420 1.930 | 1.63 0.91 0.53 0.36 0.28 0.21 0.17 0.12 0.08 0.05 0.02 0.00 | E 1.50 1.00 0.50 0.00 0 200 400 600 800 1000 Elapsed Time (s) | | | | | | | | |
| 10 0.300 20 1.020 30 1.400 60 1.570 90 1.650 120 1.720 150 1.760 180 1.810 210 1.850 240 1.880 270 1.910 300 1.930 420 1.930 480 1.930 | 1.63 0.91 0.53 0.36 0.28 0.21 0.17 0.12 0.08 0.05 0.02 0.00 0.00 0.00 0.00 | E 1.50 1.00 0.00 0 200 400 600 800 1000 | <u>s⁻¹)</u> | | | | | | | |
| 10 0.300 20 1.020 30 1.400 60 1.570 90 1.650 120 1.720 150 1.760 180 1.810 210 1.850 240 1.880 270 1.910 300 1.930 420 1.930 480 1.930 540 1.930 | 1.63 0.91 0.53 0.36 0.28 0.21 0.17 0.12 0.08 0.05 0.02 0.00 0.00 0.00 0.00 0.00 | $\begin{array}{c cccc} \hline \mathbf{E} & 1.50 \\ \hline \mathbf{F} & 1.00 \\ 0.50 \\ 0.00 \\ 0 \\ \hline \mathbf{E} & 0.50 \\ 0 \\ \hline \mathbf{E} & 0.50 \\ \hline \mathbf{E} & 0.50 \\ \hline \mathbf{E} & \mathbf{E} & \mathbf{E} \\ $ | E-05 | | | | | | | |
| 10 0.300 20 1.020 30 1.400 60 1.570 90 1.650 120 1.720 150 1.760 180 1.810 210 1.850 240 1.880 270 1.910 300 1.930 420 1.930 540 1.930 600 1.930 | 1.63 0.91 0.53 0.36 0.28 0.21 0.17 0.12 0.08 0.05 0.02 0.00 0.00 0.00 0.00 0.00 0.00 | $(f) = 1.50 \\ f = 1.00 \\ 0.50 \\ 0.00 \\ 0 \\ 200 \\ 400 \\ 600 \\ 800 \\ 1000 \\ Elapsed Time (s) \\ (f) \\ (f) \\ (f) \\ (f) \\ (f) \\ (g) \\ (f) \\ (g) \\ (f) \\ (g) | E-05 | | | | | | | |
| 10 0.300 20 1.020 30 1.400 60 1.570 90 1.650 120 1.720 150 1.760 180 1.810 210 1.850 240 1.880 270 1.910 300 1.930 420 1.930 540 1.930 600 1.930 | 1.63 0.91 0.53 0.36 0.28 0.21 0.17 0.12 0.08 0.05 0.02 0.00 0.00 0.00 0.00 0.00 0.00 | $\begin{array}{c ccccccccccccccccccccccccccccccccccc$ | E-05 | | | | | | | |
| 10 0.300 20 1.020 30 1.400 60 1.570 90 1.650 120 1.720 150 1.760 180 1.810 210 1.850 240 1.880 270 1.910 300 1.930 420 1.930 540 1.930 600 1.930 | 1.63 0.91 0.53 0.36 0.28 0.21 0.17 0.12 0.08 0.05 0.02 0.00 0.00 0.00 0.00 0.00 0.00 | Image: state sta | E-05 | | | | | | | |
| 10 0.300 20 1.020 30 1.400 60 1.570 90 1.650 120 1.720 150 1.760 180 1.810 210 1.850 240 1.880 270 1.910 300 1.930 420 1.930 540 1.930 600 1.930 | 1.63 0.91 0.53 0.36 0.28 0.21 0.17 0.12 0.08 0.05 0.02 0.00 0.00 0.00 0.00 0.00 0.00 | $\begin{array}{c ccccccccccccccccccccccccccccccccccc$ | E-05 | | | | | | | |
| 10 0.300 20 1.020 30 1.400 60 1.570 90 1.650 120 1.720 150 1.760 180 1.810 210 1.850 240 1.880 270 1.910 300 1.930 420 1.930 540 1.930 600 1.930 | 1.63 0.91 0.53 0.36 0.28 0.21 0.17 0.12 0.08 0.05 0.02 0.00 0.00 0.00 0.00 0.00 0.00 | Image: state sta | E-05 | | | | | | | |
| 10 0.300 20 1.020 30 1.400 60 1.570 90 1.650 120 1.720 150 1.760 180 1.810 210 1.850 240 1.880 270 1.910 300 1.930 420 1.930 540 1.930 600 1.930 | 1.63 0.91 0.53 0.36 0.28 0.21 0.17 0.12 0.08 0.05 0.02 0.00 0.00 0.00 0.00 0.00 0.00 | Image: state sta | E-05 | | | | | | | |
| 10 0.300 20 1.020 30 1.400 60 1.570 90 1.650 120 1.720 150 1.760 180 1.810 210 1.850 240 1.880 270 1.910 300 1.930 420 1.930 540 1.930 600 1.930 | 1.63 0.91 0.53 0.36 0.28 0.21 0.17 0.12 0.08 0.05 0.02 0.00 0.00 0.00 0.00 0.00 0.00 | Image: state sta | E-05 | | | | | | | |





Appendix 7 - Groundwater Monitoring





Appendix 7.1 – Groundwater Monitoring Result Sheets



RECORD OF MEASUREMENTS FOR MONITORING BOREHOLES

Environmental Services

| Client Name | Aberdeensl | nire Council | | | | | | | | | Date of M | onitoring | 27/11/2013 10:30 - 12:30 | | |
|---------------------------|------------------|------------------------|-----------------------|----------|----------------|----------------|--------------|--------------|-----------|---------------|-------------------------|----------------|--------------------------|----------------|--|
| Site Name | Stonehaver | River Carron a | nd Burn of Gl | aslaw FA | S | |] | | | | Job Ni | umber | 5414 | | |
| Sample Point Reference | CH₄ (%) | CO ₂ (%) | O ₂ (%) | ВА (% | | CO (ppm) | H₂S (ppm) | L.CH₄ (%) | P.C (% | CH₄ ⁄6) | Rel Pressure (mb) | Flow (l/hr) | Water level (mbgl) | Base (mbgl) | |
| BH21B | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | 1.93 | 3.48 | |
| BH15 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | 1.51 | 3.46 | |
| BH13PIEZO | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | 3.04 | 6.74 | |
| BH13 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | 3.08 | 5.00 | |
| BH6 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | 1.65 | 4.46 | |
| BH8 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | 2.81 | 4.45 | |
| BH18 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | 1.91 | 4.47 | |
| Accuracy of Instrument | | | | | | | | | | | | | | | |
| Instrument Used | Used GW Dip tape | |] | Date | Last Calibrate | ed 24.11.13 | | | | Serial Number | | T62 | | | |
| Atmospheric Pre | ssure (mb) | 1028 | | | Date | Next Calibrati | on Due | 28.02.14 | | | Operator | | A Grierson | | |

Notes/Comments

Weather / Temperature

Date Next Calibration Due 28.02.14 Date Last Calibration Gas Check NR

| Serial Number | T62 |
|----------------|------------|
| Operator | A Grierson |
| Pressure Trend | Rising |

Cold/calm 12⁰C

COSTAIN

RECORD OF MEASUREMENTS FOR GAS MONITORING BOREHOLES

Environmental Services

| Client Name | Aberdeensh | ire Council | | | | | | | | | Date of N | lonitoring | 06/12/2013 | |
|---------------------------|------------------------|------------------------|-----------------------|----------|----|-------------|---------------------------|--------------|----|-----------|-------------------------|------------|-----------------------|----------------|
| Site Name | Stonehaven | River Carron a | and Burn of Gla | aslaw FA | S | | | | | | Job N | umber | 5414 | |
| Sample Point Reference | CH ₄ (%) | CO ₂ (%) | O ₂ (%) | ВА (% | | CO (ppm) | H ₂ S (ppm) | L.CH₄ (%) | | CH₄ %) | Rel Pressure (mb) | Time | Water level (mbgl) | Base (mbgl) |
| BH21B | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | 11:01 | 1.9 | 3.47 |
| BH15 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | 10:14 | 1.49 | 3.46 |
| BH13PIEZO | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | 11:06 | 3.03 | 6.88 |
| BH13 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | 11:07 | 3.06 | 5.01 |
| BH6 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | 11:10 | 1.60 | 4.46 |
| BH8 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | 10:55 | 2.78 | 4.45 |
| BH18 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | 10:07 | 1.90 | 4.47 |
| | | | | | | | | | | | | | | |
| Accuracy of Instrument | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |

| Instrument Used | GW Dip tape |
|---------------------------|---------------|
| Atmospheric Pressure (mb) | 1019 |
| Weather / Temperature | Cold/calm 0ºC |

| Date Last Calibrated | 24.11.13 |
|---------------------------------|----------|
| Date Next Calibration Due | 28.02.14 |
| Date Last Calibration Gas Check | NR |

| Serial Number | T62 |
|----------------|------------|
| Operator | A.Grierson |
| Pressure Trend | Raising |

Notes/Comments



RECORD OF MEASUREMENTS FOR MONITORING BOREHOLES

Environmental Services

| Client Name | Aberdeenst | nire Council | | | | | | | | | Date of N | Ionitoring | 13/12/2013 | |
|---------------------------|-----------------------------|------------------------|-----------------------|----------|----------------|----------------|---------------------------|--------------------------|----|-------------|-------------------------|------------|------------------------|----------------|
| Site Name | Stonehaver | n River Carron a | nd Burn of Gl | aslaw FA | S | |] | | | | Job N | umber | 5414 | |
| Sample Point Reference | CH₄ (%) | CO ₂ (%) | O ₂ (%) | B/ (% | | CO (ppm) | H ₂ S (ppm) | L.CH ₄ (%) | | CH₄ %) | Rel Pressure (mb) | Time | Water level (mbgl) | Base (mbgl) |
| BH21B | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | 10:34 | 1.9 | 3.47 |
| BH15 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | 10:38 | 1.50 | 3.46 |
| BH13PIEZO | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | 10:40 | 3.00 | 6.88 |
| BH13 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | 10:40 | 3.02 | 4.99 |
| BH6 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | Damaged, cannot monito | |
| BH8 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | 10:46 | 2.78 | 4.45 |
| BH18 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | 10:29 | 1.92 | 4.47 |
| Accuracy of Instrument | | | | | | | | | | | | | | |
| Instrument Used | Instrument Used GW Dip tape | | | Date | Last Calibrate | ed | 24.11.13 | | | Serial Numb | ber | T62 | | |
| Atmospheric Pre | ssure (mb) | 1004 | | 1 | Date | Next Calibrati | on Due | 28.02.1 | 14 | | Operator | | A.Grierson | |

Date Last Calibration Gas Check

NR

Raising

Pressure Trend

Notes/Comments

Weather / Temperature

Cold/calm 10⁰C



Factual Report on Ground Investigation

Stonehaven River Carron & Burn of Glaslaw Flood Alleviation Scheme -Ground Investigation

Volume 2 of 2

Contract No: 018936/5414 January 2014

Client: Aberdeenshire Council Engineer: JBA Consulting





Appendix 8 - Geotechnical Test Results



SUMMARY OF INDEX PROPERTIES

BS1377 : Part 2 : 1990 : Clause 3.0, 4.0 & 5.0

Client: Aberdeenshire Council

Contract Name: Stonehaven FAS

| Lab Sample | Hole Id | | Sample | Dept | h (m) | Description | MC | LL | PL | PI | <425 | Remarks |
|------------|---------|------|--------|------|-------|--|-----|-----|-----|-----|---------|----------------------------------|
| No | | Туре | No | From | То | | (%) | (%) | (%) | (%) | mic (%) | |
| | | | | | | | | | | | | |
| S8790 | BH10 | В | 5.0 | 2.00 | 2.50 | Brown slightly silty gravelly SAND with PEAT | 90 | | | | | |
| S8800 | BH12 | D | 13.0 | 3.50 | | Pinkish brown clayey sandy SILT | 17 | 32 | 19 | 13 | 100 | Natural Specimen,4- point. |
| S8801 | BH12 | D | 15.0 | 4.00 | 4.45 | Brown very sandy CLAY | 17 | 36 | 21 | 15 | 100 | Natural Specimen,4- point. |
| S8808 | BH13 | В | 11.0 | 4.70 | 5.50 | Light pinkish brown slightly gravelly silty sandy CLAY | 9 | 30 | 16 | 14 | 78 | Sieved Specimen,4- point. |
| S8814 | BH14 | В | 6.0 | 2.40 | 3.00 | Reddish brown gravelly sandy silty CLAY | 14 | 28 | 14 | 14 | 52 | Sieved Specimen,4- point. |
| S8816 | BH14 | D | 10.0 | 3.50 | 3.75 | Brown slightly gravelly very sandy silty CLAY | 14 | 27 | 17 | 10 | 81 | Sieved Specimen,1- point. |
| S8823 | BH15 | В | 8.0 | 3.00 | 3.30 | Orange brown slightly sandy gravelly silty CLAY | 18 | 36 | 17 | 19 | 29 | Sieved Specimen,4- point. |
| S8827 | BH17 | D | 4.0 | 1.20 | 1.65 | Brown clayey very gravelly SAND | 8 | | | | 29 | Non-plastic |
| S8832 | BH18 | D | 6.0 | 2.00 | 2.45 | Black slightly sandy slightly garvelly organic SILT | 85 | 69 | 48 | 21 | 93 | Sieved Specimen,4- point. |
| S8839 | BH19 | D | 9.0 | 2.80 | 3.00 | Black slightly sandy organic SILT | 98 | | | | | |
| S8841 | BH19 | D | 12.0 | 4.00 | 4.45 | Brownish grey slightly clayey sandy GRAVEL | 13 | | | | | |
| S8842 | BH19 | В | 14.0 | 4.80 | 5.00 | Reddish brown gravelly sandy CLAY | 13 | 33 | 14 | 19 | 58 | Sieved Specimen,4- point. |

| General no | tes: |
|------------|------|
|------------|------|

MC-Moisture content

LL-Liquid limit

PL-Plastic limit

PI-Plasticity Index

Date: 09/12/2013

Contract No:

5414



Agata K-Roche Senior Technician

Unit 10 Wessex Road Bourne end Buckinghamshire SL8 5DT

Sheet 1 of 1

1489



SUMMARY OF INDEX PROPERTIES

BS1377 : Part 2 : 1990 : Clause 3.0, 4.0 & 5.0

Client: Aberdeenshire Council

Contract Name: Stonehaven FAS

| Lab Sample | Hole Id | | Sample | Dept | h (m) | Description | MC | LL | PL | PI | <425 | Remarks |
|------------|---------|------|--------|------|-------|---|-----|-----|-----|-----|---------|----------------------------------|
| No | | Туре | No | From | То | | (%) | (%) | (%) | (%) | mic (%) | |
| S8716 | BH1A | D | 11.0 | 3.30 | | Dark brown and greyish brown slightly sandy organic SILT | 74 | 107 | 57 | 50 | 100 | Natural Specimen,4- point. |
| S8718 | BH1A | В | 17.0 | 5.10 | 5.60 | Dark grey silty organic SAND | 72 | | | | | |
| S8719 | BH1A | D | 19.0 | 5.90 | | Reddish brown slightly gravelly sandy CLAY | 20 | 31 | 19 | 12 | 69 | Sieved Specimen,4- point. |
| S8721 | BH1A | В | 24.0 | 7.00 | 7.50 | Reddish brown slightly gravelly sandy CLAY | 13 | 32 | 16 | 16 | 72 | Sieved Specimen,4- point. |
| S8724 | BH2 | D | 10.0 | 2.00 | 2.45 | Dark grey slightly sandy slightly gravelly organic SILT and brown slightly sandy GRAVEL | 57 | 74 | 44 | 30 | 22 | Sieved Specimen,1- point. |
| S8845 | BH20 | D | 11.0 | 3.00 | 3.45 | Orange brown slightly clayey sandy GRAVEL | 8.4 | | | | | |
| S8849 | BH20 | D | 21.0 | 6.00 | 6.45 | Pinkish brown slightly sandy CLAY and greenish grey slightly gravelly SAND | 14 | 33 | 17 | 16 | 66 | Sieved Specimen,4- point. |
| S8853 | BH21B | В | 5.0 | 1.20 | 1.80 | Brown gravelly clayey SAND | 7.3 | | | | | |
| S8860 | BH21B | D | 16.0 | 5.00 | 5.45 | Reddish brown slightly sandy slightly gravelly silty CLAY | 13 | 37 | 19 | 18 | 70 | Sieved Specimen,4- point. |
| S8867 | BH22 | D | 13.0 | 4.50 | | Reddish brown slightly sandy gravelly silty CLAY | 10 | 33 | 15 | 18 | | Sieved Specimen,4- point. |
| S8873 | BH23 | В | 9.0 | 3.00 | 3.35 | Reddish brown gravelly very sandy silty CLAY | 16 | 25 | 17 | 8 | 42 | Sieved Specimen,4- point. |
| S8876 | BH23 | В | 15.0 | 4.00 | 5.00 | Reddish brown slightly sandy slightly gravelly CLAY | 14 | 34 | 15 | 19 | 59 | Sieved Specimen,4- point. |

MC-Moisture content

LL-Liquid limit

PL-Plastic limit

PI-Plasticity Index

Contract No:

5414

Checked and Agata K-Roche Approved

Senior Technician

Unit 10 Wessex Road Bourne end Buckinghamshire SL8 5DT

Sheet 1 of 1

RS-INDEX-Output01



Date: 09/12/2013



Contract No:

5414

SUMMARY OF INDEX PROPERTIES

BS1377 : Part 2 : 1990 : Clause 3.0, 4.0 & 5.0

Client: Aberdeenshire Council

Contract Name: Stonehaven FAS

| Lab Sample | Hole Id | Sample | Sample | Dept | h (m) | Description | MC | LL | PL | PI | <425 | Remarks |
|------------|---------|--------|--------|------|-------|---|-----|-----|-----|-----|---------|---------------------------------|
| No | | Туре | No | From | То | | (%) | (%) | (%) | (%) | mic (%) | |
| S8882 | BH24 | D | 13.0 | 4.50 | | Reddish brown sandy gravelly silty CLAY | 14 | 29 | 18 | 11 | 56 | Sieved Specimen,4- point. |
| S8883 | BH24 | D | 15.0 | 4.90 | | Reddish brown slightly gravelly very sandy silty CLAY | 13 | 27 | 15 | 12 | 61 | Sieved Specimen,4- point. |
| S8885 | BH24 | D | 19.0 | 6.00 | 6.45 | Reddish brown sandy gravelly CLAY | 12 | 35 | 14 | 21 | 54 | Sieved Specimen,1- point. |
| S8887 | BH25 | В | 3.0 | 0.50 | 1.00 | Brown clayey very sandy GRAVEL with cobbles | 15 | 37 | 23 | 14 | 23 | Sieved Specimen,4- point. |
| S8889 | BH25 | В | 10.0 | 2.60 | 3.00 | Reddish brown slightly sandy slightly gravelly silty CLAY | 19 | 31 | 20 | 11 | 60 | Sieved Specimen,4- point. |
| S8892 | BH25 | D | 19.0 | 5.50 | | Reddish brown gravelly sandy CLAY | 10 | 33 | 14 | 19 | 50 | Sieved Specimen,4- point. |
| S8894 | BH25 | В | 27.0 | 7.50 | 8.00 | Reddish brown sandy gravelly silty CLAY | 17 | 40 | 16 | 24 | 58 | Sieved Specimen,4- point. |
| S8900 | BH26 | D | 10.0 | 2.40 | | Reddish brown slightly sandy slightly gravelly clayey SILT | 23 | 38 | 24 | 14 | 73 | Sieved Specimen,4- point. |
| S8904 | BH26 | D | 20.0 | 5.70 | | Reddish brown slightly gravelly slightly sandy clayey SILT | 24 | 37 | 23 | 14 | 84 | Sieved Specimen,4- point. |
| S8911 | BH27 | В | 11.0 | 2.60 | 3.40 | Reddish brown slightly sandy slightly gravelly clayey SILT | 33 | 41 | 26 | 15 | | Sieved Specimen,4- point. |
| S8912 | BH27 | В | 13.0 | 3.40 | 4.00 | Reddish brown slightly gravelly slightly sandy silty CLAY with frequent cobbles | 23 | 38 | 20 | 18 | | Sieved Specimen,4- point. |
| S8915 | BH27 | В | 20.0 | 6.00 | 6.20 | Reddish brown clayey very sandy GRAVEL | 15 | 26 | 15 | 11 | 28 | Sieved Specimen,4- point. |

General notes: PL-Plastic limit MC-Moisture content LL-Liquid limit **PI-Plasticity Index** Checked and Agata K-Roche Approved Date: 09/12/2013 Senior Technician

1489

Unit 10 Wessex Road Bourne end Buckinghamshire SL8 5DT

Sheet 1 of 1

RS-INDEX-Output01



SUMMARY OF INDEX PROPERTIES

BS1377 : Part 2 : 1990 : Clause 3.0, 4.0 & 5.0

Client: Aberdeenshire Council

Contract Name: Stonehaven FAS

| Lab Sample | Hole Id | | Sample | Dept | h (m) | Description | MC | LL | PL | PI | <425 | Remarks |
|------------|---------|------|--------|------|-------|--|-----|-----|-----|-----|---------|---------------------------------|
| No | | Туре | No | From | То | | (%) | (%) | (%) | (%) | mic (%) | |
| S8917 | BH28 | D | 9.0 | 2.20 | | Black slightly sandy slightly gravelly organic SILT | 55 | | | | | |
| S8919 | BH28 | В | 12.0 | 3.00 | 3.50 | Brown slightly sandy slightly gravelly clayey SILT with cobbles | 26 | 39 | 23 | 16 | 43 | Sieved Specimen,4- point. |
| S8921 | BH28 | D | 15.0 | 4.00 | 4.45 | Reddish brown gravelly sandy silty CLAY | 14 | 27 | 16 | 11 | 57 | Sieved Specimen,4- point. |
| S8922 | BH28 | В | 22.0 | 6.60 | 7.25 | Reddish brown slightly gravelly sandy CLAY | 11 | 31 | 14 | 17 | 62 | Sieved Specimen,4- point. |
| S8923 | BH28 | В | 26.0 | 8.60 | 9.00 | Light brown sandy gravelly CLAY | 11 | 26 | 18 | 8 | 27 | Sieved Specimen,4- point. |
| S8926 | BH29 | D | 6.0 | 2.00 | 2.45 | Orange brown slightly gravelly very sandy CLAY | 25 | | | | | |
| S8730 | BH3 | D | 6.0 | 2.00 | 2.45 | Brown clayey gravelly SAND | 15 | | | | | |
| S8732 | BH3 | D | 11.0 | 3.00 | 3.45 | Black organic SILT | 83 | | | | | |
| S8734 | BH3 | D | 14.0 | 4.80 | | Reddish brown slightly sandy slightly gravelly CLAY | 14 | 34 | 14 | 20 | 70 | Sieved Specimen,4- point. |
| S8737 | BH3 | D | 24.0 | 7.50 | 7.95 | Reddish brown and greenish brown slightly sandy gravelly CLAY | 11 | 27 | 18 | 9 | | Sieved Specimen,4- point. |
| S8741 | BH4 | D | 8.0 | 3.00 | 3.20 | Dark grey and brown slightly sandy organic CLAY | 56 | | | | | |
| S8743 | BH4 | В | 13.0 | 5.10 | 5.40 | Dark brown sandy gravelly silty CLAY | 14 | 28 | 13 | 15 | 45 | Sieved Specimen,4- point. |

General notes:

MC-Moisture content

LL-Liquid limit

PL-Plastic limit

PI-Plasticity Index

Date: 09/12/2013

Contract No:

5414

Checked and Agata K-Roche Approved

Senior Technician

Unit 10 Wessex Road Bourne end Buckinghamshire SL8 5DT

1489



Contract No:

5414

SUMMARY OF INDEX PROPERTIES

BS1377 : Part 2 : 1990 : Clause 3.0, 4.0 & 5.0

Client: Aberdeenshire Council

Contract Name: Stonehaven FAS

| Lab Sample | Hole Id | | Sample | Dept | h (m) | Description | MC | LL | PL | PI | <425 | Remarks |
|------------|---------|------|--------|------|-------|--|-----|-----|-----|-----|---------|---------------------------------|
| No | | Туре | No | From | То | | (%) | (%) | (%) | (%) | mic (%) | |
| | | | | | | | | | | | | |
| S8745 | BH4 | D | 16.0 | 5.90 | | Pinkish brown and greyish brown slightly sandy slightly gravelly CLAY | 14 | 38 | 15 | 23 | 72 | Sieved Specimen,4- point. |
| S8751 | BH5 | В | 4.0 | 2.00 | 2.70 | Brownish grey slightly silty very gravelly SAND | 20 | | | | 25 | |
| S8752 | BH5 | В | 5.0 | 2.70 | 3.30 | Grey and yellowish brown clayey very sandy GRAVEL | 15 | | | | 30 | Non-plastic |
| S8753 | BH5 | D | 7.0 | 3.30 | 3.45 | Black and brown slightly sandy slightly gravelly organic SILT | 53 | | | | | |
| S8756 | BH5 | В | 15.0 | 5.60 | 6.00 | Grey slightly gravelly slightly sandy SILT | 12 | 27 | 22 | 5 | 69 | Sieved Specimen,4- point. |
| S8758 | BH5 | D | 24.0 | 9.40 | | Greyish brown and light brown sandy very gravelly CLAY | 10 | 30 | 20 | 10 | 21 | Sieved Specimen,4- point. |
| S8761 | BH6 | В | 7.0 | 2.35 | 2.70 | Black slightly gravelly sandy organic SILT | 66 | 55 | 34 | 21 | 69 | Sieved Specimen,4- point. |
| S8763 | BH6 | D | 11.0 | 3.90 | | Reddish brown occasional mottled greenish brown slightly sandy gravelly silty CLAY | 16 | 30 | 15 | 15 | 63 | Sieved Specimen,4- point. |
| S8771 | BH7 | D | 9.0 | 2.40 | | Reddish brown slightly sandy slightly gravelly silty CLAY | 18 | 33 | 17 | 16 | 76 | Sieved Specimen,4- point. |
| S8776 | BH8 | В | 11.0 | 2.80 | 3.70 | Brown slightly sandy gravelly CLAY with cobbles | 6 | 32 | 15 | 17 | | Sieved Specimen,4- point. |
| S8778 | BH8 | В | 15.0 | 4.00 | 4.40 | Brown gravelly very clayey SAND | 14 | | | | 72 | |
| S8779 | BH8 | D | 16.0 | 4.50 | | Brown gravelly sandy CLAY | 7 | 29 | 14 | 15 | 51 | Sieved Specimen,4- point. |

General notes: PL-Plastic limit MC-Moisture content LL-Liquid limit **PI-Plasticity Index** Checked and Agata K-Roche Approved Date: 09/12/2013 Senior Technician

Unit 10 Wessex Road Bourne end Buckinghamshire SL8 5DT

Sheet 1 of 1

RS-INDEX-Output01



SUMMARY OF INDEX PROPERTIES

BS1377 : Part 2 : 1990 : Clause 3.0, 4.0 & 5.0

Client: Aberdeenshire Council

Contract Name: Stonehaven FAS

Lab Sample MC <425 Hole Id Sample Sample Depth (m) Description LL PL ΡI Remarks No Туре No (%) (%) (%) (%) mic (%) From То D S8783 BH9 6.0 2.00 2.45 Brown very sandy GRAVEL 7.1 Sieved S8785 BH9 D 8.0 2.50 Brown sandy very gravelly CLAY 30 15 15 29 Specimen,4-11 point. S8691 CDR1 В 9.0 3.00 4.00 Black gravelly sandy PEAT 43 44 Sieved Reddish brown slightly sandy slightly CDR1 5.50 Specimen,4-S8692 В 11.0 5.00 18 33 16 17 60 gravelly silty CLAY point. Sieved Orange brown slightly gravelly sandy S8694 CDR1 в 17.0 7.50 8.00 18 31 15 16 65 Specimen,4-CLAY point. CDR3 S8699 D 7.0 2.00 Dark grey very sandy organic SILT 54 S8708 CDR4 D 9.0 1.90 90 Black slightly sandy organic SILT Natural S8709 CDR4 D 11.0 2.50 Grey sandy silty CLAY 28 40 16 24 100 Specimen,4point.

General notes:

Checked and

MC-Moisture content

LL-Liquid limit

PL-Plastic limit

PI-Plasticity Index



Date: 09/12/2013

Senior Technician Unit 10 Wessex Road Bourne end Buckinghamshire SL8 5DT

Agata K-Roche

Approved

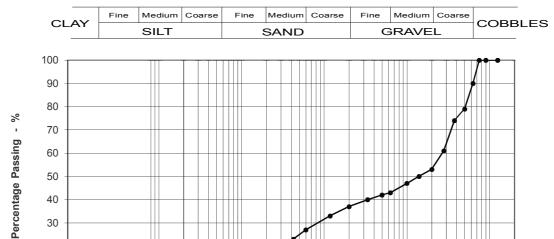
Contract No: 5414

| Project Na | ime: | Stoneha | ven FAS | | Samples F | Received: | 02/12 | /2013 | K4 SOILS |
|---------------------------------------|---------------|--------------|---|----------------------------|------------------------|-------------------------|----------------------------|----------------------------|--|
| | | | | | Project Sta | | 02/12 | | |
| Client: | | | Environmental Services | | Testing St | | 10/12 | | Soils |
| Project No |): | 5414 | Our job/report no: 15 | 754 | Date Repo | rted: | 04/01 | /2014 | |
| Borehole No: | Sample No: | Depth (m) | Description | Moisture content (%) | Liquid Limit (%) | Plastic Limit (%) | Plasticity Index (%) | Passing 0.425 mm (%) | Remarks |
| BH20 | U15 | 4.00 | Very high strength reddish brown gravelly sandy silty CLAY (gravel is fmc and sub-angular to sub-rounded) | | | | | | |
| | BS 1377 | : Part 2 : | Summary of Test Res Clause 4.4 : 1990 Determination of the liquid limit by the cone p | | er metho | d. | | | Checked and Approved Initials: K.P |
| UKAS TESTING 2519 Test Repoi | BS 1377 | : Part 2 : | Clause 5 : 1990 Determination of the plastic limit and plasticity Clause 3.2 : 1990 Determination of the moisture content by the BORATORY Unit 8 Olds Close Olds Approach Watford Herts W | oven-dryin | g methoo | d. | | | Date: 04/01/2014 |
| | | | numbers shown above. Approved Signatories: K.Phaure (Tech.Mgr) J.P. | haure (Lab.Mg | | request | | | MSF-11/R2 |



DETERMINATION OF PARTICLE SIZE DISTRIBUTION WET SIEVING METHOD

| BS1377 : Part 2 : 199 | 00 Clause 9.2 | | |
|-----------------------|---|----------------|-------------|
| Client: | Aberdeenshire Council | Lab Sample No: | S8713 |
| Contract No: | 5414 | Hole ID: | BH1A |
| Contract Name: | Stonehaven FAS | Sample Type: | В |
| Sample | Crovich brown clightly clovey yory condy CRAV/EL with | Sample No: | 5 |
| | Greyish brown slightly clayey very sandy GRAVEL with cobbles | Depth (m): | 1.20 - 2.00 |
| Description: | CODDIES | Date Tested: | 27/11/2013 |



| 10 | | | • | - K | |
|---------------------|-----------|---------------------|---|--------------------|-----|
| 0 | | | | 0 | 0.6 |
| | | 0.03 | 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 | 0 N e Size - | |
| | | | | | |
| Sievir | ıg | Sediment | tation | | |
| Particle Size mm | % Passing | Particle Size mm | % Passing | | |
| 125 | 100 | | | | : |
| 90 | 100 | | | | |
| 75 | 100 | | | | |
| 63 | 90 | | | | |
| 50 | 79 | | | | |
| 37.5 | 74 | | | | |
| 28 | 61 | | | | |
| 20 | 53 | | | | |
| 14 | 50 | | | | |
| 10 | 47 | | | | |
| 6.3 | 43 | | | | |
| 5 | 42 | | | | |
| 3.35 2 | 40 37 | | | | |
| 2 1.18 | 33 | | | | |
| 0.6 | 33 27 | | | | |
| 0.425 | 27 | | | | |
| 0.425 | 18 | | | | |
| 0.212 | 14 | | | | |
| 0.15 | 12 | | | | |
| | 1 | | I | | 1 |

20

| Test Method | | | | | |
|-------------------------|-------------------|--|--|--|--|
| BS 1377 : Part 2 : 1990 | | | | | |
| Sieving | Clause Depth (m): | | | | |
| Sedimentation | N/A | | | | |

20

200

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N

ი

| Sample Proportions | | | | |
|--------------------|------|--|--|--|
| Cobbles | 10.0 | | | |
| Gravel | 53.0 | | | |
| Sand | 29.0 | | | |
| Silt & Clay | 8.0 | | | |

| Grading Analysis | | | | | |
|------------------------|--------|--|--|--|--|
| D60 | 27.00 | | | | |
| D10 | 0.11 | | | | |
| Uniformity Coefficient | 253.52 | | | | |

Date:

09/12/2013



Sheet 1 of 1

Remarks:

Checked and Approved:

0.063

Whole sample used

Agata K-Roche

Senior Technician

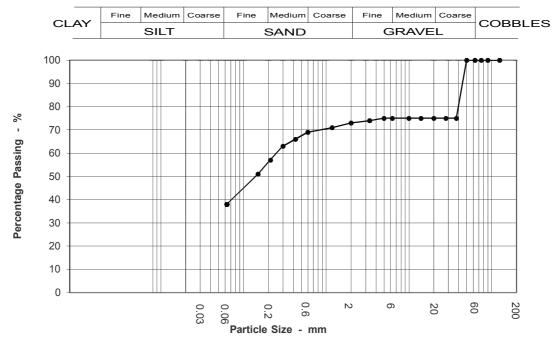
Unit 10 Wessex Road Bourne end Buckinghamshire SL8 5DT

8



DETERMINATION OF PARTICLE SIZE DISTRIBUTION WET SIEVING METHOD

| BS1377 : Part 2 : 199 | 90 Clause 9.2 | | |
|-----------------------|--|----------------|-------------|
| Client: | Aberdeenshire Council | Lab Sample No: | S8715 |
| Contract No: | 5414 | Hole ID: | BH1A |
| Contract Name: | Stonehaven FAS | Sample Type: | В |
| Sample | Dark grow alightly growelly ailty SAND and brown mattled | Sample No: | 12 |
| - | Dark grey slightly gravelly silty SAND and brown mottled grey slightly gravelly sandy CLAY | Depth (m): | 3.20 - 4.00 |
| Description: | gicy slightly gravely salidy CLAT | Date Tested: | 26/11/2013 |



| Sievir | ng | Sediment | tation |
|---------------------|-----------|---------------------|-----------|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | | |
| 90 | 100 | | |
| 75 | 100 | | |
| 63 | 100 | | |
| 50 | 100 | | |
| 37.5 | 75 | | |
| 28 | 75 | | |
| 20 | 75 | | |
| 14 | 75 | | |
| 10 | 75 | | |
| 6.3 | 75 | | |
| 5 | 75 | | |
| 3.35 | 74 | | |
| 2 | 73 | | |
| 1.18 | 71 | | |
| 0.6 | 69 | | |
| 0.425 | 66 | | |
| 0.3 | 63 | | |
| 0.212 | 57 | | |
| 0.15 | 51 | | |
| 0.063 | 38 | | |

| Test Method | | | | | |
|-------------------------|-------------------|--|--|--|--|
| BS 1377 : Part 2 : 1990 | | | | | |
| Sieving | Clause Depth (m): | | | | |
| Sedimentation | N/A | | | | |

| Sample Proportions | | | |
|--------------------|------|--|--|
| Cobbles | 0.0 | | |
| Gravel | 27.0 | | |
| Sand | 35.0 | | |
| Silt & Clay | 38.0 | | |

| Grading Analysis | | |
|------------------------|------|--|
| D60 D10 | 0.26 | |
| Uniformity Coefficient | N/A | |

Remarks:

Checked and Agata K-Roche

Approved: Senior Technician

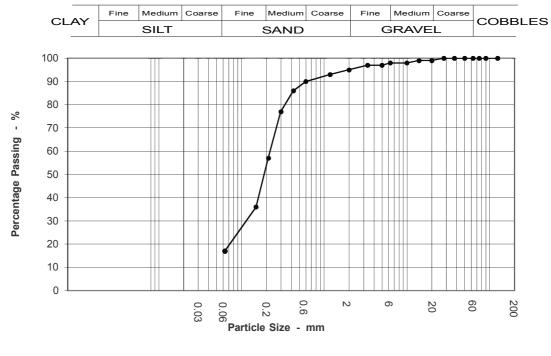
Unit 10 Wessex Road Bourne end Buckinghamshire SL8 5DT

Date: 09/12/2013



DETERMINATION OF PARTICLE SIZE DISTRIBUTION WET SIEVING METHOD

| BS1377 : Part 2 : 19 | 00 Clause 9.2 | | |
|----------------------|------------------------------------|----------------|-------------|
| Client: | Aberdeenshire Council | Lab Sample No: | S8717 |
| Contract No: | 5414 | Hole ID: | BH1A |
| Contract Name: | Stonehaven FAS | Sample Type: | В |
| Sampla | | Sample No: | 15 |
| Sample | Grey slightly gravelly clayey SAND | Depth (m): | 4.60 - 5.00 |
| Description: | | Date Tested: | 26/11/2013 |



| Sievir | ng | Sediment | tation |
|---------------------|-----------|---------------------|-----------|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | | |
| 90 | 100 | | |
| 75 | 100 | | |
| 63 | 100 | | |
| 50 | 100 | | |
| 37.5 | 100 | | |
| 28 | 100 | | |
| 20 | 99 | | |
| 14 | 99 | | |
| 10 | 98 | | |
| 6.3 | 98 | | |
| 5 | 97 | | |
| 3.35 | 97 | | |
| 2 | 95 | | |
| 1.18 | 93 | | |
| 0.6 | 90 | | |
| 0.425 | 86 | | |
| 0.3 | 77 | | |
| 0.212 | 57 | | |
| 0.15 | 36 | | |
| 0.063 | 17 | | |

| Test Method | | |
|---------------------------|-----|--|
| BS 1377 : Part 2 : 1990 | | |
| Sieving Clause Depth (m): | | |
| Sedimentation | N/A | |

| Sample Proportions | | | |
|--------------------|------|--|--|
| Cobbles | 0.0 | | |
| Gravel | 5.0 | | |
| Sand | 78.0 | | |
| Silt & Clay | 17.0 | | |

| Grading Analysis | | |
|------------------------|------|--|
| D60 D10 | 0.23 | |
| Uniformity Coefficient | N/A | |

Date:

09/12/2013

| Checked | and |
|---------|-----|

d Agata K-Roche Senior Technician

Unit 10 Wessex Road Bourne end Buckinghamshire SL8 5DT

Sheet 1 of 1

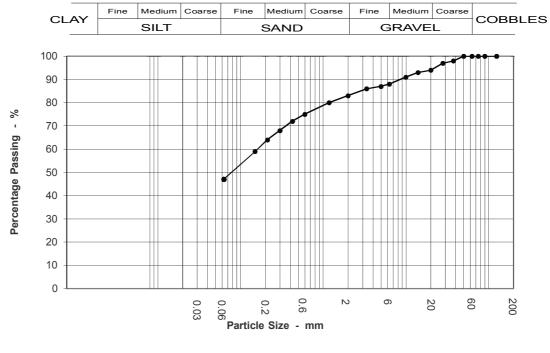
Remarks:

Approved:



DETERMINATION OF PARTICLE SIZE DISTRIBUTION WET SIEVING METHOD

| BS1377 : Part 2 : 199 | 90 Clause 9.2 | | |
|-----------------------|--|----------------|-------------|
| Client: | Aberdeenshire Council | Lab Sample No: | S8721 |
| Contract No: | 5414 | Hole ID: | BH1A |
| Contract Name: | Stonehaven FAS | Sample Type: | В |
| Somalo | | Sample No: | 24 |
| Sample | Reddish brown slightly gravelly sandy CLAY | Depth (m): | 7.00 - 7.50 |
| Description: | | Date Tested: | 05/12/2013 |



| Sieving | | Sedimen | tation |
|------------------|-----------|---------------------|-----------|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | | |
| 90 | 100 | | |
| 75 | 100 | | |
| 63 | 100 | | |
| 50 | 100 | | |
| 37.5 | 98 | | |
| 28 | 97 | | |
| 20 | 94 | | |
| 14 | 93 | | |
| 10 | 91 | | |
| 6.3 | 88 | | |
| 5 | 87 | | |
| 3.35 | 86 | | |
| 2 | 83 | | |
| 1.18 | 80 | | |
| 0.6 | 75 | | |
| 0.425 | 72 | | |
| 0.3 | 68 | | |
| 0.212 | 64 | | |
| 0.15 | 59 | | |
| 0.063 | 47 | | |

| Test Method | | |
|---------------------------|-----|--|
| BS 1377 : Part 2 : 1990 | | |
| Sieving Clause Depth (m): | | |
| Sedimentation | N/A | |

| Sample Proportions | | | |
|--------------------|------|--|--|
| Cobbles | 0.0 | | |
| Gravel | 17.0 | | |
| Sand | 36.0 | | |
| Silt & Clay | 47.0 | | |
| | | | |

| Grading Analysis | | |
|------------------------|------|--|
| D60 D10 | 0.16 | |
| Uniformity Coefficient | N/A | |

Date:

09/12/2013



Agata K-Roche Checked and Approved: Senior Technician

Unit 10 Wessex Road Bourne end Buckinghamshire SL8 5DT

Whole sample used

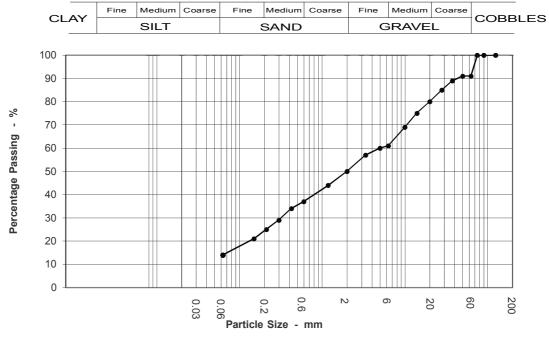
Sheet 1 of 1

Remarks:



DETERMINATION OF PARTICLE SIZE DISTRIBUTION WET SIEVING METHOD

| BS1377 : Part 2 : 1990 Clause 9.2 | | | |
|-----------------------------------|--|----------------|--------------|
| Client: | Aberdeenshire Council | Lab Sample No: | S8722 |
| Contract No: | 5414 | Hole ID: | BH1A |
| Contract Name: | Stonehaven FAS | Sample Type: | В |
| Somalo | | Sample No: | 29 |
| Sample | Greyish brown clayey very sandy GRAVEL | Depth (m): | 9.00 - 10.00 |
| Description: | | Date Tested: | 27/11/2013 |



| Sieving Particle Size mm % Passing | | Sedimen | tation |
|--|-----|---------------------|-----------|
| | | Particle Size mm | % Passing |
| 125 | 100 | | |
| 90 | 100 | | |
| 75 | 100 | | |
| 63 | 91 | | |
| 50 | 91 | | |
| 37.5 | 89 | | |
| 28 | 85 | | |
| 20 | 80 | | |
| 14 | 75 | | |
| 10 | 69 | | |
| 6.3 | 61 | | |
| 5 | 60 | | |
| 3.35 | 57 | | |
| 2 | 50 | | |
| 1.18 | 44 | | |
| 0.6 | 37 | | |
| 0.425 | 34 | | |
| 0.3 | 29 | | |
| 0.212 | 25 | | |
| 0.15 | 21 | | |
| 0.063 | 14 | | |

Agata K-Roche

Senior Technician

| Test Method | | |
|---------------------------|-----|--|
| BS 1377 : Part 2 : 1990 | | |
| Sieving Clause Depth (m): | | |
| Sedimentation | N/A | |

| Sample Proportions | | | |
|--------------------|------|--|--|
| Cobbles | 9.0 | | |
| Gravel | 41.0 | | |
| Sand | 36.0 | | |
| Silt & Clay | 14.0 | | |
| | | | |

| Grading Analysis | | |
|------------------------|------|--|
| D60 D10 | 5.00 | |
| Uniformity Coefficient | N/A | |

1489

Unit 10 Wessex Road Bourne end Buckinghamshire SL8 5DT

Sheet 1 of 1

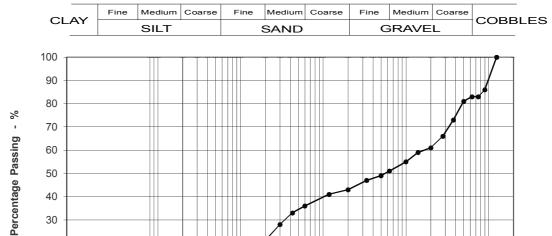
Remarks:

Checked and Approved:



DETERMINATION OF PARTICLE SIZE DISTRIBUTION WET SIEVING METHOD

| BS1377 : Part 2 : 1990 Clause 9.2 | | | |
|-----------------------------------|--------------------------------------|----------------|-------------|
| Client: | Aberdeenshire Council | Lab Sample No: | S8723 |
| Contract No: | 5414 | Hole ID: | BH2 |
| Contract Name: | Stonehaven FAS | Sample Type: | В |
| Sample | | Sample No: | 6 |
| • | Brown very sandy GRAVEL with cobbles | Depth (m): | 0.80 - 1.00 |
| Description: | | Date Tested: | 28/11/2013 |



N

ი

| 0 | | 0.03 |) () | 0 12 e Size - | 0.6 |
|---------------------|-----------|---------------------|-----------|---------------------|-----|
| | | | Partici | e Size - | |
| Sievir | ng | Sediment | tation | | |
| Particle Size mm | % Passing | Particle Size mm | % Passing | | |
| 125 | 100 | | | | 5 |
| 90 | 86 | | | | |
| 75 | 83 | | | | |
| 63 | 83 | | | | |
| 50 | 81 | | | | |
| 37.5 | 73 | | | | |
| 28 | 66 | | | | |
| 20 | 61 | | | | |
| 14 | 59 | | | | |
| 10 | 55 | | | | |
| 6.3 | 51 | | | | |
| 5 | 49 | | | | |
| 3.35 | 47 | | | | |
| 2 | 43 | | | | |
| 1.18 | 41 | | | | |
| 0.6 | 36 | | | | |
| 0.425 | 33 | | | | |
| 0.3 | 28 | | | | |
| 0.212 | 22 | | | | |
| 0.15 | 16 | | | | |
| 0.063 | 8 | | | | Uı |

20 10 0

| Test Method | | |
|---------------------------|-----|--|
| BS 1377 : Part 2 : 1990 | | |
| Sieving Clause Depth (m): | | |
| Sedimentation | N/A | |

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| Sample Proportions | | | |
|--------------------|------|--|--|
| Cobbles | 17.0 | | |
| Gravel | 40.0 | | |
| Sand | 35.0 | | |
| Silt & Clay | 8.0 | | |

| Grading Analysis | | |
|------------------------|--------|--|
| D60 | 17.00 | |
| D10 | 0.08 | |
| Uniformity Coefficient | 200.59 | |



Sheet 1 of 1

Remarks:

Checked and Approved:

Whole sample used

Agata K-Roche

Senior Technician

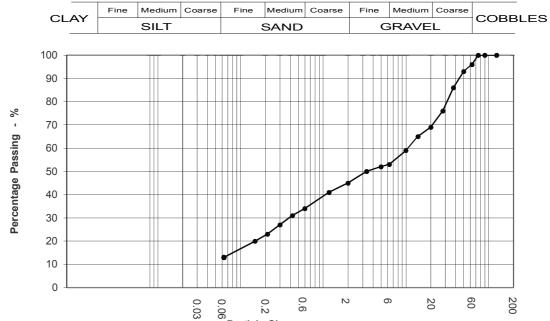
Unit 10 Wessex Road Bourne end Buckinghamshire SL8 5DT

Date: 09/12/2013



DETERMINATION OF PARTICLE SIZE DISTRIBUTION WET SIEVING METHOD

| BS1377 : Part 2 : 1990 Clause 9.2 | | | | |
|-----------------------------------|---|----------------|-------------|--|
| Client: | Aberdeenshire Council | Lab Sample No: | S8725 | |
| Contract No: | 5414 | Hole ID: | BH2 | |
| Contract Name: | Stonehaven FAS | Sample Type: | В | |
| Somalo | | Sample No: | 12 | |
| Sample | Brown silty very sandy GRAVEL with occasional cobbles | Depth (m): | 3.00 - 4.00 | |
| Description: | | Date Tested: | 05/12/2013 | |



| Particle | Size | - | mm |
|-----------|------|---|----|
| i aitioio | 0.20 | | |

| Sieving | | Sedimentation | |
|---------------------|-----------|---------------------|-----------|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | | |
| 90 | 100 | | |
| 75 | 100 | | |
| 63 | 96 | | |
| 50 | 93 | | |
| 37.5 | 86 | | |
| 28 | 76 | | |
| 20 | 69 | | |
| 14 | 65 | | |
| 10 | 59 | | |
| 6.3 | 53 | | |
| 5 | 52 | | |
| 3.35 | 50 | | |
| 2 | 45 | | |
| 1.18 | 41 | | |
| 0.6 | 34 | | |
| 0.425 | 31 | | |
| 0.3 | 27 | | |
| 0.212 | 23 | | |
| 0.15 | 20 | | |
| 0.063 | 13 | | |

| Test Method | | |
|-------------------------|-------------------|--|
| BS 1377 : Part 2 : 1990 | | |
| Sieving | Clause Depth (m): | |
| Sedimentation | N/A | |

| Sample Proportions | | | |
|--------------------|------|--|--|
| Cobbles | 4.0 | | |
| Gravel | 51.0 | | |
| Sand | 32.0 | | |
| Silt & Clay | 13.0 | | |

| Grading Analysis | | |
|------------------------|-------|--|
| D60 D10 | 10.67 | |
| Uniformity Coefficient | N/A | |

Date:

09/12/2013



 Approved:
 Senior Technician

 Unit 10 Wessex Road Bourne end Buckinghamshire SL8 5DT

Agata K-Roche

Whole sample used

Sheet 1 of 1

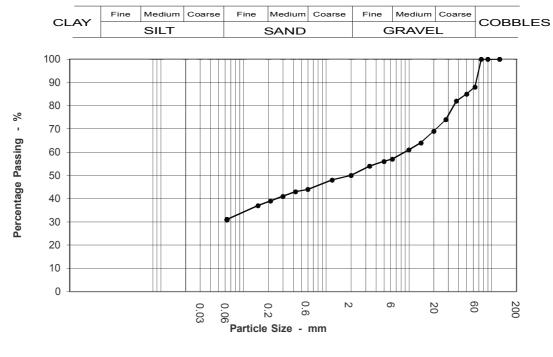
Remarks:

Checked and Approved:



DETERMINATION OF PARTICLE SIZE DISTRIBUTION WET SIEVING METHOD

| BS1377 : Part 2 : 199 | 00 Clause 9.2 | | |
|-----------------------|--|----------------|-------------|
| Client: | Aberdeenshire Council | Lab Sample No: | S8726 |
| Contract No: | 5414 | Hole ID: | BH2 |
| Contract Name: | Stonehaven FAS | Sample Type: | В |
| Samala | | Sample No: | 14 |
| Sample | Brown slightly sandy clayey gravelly SILT with cobbles | Depth (m): | 4.00 - 5.00 |
| Description: | | Date Tested: | 29/11/2013 |



| Sievir | Sieving | | tation |
|---------------------|-----------|---------------------|-----------|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | | |
| 90 | 100 | | |
| 75 | 100 | | |
| 63 | 88 | | |
| 50 | 85 | | |
| 37.5 | 82 | | |
| 28 | 74 | | |
| 20 | 69 | | |
| 14 | 64 | | |
| 10 | 61 | | |
| 6.3 | 57 | | |
| 5 | 56 | | |
| 3.35 | 54 | | |
| 2 | 50 | | |
| 1.18 | 48 | | |
| 0.6 | 44 | | |
| 0.425 | 43 | | |
| 0.3 | 41 | | |
| 0.212 | 39 | | |
| 0.15 | 37 | | |
| 0.063 | 31 | | |

| Test Method | | |
|-------------------------|-------------------|--|
| BS 1377 : Part 2 : 1990 | | |
| Sieving | Clause Depth (m): | |
| Sedimentation | N/A | |

| Sample Proportions | | | |
|--------------------|------|--|--|
| Cobbles | 12.0 | | |
| Gravel | 38.0 | | |
| Sand | 19.0 | | |
| Silt & Clay | 31.0 | | |

| Grading Analysis | | |
|------------------------|------|--|
| D60 D10 | 9.08 | |
| Uniformity Coefficient | N/A | |



Unit 10 Wessex Road Bourne end Buckinghamshire SL8 5DT

Remarks:

Checked and Approved:

Whole sample used

Agata K-Roche

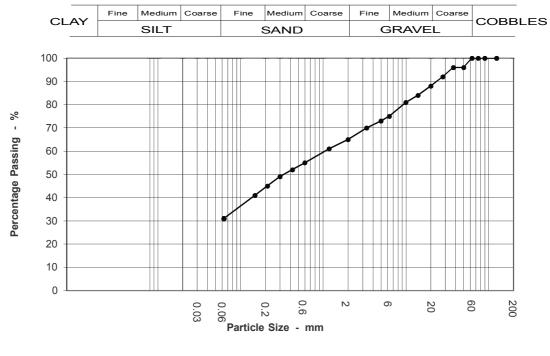
Senior Technician

Date: 09/12/2013



DETERMINATION OF PARTICLE SIZE DISTRIBUTION WET SIEVING METHOD

| BS1377 : Part 2 : 19 | 00 Clause 9.2 | | |
|----------------------|--|----------------|-------------|
| Client: | Aberdeenshire Council | Lab Sample No: | S8727 |
| Contract No: | 5414 | Hole ID: | BH2 |
| Contract Name: | Stonehaven FAS | Sample Type: | В |
| Somalo | | Sample No: | 18 |
| Sample | Reddish brown very silty SAND and GRAVEL | Depth (m): | 6.00 - 6.50 |
| Description: | | Date Tested: | 27/11/2013 |



| Sieving | | Sedimentation | |
|---------------------|-----------|---------------------|-----------|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | | |
| 90 | 100 | | |
| 75 | 100 | | |
| 63 | 100 | | |
| 50 | 96 | | |
| 37.5 | 96 | | |
| 28 | 92 | | |
| 20 | 88 | | |
| 14 | 84 | | |
| 10 | 81 | | |
| 6.3 | 75 | | |
| 5 | 73 | | |
| 3.35 | 70 | | |
| 2 | 65 | | |
| 1.18 | 61 | | |
| 0.6 | 55 | | |
| 0.425 | 52 | | |
| 0.3 | 49 | | |
| 0.212 | 45 | | |
| 0.15 | 41 | | |
| 0.063 | 31 | | |

Agata K-Roche

Senior Technician

| Test Method | | |
|-------------------------|-------------------|--|
| BS 1377 : Part 2 : 1990 | | |
| Sieving | Clause Depth (m): | |
| Sedimentation | N/A | |

| Sample Proportions | | |
|--------------------|------|--|
| Cobbles | 0.0 | |
| Gravel | 35.0 | |
| Sand | 34.0 | |
| Silt & Clay | 31.0 | |

| Grading Analysis | | |
|------------------------|------|--|
| D60 D10 | 1.08 | |
| Uniformity Coefficient | N/A | |

Date:

09/12/2013

| , appi or oai | |
|---------------------|------------------------------------|
| Unit 10 Wessex Road | Bourne end Buckinghamshire SL8 5DT |

Sheet 1 of 1

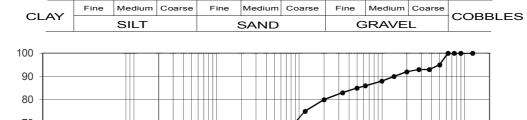
Remarks:

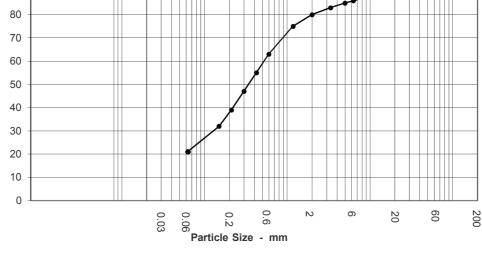
Checked and Approved:



DETERMINATION OF PARTICLE SIZE DISTRIBUTION WET SIEVING METHOD

| BS1377 : Part 2 : 1990 Clause 9.2 | | | |
|-----------------------------------|---------------------------|----------------|-------------|
| Client: | Aberdeenshire Council | Lab Sample No: | S8728 |
| Contract No: | 5414 | Hole ID: | BH3 |
| Contract Name: | Stonehaven FAS | Sample Type: | В |
| Somalo | | Sample No: | 2 |
| Sample | Grey clayey gravelly SAND | Depth (m): | 0.30 - 0.50 |
| Description: | | Date Tested: | 02/12/2013 |





| Sieving | | Sediment | tation |
|---------------------|-----------|---------------------|-----------|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | | |
| 90 | 100 | | |
| 75 | 100 | | |
| 63 | 100 | | |
| 50 | 95 | | |
| 37.5 | 93 | | |
| 28 | 93 | | |
| 20 | 92 | | |
| 14 | 90 | | |
| 10 | 88 | | |
| 6.3 | 86 | | |
| 5 | 85 | | |
| 3.35 | 83 | | |
| 2 | 80 | | |
| 1.18 | 75 | | |
| 0.6 | 63 | | |
| 0.425 | 55 | | |
| 0.3 | 47 | | |
| 0.212 | 39 | | |
| 0.15 | 32 | | |
| 0.063 | 21 | | |

| Test Method | | |
|-------------------------|-------------------|--|
| BS 1377 : Part 2 : 1990 | | |
| Sieving | Clause Depth (m): | |
| Sedimentation | N/A | |

| Sample Proportions | | | |
|--------------------|------|--|--|
| Cobbles | 0.0 | | |
| Gravel | 20.0 | | |
| Sand | 59.0 | | |
| Silt & Clay | 21.0 | | |

| Grading Analysis | | |
|------------------------|------|--|
| D60 D10 | 0.53 | |
| Uniformity Coefficient | N/A | |

Agata K-Roche Senior Technician

Percentage Passing - %

Unit 10 Wessex Road Bourne end Buckinghamshire SL8 5DT

Remarks:

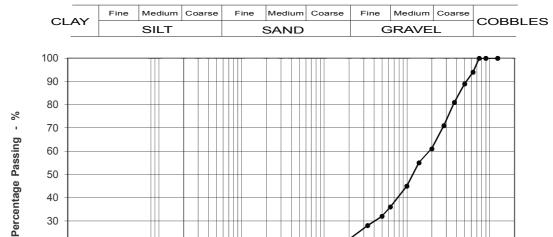
Checked and Approved:





DETERMINATION OF PARTICLE SIZE DISTRIBUTION WET SIEVING METHOD

| BS1377 : Part 2 : 1990 Clause 9.2 | | | | |
|-----------------------------------|---|----------------|-------------|--|
| Client: | Aberdeenshire Council | Lab Sample No: | S8729 | |
| Contract No: | 5414 | Hole ID: | BH3 | |
| Contract Name: | Stonehaven FAS | Sample Type: | В | |
| Somalo | | Sample No: | 5 | |
| Sample | Brown slightly clayey sandy GRAVEL with cobbles | Depth (m): | 1.20 - 2.00 | |
| Description: | | Date Tested: | 28/11/2013 | |



N

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| | 0 | | 0.03 | 0 06 Particl | 0 i2 e Size - | 0 6 mm |
|---|---------------------|-----------|---------------------|--------------------|---------------------|--------------|
| ĺ | Sievir | na | Sediment | tation | 1 | |
| | Particle Size mm | % Passing | Particle Size mm | % Passing | | |
| | 125 | 100 | | | | 5 |
| | 90 | 100 | | | | |
| | 75 | 100 | | | | |
| | 63 | 94 | | | | |
| | 50 | 89 | | | | |
| | 37.5 | 81 | | | | |
| | 28 | 71 | | | | |
| | 20 | 61 | | | | |
| | 14 | 55 | | | | |
| | 10 | 45 | | | | |
| | 6.3 | 36 | | | | |
| | 5 | 32 | | | | |
| | 3.35 | 28 | | | | |
| | 2 | 22 | | | | |
| | 1.18 | 17 | | | | - |
| | 0.6 | 11 | | | | |
| | 0.425 | 9 | | | | |
| | 0.3 | 8 | | | | |
| | 0.212 | 7 | | | | |
| | 0.15 | 6 | | | | |
| | 0.063 | 4 | | | | Uı |

20 10 0

| Test Method | | |
|-------------------------|-------------------|--|
| BS 1377 : Part 2 : 1990 | | |
| Sieving | Clause Depth (m): | |
| Sedimentation | N/A | |

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| Sample Proportions | | | |
|--------------------|------|--|--|
| Cobbles | 6.0 | | |
| Gravel | 72.0 | | |
| Sand | 18.0 | | |
| Silt & Clay | 4.0 | | |

| Grading Analysis | | |
|------------------------------|-------|--|
| D60 | 19.00 | |
| D10 | 0.51 | |
| Uniformity Coefficient 37.07 | | |



Sheet 1 of 1

Remarks:

Checked and Approved:

Whole sample used

Agata K-Roche

Senior Technician

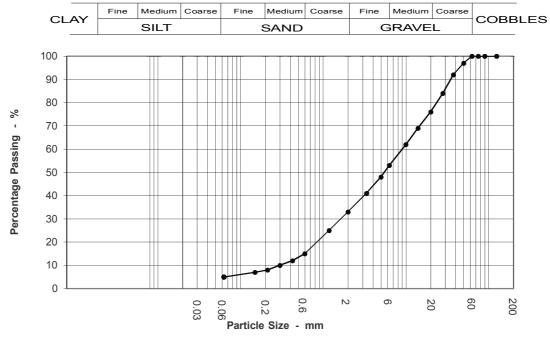
Unit 10 Wessex Road Bourne end Buckinghamshire SL8 5DT

Date: 09/12/2013



DETERMINATION OF PARTICLE SIZE DISTRIBUTION WET SIEVING METHOD

| BS1377 : Part 2 : 19 | 90 Clause 9.2 | | |
|----------------------|---|----------------|-------------|
| Client: | Aberdeenshire Council | Lab Sample No: | S8731 |
| Contract No: | 5414 | Hole ID: | BH3 |
| Contract Name: | Stonehaven FAS | Sample Type: | В |
| Somalo | | Sample No: | 7 |
| Sample | Brown slightly clayey very sandy GRAVEL | Depth (m): | 2.00 - 2.60 |
| Description: | | Date Tested: | 04/12/2013 |



| Sieving | | Sedimen | tation |
|---------------------|-----------|---------------------|-----------|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | | |
| 90 | 100 | | |
| 75 | 100 | | |
| 63 | 100 | | |
| 50 | 97 | | |
| 37.5 | 92 | | |
| 28 | 84 | | |
| 20 | 76 | | |
| 14 | 69 | | |
| 10 | 62 | | |
| 6.3 | 53 | | |
| 5 | 48 | | |
| 3.35 | 41 | | |
| 2 | 33 | | |
| 1.18 | 25 | | |
| 0.6 | 15 | | |
| 0.425 | 12 | | |
| 0.3 | 10 | | |
| 0.212 | 8 | | |
| 0.15 | 7 | | |
| 0.063 | 5 | | |

| Test Method | |
|---------------------------|-----|
| BS 1377 : Part 2 : 1990 | |
| Sieving Clause Depth (m): | |
| Sedimentation | N/A |

| Sample Proportions | | | |
|--------------------|------|--|--|
| Cobbles | 0.0 | | |
| Gravel | 67.0 | | |
| Sand | 28.0 | | |
| Silt & Clay | 5.0 | | |
| | | | |

| Grading Analysis | | |
|------------------------|-------|--|
| D60 | 9.18 | |
| D10 | 0.30 | |
| Uniformity Coefficient | 30.59 | |

Date:

09/12/2013



Agata K-Roche Checked and Approved: Senior Technician

Unit 10 Wessex Road Bourne end Buckinghamshire SL8 5DT

Whole sample used

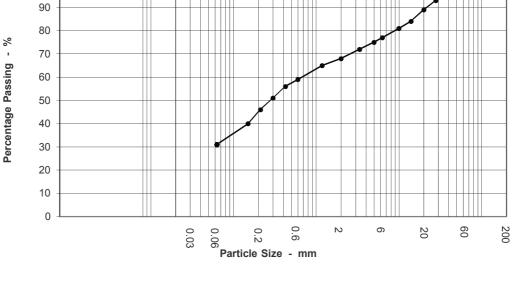
Remarks:



DETERMINATION OF PARTICLE SIZE DISTRIBUTION WET SIEVING METHOD

| BS1377 : Part 2 : 19 | 90 Clause 9.2 | | |
|----------------------|------------------------------------|----------------|-------------|
| Client: | Aberdeenshire Council | Lab Sample No: | S8735 |
| Contract No: | 5414 | Hole ID: | BH3 |
| Contract Name: | Stonehaven FAS | Sample Type: | В |
| Somalo | | Sample No: | 15 |
| Sample | Brown slightly gravelly sandy CLAY | Depth (m): | 4.80 - 5.00 |
| Description: | | Date Tested: | 28/11/2013 |





| Sievir | ng | Sediment | tation |
|---------------------|-----------|---------------------|-----------|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | | |
| 90 | 100 | | |
| 75 | 100 | | |
| 63 | 100 | | |
| 50 | 100 | | |
| 37.5 | 97 | | |
| 28 | 93 | | |
| 20 | 89 | | |
| 14 | 84 | | |
| 10 | 81 | | |
| 6.3 | 77 | | |
| 5 | 75 | | |
| 3.35 | 72 | | |
| 2 | 68 | | |
| 1.18 | 65 | | |
| 0.6 | 59 | | |
| 0.425 | 56 | | |
| 0.3 | 51 | | |
| 0.212 | 46 | | |
| 0.15 | 40 | | |
| 0.063 | 31 | | |

| Test Method | | |
|-------------------------|-------------------|--|
| BS 1377 : Part 2 : 1990 | | |
| Sieving | Clause Depth (m): | |
| Sedimentation | N/A | |

| Sample Proportions | | | |
|--------------------|------|--|--|
| Cobbles | 0.0 | | |
| Gravel | 32.0 | | |
| Sand | 37.0 | | |
| Silt & Clay | 31.0 | | |

| Grading Analysis | | |
|----------------------------|------|--|
| D60 D10 | 0.70 | |
| Uniformity Coefficient N/A | | |



Remarks:

Checked and Approved:

Whole sample used

Agata K-Roche

Senior Technician

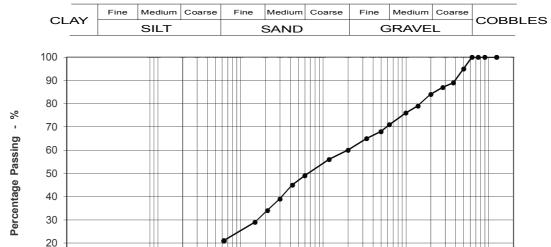
Unit 10 Wessex Road Bourne end Buckinghamshire SL8 5DT

Date: 09/12/2013



DETERMINATION OF PARTICLE SIZE DISTRIBUTION WET SIEVING METHOD

| BS1377 : Part 2 : 19 | 90 Clause 9.2 | | |
|----------------------|-----------------------------------|----------------|-------------|
| Client: | Aberdeenshire Council | Lab Sample No: | S8733 |
| Contract No: | 5414 | Hole ID: | BH3 |
| Contract Name: | Stonehaven FAS | Sample Type: | В |
| Samula | | Sample No: | 13 |
| Sample | Brown very clayey SAND and GRAVEL | Depth (m): | 4.00 - 4.70 |
| Description: | | Date Tested: | 05/12/2013 |



0.06 Particle Size - mm

0.03

0.6

N

ი

| Sieving | | Sedimentation | |
|---------------------|-----------|---------------------|-----------|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | | |
| 90 | 100 | | |
| 75 | 100 | | |
| 63 | 100 | | |
| 50 | 95 | | |
| 37.5 | 89 | | |
| 28 | 87 | | |
| 20 | 84 | | |
| 14 | 79 | | |
| 10 | 76 | | |
| 6.3 | 71 | | |
| 5 | 68 | | |
| 3.35 | 65 | | |
| 2 | 60 | | |
| 1.18 | 56 | | |
| 0.6 | 49 | | |
| 0.425 | 45 | | |
| 0.3 | 39 | | |
| 0.212 | 34 | | |
| 0.15 | 29 | | |
| 0.063 | 21 | | |

| Test Method | | | |
|-------------------------|-------------------|--|--|
| BS 1377 : Part 2 : 1990 | | | |
| Sieving | Clause Depth (m): | | |
| Sedimentation | N/A | | |

20

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| Sample Proportions | | | | |
|--------------------|------|--|--|--|
| Cobbles | 0.0 | | | |
| Gravel | 40.0 | | | |
| Sand | 39.0 | | | |
| Silt & Clay | 21.0 | | | |

| Grading Analysis | | | |
|------------------------|------|--|--|
| D60 D10 | 2.00 | | |
| Uniformity Coefficient | N/A | | |

Date:

09/12/2013



Approved: Senior Technician

Unit 10 Wessex Road Bourne end Buckinghamshire SL8 5DT

Agata K-Roche

Whole sample used

10 0

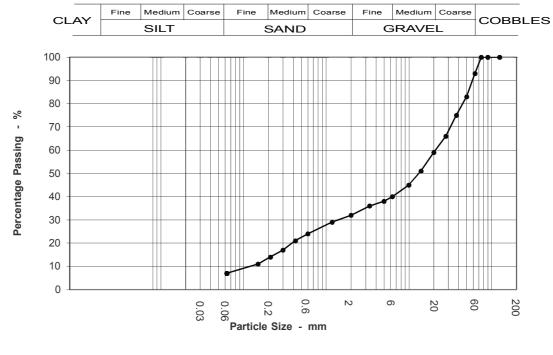
Remarks:

Checked and



DETERMINATION OF PARTICLE SIZE DISTRIBUTION WET SIEVING METHOD

| BS1377 : Part 2 : 19 | 90 Clause 9.2 | | |
|----------------------|--|----------------|-------------|
| Client: | Aberdeenshire Council | Lab Sample No: | S8739 |
| Contract No: | 5414 | Hole ID: | BH4 |
| Contract Name: | Stonehaven FAS | Sample Type: | В |
| Somalo | | Sample No: | 4 |
| Sample | Purplish brown clayey very sandy GRAVEL with cobbles | Depth (m): | 1.20 - 1.90 |
| Description: | | Date Tested: | 04/12/2013 |



| Sieving | | Sedimentation | |
|---------------------|-----------|---------------------|-----------|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | | |
| 90 | 100 | | |
| 75 | 100 | | |
| 63 | 93 | | |
| 50 | 83 | | |
| 37.5 | 75 | | |
| 28 | 66 | | |
| 20 | 59 | | |
| 14 | 51 | | |
| 10 | 45 | | |
| 6.3 | 40 | | |
| 5 | 38 | | |
| 3.35 | 36 | | |
| 2 | 32 | | |
| 1.18 | 29 | | |
| 0.6 | 24 | | |
| 0.425 | 21 | | |
| 0.3 | 17 | | |
| 0.212 | 14 | | |
| 0.15 | 11 | | |
| 0.063 | 7 | | |

| Test Method | | | |
|-------------------------|-------------------|--|--|
| BS 1377 : Part 2 : 1990 | | | |
| Sieving | Clause Depth (m): | | |
| Sedimentation | N/A | | |

| Sample Proportions | | | |
|--------------------|------|--|--|
| Cobbles | 7.0 | | |
| Gravel | 61.0 | | |
| Sand | 25.0 | | |
| Silt & Clay | 7.0 | | |

| Grading Analysis | | | |
|------------------------|--------|--|--|
| D60 | 21.14 | | |
| D10 | 0.13 | | |
| Uniformity Coefficient | 164.86 | | |



Sheet 1 of 1

Remarks:

Checked and Approved:

Whole sample used

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Senior Technician

Unit 10 Wessex Road Bourne end Buckinghamshire SL8 5DT

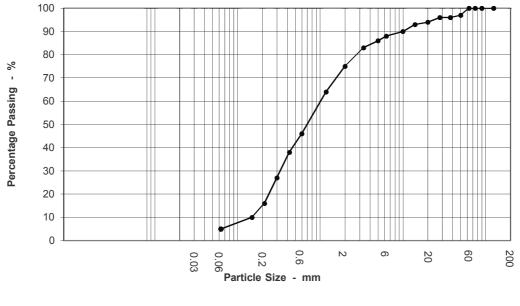
Date: 09/12/2013



DETERMINATION OF PARTICLE SIZE DISTRIBUTION WET SIEVING METHOD

| BS1377 : Part 2 : 1990 Clause 9.2 | | | | |
|-----------------------------------|--|----------------|-------------|--|
| Client: | Aberdeenshire Council | Lab Sample No: | S8742 | |
| Contract No: | 5414 | Hole ID: | BH4 | |
| Contract Name: | Stonehaven FAS | Sample Type: | В | |
| Samula | | Sample No: | 9 | |
| Sample | Greyish brown slightly clayey very gravelly SAND | Depth (m): | 3.20 - 5.00 | |
| Description: | | Date Tested: | 25/11/2013 | |





| Sievir | Sieving | | Sedimentation | |
|---------------------|-----------|---------------------|---------------|--|
| Particle Size mm | % Passing | Particle Size mm | % Passing | |
| 125 | 100 | | | |
| 90 | 100 | | | |
| 75 | 100 | | | |
| 63 | 100 | | | |
| 50 | 97 | | | |
| 37.5 | 96 | | | |
| 28 | 96 | | | |
| 20 | 94 | | | |
| 14 | 93 | | | |
| 10 | 90 | | | |
| 6.3 | 88 | | | |
| 5 | 86 | | | |
| 3.35 | 83 | | | |
| 2 | 75 | | | |
| 1.18 | 64 | | | |
| 0.6 | 46 | | | |
| 0.425 | 38 | | | |
| 0.3 | 27 | | | |
| 0.212 | 16 | | | |
| 0.15 | 10 | | | |
| 0.063 | 5 | | | |

| Test Method | | |
|-------------------------|-------------------|--|
| BS 1377 : Part 2 : 1990 | | |
| Sieving | Clause Depth (m): | |
| Sedimentation | N/A | |

| Sample Proportions | | | |
|--------------------|------|--|--|
| Cobbles | 0.0 | | |
| Gravel | 25.0 | | |
| Sand | 70.0 | | |
| Silt & Clay | 5.0 | | |

| Grading Analysis | | |
|------------------------|------|--|
| D60 | 1.05 | |
| D10 | 0.15 | |
| Uniformity Coefficient | 7.01 | |

Date:

09/12/2013



Approved: S Unit 10 Wessex Road B

Checked and

Agata K-Roche Senior Technician

Unit 10 Wessex Road Bourne end Buckinghamshire SL8 5DT

Whole sample used

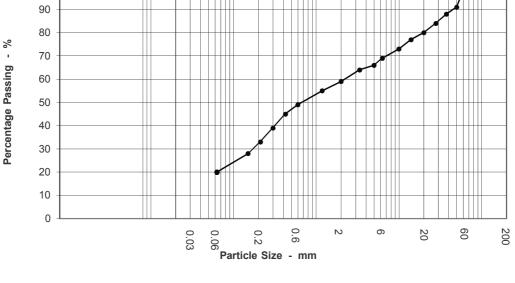
Remarks:



DETERMINATION OF PARTICLE SIZE DISTRIBUTION WET SIEVING METHOD

| Client: | Aberdeenshire Council | Lab Sample No: | S8743 |
|----------------|--------------------------------------|----------------|-------------|
| Contract No: | 5414 | Hole ID: | BH4 |
| Contract Name: | Stonehaven FAS | Sample Type: | В |
| 0 | | Sample No: | 13 |
| Sample | Dark brown sandy gravelly silty CLAY | Depth (m): | 5.10 - 5.40 |
| Description: | Date Tested: | 28/11/2013 | |





| Sievir | ng | Sedimen | tation |
|---------------------|-----------|---------------------|-----------|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | | |
| 90 | 100 | | |
| 75 | 100 | | |
| 63 | 100 | | |
| 50 | 91 | | |
| 37.5 | 88 | | |
| 28 | 84 | | |
| 20 | 80 | | |
| 14 | 77 | | |
| 10 | 73 | | |
| 6.3 | 69 | | |
| 5 | 66 | | |
| 3.35 | 64 | | |
| 2 | 59 | | |
| 1.18 | 55 | | |
| 0.6 | 49 | | |
| 0.425 | 45 | | |
| 0.3 | 39 | | |
| 0.212 | 33 | | |
| 0.15 | 28 | | |
| 0.063 | 20 | | |

| Test Method | | |
|-------------------------|-------------------|--|
| BS 1377 : Part 2 : 1990 | | |
| Sieving | Clause Depth (m): | |
| Sedimentation | N/A | |

| Sample Proportions | | |
|--------------------|------|--|
| Cobbles | 0.0 | |
| Gravel | 41.0 | |
| Sand | 39.0 | |
| Silt & Clay | 20.0 | |

| Grading Analysis | | |
|------------------------|------|--|
| D60 D10 | 2.27 | |
| Uniformity Coefficient | N/A | |

Date:

09/12/2013



Checked andAgata K-RocheApproved:Senior Technician

Unit 10 Wessex Road Bourne end Buckinghamshire SL8 5DT

Whole sample used

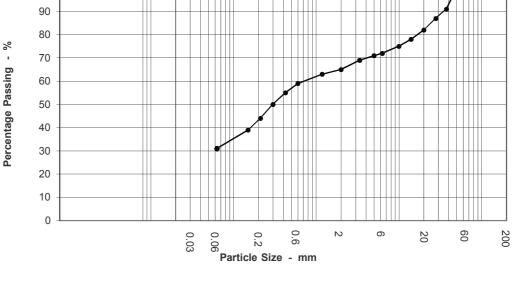
Remarks:



DETERMINATION OF PARTICLE SIZE DISTRIBUTION WET SIEVING METHOD

| 90 Clause 9.2 | | |
|---------------------------|---|--|
| Aberdeenshire Council | Lab Sample No: | S8744 |
| 5414 | Hole ID: | BH4 |
| Stonehaven FAS | Sample Type: | В |
| | Sample No: | 15 |
| Brown sandy gravelly CLAY | Depth (m): | 5.50 - 5.90 |
| | Date Tested: | 27/11/2013 |
| | Aberdeenshire Council 5414 Stonehaven FAS | Aberdeenshire CouncilLab Sample No:5414Hole ID:Stonehaven FASSample Type:Brown sandy gravelly CLAYDepth (m): |





| Sievir | ng | Sediment | tation |
|---------------------|-----------|---------------------|-----------|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | | |
| 90 | 100 | | |
| 75 | 100 | | |
| 63 | 100 | | |
| 50 | 100 | | |
| 37.5 | 91 | | |
| 28 | 87 | | |
| 20 | 82 | | |
| 14 | 78 | | |
| 10 | 75 | | |
| 6.3 | 72 | | |
| 5 | 71 | | |
| 3.35 | 69 | | |
| 2 | 65 | | |
| 1.18 | 63 | | |
| 0.6 | 59 | | |
| 0.425 | 55 | | |
| 0.3 | 50 | | |
| 0.212 | 44 | | |
| 0.15 | 39 | | |
| 0.063 | 31 | | |

| Test Method | | |
|-------------------------|-------------------|--|
| BS 1377 : Part 2 : 1990 | | |
| Sieving | Clause Depth (m): | |
| Sedimentation | N/A | |

| Sample Proportions | | |
|--------------------|------|--|
| Cobbles | 0.0 | |
| Gravel | 35.0 | |
| Sand | 34.0 | |
| Silt & Clay | 31.0 | |

| Grading Analysis | | |
|------------------------|------|--|
| D60 D10 | 0.75 | |
| Uniformity Coefficient | N/A | |



Unit 10 Wessex Road Bourne end Buckinghamshire SL8 5DT

Date: 09/12/2013

Remarks:

Checked and Approved:

Whole sample used

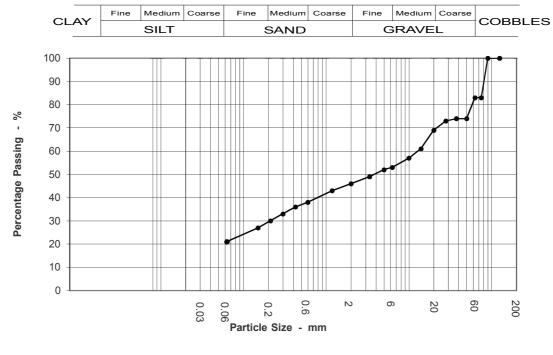
Agata K-Roche

Senior Technician



DETERMINATION OF PARTICLE SIZE DISTRIBUTION WET SIEVING METHOD

| BS1377 : Part 2 : 19 | 90 Clause 9.2 | | |
|----------------------|---|----------------|-------------|
| Client: | Aberdeenshire Council | Lab Sample No: | S8746 |
| Contract No: | 5414 | Hole ID: | BH4 |
| Contract Name: | Stonehaven FAS | Sample Type: | В |
| Somalo | | Sample No: | 25 |
| Sample | Brown clayey very sandy GRAVEL with cobbles | Depth (m): | 8.50 - 8.70 |
| Description: | | Date Tested: | 02/12/2013 |



| Sievir | ng | Sedimen | tation |
|---------------------|-----------|---------------------|-----------|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | | |
| 90 | 100 | | |
| 75 | 83 | | |
| 63 | 83 | | |
| 50 | 74 | | |
| 37.5 | 74 | | |
| 28 | 73 | | |
| 20 | 69 | | |
| 14 | 61 | | |
| 10 | 57 | | |
| 6.3 | 53 | | |
| 5 | 52 | | |
| 3.35 | 49 | | |
| 2 | 46 | | |
| 1.18 | 43 | | |
| 0.6 | 38 | | |
| 0.425 | 36 | | |
| 0.3 | 33 | | |
| 0.212 | 30 | | |
| 0.15 | 27 | | |
| 0.063 | 21 | | |

| Test Method | | |
|-------------------------|-------------------|--|
| BS 1377 : Part 2 : 1990 | | |
| Sieving | Clause Depth (m): | |
| Sedimentation | N/A | |

| Sample Proportions | | | |
|--------------------|------|--|--|
| Cobbles | 17.0 | | |
| Gravel | 37.0 | | |
| Sand | 25.0 | | |
| Silt & Clay | 21.0 | | |

| Grading Analysis | | |
|------------------------|-------|--|
| D60 D10 | 13.00 | |
| Uniformity Coefficient | N/A | |

Date:

09/12/2013



Senior Technician

Unit 10 Wessex Road Bourne end Buckinghamshire SL8 5DT

Agata K-Roche

Whole sample used

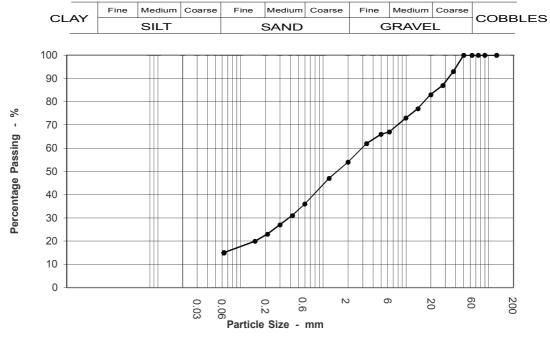
Remarks:

Checked and Approved:



DETERMINATION OF PARTICLE SIZE DISTRIBUTION WET SIEVING METHOD

| BS1377 : Part 2 : 199 | 90 Clause 9.2 | | |
|-----------------------|---|----------------|--------------|
| Client: | Aberdeenshire Council | Lab Sample No: | S8747 |
| Contract No: | 5414 | Hole ID: | BH4 |
| Contract Name: | Stonehaven FAS | Sample Type: | В |
| Samula | | Sample No: | 28 |
| Sample | Greyish brown and brown clayey sandy GRAVEL | Depth (m): | 9.20 - 10.00 |
| Description: | | Date Tested: | 05/12/2013 |



| Sievir | ng | Sedimen | tation |
|---------------------|-----------|---------------------|-----------|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | | |
| 90 | 100 | | |
| 75 | 100 | | |
| 63 | 100 | | |
| 50 | 100 | | |
| 37.5 | 93 | | |
| 28 | 87 | | |
| 20 | 83 | | |
| 14 | 77 | | |
| 10 | 73 | | |
| 6.3 | 67 | | |
| 5 | 66 | | |
| 3.35 | 62 | | |
| 2 | 54 | | |
| 1.18 | 47 | | |
| 0.6 | 36 | | |
| 0.425 | 31 | | |
| 0.3 | 27 | | |
| 0.212 | 23 | | |
| 0.15 | 20 | | |
| 0.063 | 15 | | |

| Test Method | | |
|-------------------------|-------------------|--|
| BS 1377 : Part 2 : 1990 | | |
| Sieving | Clause Depth (m): | |
| Sedimentation | N/A | |

| Sample Proportions | | | |
|--------------------|------|--|--|
| Cobbles | 0.0 | | |
| Gravel | 46.0 | | |
| Sand | 39.0 | | |
| Silt & Clay | 15.0 | | |

| Grading Analysis | | |
|------------------------|------|--|
| D60 D10 | 3.01 | |
| Uniformity Coefficient | N/A | |

Date:

09/12/2013

1489

Unit 10 Wessex Road Bourne end Buckinghamshire SL8 5DT

Agata K-Roche

Senior Technician

Sheet 1 of 1

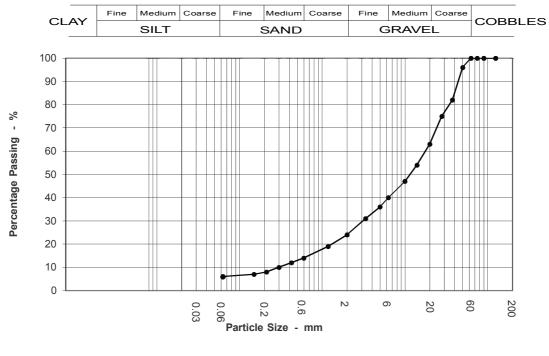
Remarks:

Checked and Approved:



DETERMINATION OF PARTICLE SIZE DISTRIBUTION WET SIEVING METHOD

| BS1377 : Part 2 : 1990 Clause 9.2 | | | | |
|-----------------------------------|------------------------------------|----------------|-------------|--|
| Client: | Aberdeenshire Council | Lab Sample No: | S8748 | |
| Contract No: | 5414 | Hole ID: | BH5 | |
| Contract Name: | Stonehaven FAS | Sample Type: | В | |
| Somalo | | Sample No: | 3 | |
| Sample | Brown slightly clayey sandy GRAVEL | Depth (m): | 1.20 - 2.00 | |
| Description: | | Date Tested: | 05/12/2013 | |



| Sieving | | Sedimentation | | |
|---------------------|-----------|---------------------|-----------|--|
| Particle Size mm | % Passing | Particle Size mm | % Passing | |
| 125 | 100 | | | |
| 90 | 100 | | | |
| 75 | 100 | | | |
| 63 | 100 | | | |
| 50 | 96 | | | |
| 37.5 | 82 | | | |
| 28 | 75 | | | |
| 20 | 63 | | | |
| 14 | 54 | | | |
| 10 | 47 | | | |
| 6.3 | 40 | | | |
| 5 | 36 | | | |
| 3.35 | 31 | | | |
| 2 | 24 | | | |
| 1.18 | 19 | | | |
| 0.6 | 14 | | | |
| 0.425 | 12 | | | |
| 0.3 | 10 | | | |
| 0.212 | 8 | | | |
| 0.15 | 7 | | | |
| 0.063 | 6 | | | |

| Test Method | | | |
|-------------------------|-------------------|--|--|
| BS 1377 : Part 2 : 1990 | | | |
| Sieving | Clause Depth (m): | | |
| Sedimentation | N/A | | |

| Sample Proportions | | | | |
|--------------------|------|--|--|--|
| Cobbles | 0.0 | | | |
| Gravel | 76.0 | | | |
| Sand | 18.0 | | | |
| Silt & Clay | 6.0 | | | |

| Grading Analysis | | | |
|------------------------|-------|--|--|
| D60 | 18.00 | | |
| D10 | 0.30 | | |
| Uniformity Coefficient | 60.00 | | |



Unit 10 Wessex Road Bourne end Buckinghamshire SL8 5DT Sheet 1 of 1

Remarks:

Checked and Approved:

Whole sample used

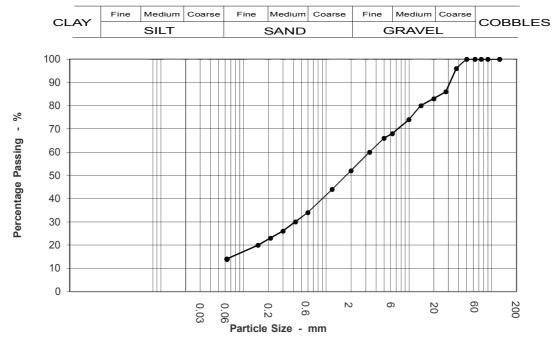
Agata K-Roche

Senior Technician



DETERMINATION OF PARTICLE SIZE DISTRIBUTION WET SIEVING METHOD

| BS1377 : Part 2 : 1990 Clause 9.2 | | | | |
|-----------------------------------|---|----------------|-------------|--|
| Client: | Aberdeenshire Council | Lab Sample No: | S8752 | |
| Contract No: | 5414 | Hole ID: | BH5 | |
| Contract Name: | Stonehaven FAS | Sample Type: | В | |
| Somalo | | Sample No: | 5 | |
| Sample | Grey and yellowish brown clayey very sandy GRAVEL | Depth (m): | 2.70 - 3.30 | |
| Description: | | Date Tested: | 04/12/2013 | |



| Sieving | | Sedimentation | | |
|---------------|-------------|---------------|-------------|--|
| Particle Size | % Passing | Particle Size | % Passing | |
| mm | 70 T assing | mm | 70 T assing | |
| 125 | 100 | | | |
| 90 | 100 | | | |
| 75 | 100 | | | |
| 63 | 100 | | | |
| 50 | 100 | | | |
| 37.5 | 96 | | | |
| 28 | 86 | | | |
| 20 | 83 | | | |
| 14 | 80 | | | |
| 10 | 74 | | | |
| 6.3 | 68 | | | |
| 5 | 66 | | | |
| 3.35 | 60 | | | |
| 2 | 52 | | | |
| 1.18 | 44 | | | |
| 0.6 | 34 | | | |
| 0.425 | 30 | | | |
| 0.3 | 26 | | | |
| 0.212 | 23 | | | |
| 0.15 | 20 | | | |
| 0.063 | 14 | | | |

| Test Method | | | |
|-------------------------|-------------------|--|--|
| BS 1377 : Part 2 : 1990 | | | |
| Sieving | Clause Depth (m): | | |
| Sedimentation | N/A | | |

| Sample Proportions | | | |
|--------------------|------|--|--|
| Cobbles | 0.0 | | |
| Gravel | 48.0 | | |
| Sand | 38.0 | | |
| Silt & Clay | 14.0 | | |

| Grading Analysis | | | |
|------------------------|------|--|--|
| D60 D10 | 3.35 | | |
| Uniformity Coefficient | N/A | | |



Unit 10 Wessex Road Bourne end Buckinghamshire SL8 5DT

Whole sample used

Agata K-Roche

Senior Technician

Date: 09/12/2013

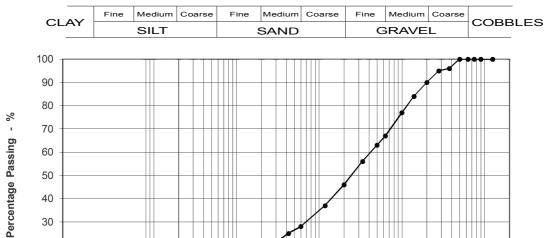
Remarks:

Checked and Approved:



DETERMINATION OF PARTICLE SIZE DISTRIBUTION WET SIEVING METHOD

| BS1377 : Part 2 : 1990 Clause 9.2 | | | | |
|-----------------------------------|---|----------------|-------------|--|
| Client: | Aberdeenshire Council | Lab Sample No: | S8751 | |
| Contract No: | 5414 | Hole ID: | BH5 | |
| Contract Name: | Stonehaven FAS | Sample Type: | В | |
| Samula | | Sample No: | 4 | |
| Sample | Brownish grey slightly silty very gravelly SAND | Depth (m): | 2.00 - 2.70 | |
| Description: | | Date Tested: | 05/12/2013 | |



N

ი

| 0 | | 0.03 | 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 | | 0.6 |
|---------------------|-----------|---------------------|---|----------|-----|
| | | | Particl | e Size - | mm |
| Sievir | ng | Sediment | tation | | |
| Particle Size mm | % Passing | Particle Size mm | % Passing | | |
| 125 | 100 | | | | 5 |
| 90 | 100 | | | | |
| 75 | 100 | | | | |
| 63 | 100 | | | | |
| 50 | 100 | | | | |
| 37.5 | 96 | | | | |
| 28 | 95 | | | | |
| 20 | 90 | | | | |
| 14 | 84 | | | | |
| 10 | 77 | | | | |
| 6.3 | 67 | | | | |
| 5 | 63 | | | | |
| 3.35 | 56 | | | | |
| 2 | 46 | | | | |
| 1.18 | 37 | | | | |
| 0.6 | 28 | | | | |
| 0.425 | 25 | | | | |
| 0.3 | 21 | | | | |
| 0.212 | 18 | | | | |
| 0.15 | 15 | | | | |
| 0.063 | 9 | | |] | Uı |

| Test Method | | |
|---------------------------|-----|--|
| BS 1377 : Part 2 : 1990 | | |
| Sieving Clause Depth (m): | | |
| Sedimentation | N/A | |

20

60

200

| Sample Proportions | | | |
|--------------------|------|--|--|
| Cobbles | 0.0 | | |
| Gravel | 54.0 | | |
| Sand | 37.0 | | |
| Silt & Clay | 9.0 | | |

| Grading Analysis | | |
|------------------------|-------|--|
| D60 | 4.29 | |
| D10 | 0.08 | |
| Uniformity Coefficient | 55.39 | |

Date:

09/12/2013



Remarks:

Checked and Approved:

Agata K-Roche Senior Technician

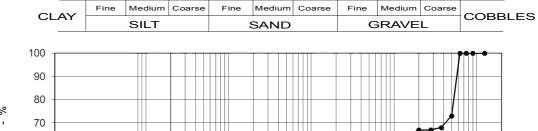
Unit 10 Wessex Road Bourne end Buckinghamshire SL8 5DT

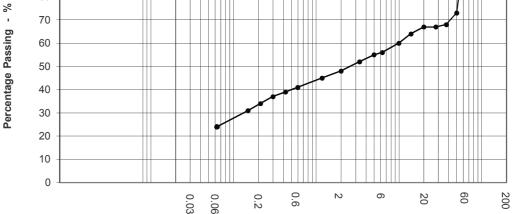
Whole sample used



DETERMINATION OF PARTICLE SIZE DISTRIBUTION WET SIEVING METHOD

| BS1377 : Part 2 : 199 | 00 Clause 9.2 | | |
|-----------------------|--|----------------|-------------|
| Client: | Aberdeenshire Council | Lab Sample No: | S8738 |
| Contract No: | 5414 | Hole ID: | BH3 |
| Contract Name: | Stonehaven FAS | Sample Type: | В |
| Somalo | | Sample No: | 29 |
| Sample | Brown and greyish brown slightly sandy gravelly CLAY | Depth (m): | 9.50 - 9.75 |
| Description: | | Date Tested: | 28/11/2013 |





| 0 | | | |
|----------|------|---|----|
| Particle | Size | - | mm |

| Sievir | ng | Sedimen | tation |
|---------------------|-----------|---------------------|-----------|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | | |
| 90 | 100 | | |
| 75 | 100 | | |
| 63 | 100 | | |
| 50 | 73 | | |
| 37.5 | 68 | | |
| 28 | 67 | | |
| 20 | 67 | | |
| 14 | 64 | | |
| 10 | 60 | | |
| 6.3 | 56 | | |
| 5 | 55 | | |
| 3.35 | 52 | | |
| 2 | 48 | | |
| 1.18 | 45 | | |
| 0.6 | 41 | | |
| 0.425 | 39 | | |
| 0.3 | 37 | | |
| 0.212 | 34 | | |
| 0.15 | 31 | | |
| 0.063 | 24 | | |

| Test Method | | |
|---------------------------|-----|--|
| BS 1377 : Part 2 : 1990 | | |
| Sieving Clause Depth (m): | | |
| Sedimentation | N/A | |

| Sample Proportions | | |
|--------------------|------|--|
| Cobbles | 0.0 | |
| Gravel | 52.0 | |
| Sand | 24.0 | |
| Silt & Clay | 24.0 | |

| Grading Analysis | | |
|------------------------|-------|--|
| D60 D10 | 10.00 | |
| Uniformity Coefficient | N/A | |

Date:

09/12/2013



Approved: Senior Technician

Unit 10 Wessex Road Bourne end Buckinghamshire SL8 5DT

Agata K-Roche

Whole sample used

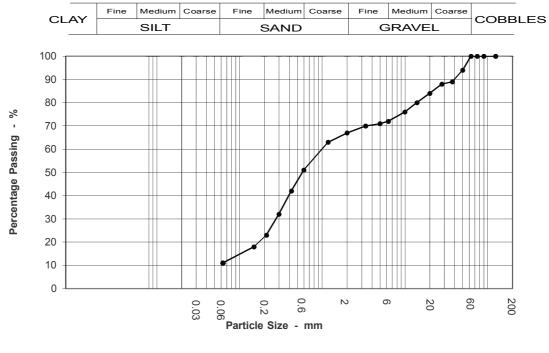
Remarks:

Checked and



DETERMINATION OF PARTICLE SIZE DISTRIBUTION WET SIEVING METHOD

| BS1377 : Part 2 : 199 | 00 Clause 9.2 | | |
|-----------------------|--------------------------|----------------|-------------|
| Client: | Aberdeenshire Council | Lab Sample No: | S8754 |
| Contract No: | 5414 | Hole ID: | BH5 |
| Contract Name: | Stonehaven FAS | Sample Type: | В |
| Samula | | Sample No: | 8 |
| Sample | Grey silty gravelly SAND | Depth (m): | 3.45 - 3.80 |
| Description: | | Date Tested: | 28/11/2013 |



| Sievir | ng | Sedimen | tation |
|---------------------|-----------|---------------------|-----------|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | | |
| 90 | 100 | | |
| 75 | 100 | | |
| 63 | 100 | | |
| 50 | 94 | | |
| 37.5 | 89 | | |
| 28 | 88 | | |
| 20 | 84 | | |
| 14 | 80 | | |
| 10 | 76 | | |
| 6.3 | 72 | | |
| 5 | 71 | | |
| 3.35 | 70 | | |
| 2 | 67 | | |
| 1.18 | 63 | | |
| 0.6 | 51 | | |
| 0.425 | 42 | | |
| 0.3 | 32 | | |
| 0.212 | 23 | | |
| 0.15 | 18 | | |
| 0.063 | 11 | | |

| Test Method | | |
|-------------------------|-------------------|--|
| BS 1377 : Part 2 : 1990 | | |
| Sieving | Clause Depth (m): | |
| Sedimentation | N/A | |

| Sample Proportions | | |
|--------------------|------|--|
| Cobbles | 0.0 | |
| Gravel | 33.0 | |
| Sand | 56.0 | |
| Silt & Clay | 11.0 | |

| Grading Analysis | | |
|------------------------|------|--|
| D60 D10 | 1.04 | |
| Uniformity Coefficient | N/A | |

Date:



Agata K-Roche Checked and Approved: Senior Technician

Unit 10 Wessex Road Bourne end Buckinghamshire SL8 5DT

Whole sample used

Sheet 1 of 1

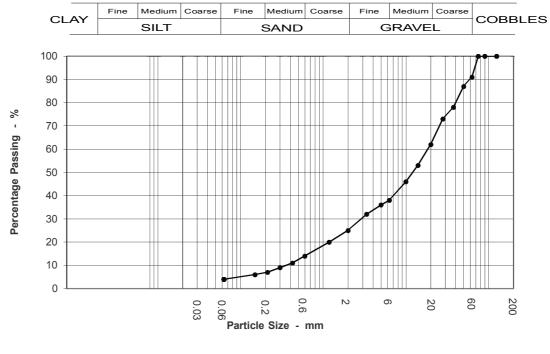
Remarks:

09/12/2013



DETERMINATION OF PARTICLE SIZE DISTRIBUTION WET SIEVING METHOD

| BS1377 : Part 2 : 19 | 90 Clause 9.2 | | |
|----------------------|---------------------------------|----------------|-------------|
| Client: | Aberdeenshire Council | Lab Sample No: | S8755 |
| Contract No: | 5414 | Hole ID: | BH5 |
| Contract Name: | Stonehaven FAS | Sample Type: | В |
| Somalo | | Sample No: | 12 |
| Sample | Brown sandy GRAVEL with cobbles | Depth (m): | 5.00 - 5.50 |
| Description: | | Date Tested: | 25/11/2013 |



| Sieving | | Sedimen | tation |
|---------------------|-----------|---------------------|-----------|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | | |
| 90 | 100 | | |
| 75 | 100 | | |
| 63 | 91 | | |
| 50 | 87 | | |
| 37.5 | 78 | | |
| 28 | 73 | | |
| 20 | 62 | | |
| 14 | 53 | | |
| 10 | 46 | | |
| 6.3 | 38 | | |
| 5 | 36 | | |
| 3.35 | 32 | | |
| 2 | 25 | | |
| 1.18 | 20 | | |
| 0.6 | 14 | | |
| 0.425 | 11 | | |
| 0.3 | 9 | | |
| 0.212 | 7 | | |
| 0.15 | 6 | | |
| 0.063 | 4 | | |

| Test Method | |
|---------------------------|-----|
| BS 1377 : Part 2 : 1990 | |
| Sieving Clause Depth (m): | |
| Sedimentation | N/A |

| Sample Proportions | | | |
|--------------------|------|--|--|
| Cobbles | 9.0 | | |
| Gravel | 66.0 | | |
| Sand | 21.0 | | |
| Silt & Clay | 4.0 | | |

| Grading Analysis | | |
|------------------------|-------|--|
| D60 | 18.67 | |
| D10 | 0.36 | |
| Uniformity Coefficient | 51.49 | |

Date:

09/12/2013



Senior Technician

Unit 10 Wessex Road Bourne end Buckinghamshire SL8 5DT

Agata K-Roche

Whole sample used

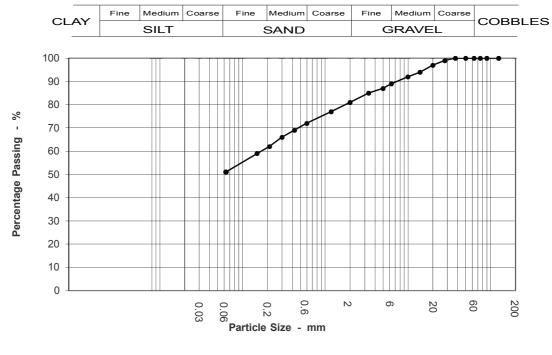
Remarks:

Checked and Approved:



DETERMINATION OF PARTICLE SIZE DISTRIBUTION WET SIEVING METHOD

| BS1377 : Part 2 : 19 | 90 Clause 9.2 | | |
|----------------------|--|----------------|-------------|
| Client: | Aberdeenshire Council | Lab Sample No: | S8756 |
| Contract No: | 5414 | Hole ID: | BH5 |
| Contract Name: | Stonehaven FAS | Sample Type: | В |
| Somalo | | Sample No: | 15 |
| Sample | Grey slightly gravelly slightly sandy SILT | Depth (m): | 5.60 - 6.00 |
| Description: | | Date Tested: | 04/12/2013 |



| Sieving | | Sedimen | tation |
|---------------------|-----------|---------------------|-----------|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | | |
| 90 | 100 | | |
| 75 | 100 | | |
| 63 | 100 | | |
| 50 | 100 | | |
| 37.5 | 100 | | |
| 28 | 99 | | |
| 20 | 97 | | |
| 14 | 94 | | |
| 10 | 92 | | |
| 6.3 | 89 | | |
| 5 | 87 | | |
| 3.35 | 85 | | |
| 2 | 81 | | |
| 1.18 | 77 | | |
| 0.6 | 72 | | |
| 0.425 | 69 | | |
| 0.3 | 66 | | |
| 0.212 | 62 | | |
| 0.15 | 59 | | |
| 0.063 | 51 | | |

| Test Method | | |
|-------------------------|-------------------|--|
| BS 1377 : Part 2 : 1990 | | |
| Sieving | Clause Depth (m): | |
| Sedimentation | N/A | |

| Sample Proportions | | | |
|--------------------|------|--|--|
| Cobbles | 0.0 | | |
| Gravel | 19.0 | | |
| Sand | 30.0 | | |
| Silt & Clay | 51.0 | | |

| Grading Analysis | | |
|------------------------|------|--|
| D60 D10 | 0.17 | |
| Uniformity Coefficient | N/A | |



Sheet 1 of 1

Remarks:

Checked and Approved:

Whole sample used

Agata K-Roche

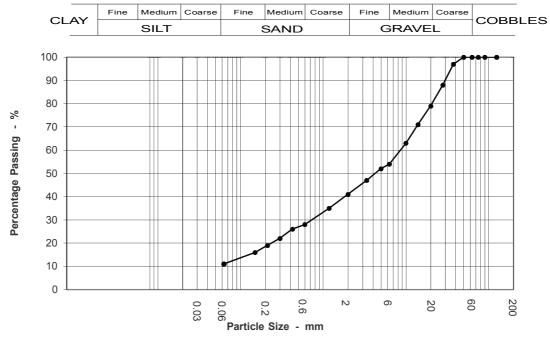
Senior Technician

Unit 10 Wessex Road Bourne end Buckinghamshire SL8 5DT



DETERMINATION OF PARTICLE SIZE DISTRIBUTION WET SIEVING METHOD

| BS1377 : Part 2 : 19 | 90 Clause 9.2 | | |
|----------------------|-------------------------------------|----------------|-------------|
| Client: | Aberdeenshire Council | Lab Sample No: | S8757 |
| Contract No: | 5414 | Hole ID: | BH5 |
| Contract Name: | Stonehaven FAS | Sample Type: | В |
| Somalo | | Sample No: | 21 |
| Sample | Light brown silty very sandy GRAVEL | Depth (m): | 8.25 - 9.30 |
| Description: | | Date Tested: | 05/12/2013 |



| Sievir | ng | Sediment | tation |
|---------------------|-----------|---------------------|-----------|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | | |
| 90 | 100 | | |
| 75 | 100 | | |
| 63 | 100 | | |
| 50 | 100 | | |
| 37.5 | 97 | | |
| 28 | 88 | | |
| 20 | 79 | | |
| 14 | 79 71 | | |
| | 63 | | |
| 10 | 54 | | |
| 6.3 | | | |
| 5 | 52 | | |
| 3.35 | 47 | | |
| 2 | 41 | | |
| 1.18 | 35 | | |
| 0.6 | 28 | | |
| 0.425 | 26 | | |
| 0.3 | 22 | | |
| 0.212 | 19 | | |
| 0.15 | 16 | | |
| 0.063 | 11 | | |

Agata K-Roche

Senior Technician

Unit 10 Wessex Road Bourne end Buckinghamshire SL8 5DT

| Test Method | | | |
|---------------------------|-----|--|--|
| BS 1377 : Part 2 : 1990 | | | |
| Sieving Clause Depth (m): | | | |
| Sedimentation | N/A | | |

| Sample Proportions | | | | | |
|--------------------|------|--|--|--|--|
| Cobbles | 0.0 | | | | |
| Gravel | 59.0 | | | | |
| Sand | 30.0 | | | | |
| Silt & Clay | 11.0 | | | | |

| Grading Analysis | | | | |
|------------------------|------|--|--|--|
| D60 D10 | 8.77 | | | |
| Uniformity Coefficient | N/A | | | |

Remarks:

Checked and Approved:



DETERMINATION OF PARTICLE SIZE DISTRIBUTION WET SIEVING METHOD

| Client: Contract No: Contract Name: Sample Description: | 5414 Stoneha | enshire Co aven FAS | | andy GRA\ | /EL with cobble | Lab Sam Hole ID: Sample T Sample N Depth (m Date Tes | Гуре: No: I): | S8759 BH5 B 25 9.40 - 10.00 02/12/2013 |
|---|---|---|---------------------------|-----------|-------------------------------|---|---|---|
| | CI | | ne Medium Coa | rse Fine | Medium Coarse | Fine Mediu | ım Coarse | COBBLES |
| | | | SILT | | SAND | GRAV | /EL | |
| | 100 - | | | | | | | |
| | | | | | | | | |
| | 90 - | | | | | | | |
| | 80 - | | | | | | | |
| % - | | | | | | | | |
| | | | | | | | | |
| ssir | 60 - | | | | | | | |
| Ра | 50 - | | | | | | | |
| Percentage Passing | 4 0 - | | | | | | | |
| ent | 40 | | | | | | | |
| erc | 30 - | | | | | | | |
| ш. | 20 - | | | | | | | |
| | 10 - | | | | | | | |
| | 10 | | | | | | | |
| | | | | | | | | |
| | 0 - | | 0.0 | 0 | 0. 2 0. 2 | ა თ | 20 60 | 200 |
| | Sievin | g | Sediment | Particle | o O ™ N O ™ e Size - mm | Test M | lethod | 200 |
| | Sievin cle Size | 9 % Passing | Sediment Particle Size | Particle | e Size - mm | Test M BS 1377 : F | 1ethod Part 2 : 1990 | |
| m | Sievin Sie Size | % Passing | Sediment | Particle | e Size - mm | Test N BS 1377 : F Sieving | 1ethod Part 2 : 1990 Clause D | epth (m): |
| m 1 | Sievin sle Size nm 25 | % Passing 100 | Sediment Particle Size | Particle | e Size - mm | Test M BS 1377 : F | 1ethod Part 2 : 1990 | epth (m): |
| n 1 5 | Sievin Sie Size | % Passing | Sediment Particle Size | Particle | e Size - mm | Test N BS 1377 : F Sieving | 1ethod Part 2 : 1990 Clause D | epth (m): |
| 1 5 6 | Sievin cle Size nm 25 90 75 63 | % Passing 100 100 100 87 | Sediment Particle Size | Particle | e Size - mm | Test N BS 1377 : F Sieving | 1ethod Part 2 : 1990 Clause D | epth (m): |
| 1 5 6 | Sievin cle Size nm 25 90 75 63 50 | % Passing 100 100 100 87 80 | Sediment Particle Size | Particle | e Size - mm | Test N BS 1377 : F Sieving | 1ethod Part 2 : 1990 Clause D | epth (m): |
| m 1 6 8 8 8 | Sievin Sle Size nm 225 90 75 63 50 7.5 | % Passing 100 100 100 87 80 77 | Sediment Particle Size | Particle | e Size - mm | Test M BS 1377 : F Sieving imentation | 1ethod Part 2 : 1990 Clause D N/ | epth (m): |
| m 1 6 5 6 8 3 | Sievin Sle Size nm 25 90 75 63 50 7.5 28 | % Passing 100 100 87 80 77 72 | Sediment Particle Size | Particle | e Size - mm | Test M BS 1377 : F Sieving imentation Sample Pr | 1ethod Part 2 : 1990 Clause D N/ | epth (m): A |
| m 1 6 8 3 | Sievin Sle Size nm 225 90 75 63 50 7.5 | % Passing 100 100 100 87 80 77 | Sediment Particle Size | Particle | e Size - mm | Test M BS 1377 : F Sieving imentation | fethod Part 2 : 1990 Clause D N/ | epth (m): |
| m 1 6 8 3 3 | Sievin Sle Size nm 25 90 75 63 50 7.5 28 20 14 10 | % Passing 100 100 87 80 77 72 69 63 59 | Sediment Particle Size | Particle | Size - mm | Test M BS 1377 : F Sieving imentation Sample Pr Cobbles Gravel Sand | 1ethod Part 2 : 1990 Clause D N/ | epth (m): /A 13.0 42.0 24.0 |
| m 1 6 8 3 3 2 6 | Sievin Sle Size nm 25 90 75 63 50 7.5 28 20 14 10 5.3 | % Passing 100 100 87 80 77 72 69 63 59 54 | Sediment Particle Size | Particle | Size - mm | Test M BS 1377 : F Sieving imentation Sample Pr Cobbles Gravel | 1ethod Part 2 : 1990 Clause D N/ | epth (m): A 13.0 42.0 |
| m 1 6 8 3 2 2 6 | Sievin Sle Size nm 25 90 75 63 50 7.5 28 20 14 10 5.3 5 | % Passing 100 100 87 80 77 72 69 63 59 54 51 | Sediment Particle Size | Particle | Size - mm | Test M BS 1377 : F Sieving imentation Sample Pr Cobbles Gravel Sand | 1ethod Part 2 : 1990 Clause D N/ | epth (m): /A 13.0 42.0 24.0 |
| m 1 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 | Sievin Sle Size nm 25 90 75 63 50 7.5 28 20 14 10 5.3 5 .35 | % Passing 100 100 87 80 77 72 69 63 59 63 59 54 51 49 | Sediment Particle Size | Particle | Size - mm | Test M BS 1377 : F Sieving imentation Sample Pr Cobbles Gravel Sand | 1ethod Part 2 : 1990 Clause D N/ | epth (m): /A 13.0 42.0 24.0 |
| m 1 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 | Sievin Sle Size 11m 25 90 75 63 50 7.5 28 20 14 10 5.3 5 .35 2 | % Passing 100 100 87 80 77 72 69 63 59 63 59 54 51 49 45 | Sediment Particle Size | Particle | Size - mm | Test M BS 1377 : F Sieving imentation Sample Pr Cobbles Gravel Sand | 1ethod Part 2 : 1990 Clause D N/ | epth (m): /A 13.0 42.0 24.0 |
| m 1 9 1 3 3 2 2 2 3 3 3 1 1 | Sievin Sle Size nm 25 90 75 63 50 7.5 28 20 14 10 5.3 5 .35 | % Passing 100 100 87 80 77 72 69 63 59 63 59 54 51 49 | Sediment Particle Size | Particle | Size - mm | Test M BS 1377 : F Sieving imentation Sample Pr Cobbles Gravel Sand Silt & Clay | 1ethod Part 2 : 1990 Clause D N/ | epth (m): /A 13.0 42.0 24.0 |
| m 1 6 3 3 2 2 3 6 6 3 1 0 0 | Sievin Sie Size 111 25 90 75 63 50 7.5 28 20 14 10 5.3 5 .35 2 .18 0.6 425 | % Passing 100 100 87 80 77 72 69 63 59 54 51 49 45 41 36 33 | Sediment Particle Size | Particle | Size - mm | Test M BS 1377 : F Sieving imentation Sample Pr Cobbles Gravel Sand Silt & Clay Grading | Analysis | epth (m): /A 13.0 42.0 24.0 21.0 |
| m 1 6 3 3 6 3 4 6 3 1 0 0 0 0 | Sievin le Size nm 25 90 75 63 50 7.5 28 20 14 10 5.3 5 .35 2 .18).6 425).3 | % Passing 100 100 87 80 77 72 69 63 59 63 59 63 59 54 51 49 45 41 36 33 31 | Sediment Particle Size | Particle | Size - mm | Test M BS 1377 : F Sieving imentation Sample Pr Cobbles Gravel Sand Silt & Clay Grading D60 | Analysis | epth (m): /A 13.0 42.0 24.0 |
| m 1 6 8 3 3 2 6 8 3 6 6 3. 1. 0. 0. 0. 0. | Sievin le Size nm 25 90 75 63 50 7.5 28 20 14 10 5.3 5 .35 2 .18).6 425).3 212 | % Passing 100 100 87 80 77 72 69 63 59 63 59 63 59 54 51 49 45 41 36 33 31 29 | Sediment Particle Size | Particle | Size - mm | Test M BS 1377 : F Sieving imentation Sample Pr Cobbles Gravel Sand Silt & Clay Grading | Analysis | epth (m): /A 13.0 42.0 24.0 21.0 |
| m 1 6 8 3 3 2 3 4 6 6 3 1 5 6 6 3 1 5 6 6 1 5 6 6 1 5 6 6 1 5 6 6 1 5 1 5 | Sievin le Size nm 25 90 75 63 50 7.5 28 20 14 10 5.3 5 .35 2 .18).6 425).3 | % Passing 100 100 87 80 77 72 69 63 59 63 59 63 59 54 51 49 45 41 36 33 31 | Sediment Particle Size | Particle | size - mm | Test M BS 1377 : F Sieving imentation Sample Pr Cobbles Gravel Sand Silt & Clay Grading D60 | Part 2 : 1990 Clause D N/ roportions Analysis 1 | epth (m): /A 13.0 42.0 24.0 21.0 |



Remarks:

Checked and Approved:

Whole sample used

Agata K-Roche

Senior Technician

Unit 10 Wessex Road Bourne end Buckinghamshire SL8 5DT

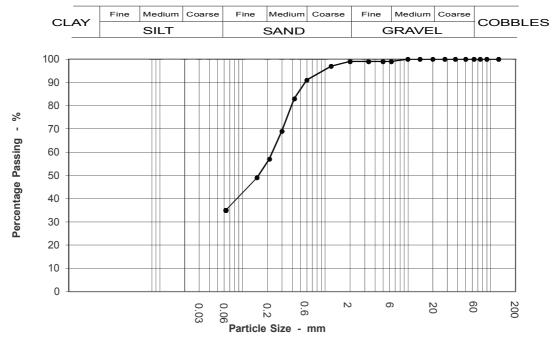
Date:

09/12/2013



DETERMINATION OF PARTICLE SIZE DISTRIBUTION WET SIEVING METHOD

| BS1377 : Part 2 : 19 | 90 Clause 9.2 | | |
|----------------------|---------------------------------|----------------|---------------|
| Client: | Aberdeenshire Council | Lab Sample No: | S8749 |
| Contract No: | 5414 | Hole ID: | BH5 |
| Contract Name: | Stonehaven FAS | Sample Type: | В |
| Sampla | | Sample No: | 27 |
| Sample | Purplish grey sandy clayey SILT | Depth (m): | 10.00 - 10.50 |
| Description: | | Date Tested: | 02/12/2013 |



| Sievir | ng | Sediment | tation |
|---------------------|-----------|---------------------|-----------|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | | |
| 90 | 100 | | |
| 75 | 100 | | |
| 63 | 100 | | |
| 50 | 100 | | |
| 37.5 | 100 | | |
| 28 | 100 | | |
| 20 | 100 | | |
| 14 | 100 | | |
| 10 | 100 | | |
| 6.3 | 99 | | |
| 5 | 99 | | |
| 3.35 | 99 | | |
| 2 | 99 | | |
| 1.18 | 97 | | |
| 0.6 | 91 | | |
| 0.425 | 83 | | |
| 0.3 | 69 | | |
| 0.212 | 57 | | |
| 0.15 | 49 | | |
| 0.063 | 35 | | |

Agata K-Roche

Senior Technician

Unit 10 Wessex Road Bourne end Buckinghamshire SL8 5DT

| Test Method | | | |
|---------------------------|-----|--|--|
| BS 1377 : Part 2 : 1990 | | | |
| Sieving Clause Depth (m): | | | |
| Sedimentation | N/A | | |

| Sample Proportions | | | | | |
|--------------------|------|--|--|--|--|
| Cobbles | 0.0 | | | | |
| Gravel | 1.0 | | | | |
| Sand | 64.0 | | | | |
| Silt & Clay | 35.0 | | | | |

| Grading Analysis | | | | |
|------------------------|------|--|--|--|
| D60 D10 | 0.23 | | | |
| Uniformity Coefficient | N/A | | | |

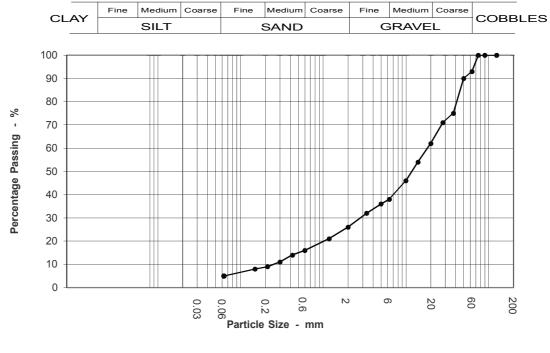
Remarks:

Checked and Approved:



DETERMINATION OF PARTICLE SIZE DISTRIBUTION WET SIEVING METHOD

| BS1377 : Part 2 : 19 | 90 Clause 9.2 | | |
|----------------------|--|----------------|-------------|
| Client: | Aberdeenshire Council | Lab Sample No: | S8760 |
| Contract No: | 5414 | Hole ID: | BH6 |
| Contract Name: | Stonehaven FAS | Sample Type: | В |
| Somalo | | Sample No: | 5 |
| Sample | Brown slightly clayey very sandy GRAVEL with cobbles | Depth (m): | 1.20 - 2.00 |
| Description: | | Date Tested: | 04/12/2013 |



| Sievir | ng | Sedimen | tation |
|---------------------|-----------|---------------------|-----------|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | | |
| 90 | 100 | | |
| 75 | 100 | | |
| 63 | 93 | | |
| 50 | 90 | | |
| 37.5 | 75 | | |
| 28 | 71 | | |
| 20 | 62 | | |
| 14 | 54 | | |
| 10 | 46 | | |
| 6.3 | 38 | | |
| 5 | 36 | | |
| 3.35 | 32 | | |
| 2 | 26 | | |
| 1.18 | 21 | | |
| 0.6 | 16 | | |
| 0.425 | 14 | | |
| 0.3 | 11 | | |
| 0.212 | 9 | | |
| 0.15 | 8 | | |
| 0.063 | 5 | | |

| Test Method | | | | | |
|-------------------------|-------------------|--|--|--|--|
| BS 1377 : Part 2 : 1990 | | | | | |
| Sieving | Clause Depth (m): | | | | |
| Sedimentation | N/A | | | | |

| Sample Proportions | | | | | |
|--------------------|------|--|--|--|--|
| Cobbles | 7.0 | | | | |
| Gravel | 67.0 | | | | |
| Sand | 21.0 | | | | |
| Silt & Clay | 5.0 | | | | |

| Grading Analysis | | | | | | |
|------------------------|-------|--|--|--|--|--|
| D60 | 18.50 | | | | | |
| D10 | 0.26 | | | | | |
| Uniformity Coefficient | 72.27 | | | | | |



Sheet 1 of 1

Remarks:

Checked and Approved:

Whole sample used

Agata K-Roche

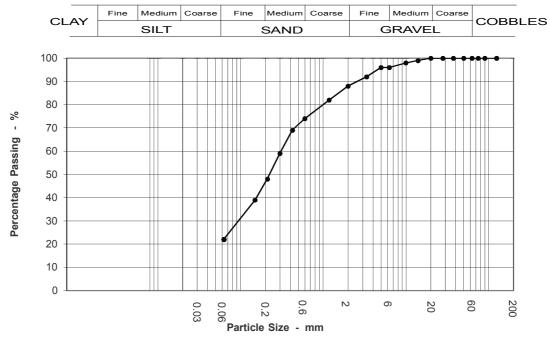
Senior Technician

Unit 10 Wessex Road Bourne end Buckinghamshire SL8 5DT



DETERMINATION OF PARTICLE SIZE DISTRIBUTION WET SIEVING METHOD

| BS1377 : Part 2 : 19 | 90 Clause 9.2 | | |
|----------------------|--|----------------|-------------|
| Client: | Aberdeenshire Council | Lab Sample No: | S8761 |
| Contract No: | 5414 | Hole ID: | BH6 |
| Contract Name: | Stonehaven FAS | Sample Type: | В |
| Somalo | | Sample No: | 7 |
| Sample | Black slightly gravelly sandy organic SILT | Depth (m): | 2.35 - 2.70 |
| Description: | | Date Tested: | 05/12/2013 |



| Sievir | ng | Sediment | tation |
|---------------------|-----------|---------------------|-----------|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | | |
| 90 | 100 | | |
| 75 | 100 | | |
| 63 | 100 | | |
| 50 | 100 | | |
| 37.5 | 100 | | |
| 28 | 100 | | |
| 20 | 100 | | |
| 14 | 99 | | |
| 10 | 98 | | |
| 6.3 | 96 | | |
| 5 | 96 | | |
| 3.35 | 92 | | |
| 2 | 88 | | |
| 1.18 | 82 | | |
| 0.6 | 74 | | |
| 0.425 | 69 | | |
| 0.3 | 59 | | |
| 0.212 | 48 | | |
| 0.15 | 39 | | |
| 0.063 | 22 | | |

| Test Method | | | | | |
|---------------|-------------------|--|--|--|--|
| BS 1377 : F | Part 2 : 1990 | | | | |
| Sieving | Clause Depth (m): | | | | |
| Sedimentation | N/A | | | | |

| Sample Proportions | | | | | | |
|--------------------|------|--|--|--|--|--|
| Cobbles | 0.0 | | | | | |
| Gravel | 12.0 | | | | | |
| Sand | 66.0 | | | | | |
| Silt & Clay | 22.0 | | | | | |

| Grading Analysis | | | | | |
|------------------------|------|--|--|--|--|
| D60 D10 | 0.31 | | | | |
| Uniformity Coefficient | N/A | | | | |

Date:

09/12/2013



Remarks:

Checked and Approved:

Whole sample used

Agata K-Roche

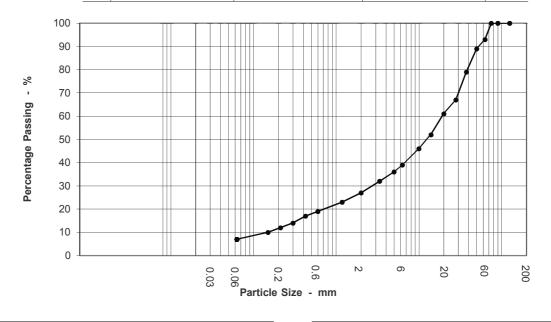
Senior Technician

Unit 10 Wessex Road Bourne end Buckinghamshire SL8 5DT



DETERMINATION OF PARTICLE SIZE DISTRIBUTION WET SIEVING METHOD

| Client: | Aberdeenshire Council 5414 Stonehaven FAS Light brown and grey clayey sandy GRAVEL with cobbles | | | | | | Aberdeenshire Council Lab Sample No: | | e No: | S8762 | |
|----------------|--|------|--------|--------|------|--------|--------------------------------------|--|--------|-------------|------------|
| Contract No: | | | | | | | | Hole ID: Sample Type: Sample No: Depth (m): | | BH6 B | |
| Contract Name: | | | | | | | | | | | |
| Sample | | | | | | | | | | 10 | |
| • | | | | | | | bbles | | | 3.10 - 3.80 | |
| Description: | | | | | | | | Date | Tested | d: | 02/12/2013 |
| | | | | | | | | | | | |
| | CLAY | Fine | Medium | Coarse | Fine | Medium | Coarse | Fine | Medium | Coarse | COBBLES |
| | OLAI | | SILT | | | SAND | | G | BRAVE | L | COBBLES |



| Sievir | ng | Sediment | tation |
|---------------------|-----------|---------------------|-----------|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | | |
| 90 | 100 | | |
| 75 | 100 | | |
| 63 | 93 | | |
| 50 | 89 | | |
| 37.5 | 79 | | |
| 28 | 67 | | |
| 20 | 61 | | |
| 14 | 52 | | |
| 10 | 46 | | |
| 6.3 | 39 | | |
| 5 | 36 | | |
| 3.35 | 32 | | |
| 2 | 27 | | |
| 1.18 | 23 | | |
| 0.6 | 19 | | |
| 0.425 | 17 | | |
| 0.3 | 14 | | |
| 0.212 | 12 | | |
| 0.15 | 10 | | |
| 0.063 | 7 | | |

Whole sample used

Agata K-Roche

Senior Technician

Unit 10 Wessex Road Bourne end Buckinghamshire SL8 5DT

| Test Method | | | | | |
|---------------|-------------------|--|--|--|--|
| BS 1377 : F | Part 2 : 1990 | | | | |
| Sieving | Clause Depth (m): | | | | |
| Sedimentation | N/A | | | | |

| Sample Proportions | | | |
|--------------------|------|--|--|
| Cobbles | 7.0 | | |
| Gravel | 66.0 | | |
| Sand | 20.0 | | |
| Silt & Clay | 7.0 | | |

| Grading Analysis | | |
|------------------------|--------|--|
| D60 | 19.33 | |
| D10 | 0.15 | |
| Uniformity Coefficient | 128.89 | |



Sheet 1 of 1

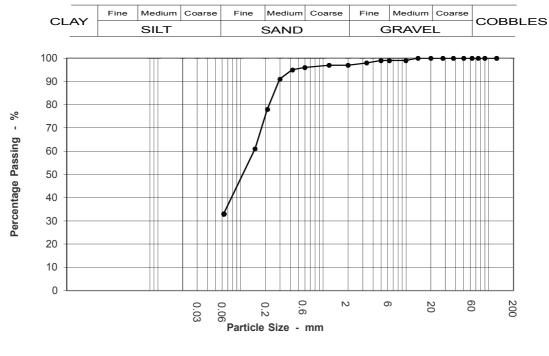
Remarks:

Checked and Approved:



DETERMINATION OF PARTICLE SIZE DISTRIBUTION WET SIEVING METHOD

| BS1377 : Part 2 : 19 | 90 Clause 9.2 | | |
|----------------------|---|----------------|-------------|
| Client: | Aberdeenshire Council | Lab Sample No: | S8764 |
| Contract No: | 5414 | Hole ID: | BH6 |
| Contract Name: | Stonehaven FAS | Sample Type: | В |
| Somalo | | Sample No: | 15 |
| Sample | Greenish grey slightly gravelly clayey SAND | Depth (m): | 4.80 - 5.00 |
| Description: | | Date Tested: | 02/12/2013 |



| Sieving | | Sediment | tation |
|---------------------|-----------|---------------------|-----------|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | | |
| 90 | 100 | | |
| 75 | 100 | | |
| 63 | 100 | | |
| 50 | 100 | | |
| 37.5 | 100 | | |
| 28 | 100 | | |
| 20 | 100 | | |
| 14 | 100 | | |
| 10 | 99 | | |
| 6.3 | 99 | | |
| 5 | 99 | | |
| 3.35 | 98 | | |
| 2 | 97 | | |
| 1.18 | 97 | | |
| 0.6 | 96 | | |
| 0.425 | 95 | | |
| 0.3 | 91 | | |
| 0.212 | 78 | | |
| 0.15 | 61 | | |
| 0.063 | 33 | | |

| Test Method | | |
|---------------------------|-----|--|
| BS 1377 : Part 2 : 1990 | | |
| Sieving Clause Depth (m): | | |
| Sedimentation | N/A | |

| Sample Proportions | | | |
|--------------------|------|--|--|
| Cobbles | 0.0 | | |
| Gravel | 3.0 | | |
| Sand | 64.0 | | |
| Silt & Clay | 33.0 | | |

| Grading Analysis | | |
|------------------------|------|--|
| D60 D10 | 0.15 | |
| Uniformity Coefficient | N/A | |

Date:

09/12/2013

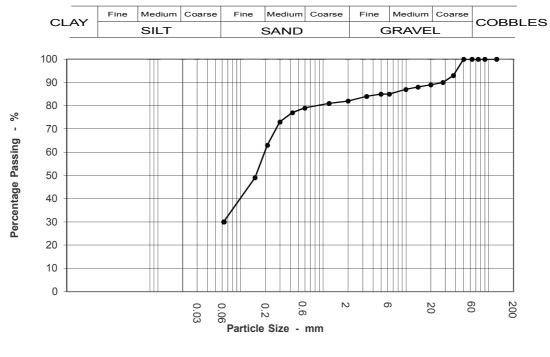
| Checked and | Agata K-Roche | |
|-------------|-------------------|--|
| Approved: | Senior Technician | |
| | | |

Unit 10 Wessex Road Bourne end Buckinghamshire SL8 5DT



DETERMINATION OF PARTICLE SIZE DISTRIBUTION WET SIEVING METHOD

| BS1377 : Part 2 : 199 | 90 Clause 9.2 | | |
|-----------------------|--|----------------|-------------|
| Client: | Aberdeenshire Council | Lab Sample No: | S8766 |
| Contract No: | 5414 | Hole ID: | BH6 |
| Contract Name: | Stonehaven FAS | Sample Type: | В |
| Sample | Greenish grey and purplish brown slightly gravelly sandy silty | Sample No: | 20 |
| - | CLAY | Depth (m): | 6.75 - 7.50 |
| Description: | CLAT | Date Tested: | 28/11/2013 |



| Sievir | ng | Sediment | tation |
|---------------------|-----------|---------------------|-----------|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | | |
| 90 | 100 | | |
| 75 | 100 | | |
| 63 | 100 | | |
| 50 | 100 | | |
| 37.5 | 93 | | |
| 28 | 90 | | |
| 20 | 89 | | |
| 14 | 88 | | |
| 10 | 87 | | |
| 6.3 | 85 | | |
| 5 | 85 | | |
| 3.35 | 84 | | |
| 2 | 82 | | |
| 1.18 | 81 | | |
| 0.6 | 79 | | |
| 0.425 | 77 | | |
| 0.3 | 73 | | |
| 0.212 | 63 | | |
| 0.15 | 49 | | |
| 0.063 | 30 | | |

| Test Method | | |
|---------------------------|-----|--|
| BS 1377 : Part 2 : 1990 | | |
| Sieving Clause Depth (m): | | |
| Sedimentation | N/A | |

| Sample Proportions | | | |
|--------------------|------|--|--|
| Cobbles | 0.0 | | |
| Gravel | 18.0 | | |
| Sand | 52.0 | | |
| Silt & Clay | 30.0 | | |

| Grading Analysis | | |
|------------------------|------|--|
| D60 D10 | 0.20 | |
| Uniformity Coefficient | N/A | |

Date:

09/12/2013



Approved: Senior Technician Unit 10 Wessex Road Bourne end Buckin

Unit 10 Wessex Road Bourne end Buckinghamshire SL8 5DT

Agata K-Roche

Whole sample used

Remarks:

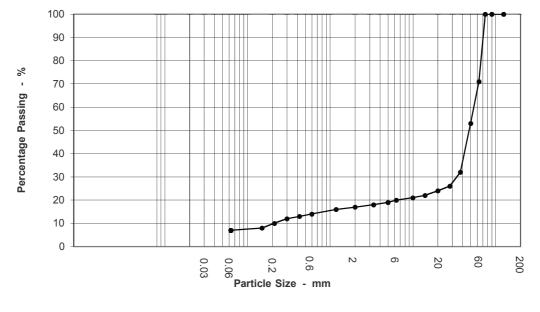
Checked and



DETERMINATION OF PARTICLE SIZE DISTRIBUTION WET SIEVING METHOD

| BS1377 : Part 2 : 199 | 90 Clause 9.2 | | |
|-----------------------|--|----------------|-------------|
| Client: | Aberdeenshire Council | Lab Sample No: | S8768 |
| Contract No: | 5414 | Hole ID: | BH7 |
| Contract Name: | Stonehaven FAS | Sample Type: | В |
| Samula | | Sample No: | 3 |
| Sample | Dark brown clayey sandy GRAVEL with frequent cobbles | Depth (m): | 0.80 - 1.20 |
| Description: | | Date Tested: | 02/12/2013 |





| Sievir | ng | Sediment | tation |
|---------------------|-----------|---------------------|-----------|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | | |
| 90 | 100 | | |
| 75 | 100 | | |
| 63 | 71 | | |
| 50 | 53 | | |
| 37.5 | 32 | | |
| 28 | 26 | | |
| 20 | 24 | | |
| 14 | 22 | | |
| 10 | 21 | | |
| 6.3 | 20 | | |
| 5 | 19 | | |
| 3.35 | 18 | | |
| 2 | 17 | | |
| 1.18 | 16 | | |
| 0.6 | 14 | | |
| 0.425 | 13 | | |
| 0.3 | 12 | | |
| 0.212 | 10 | | |
| 0.15 | 8 | | |
| 0.063 | 7 | | |

| Test Method | | |
|-------------------------|-------------------|--|
| BS 1377 : Part 2 : 1990 | | |
| Sieving | Clause Depth (m): | |
| Sedimentation | N/A | |

| Sample Proportions | | | |
|--------------------|------|--|--|
| Cobbles | 29.0 | | |
| Gravel | 54.0 | | |
| Sand | 10.0 | | |
| Silt & Clay | 7.0 | | |

| Grading Analysis | | |
|------------------------|---------------|--|
| D60 D10 | 55.06 0.21 | |
| Uniformity Coefficient | 259.70 | |

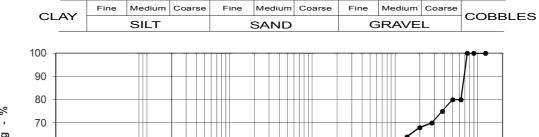
Remarks:

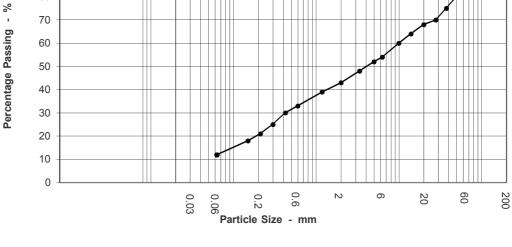
| Checked and | Agata K-Roche | |
|--|-------------------|--|
| Approved: | Senior Technician | |
| Unit 10 Wessex Road Bourne end Buckinghamshire SL8 5DT | | |



DETERMINATION OF PARTICLE SIZE DISTRIBUTION WET SIEVING METHOD

| BS1377 : Part 2 : 19 | 00 Clause 9.2 | | |
|----------------------|---|----------------|-------------|
| Client: | Aberdeenshire Council | Lab Sample No: | S8769 |
| Contract No: | 5414 | Hole ID: | BH7 |
| Contract Name: | Stonehaven FAS | Sample Type: | В |
| Samula | | Sample No: | 6 |
| Sample | Brown silty very sandy GRAVEL with frequent cobbles | Depth (m): | 1.40 - 2.00 |
| Description: | | Date Tested: | 02/12/2013 |





| Sievir | ng | Sediment | tation |
|---------------------|-----------|---------------------|-----------|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | | |
| 90 | 100 | | |
| 75 | 100 | | |
| 63 | 80 | | |
| 50 | 80 | | |
| 37.5 | 75 | | |
| 28 | 70 | | |
| 20 | 68 | | |
| 14 | 64 | | |
| 10 | 60 | | |
| 6.3 | 54 | | |
| 5 | 52 | | |
| 3.35 | 48 | | |
| 2 | 43 | | |
| 1.18 | 39 | | |
| 0.6 | 33 | | |
| 0.425 | 30 | | |
| 0.3 | 25 | | |
| 0.212 | 21 | | |
| 0.15 | 18 | | |
| 0.063 | 12 | | |

| Test Method | | |
|-------------------------|-------------------|--|
| BS 1377 : Part 2 : 1990 | | |
| Sieving | Clause Depth (m): | |
| Sedimentation | N/A | |

| Sample Proportions | | | |
|--------------------|------|--|--|
| Cobbles | 20.0 | | |
| Gravel | 37.0 | | |
| Sand | 31.0 | | |
| Silt & Clay | 12.0 | | |

| Grading Analysis | | |
|------------------------|-------|--|
| D60 D10 | 10.00 | |
| Uniformity Coefficient | N/A | |



Sheet 1 of 1

Remarks:

Checked and Approved:

Whole sample used

Agata K-Roche

Senior Technician

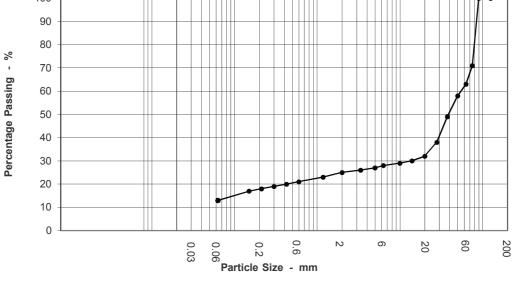
Unit 10 Wessex Road Bourne end Buckinghamshire SL8 5DT



DETERMINATION OF PARTICLE SIZE DISTRIBUTION WET SIEVING METHOD

| BS1377 : Part 2 : 1990 Clause 9.2 | | | |
|-----------------------------------|---|----------------|-------------|
| Client: | Aberdeenshire Council | Lab Sample No: | S8770 |
| Contract No: | 5414 | Hole ID: | BH7 |
| Contract Name: | Stonehaven FAS | Sample Type: | В |
| Somalo | | Sample No: | 10 |
| Sample | Reddish brown clayey sandy GRAVEL with frequent cobbles | Depth (m): | 2.30 - 3.00 |
| Description: | | Date Tested: | 27/11/2013 |





| Sievir | Sieving Sedimentation | | tation |
|---------------------|-----------------------|---------------------|-----------|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | | |
| 90 | 100 | | |
| 75 | 71 | | |
| 63 | 63 | | |
| 50 | 58 | | |
| 37.5 | 49 | | |
| 28 | 38 | | |
| 20 | 32 | | |
| 14 | 30 | | |
| 10 | 29 | | |
| 6.3 | 28 | | |
| 5 | 27 | | |
| 3.35 | 26 | | |
| 2 | 25 | | |
| 1.18 | 23 | | |
| 0.6 | 21 | | |
| 0.425 | 20 | | |
| 0.3 | 19 | | |
| 0.212 | 18 | | |
| 0.15 | 17 | | |
| 0.063 | 13 | | |

| Test Method | | |
|---------------------------|-----|--|
| BS 1377 : Part 2 : 1990 | | |
| Sieving Clause Depth (m): | | |
| Sedimentation | N/A | |

| Sample Proportions | | |
|--------------------|------|--|
| Cobbles | 37.0 | |
| Gravel | 38.0 | |
| Sand | 12.0 | |
| Silt & Clay | 13.0 | |

| Grading Analysis | | |
|------------------------|-------|--|
| D60 D10 | 55.20 | |
| Uniformity Coefficient | N/A | |



Unit 10 Wessex Road Bourne end Buckinghamshire SL8 5DT

Whole sample used

Agata K-Roche

Senior Technician

Date: 09/12/2013

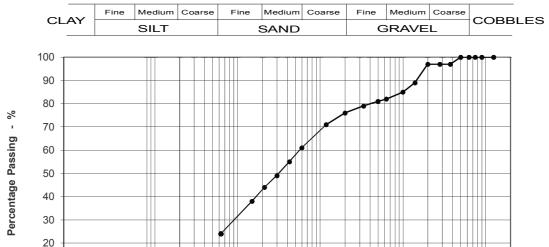
Remarks:

Checked and Approved:



DETERMINATION OF PARTICLE SIZE DISTRIBUTION WET SIEVING METHOD

| BS1377 : Part 2 : 1990 Clause 9.2 | | | |
|-----------------------------------|---|----------------|-------------|
| Client: | Aberdeenshire Council | Lab Sample No: | S8772 |
| Contract No: | 5414 | Hole ID: | BH7 |
| Contract Name: | Stonehaven FAS | Sample Type: | В |
| Somalo | | Sample No: | 13 |
| Sample | Brownish grey very silty very gravelly SAND | Depth (m): | 3.60 - 4.00 |
| Description: | | Date Tested: | 29/11/2013 |



N

ი

| · · · | | 0.03 | 0 | | 0.6 |
|---------------------|-----------|---------------------|-----------|----------|-----|
| | | | Particl | e Size - | mm |
| Sievir | ng | Sediment | tation | 1 | |
| Particle Size mm | % Passing | Particle Size mm | % Passing | | |
| 125 | 100 | | | | |
| 90 | 100 | | | | |
| 75 | 100 | | | | |
| 63 | 100 | | | | |
| 50 | 100 | | | | |
| 37.5 | 97 | | | | - |
| 28 | 97 | | | | |
| 20 | 97 | | | | |
| 14 | 89 | | | | |
| 10 | 85 | | | | |
| 6.3 | 82 | | | | |
| 5 | 81 | | | | |
| 3.35 | 79 | | | | |
| 2 | 76 | | | | |
| 1.18 | 71 | | | | F |
| 0.6 | 61 | | | | |
| 0.425 | 55 | | | | |
| 0.3 | 49 | | | | |
| 0.212 | 44 | | | | |
| 0.15 | 38 | | | | |
| 0.063 | 24 | | | | U |

| Test Method | | |
|---------------------------|-----|--|
| BS 1377 : Part 2 : 1990 | | |
| Sieving Clause Depth (m): | | |
| Sedimentation | N/A | |

20

60

200

| Sample Proportions | | |
|--------------------|------|--|
| Cobbles | 0.0 | |
| Gravel | 24.0 | |
| Sand | 52.0 | |
| Silt & Clay | 24.0 | |

| Grading Analysis | | |
|------------------------|------|--|
| D60 D10 | 0.57 | |
| Uniformity Coefficient | N/A | |

Date:

09/12/2013



Agata K-Roche Checked and Approved: Senior Technician

Whole sample used

10 0

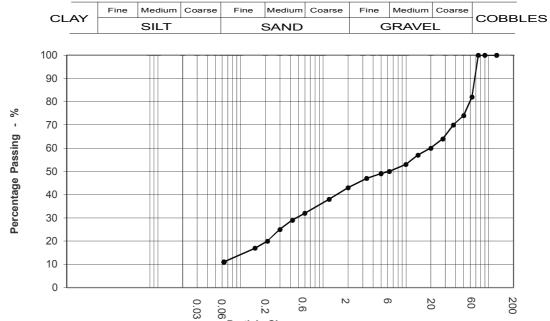
Unit 10 Wessex Road Bourne end Buckinghamshire SL8 5DT

Remarks:



DETERMINATION OF PARTICLE SIZE DISTRIBUTION WET SIEVING METHOD

| BS1377 : Part 2 : 1990 Clause 9.2 | | | | |
|-----------------------------------|---|----------------|-------------|--|
| Client: | Aberdeenshire Council | Lab Sample No: | S8774 | |
| Contract No: | 5414 | Hole ID: | Bh8 | |
| Contract Name: | Stonehaven FAS | Sample Type: | В | |
| Samula | | Sample No: | 5 | |
| Sample | Brown very sandy GRAVEL with rootlets and cobbles | Depth (m): | 0.60 - 1.20 | |
| Description: | | Date Tested: | 05/12/2013 | |



| Particle | Size | - | mm |
|----------|------|---|----|
| | | | |

| Sieving | | Sedimen | tation |
|---------------------|-----------|---------------------|-----------|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | | |
| 90 | 100 | | |
| 75 | 100 | | |
| 63 | 82 | | |
| 50 | 74 | | |
| 37.5 | 70 | | |
| 28 | 64 | | |
| 20 | 60 | | |
| 14 | 57 | | |
| 10 | 53 | | |
| 6.3 | 50 | | |
| 5 | 49 | | |
| 3.35 | 47 | | |
| 2 | 43 | | |
| 1.18 | 38 | | |
| 0.6 | 32 | | |
| 0.425 | 29 | | |
| 0.3 | 25 | | |
| 0.212 | 20 | | |
| 0.15 | 17 | | |
| 0.063 | 11 | | |

| Test Method | | | |
|-------------------------|-------------------|--|--|
| BS 1377 : Part 2 : 1990 | | | |
| Sieving | Clause Depth (m): | | |
| Sedimentation | N/A | | |

| Sample Proportions | | | | |
|--------------------|------|--|--|--|
| Cobbles | 18.0 | | | |
| Gravel | 39.0 | | | |
| Sand | 32.0 | | | |
| Silt & Clay | 11.0 | | | |

| Grading Analysis | | | | |
|------------------------|-------|--|--|--|
| D60 D10 | 20.00 | | | |
| Uniformity Coefficient | N/A | | | |

Date:

09/12/2013



Agata K-Roche Senior Technician

Unit 10 Wessex Road Bourne end Buckinghamshire SL8 5DT

Whole sample used

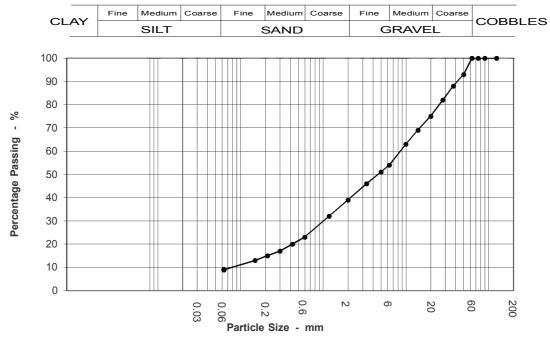
Remarks:

Checked and Approved:



DETERMINATION OF PARTICLE SIZE DISTRIBUTION WET SIEVING METHOD

| BS1377 : Part 2 : 19 | 90 Clause 9.2 | | |
|----------------------|--------------------------------|----------------|-------------|
| Client: | Aberdeenshire Council | Lab Sample No: | S8775 |
| Contract No: | 5414 | Hole ID: | Bh8 |
| Contract Name: | Stonehaven FAS | Sample Type: | В |
| Somalo | | Sample No: | 7 |
| Sample | Brown clayey very sandy GRAVEL | Depth (m): | 1.20 - 2.00 |
| Description: | | Date Tested: | 05/12/2013 |



| Sieving | | Sediment | tation |
|---------------|--------------|---------------|--------------|
| Particle Size | % Passing | Particle Size | % Passing |
| mm | 70 T assiriy | mm | 70 T 8551119 |
| 125 | 100 | | |
| 90 | 100 | | |
| 75 | 100 | | |
| 63 | 100 | | |
| 50 | 93 | | |
| 37.5 | 88 | | |
| 28 | 82 | | |
| 20 | 75 | | |
| 14 | 69 | | |
| 10 | 63 | | |
| 6.3 | 54 | | |
| 5 | 51 | | |
| 3.35 | 46 | | |
| 2 | 39 | | |
| 1.18 | 32 | | |
| 0.6 | 23 | | |
| 0.425 | 20 | | |
| 0.3 | 17 | | |
| 0.212 | 15 | | |
| 0.15 | 13 | | |
| 0.063 | 9 | | |

| Test Method | | | |
|-------------------------|-------------------|--|--|
| BS 1377 : Part 2 : 1990 | | | |
| Sieving | Clause Depth (m): | | |
| Sedimentation | N/A | | |

| Sample Proportions | | | | |
|--------------------|------|--|--|--|
| Cobbles | 0.0 | | | |
| Gravel | 61.0 | | | |
| Sand | 30.0 | | | |
| Silt & Clay | 9.0 | | | |

| Grading Analysis | | | | |
|------------------------|--------|--|--|--|
| D60 | 8.77 | | | |
| D10 | 0.08 | | | |
| Uniformity Coefficient | 103.44 | | | |



Unit 10 Wessex Road Bourne end Buckinghamshire SL8 5DT Sheet 1 of 1

Remarks:

Checked and Approved:

Whole sample used

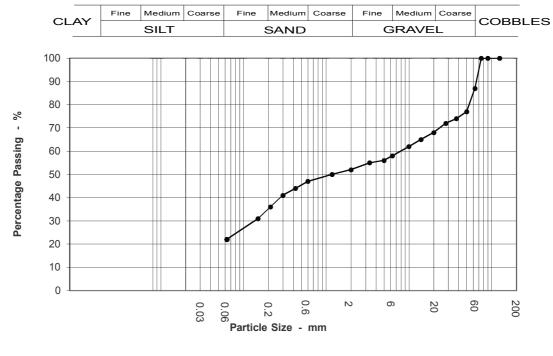
Agata K-Roche

Senior Technician



DETERMINATION OF PARTICLE SIZE DISTRIBUTION WET SIEVING METHOD

| BS1377 : Part 2 : 19 | 90 Clause 9.2 | | |
|----------------------|---|----------------|-------------|
| Client: | Aberdeenshire Council | Lab Sample No: | S8776 |
| Contract No: | 5414 | Hole ID: | Bh8 |
| Contract Name: | Stonehaven FAS | Sample Type: | В |
| Commis | | Sample No: | 11 |
| Sample | Brown slightly sandy gravelly CLAY with cobbles | Depth (m): | 2.80 - 3.70 |
| Description: | | Date Tested: | 28/11/2013 |



| Sieving | | Sedimentation | |
|---------------------|-----------|---------------------|-----------|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | | |
| 90 | 100 | | |
| 75 | 100 | | |
| 63 | 87 | | |
| 50 | 77 | | |
| 37.5 | 74 | | |
| 28 | 72 | | |
| 20 | 68 | | |
| 14 | 65 | | |
| 10 | 62 | | |
| 6.3 | 58 | | |
| 5 | 56 | | |
| 3.35 | 55 | | |
| 2 | 52 | | |
| 1.18 | 50 | | |
| 0.6 | 47 | | |
| 0.425 | 44 | | |
| 0.3 | 41 | | |
| 0.212 | 36 | | |
| 0.15 | 31 | | |
| 0.063 | 22 | | |

| Test Method | | |
|---------------------------|-----|--|
| BS 1377 : Part 2 : 1990 | | |
| Sieving Clause Depth (m): | | |
| Sedimentation | N/A | |

| Sample Proportions | | | |
|--------------------|------|--|--|
| Cobbles | 13.0 | | |
| Gravel | 35.0 | | |
| Sand | 30.0 | | |
| Silt & Clay | 22.0 | | |

| Grading Analysis | | |
|------------------------|------|--|
| D60 D10 | 8.15 | |
| Uniformity Coefficient | N/A | |



Sheet 1 of 1

Remarks:

Checked and Approved:

Whole sample used

Agata K-Roche

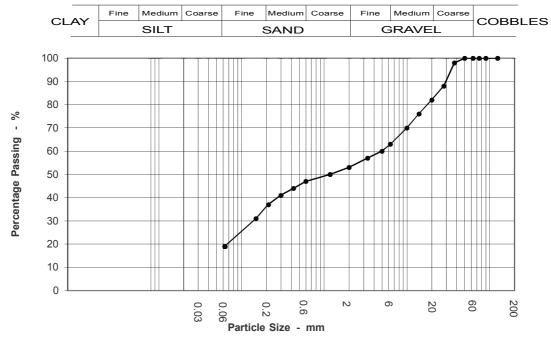
Senior Technician

Unit 10 Wessex Road Bourne end Buckinghamshire SL8 5DT



DETERMINATION OF PARTICLE SIZE DISTRIBUTION WET SIEVING METHOD

| BS1377 : Part 2 : 19 | 90 Clause 9.2 | | |
|----------------------|--------------------------------|----------------|-------------|
| Client: | Aberdeenshire Council | Lab Sample No: | S8777 |
| Contract No: | 5414 | Hole ID: | Bh8 |
| Contract Name: | Stonehaven FAS | Sample Type: | В |
| Somalo | | Sample No: | 13 |
| Sample | Brown clayey very sandy GRAVEL | Depth (m): | 3.70 - 4.00 |
| Description: | | Date Tested: | 04/12/2013 |



| Sievir | ng | Sediment | tation |
|---------------------|-----------|---------------------|-----------|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | | |
| 90 | 100 | | |
| 75 | 100 | | |
| 63 | 100 | | |
| 50 | 100 | | |
| 37.5 | 98 | | |
| 28 | 88 | | |
| 20 | 82 | | |
| 14 | 76 | | |
| 10 | 70 | | |
| 6.3 | 63 | | |
| 5 | 60 | | |
| 3.35 | 57 | | |
| 2 | 53 | | |
| 1.18 | 50 | | |
| 0.6 | 47 | | |
| 0.425 | 44 | | |
| 0.3 | 41 | | |
| 0.212 | 37 | | |
| 0.15 | 31 | | |
| 0.063 | 19 | | |

| Test Method | | |
|---------------------------|-----|--|
| BS 1377 : Part 2 : 1990 | | |
| Sieving Clause Depth (m): | | |
| Sedimentation | N/A | |

| Sample Proportions | | | |
|--------------------|------|--|--|
| Cobbles | 0.0 | | |
| Gravel | 47.0 | | |
| Sand | 34.0 | | |
| Silt & Clay | 19.0 | | |

| Grading Analysis | | |
|------------------------|------|--|
| D60 D10 | 5.00 | |
| Uniformity Coefficient | N/A | |



 Approved:
 Senior Technician

 Unit 10 Wessex Road Bourne end Buckinghamshire SL8 5DT

Whole sample used

Agata K-Roche

Date: 09/12/2013

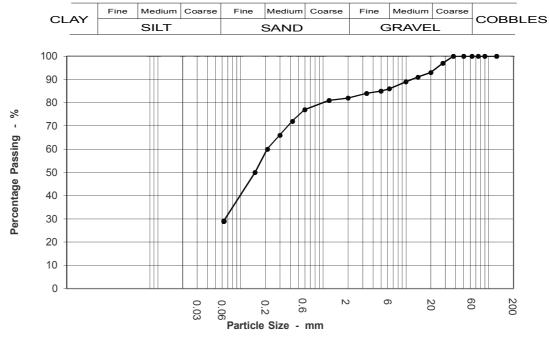
Remarks:

Checked and



DETERMINATION OF PARTICLE SIZE DISTRIBUTION WET SIEVING METHOD

| BS1377 : Part 2 : 19 | 90 Clause 9.2 | | |
|----------------------|---------------------------------|----------------|-------------|
| Client: | Aberdeenshire Council | Lab Sample No: | S8778 |
| Contract No: | 5414 | Hole ID: | Bh8 |
| Contract Name: | Stonehaven FAS | Sample Type: | В |
| Somalo | | Sample No: | 15 |
| Sample | Brown gravelly very clayey SAND | Depth (m): | 4.00 - 4.40 |
| Description: | | Date Tested: | 05/12/2013 |



| Sievir | ng | Sedimen | tation |
|---------------------|-----------|---------------------|-----------|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | | |
| 90 | 100 | | |
| 75 | 100 | | |
| 63 | 100 | | |
| 50 | 100 | | |
| 37.5 | 100 | | |
| 28 | 97 | | |
| 20 | 93 | | |
| 14 | 91 | | |
| 10 | 89 | | |
| 6.3 | 86 | | |
| 5 | 85 | | |
| 3.35 | 84 | | |
| 2 | 82 | | |
| 1.18 | 81 | | |
| 0.6 | 77 | | |
| 0.425 | 72 | | |
| 0.3 | 66 | | |
| 0.212 | 60 | | |
| 0.15 | 50 | | |
| 0.063 | 29 | | |

| Test Method | | |
|---------------------------|-----|--|
| BS 1377 : Part 2 : 1990 | | |
| Sieving Clause Depth (m): | | |
| Sedimentation | N/A | |

| Sample Proportions | | | |
|--------------------|------|--|--|
| Cobbles | 0.0 | | |
| Gravel | 18.0 | | |
| Sand | 53.0 | | |
| Silt & Clay | 29.0 | | |

| Grading Analysis | | |
|------------------------|------|--|
| D60 D10 | 0.21 | |
| Uniformity Coefficient | N/A | |

Date:

1489

| Remarks: |
|----------|
|----------|

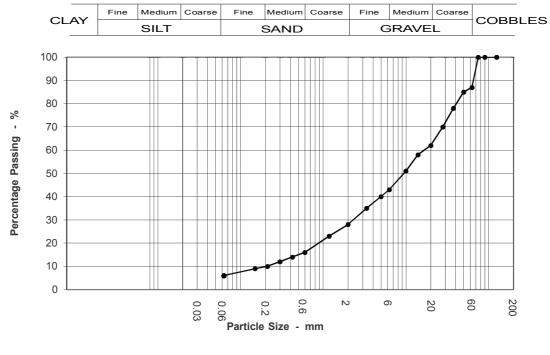
| Checked and | Agata K-Roche |
|-------------|-------------------|
| Approved: | Senior Technician |

Unit 10 Wessex Road Bourne end Buckinghamshire SL8 5DT



DETERMINATION OF PARTICLE SIZE DISTRIBUTION WET SIEVING METHOD

| BS1377 : Part 2 : 19 | 90 Clause 9.2 | | |
|----------------------|--------------------------------------|----------------|-------------|
| Client: | Aberdeenshire Council | Lab Sample No: | S8782 |
| Contract No: | 5414 | Hole ID: | BH9 |
| Contract Name: | Stonehaven FAS | Sample Type: | В |
| Somalo | | Sample No: | 5 |
| Sample | Brown very sandy GRAVEL with cobbles | Depth (m): | 1.20 - 2.00 |
| Description: | | Date Tested: | 05/12/2013 |



| Sievir | ng | Sediment | tation |
|---------------------|-----------|---------------------|-----------|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | | |
| 90 | 100 | | |
| 75 | 100 | | |
| 63 | 87 | | |
| 50 | 85 | | |
| 37.5 | 78 | | |
| 28 | 70 | | |
| 20 | 62 | | |
| 14 | 58 | | |
| 10 | 51 | | |
| 6.3 | 43 | | |
| 5 | 40 | | |
| 3.35 | 35 | | |
| 2 | 28 | | |
| 1.18 | 23 | | |
| 0.6 | 16 | | |
| 0.425 | 14 | | |
| 0.3 | 12 | | |
| 0.212 | 10 | | |
| 0.15 | 9 | | |
| 0.063 | 6 | | |

| Test Method | | |
|-------------------------|-------------------|--|
| BS 1377 : Part 2 : 1990 | | |
| Sieving | Clause Depth (m): | |
| Sedimentation | N/A | |

| Sample Proportions | | | |
|--------------------|------|--|--|
| Cobbles | 13.0 | | |
| Gravel | 59.0 | | |
| Sand | 22.0 | | |
| Silt & Clay | 6.0 | | |

| Grading Analysis | | |
|------------------------|-------|--|
| D60 | 17.00 | |
| D10 | 0.21 | |
| Uniformity Coefficient | 80.19 | |



Sheet 1 of 1

Remarks:

Checked and Approved:

Whole sample used

Agata K-Roche

Senior Technician

Unit 10 Wessex Road Bourne end Buckinghamshire SL8 5DT



DETERMINATION OF PARTICLE SIZE DISTRIBUTION WET SIEVING METHOD

| Lab Sample No: Hole ID: Sample Type: Sample No: bles Depth (m): Date Tested: | S8786 BH9 B 9 2.50 - 3.00 05/12/2013 |
|---|---|
| Coarse Fine Medium Coarse COB | |
| | |
| ν ο γ ο | 200 |
| n | mm |

| Sievir | ng | Sediment | tation |
|---------------------|-----------|---------------------|-----------|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | | |
| 90 | 100 | | |
| 75 | 100 | | |
| 63 | 94 | | |
| 50 | 90 | | |
| 37.5 | 87 | | |
| 28 | 84 | | |
| 20 | 82 | | |
| 14 | 80 | | |
| 10 | 78 | | |
| 6.3 | 76 | | |
| 5 | 76 | | |
| 3.35 | 75 | | |
| 2 | 73 | | |
| 1.18 | 70 | | |
| 0.6 | 63 | | |
| 0.425 | 58 | | |
| 0.3 | 52 | | |
| 0.212 | 46 | | |
| 0.15 | 41 | | |
| 0.063 | 30 | | |

| Test Method | | |
|-------------------------|-------------------|--|
| BS 1377 : Part 2 : 1990 | | |
| Sieving | Clause Depth (m): | |
| Sedimentation | N/A | |

| Sample Proportions | | | |
|--------------------|------|--|--|
| Cobbles | 6.0 | | |
| Gravel | 21.0 | | |
| Sand | 43.0 | | |
| Silt & Clay | 30.0 | | |

| Grading Analysis | | |
|------------------------|------|--|
| D60 D10 | 0.50 | |
| Uniformity Coefficient | N/A | |



Unit 10 Wessex Road Bourne end Buckinghamshire SL8 5DT Sheet 1 of 1

Remarks:

Checked and Approved:

Whole sample used

Agata K-Roche

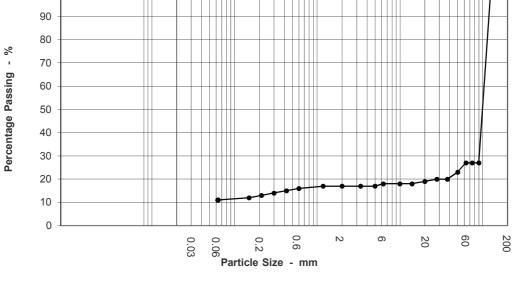
Senior Technician



DETERMINATION OF PARTICLE SIZE DISTRIBUTION WET SIEVING METHOD

| BS1377 : Part 2 : 199 | 90 Clause 9.2 | | |
|-----------------------|---|----------------|-------------|
| Client: | Aberdeenshire Council | Lab Sample No: | S8787 |
| Contract No: | 5414 | Hole ID: | BH9 |
| Contract Name: | Stonehaven FAS | Sample Type: | В |
| Sample | Brown slightly gravelly slightly sandy CLAY and 1 core of | Sample No: | 14 |
| - | | Depth (m): | 4.20 - 5.00 |
| Description: | grey SANDSTONE | Date Tested: | 29/11/2013 |





| Sievir | ng | Sediment | tation |
|---------------------|-----------|---------------------|-----------|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | | |
| 90 | 27 | | |
| 75 | 27 | | |
| 63 | 27 | | |
| 50 | 23 | | |
| 37.5 | 20 | | |
| 28 | 20 | | |
| 20 | 19 | | |
| 14 | 18 | | |
| 10 | 18 | | |
| 6.3 | 18 | | |
| 5 | 17 | | |
| 3.35 | 17 | | |
| 2 | 17 | | |
| 1.18 | 17 | | |
| 0.6 | 16 | | |
| 0.425 | 15 | | |
| 0.3 | 14 | | |
| 0.212 | 13 | | |
| 0.15 | 12 | | |
| 0.063 | 11 | | |

| Test Method | | |
|---------------------------|-----|--|
| BS 1377 : Part 2 : 1990 | | |
| Sieving Clause Depth (m): | | |
| Sedimentation | N/A | |

| Sample Proportions | | |
|--------------------|------|--|
| Cobbles | 73.0 | |
| Gravel | 10.0 | |
| Sand | 6.0 | |
| Silt & Clay | 11.0 | |

| Grading Analysis | | |
|------------------------|--------|--|
| D60 D10 | 105.82 | |
| Uniformity Coefficient | N/A | |



Remarks:

Checked and Approved:

Whole sample used

Agata K-Roche

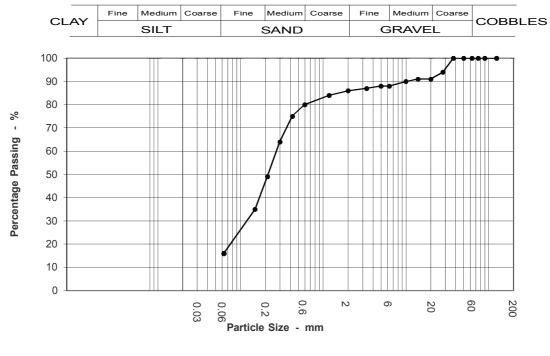
Senior Technician

Unit 10 Wessex Road Bourne end Buckinghamshire SL8 5DT



DETERMINATION OF PARTICLE SIZE DISTRIBUTION WET SIEVING METHOD

| BS1377 : Part 2 : 19 | 00 Clause 9.2 | | |
|----------------------|---------------------------|----------------|-------------|
| Client: | Aberdeenshire Council | Lab Sample No: | S8788 |
| Contract No: | 5414 | Hole ID: | BH10 |
| Contract Name: | Stonehaven FAS | Sample Type: | В |
| Samula | | Sample No: | 3 |
| Sample | Brown silty gravelly SAND | Depth (m): | 0.80 - 1.20 |
| Description: | | Date Tested: | 27/11/2013 |



| Sievir | ng | Sediment | tation |
|---------------------|-----------|---------------------|-----------|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | | |
| | | | |
| 90 | 100 | | |
| 75 | 100 | | |
| 63 | 100 | | |
| 50 | 100 | | |
| 37.5 | 100 | | |
| 28 | 94 | | |
| 20 | 91 | | |
| 14 | 91 | | |
| 10 | 90 | | |
| 6.3 | 88 | | |
| 5 | 88 | | |
| 3.35 | 87 | | |
| 2 | 86 | | |
| 1.18 | 84 | | |
| 0.6 | 80 | | |
| 0.425 | 75 | | |
| 0.3 | 64 | | |
| 0.212 | 49 | | |
| 0.15 | 35 | | |
| 0.063 | 16 | | |

Agata K-Roche

Senior Technician

Unit 10 Wessex Road Bourne end Buckinghamshire SL8 5DT

| Test Method | | |
|---------------------------|-----|--|
| BS 1377 : Part 2 : 1990 | | |
| Sieving Clause Depth (m): | | |
| Sedimentation | N/A | |

| Sample Proportions | | |
|--------------------|------|--|
| Cobbles | 0.0 | |
| Gravel | 14.0 | |
| Sand | 70.0 | |
| Silt & Clay | 16.0 | |

| Grading Analysis | | |
|------------------------|------|--|
| D60 D10 | 0.28 | |
| Uniformity Coefficient | N/A | |

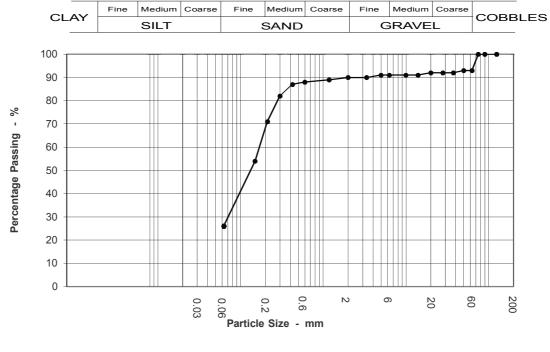
Remarks:

Checked and Approved:



DETERMINATION OF PARTICLE SIZE DISTRIBUTION WET SIEVING METHOD

| BS1377 : Part 2 : 19 | 90 Clause 9.2 | | |
|----------------------|---|----------------|-------------|
| Client: | Aberdeenshire Council | Lab Sample No: | S8789 |
| Contract No: | 5414 | Hole ID: | BH10 |
| Contract Name: | Stonehaven FAS | Sample Type: | В |
| Samula | | Sample No: | 4 |
| Sample | Brown slightly gravelly silty SAND with cobbles | Depth (m): | 1.20 - 2.00 |
| Description: | | Date Tested: | 28/11/2013 |



| Sieving | | Sedimen | tation |
|---------------------|-----------|---------------------|-----------|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | | |
| 90 | 100 | | |
| 75 | 100 | | |
| 63 | 93 | | |
| 50 | 93 | | |
| 37.5 | 92 | | |
| 28 | 92 | | |
| 20 | 92 | | |
| 14 | 91 | | |
| 10 | 91 | | |
| 6.3 | 91 | | |
| 5 | 91 | | |
| 3.35 | 90 | | |
| 2 | 90 | | |
| 1.18 | 89 | | |
| 0.6 | 88 | | |
| 0.425 | 87 | | |
| 0.3 | 82 | | |
| 0.212 | 71 | | |
| 0.15 | 54 | | |
| 0.063 | 26 | | |

| Test Method | | |
|---------------------------|-----|--|
| BS 1377 : Part 2 : 1990 | | |
| Sieving Clause Depth (m): | | |
| Sedimentation | N/A | |

| Sample Proportions | | | |
|--------------------|------|--|--|
| Cobbles | 7.0 | | |
| Gravel | 3.0 | | |
| Sand | 64.0 | | |
| Silt & Clay | 26.0 | | |

| Grading Analysis | | |
|------------------------|------|--|
| D60 D10 | 0.17 | |
| Uniformity Coefficient | N/A | |

Date:

09/12/2013



Remarks:

Checked and Approved:

Whole sample used

Agata K-Roche

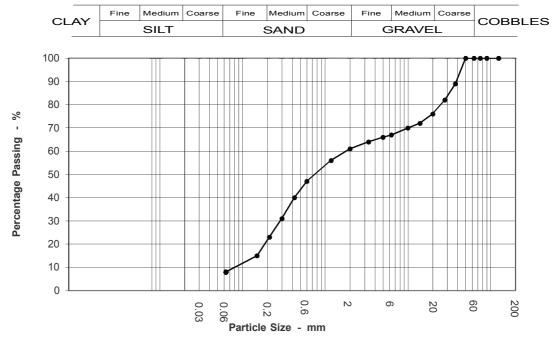
Senior Technician

Unit 10 Wessex Road Bourne end Buckinghamshire SL8 5DT



DETERMINATION OF PARTICLE SIZE DISTRIBUTION WET SIEVING METHOD

| BS1377 : Part 2 : 199 | 90 Clause 9.2 | | |
|-----------------------|---|----------------|-------------|
| Client: | Aberdeenshire Council | Lab Sample No: | S8791 |
| Contract No: | 5414 | Hole ID: | BH10 |
| Contract Name: | Stonehaven FAS | Sample Type: | В |
| Samula | | Sample No: | 6 |
| Sample | Brownish grey slightly silty very gravelly SAND | Depth (m): | 2.50 - 3.50 |
| Description: | | Date Tested: | 28/11/2013 |



| Sievir | Sieving | | tation |
|---------------|-----------|---------------|-----------|
| Particle Size | % Passing | Particle Size | % Passing |
| mm | | mm | |
| 125 | 100 | | |
| 90 | 100 | | |
| 75 | 100 | | |
| 63 | 100 | | |
| 50 | 100 | | |
| 37.5 | 89 | | |
| 28 | 82 | | |
| 20 | 76 | | |
| 14 | 72 | | |
| 10 | 70 | | |
| 6.3 | 67 | | |
| 5 | 66 | | |
| 3.35 | 64 | | |
| 2 | 61 | | |
| 1.18 | 56 | | |
| 0.6 | 47 | | |
| 0.425 | 40 | | |
| 0.3 | 31 | | |
| 0.212 | 23 | | |
| 0.15 | 15 | | |
| 0.063 | 8 | | |

| Test Method | | |
|---------------------------|-----|--|
| BS 1377 : Part 2 : 1990 | | |
| Sieving Clause Depth (m): | | |
| Sedimentation | N/A | |

| Sample Proportions | | | |
|--------------------|------|--|--|
| Cobbles | 0.0 | | |
| Gravel | 39.0 | | |
| Sand | 53.0 | | |
| Silt & Clay | 8.0 | | |

| Grading Analysis | | |
|------------------------|-------|--|
| D60 | 1.84 | |
| D10 | 0.09 | |
| Uniformity Coefficient | 20.90 | |



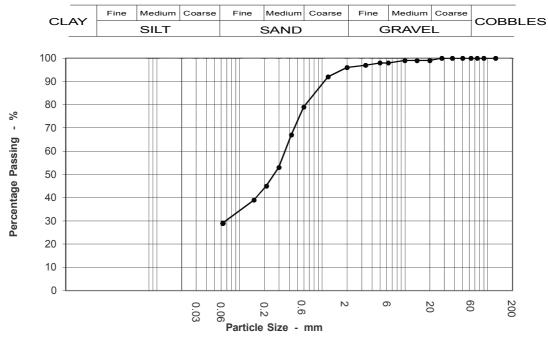
Remarks:

| Checked and | Agata K-Roche | | |
|--------------------|--------------------------------------|--|--|
| Approved: | Senior Technician | | |
| Unit 10 Wessex Roa | d Bourne end Buckinghamshire SL8 5DT | | |



DETERMINATION OF PARTICLE SIZE DISTRIBUTION WET SIEVING METHOD

| BS1377 : Part 2 : 199 | 90 Clause 9.2 | | |
|-----------------------|---|----------------|-------------|
| Client: | Aberdeenshire Council | Lab Sample No: | S8792 |
| Contract No: | 5414 | Hole ID: | BH10 |
| Contract Name: | Stonehaven FAS | Sample Type: | В |
| Somalo | | Sample No: | 10 |
| Sample | Brownish grey slightly gravelly clayey SAND | Depth (m): | 4.50 - 5.00 |
| Description: | | Date Tested: | 26/11/2013 |



| Sievir | Sieving | | tation |
|---------------------|-----------|---------------------|-----------|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | | |
| 90 | 100 | | |
| 75 | 100 | | |
| 63 | 100 | | |
| 50 | 100 | | |
| 37.5 | 100 | | |
| 28 | 100 | | |
| 20 | 99 | | |
| 14 | 99 | | |
| 10 | 99 | | |
| 6.3 | 98 | | |
| 5 | 98 | | |
| 3.35 | 97 | | |
| 2 | 96 | | |
| 1.18 | 92 | | |
| 0.6 | 79 | | |
| 0.425 | 67 | | |
| 0.3 | 53 | | |
| 0.212 | 45 | | |
| 0.15 | 39 | | |
| 0.063 | 29 | | |

| Test Method | | |
|---------------------------|-----|--|
| BS 1377 : Part 2 : 1990 | | |
| Sieving Clause Depth (m): | | |
| Sedimentation | N/A | |

| Sample Proportions | | |
|--------------------|------|--|
| Cobbles | 0.0 | |
| Gravel | 4.0 | |
| Sand | 67.0 | |
| Silt & Clay | 29.0 | |

| Grading Analysis | | | |
|----------------------------|------|--|--|
| D60 D10 | 0.36 | | |
| Uniformity Coefficient N/A | | | |

| Remarks: |
|----------|
|----------|

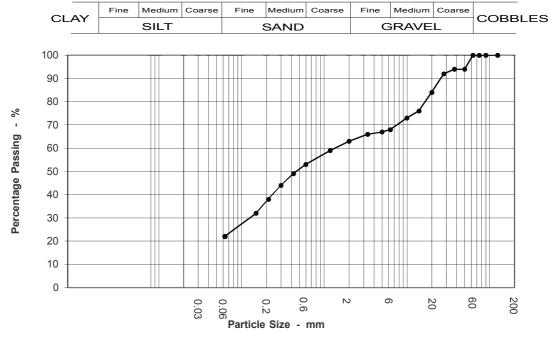
| Checked and | Agata K-Roche |
|-------------|-------------------|
| Approved: | Senior Technician |

Unit 10 Wessex Road Bourne end Buckinghamshire SL8 5DT



DETERMINATION OF PARTICLE SIZE DISTRIBUTION WET SIEVING METHOD

| BS1377 : Part 2 : 19 | 90 Clause 9.2 | | |
|----------------------|--|----------------|-------------|
| Client: | Aberdeenshire Council | Lab Sample No: | S8793 |
| Contract No: | 5414 | Hole ID: | BH11A |
| Contract Name: | Stonehaven FAS | Sample Type: | В |
| Comple | | Sample No: | 6 |
| Sample | Brown and grey clayey very gravelly SAND with rootlets | Depth (m): | 1.20 - 2.00 |
| Description: | | Date Tested: | 26/11/2013 |





| Sieving | | Sedimentation | |
|---------------------|-----------|---------------------|-----------|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | | |
| 90 | 100 | | |
| 75 | 100 | | |
| 63 | 100 | | |
| 50 | 94 | | |
| 37.5 | 94 | | |
| 28 | 92 | | |
| 20 | 84 | | |
| 14 | 76 | | |
| 10 | 73 | | |
| 6.3 | 68 | | |
| 5 | 67 | | |
| 3.35 | 66 | | |
| 2 | 63 | | |
| 1.18 | 59 | | |
| 0.6 | 53 | | |
| 0.425 | 49 | | |
| 0.3 | 44 | | |
| 0.212 | 38 | | |
| 0.15 | 32 | | |
| 0.063 | 22 | | |

| Test Method | | |
|-------------------------|-------------------|--|
| BS 1377 : Part 2 : 1990 | | |
| Sieving | Clause Depth (m): | |
| Sedimentation N/A | | |

| Sample Proportions | | |
|--------------------|------|--|
| Cobbles | 0.0 | |
| Gravel | 37.0 | |
| Sand | 41.0 | |
| Silt & Clay | 22.0 | |

| Grading Analysis | | |
|------------------------|------|--|
| D60 D10 | 1.39 | |
| Uniformity Coefficient | N/A | |

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Unit 10 Wessex Road Bourne end Buckinghamshire SL8 5DT

Agata K-Roche

Senior Technician

Date: 09/12/2013

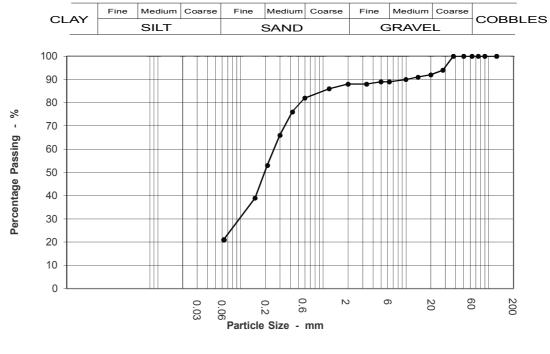
Remarks:

Checked and Approved:



DETERMINATION OF PARTICLE SIZE DISTRIBUTION WET SIEVING METHOD

| BS1377 : Part 2 : 19 | 90 Clause 9.2 | | |
|----------------------|---------------------------|----------------|-------------|
| Client: | Aberdeenshire Council | Lab Sample No: | S8794 |
| Contract No: | 5414 | Hole ID: | BH11A |
| Contract Name: | Stonehaven FAS | Sample Type: | В |
| Somalo | | Sample No: | 8 |
| Sample | Brown gravelly silty SAND | Depth (m): | 2.00 - 3.00 |
| Description: | | Date Tested: | 02/12/2013 |



| Sieving | | Sedimentation | |
|---------------------|-----------|---------------------|-----------|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | | |
| 90 | 100 | | |
| 75 | 100 | | |
| 63 | 100 | | |
| 50 | 100 | | |
| 37.5 | 100 | | |
| 28 | 94 | | |
| 20 | 92 | | |
| 14 | 91 | | |
| 10 | 90 | | |
| 6.3 | 89 | | |
| 5 | 89 | | |
| 3.35 | 88 | | |
| 2 | 88 | | |
| 1.18 | 86 | | |
| 0.6 | 82 | | |
| 0.425 | 76 | | |
| 0.3 | 66 | | |
| 0.212 | 53 | | |
| 0.15 | 39 | | |
| 0.063 | 21 | | |

| Test Method | | | |
|---------------------------|-----|--|--|
| BS 1377 : Part 2 : 1990 | | | |
| Sieving Clause Depth (m): | | | |
| Sedimentation | N/A | | |

| Sample Proportions | | | |
|--------------------|------|--|--|
| Cobbles | 0.0 | | |
| Gravel | 12.0 | | |
| Sand | 67.0 | | |
| Silt & Clay | 21.0 | | |

| Grading Analysis | | | |
|------------------------|------|--|--|
| D60 D10 | 0.26 | | |
| Uniformity Coefficient | N/A | | |

Date:

09/12/2013

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Senior Technician Unit 10 Wessex Road Bourne end Buckinghamshire SL8 5DT

Agata K-Roche

Sheet 1 of 1

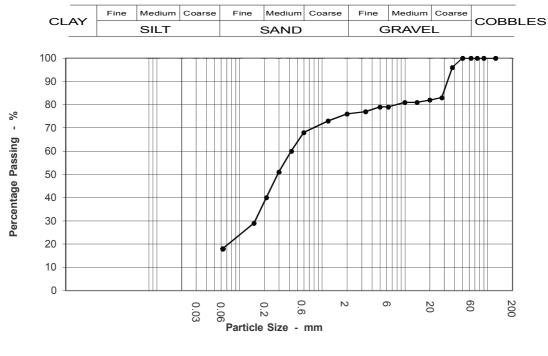
Remarks:

Checked and Approved:



DETERMINATION OF PARTICLE SIZE DISTRIBUTION WET SIEVING METHOD

| BS1377 : Part 2 : 19 | 90 Clause 9.2 | | |
|------------------------|--|----------------|-------------|
| Client: | Aberdeenshire Council | Lab Sample No: | S8795 |
| Contract No: | 5414 | Hole ID: | BH11A |
| Contract Name: | Stonehaven FAS | Sample Type: | В |
| Samula | | Sample No: | 12 |
| Sample Decerintion: | Brownish grey silty very gravelly SAND | Depth (m): | 3.50 - 4.50 |
| Description: | | Date Tested: | 26/11/2013 |



| Sieving | | Sedimentation | |
|---------------------|-----------|---------------------|-----------|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | | |
| 90 | 100 | | |
| 75 | 100 | | |
| 63 | 100 | | |
| 50 | 100 | | |
| 37.5 | 96 | | |
| 28 | 83 | | |
| 20 | 82 | | |
| 14 | 81 | | |
| 10 | 81 | | |
| 6.3 | 79 | | |
| 5 | 79 | | |
| 3.35 | 77 | | |
| 2 | 76 | | |
| 1.18 | 73 | | |
| 0.6 | 68 | | |
| 0.425 | 60 | | |
| 0.3 | 51 | | |
| 0.212 | 40 | | |
| 0.15 | 29 | | |
| 0.063 | 18 | | |

| Test Method | | | |
|-------------------------|-------------------|--|--|
| BS 1377 : Part 2 : 1990 | | | |
| Sieving | Clause Depth (m): | | |
| Sedimentation | N/A | | |

| Sample Proportions | | | |
|--------------------|------|--|--|
| Cobbles | 0.0 | | |
| Gravel | 24.0 | | |
| Sand | 58.0 | | |
| Silt & Clay | 18.0 | | |

| Grading Analysis | | | |
|------------------------|------|--|--|
| D60 D10 | 0.43 | | |
| Uniformity Coefficient | N/A | | |

| Checked and | Agata K-Roche | |
|-------------|-------------------|--|
| Approved: | Senior Technician | |
| | | |

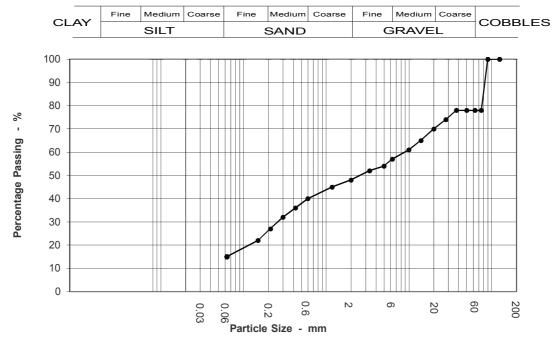
Unit 10 Wessex Road Bourne end Buckinghamshire SL8 5DT





DETERMINATION OF PARTICLE SIZE DISTRIBUTION WET SIEVING METHOD

| BS1377 : Part 2 : 19 | 90 Clause 9.2 | | |
|----------------------|--|----------------|-------------|
| Client: | Aberdeenshire Council | Lab Sample No: | S8796 |
| Contract No: | 5414 | Hole ID: | BH12 |
| Contract Name: | Stonehaven FAS | Sample Type: | В |
| Somalo | | Sample No: | 4 |
| Sample | Brown clayey SAND and GRAVEL with frequent cobbles | Depth (m): | 1.20 - 1.50 |
| Description: | | Date Tested: | 27/11/2013 |



| Sieving | | Sedimentation | |
|---------------------|-----------|---------------------|-----------|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | | |
| 90 | 100 | | |
| 75 | 78 | | |
| 63 | 78 | | |
| 50 | 78 | | |
| 37.5 | 78 | | |
| 28 | 74 | | |
| 20 | 70 | | |
| 14 | 65 | | |
| 10 | 61 | | |
| 6.3 | 57 | | |
| 5 | 54 | | |
| 3.35 | 52 | | |
| 2 | 48 | | |
| 1.18 | 45 | | |
| 0.6 | 40 | | |
| 0.425 | 36 | | |
| 0.3 | 32 | | |
| 0.212 | 27 | | |
| 0.15 | 22 | | |
| 0.063 | 15 | | |

| Test N | lethod |
|---------------|-------------------|
| BS 1377 : F | Part 2 : 1990 |
| Sieving | Clause Depth (m): |
| Sedimentation | N/A |

| Sample Propo | ortions |
|--------------|---------|
| Cobbles | 22.0 |
| Gravel | 30.0 |
| Sand | 33.0 |
| Silt & Clay | 15.0 |

| Grading Ana | lysis |
|------------------------|-------|
| D60 D10 | 9.08 |
| Uniformity Coefficient | N/A |

Date:

09/12/2013



Checked andAgata K-RocheApproved:Senior Technician

Unit 10 Wessex Road Bourne end Buckinghamshire SL8 5DT

Whole sample used

Sheet 1 of 1

Remarks:



DETERMINATION OF PARTICLE SIZE DISTRIBUTION WET SIEVING METHOD

| Client: Contract No: Contract Nam Sample Description: | 5414 e: Stone | 00 Clause 9.2 Aberdeenshire Council 5414 Stonehaven FAS Pinkish brown slightly sandy gravelly silty CLAY with cobbles | | | | | | | | | | | | | Lab Sample No: Hole ID: Sample Type: Sample No: Depth (m): Date Tested: | | | | | : | S8798 BH12 B 10 2.00 - 2.50 29/11/2013 | | | | | |
|---|---|---|------|---------------|--------|------|------|---------|-------|----------|-------------|-----|-------|------------------|--|------------------------|-------|---------------------|------------------|-----------------|---|---------------------|------|----|---|--|
| | С | | Fine | | edium | Соа | rse | F | ine | Me SA | diun | | oarse | • 1 | Fine | | | um (/EL | | se | С | DE | вВ | LE | s | |
| | 100 | | | | | | | | | 0, (| | - | | | | <u> </u> | | | - | | | | | | | |
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| | 90 | | | | | | | | | | | | | | | | | | | / | | | | | | |
| | 80 % | - | | | | | | | | | | | | | | | | | 1 | | | | | | | |
| | · 70 | | | | | | | | | | | | | | | | | | \boldsymbol{I} | | | | _ | | | |
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| | 20 | | | | | | | | | | | | | | | | | | | | | | _ | | | |
| | 10 | | | | | | | • | | | | | | | | | | | | | | | | | | |
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| | 0 | | | | | 0.03 | 9 | 90 0 | | 0.2 | | 0.6 | I | N | | ი | | 20 | | 60 | | | 200 | | | |
| | | | | | | 3 | č | ກ Pa | rticl | e Siz | | | n | | | | | | | | | | 0 | | | |
| | | | | Sedimentation | | | | | | | Test Method | | | | | | | l | | | | | | | | |
| | Sievi | ing | | | | | atio | n | |] | | | | | | | | | | | | | | | | |
| Pa | article Size | ing % Passi | ing | Parti | cle Si | | | | sing | | | | | Sio | | | | Part 2 | 2:19 | | | th | (m): | | | |
| Pa | | | | Parti | | | | | sing | | | | | Siev | | 137 | | Part 2 | | se D | Dep I/A | oth (| (m): | : | | |
| Pa | nrticle Size mm 125 90 | % Passi 100 100 | | Parti | cle Si | | | | sing | | | | | | /ing | 137 | | Part 2 | 2:19 | se D | | oth (| (m): | : | | |
| Pe | nticle Size mm 125 90 75 | % Passi 100 100 92 | | Parti | cle Si | | | | sing | | | | | | /ing | 137 | | Part 2 | 2:19 | se D | | oth (| (m): | : | | |
| Pa | article Size mm 125 90 75 63 | % Passi 100 100 92 92 | | Parti | cle Si | | | | sing | | | | | | /ing | 137 | | Part 2 | 2:19 | se D | | oth (| (m): | | | |
| Pa | nticle Size mm 125 90 75 | % Passi 100 100 92 | | Parti | cle Si | | | | sing | | | | | | ving entati | 137 on | 7 : F | Part 2 | 2 : 19 Clau | se [N | | th (| (m): | | | |
| Pa | rticle Size mm 125 90 75 63 50 37.5 28 | % Passi 100 100 92 92 84 78 66 | | Parti | cle Si | | | | sing | | | | | dime | /ing entati Sa | on | 7 : F | Part 2 | 2 : 19 Clau | se [N | J/A | | (m): | | | |
| Pa | rticle Size mm 125 90 75 63 50 37.5 28 20 | % Passi 100 100 92 92 84 78 66 57 | | Parti | cle Si | | | | sing | | | | | dime | ving entati Sa obble | on imples | 7 : F | Part 2 | 2 : 19 Clau | se [N | I/A 8. | 0 | (m): | | | |
| Pe | rticle Size mm 125 90 75 63 50 37.5 28 | % Passi 100 100 92 92 84 78 66 | | Parti | cle Si | | | | sing | | | | | dime Co Co | /ing entati Sa | on imples | 7 : F | Part 2 | 2 : 19 Clau | se [N | J/A | 0 | (m): | | | |
| Pa | rticle Size mm 125 90 75 63 50 37.5 28 20 14 10 6.3 | % Passi 100 100 92 92 84 78 66 57 53 48 48 | | Parti | cle Si | | | | sing | | | | | dime Co G | ving entati Sa obble Grave | 137 on imp es | 7 : F | Part 2 | 2 : 19 Clau | se [N | 8. 56 | 0.0 | (m): | | | |
| Pa | rticle Size mm 125 90 75 63 50 37.5 28 20 14 10 6.3 5 | % Passi 100 100 92 92 84 78 66 57 53 48 44 44 | | Parti | cle Si | | | | sing | | | | | dime Co G | ving entati Sabble Grave Sand | 137 on imp es | 7 : F | Part 2 | 2 : 19 Clau | se [N | 8. 56 22 | 0.0 | (m): | | | |
| Pe | rticle Size mm 125 90 75 63 50 37.5 28 20 14 10 6.3 5 3.35 | % Passi 100 100 92 92 84 78 66 57 53 48 44 41 39 | | Parti | cle Si | | | | sing | | | | | dime Co G | ving entati Sabble Grave Sand | 137 on imp es | 7 : F | Part 2 | 2 : 19 Clau | se [N | 8. 56 22 | 0.0 | (m): | | | |
| Pa | rticle Size mm 125 90 75 63 50 37.5 28 20 14 10 6.3 5 | % Passi 100 100 92 92 84 78 66 57 53 48 44 44 | | Parti | cle Si | | | | sing | | | | | dime Co G | ving entati Sabble Grave Sand | 137 on imp es | 7 : F | Part 2 | 2 : 19 Clau | se [N | 8. 56 22 | 0.0 | (m): | | | |
| Pe | rticle Size mm 125 90 75 63 50 37.5 28 20 14 10 6.3 5 3.35 2 1.18 0.6 | % Passi 100 100 92 92 84 78 66 57 53 48 44 41 39 36 34 31 | | Parti | cle Si | | | | sing | | | | | dime Co G | ing ntati Sa bbble Grave Sand & C | 137 on mpl es | 7 : F | Part 2 | rtio | se [N | 8. 56 22 | 0.0 | (m): | | | |
| Pe | rticle Size mm 125 90 75 63 50 37.5 28 20 14 10 6.3 5 3.35 2 1.18 0.6 0.425 | % Passi 100 100 92 92 84 78 66 57 53 48 44 41 39 36 34 31 29 | | Parti | cle Si | | | | sing | | | | | Ca G Silt | ving ntati Sabble Grave Sand & C | 137 on mpl es | 7 : F | ropo | rtio | se [N ns | 8. 56 22 14 | 0.0.0.0 | (m): | | | |
| Pe | rticle Size mm 125 90 75 63 50 37.5 28 20 14 10 6.3 5 3.35 2 1.18 0.6 0.425 0.3 | % Passi 100 100 92 92 84 78 66 57 53 48 44 41 39 36 34 31 29 26 | | Parti | cle Si | | | | sing | | | | | Cc G Silt | ring ntati Sa bbble Grave Sand & C Q D60 | 137 on mpl es | 7 : F | ropo | rtio | se [N ns | 8. 56 22 | 0.0.0.0 | (m): | | | |
| Pe | rticle Size mm 125 90 75 63 50 37.5 28 20 14 10 6.3 5 3.35 2 1.18 0.6 0.425 | % Passi 100 100 92 92 84 78 66 57 53 48 44 41 39 36 34 31 29 | | Parti | cle Si | | | | sing | | | | | Cc Cc Silt | ving ntati Sabble Grave Sand & C 0 000 D10 | imples | Ie P | Part 2 (ropo | rtio | se [N ns | 8. 56 22 14 | 0.0.0.0 | (m): | | | |
| Pe | rticle Size mm 125 90 75 63 50 37.5 28 20 14 10 6.3 5 3.35 2 1.18 0.6 0.425 0.3 0.212 | % Passi 100 100 92 92 84 78 66 57 53 48 66 57 53 48 44 41 39 36 34 31 29 26 23 | | Parti | cle Si | | | | sing | | | | | Cc Cc Silt | ving ntati Sabble Grave Sand & C 0 000 D10 | imples | Ie P | Part 2 (ropo | rtio | se [N ns | 8. 56 22 14 | 0 .0 .0 .0 | (m): | | | |
| | rticle Size mm 125 90 75 63 50 37.5 28 20 14 10 6.3 5 3.35 2 1.18 0.6 0.425 0.3 0.212 0.15 0.063 | % Passi 100 100 92 92 84 78 66 57 53 48 44 41 39 36 34 31 29 26 23 20 14 | | Parti | cle Si | | | | sing | | | | | Cc Cc Silt | ving ntati Sabble Grave Sand & C 0 000 D10 | imples | Ie P | Part 2 (ropo | rtio | se [N ns | 8. 56 22 14 | 0 .0 .0 .0 | (m): | | | |
| | rticle Size mm 125 90 75 63 50 37.5 28 20 14 10 6.3 5 3.35 2 1.18 0.6 0.425 0.3 0.212 0.15 0.063 Whole sam | % Passi 100 100 92 92 84 78 66 57 53 48 44 41 39 36 34 31 29 26 23 20 14 | | Parti | cle Si | | | | sing | | | | | Cc Cc Silt | ving ntati Sabble Grave Sand & C 0 000 D10 | imples | Ie P | Part 2 (ropo | rtio | se [N ns | 8. 56 22 14 | 0 .0 .0 .0 | (m): | | | |
| | rticle Size mm 125 90 75 63 50 37.5 28 20 14 10 6.3 5 3.35 2 1.18 0.6 0.425 0.3 0.212 0.15 0.063 Whole sam | % Passi 100 100 92 92 84 78 66 57 53 48 44 41 39 36 34 31 29 26 23 20 14 | | Parti | cle Si | | | | sing | | | | | Cc Cc Silt | ving ntati Sabble Grave Sand & C 0 000 D10 | imples | Ie P | Part 2 (ropo | rtio | se [N ns | 8. 56 22 14 | 0 .0 .0 .0 | (m): | | | |

Unit 10 Wessex Road Bourne end Buckinghamshire SL8 5DT

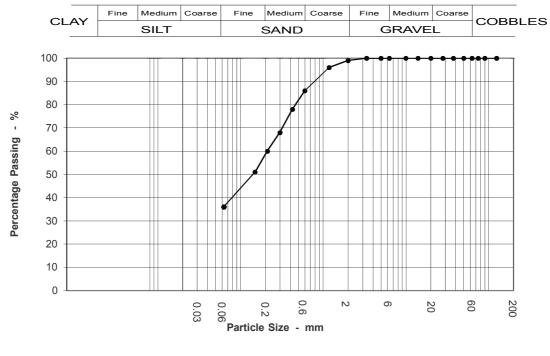
Sheet 1 of 1

1489



DETERMINATION OF PARTICLE SIZE DISTRIBUTION WET SIEVING METHOD

| BS1377 : Part 2 : 199 | 90 Clause 9.2 | | |
|-----------------------|--|----------------|-------------|
| Client: | Aberdeenshire Council | Lab Sample No: | S8802 |
| Contract No: | 5414 | Hole ID: | BH12 |
| Contract Name: | Stonehaven FAS | Sample Type: | В |
| Somalo | | Sample No: | 18 |
| Sample | Purplish brown slightly gravelly clayey SAND | Depth (m): | 5.00 - 6.00 |
| Description: | | Date Tested: | 27/11/2013 |



| Sievir | Sieving | | tation |
|---------------------|-----------|---------------------|-----------|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | | |
| 90 | 100 | | |
| 75 | 100 | | |
| 63 | 100 | | |
| 50 | 100 | | |
| 37.5 | 100 | | |
| 28 | 100 | | |
| 20 | 100 | | |
| 14 | 100 | | |
| 10 | 100 | | |
| 6.3 | 100 | | |
| 5 | 100 | | |
| 3.35 | 100 | | |
| 2 | 99 | | |
| 1.18 | 96 | | |
| 0.6 | 86 | | |
| 0.425 | 78 | | |
| 0.3 | 68 | | |
| 0.212 | 60 | | |
| 0.15 | 51 | | |
| 0.063 | 36 | | |

Agata K-Roche

Senior Technician

Unit 10 Wessex Road Bourne end Buckinghamshire SL8 5DT

| Test Method | | |
|-------------------------|-------------------|--|
| BS 1377 : Part 2 : 1990 | | |
| Sieving | Clause Depth (m): | |
| Sedimentation | N/A | |

| Sample Proportions | | |
|--------------------|------|--|
| Cobbles | 0.0 | |
| Gravel | 1.0 | |
| Sand | 63.0 | |
| Silt & Clay | 36.0 | |

| Grading Analysis | | |
|------------------------|------|--|
| D60 D10 | 0.21 | |
| Uniformity Coefficient | N/A | |

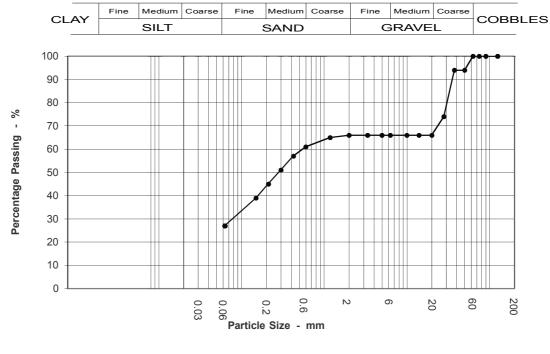
Remarks:

Checked and Approved:



DETERMINATION OF PARTICLE SIZE DISTRIBUTION WET SIEVING METHOD

| BS1377 : Part 2 : 19 | 90 Clause 9.2 | | |
|----------------------|---------------------------------------|----------------|-------------|
| Client: | Aberdeenshire Council | Lab Sample No: | S8803 |
| Contract No: | 5414 | Hole ID: | BH12 |
| Contract Name: | Stonehaven FAS | Sample Type: | В |
| Somalo | | Sample No: | 22 |
| Sample | Purplish brown clayey SAND and GRAVEL | Depth (m): | 7.00 - 8.00 |
| Description: | | Date Tested: | 02/12/2013 |



| Sieving | | Sedimen | tation |
|---------------------|-----------|---------------------|-----------|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | | |
| 90 | 100 | | |
| 75 | 100 | | |
| 63 | 100 | | |
| 50 | 94 | | |
| 37.5 | 94 | | |
| 28 | 74 | | |
| 20 | 66 | | |
| 14 | 66 | | |
| 10 | 66 | | |
| 6.3 | 66 | | |
| 5 | 66 | | |
| 3.35 | 66 | | |
| 2 | 66 | | |
| 1.18 | 65 | | |
| 0.6 | 61 | | |
| 0.425 | 57 | | |
| 0.3 | 51 | | |
| 0.212 | 45 | | |
| 0.15 | 39 | | |
| 0.063 | 27 | | |

| Test Method | | |
|-------------------------|-------------------|--|
| BS 1377 : Part 2 : 1990 | | |
| Sieving | Clause Depth (m): | |
| Sedimentation | N/A | |

| Sample Proportions | | |
|--------------------|------|--|
| Cobbles | 0.0 | |
| Gravel | 34.0 | |
| Sand | 39.0 | |
| Silt & Clay | 27.0 | |

| Grading Analysis | | |
|------------------------|------|--|
| D60 D10 | 0.56 | |
| Uniformity Coefficient | N/A | |

Date:

09/12/2013

1489

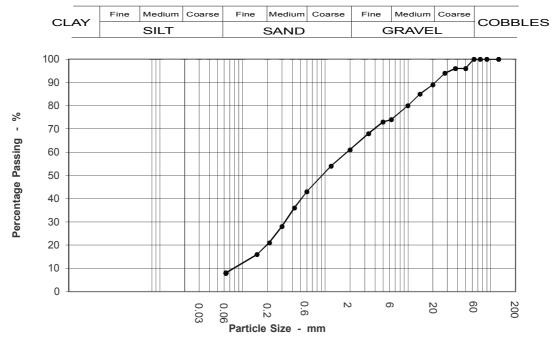
| Remarks: |
|----------|
|----------|

| Checked and | Agata K-Roche |
|-------------|-------------------|
| Approved: | Senior Technician |



DETERMINATION OF PARTICLE SIZE DISTRIBUTION WET SIEVING METHOD

| BS1377 : Part 2 : 199 | 00 Clause 9.2 | | |
|-----------------------|--------------------------------|----------------|-------------|
| Client: | Aberdeenshire Council | Lab Sample No: | S8805 |
| Contract No: | 5414 | Hole ID: | BH13 |
| Contract Name: | Stonehaven FAS | Sample Type: | В |
| Samula | | Sample No: | 3 |
| Sample | Brown silty very gravelly SAND | Depth (m): | 1.20 - 2.00 |
| Description: | | Date Tested: | 28/11/2013 |



| Sieving | | Sediment | tation |
|---------------|------------|---------------|------------|
| Particle Size | % Passing | Particle Size | % Passing |
| mm | 10 Fassing | mm | 70 Fassing |
| 125 | 100 | | |
| 90 | 100 | | |
| 75 | 100 | | |
| 63 | 100 | | |
| 50 | 96 | | |
| 37.5 | 96 | | |
| 28 | 94 | | |
| 20 | 89 | | |
| 14 | 85 | | |
| 10 | 80 | | |
| 6.3 | 74 | | |
| 5 | 73 | | |
| 3.35 | 68 | | |
| 2 | 61 | | |
| 1.18 | 54 | | |
| 0.6 | 43 | | |
| 0.425 | 36 | | |
| 0.3 | 28 | | |
| 0.212 | 21 | | |
| 0.15 | 16 | | |
| 0.063 | 8 | | |

| Test Method | | |
|-------------------------|-------------------|--|
| BS 1377 : Part 2 : 1990 | | |
| Sieving | Clause Depth (m): | |
| Sedimentation | N/A | |

| Sample Proportions | | |
|--------------------|------|--|
| Cobbles | 0.0 | |
| Gravel | 39.0 | |
| Sand | 53.0 | |
| Silt & Clay | 8.0 | |

| Grading Analysis | | |
|------------------------|-------|--|
| D60 | 1.88 | |
| D10 | 0.08 | |
| Uniformity Coefficient | 22.22 | |



Sheet 1 of 1

Remarks:

Checked and Approved:

Whole sample used

Agata K-Roche

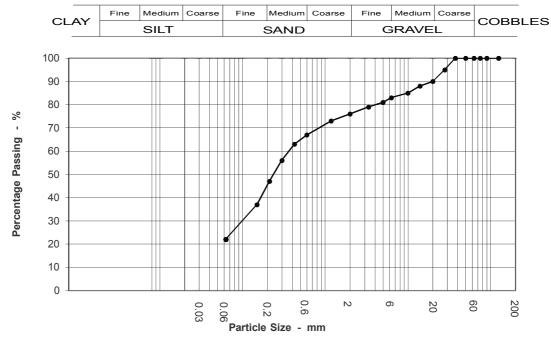
Senior Technician

Unit 10 Wessex Road Bourne end Buckinghamshire SL8 5DT



DETERMINATION OF PARTICLE SIZE DISTRIBUTION WET SIEVING METHOD

| BS1377 : Part 2 : 19 | 90 Clause 9.2 | | |
|----------------------|---------------------------|----------------|-------------|
| Client: | Aberdeenshire Council | Lab Sample No: | S8806 |
| Contract No: | 5414 | Hole ID: | BH13 |
| Contract Name: | Stonehaven FAS | Sample Type: | В |
| Somalo | | Sample No: | 5 |
| Sample | Brown silty gravelly SAND | Depth (m): | 2.00 - 3.00 |
| Description: | | Date Tested: | 29/11/2013 |



| Sieving | | Sedimen | tation |
|---------------------|-----------|---------------------|-----------|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | | |
| 90 | 100 | | |
| 75 | 100 | | |
| 63 | 100 | | |
| 50 | 100 | | |
| 37.5 | 100 | | |
| 28 | 95 | | |
| 20 | 90 | | |
| 14 | 88 | | |
| 10 | 85 | | |
| 6.3 | 83 | | |
| 5 | 81 | | |
| 3.35 | 79 | | |
| 2 | 76 | | |
| 1.18 | 73 | | |
| 0.6 | 67 | | |
| 0.425 | 63 | | |
| 0.3 | 56 | | |
| 0.212 | 47 | | |
| 0.15 | 37 | | |
| 0.063 | 22 | | |

| Test Method | | |
|-------------------------|-------------------|--|
| BS 1377 : Part 2 : 1990 | | |
| Sieving | Clause Depth (m): | |
| Sedimentation | N/A | |

| Sample Proportions | | |
|--------------------|------|--|
| Cobbles | 0.0 | |
| Gravel | 24.0 | |
| Sand | 54.0 | |
| Silt & Clay | 22.0 | |

| Grading Analysis | | |
|------------------------|------|--|
| D60 D10 | 0.37 | |
| Uniformity Coefficient | N/A | |

1489

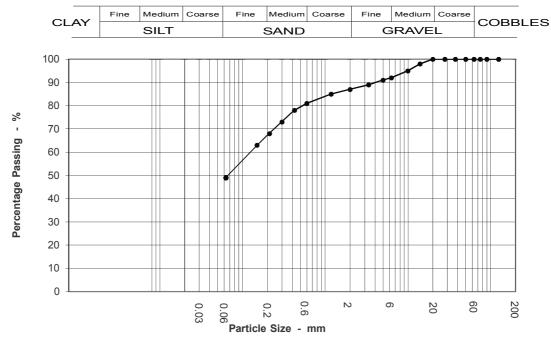
| Remarks: |
|----------|
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| Checked and | Agata K-Roche |
|-------------|-------------------|
| Approved: | Senior Technician |



DETERMINATION OF PARTICLE SIZE DISTRIBUTION WET SIEVING METHOD

| BS1377 : Part 2 : 19 | 90 Clause 9.2 | | |
|----------------------|--|----------------|-------------|
| Client: | Aberdeenshire Council | Lab Sample No: | S8808 |
| Contract No: | 5414 | Hole ID: | BH13 |
| Contract Name: | Stonehaven FAS | Sample Type: | В |
| Sampla | | Sample No: | 11 |
| Sample | Light pinkish brown slightly gravelly silty sandy CLAY | Depth (m): | 4.70 - 5.50 |
| Description: | | Date Tested: | 28/11/2013 |



| Sieving | | Sediment | tation |
|---------------|------------|---------------|------------|
| Particle Size | % Passing | Particle Size | % Passing |
| mm | 10 Fassing | mm | 70 Fassing |
| 125 | 100 | | |
| 90 | 100 | | |
| 75 | 100 | | |
| 63 | 100 | | |
| 50 | 100 | | |
| 37.5 | 100 | | |
| 28 | 100 | | |
| 20 | 100 | | |
| 14 | 98 | | |
| 10 | 95 | | |
| 6.3 | 92 | | |
| 5 | 91 | | |
| 3.35 | 89 | | |
| 2 | 87 | | |
| 1.18 | 85 | | |
| 0.6 | 81 | | |
| 0.425 | 78 | | |
| 0.3 | 73 | | |
| 0.212 | 68 | | |
| 0.15 | 63 | | |
| 0.063 | 49 | | |

| Test Method | | |
|---------------------------|-----|--|
| BS 1377 : Part 2 : 1990 | | |
| Sieving Clause Depth (m): | | |
| Sedimentation | N/A | |

| Sample Proportions | | | |
|--------------------|------|--|--|
| Cobbles | 0.0 | | |
| Gravel | 13.0 | | |
| Sand | 38.0 | | |
| Silt & Clay | 49.0 | | |

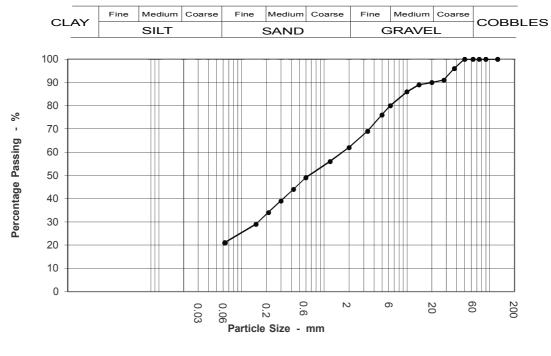
| Grading Analysis | | | |
|------------------------|------|--|--|
| D60 D10 | 0.13 | | |
| Uniformity Coefficient | N/A | | |

| Checked and | Agata K-Roche |
|-------------|-------------------|
| Approved: | Senior Technician |



DETERMINATION OF PARTICLE SIZE DISTRIBUTION WET SIEVING METHOD

| BS1377 : Part 2 : 19 | 00 Clause 9.2 | | |
|----------------------|-----------------------------|----------------|-------------|
| Client: | Aberdeenshire Council | Lab Sample No: | S8807 |
| Contract No: | 5414 | Hole ID: | BH13 |
| Contract Name: | Stonehaven FAS | Sample Type: | В |
| Somalo | | Sample No: | 9 |
| Sample | Brown silty SAND and GRAVEL | Depth (m): | 4.00 - 4.50 |
| Description: | | Date Tested: | 27/11/2013 |



| Sieving | | Sediment | tation |
|---------------------|-----------|---------------------|-----------|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | | |
| 90 | 100 | | |
| 75 | 100 | | |
| 63 | 100 | | |
| 50 | 100 | | |
| 37.5 | 96 | | |
| 28 | 91 | | |
| 20 | 90 | | |
| 14 | 89 | | |
| 10 | 86 | | |
| 6.3 | 80 | | |
| 5 | 76 | | |
| 3.35 | 69 | | |
| 2 | 62 | | |
| 1.18 | 56 | | |
| 0.6 | 49 | | |
| 0.425 | 44 | | |
| 0.3 | 39 | | |
| 0.212 | 34 | | |
| 0.15 | 29 | | |
| 0.063 | 21 | | |

Agata K-Roche

Senior Technician

Unit 10 Wessex Road Bourne end Buckinghamshire SL8 5DT

| Test Method | | | |
|-------------------------|-------------------|--|--|
| BS 1377 : Part 2 : 1990 | | | |
| Sieving | Clause Depth (m): | | |
| Sedimentation | N/A | | |

| Sample Proportions | | | |
|--------------------|------|--|--|
| Cobbles | 0.0 | | |
| Gravel | 38.0 | | |
| Sand | 41.0 | | |
| Silt & Clay | 21.0 | | |

| Grading Analysis | | | |
|------------------------|------|--|--|
| D60 D10 | 1.73 | | |
| Uniformity Coefficient | N/A | | |

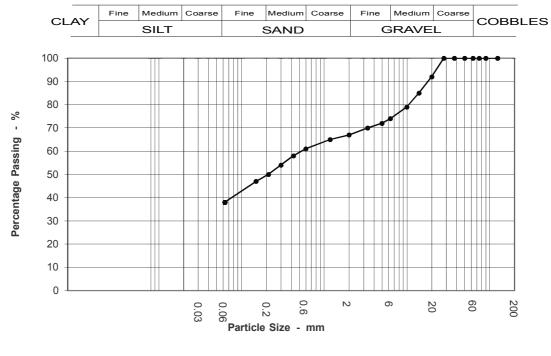
Remarks:

Checked and Approved:



DETERMINATION OF PARTICLE SIZE DISTRIBUTION WET SIEVING METHOD

| BS1377 : Part 2 : 1990 Clause 9.2 | | | |
|-----------------------------------|--------------------------------------|----------------|-------------|
| Client: | Aberdeenshire Council | Lab Sample No: | S8809 |
| Contract No: | 5414 | Hole ID: | BH13 |
| Contract Name: | Stonehaven FAS | Sample Type: | В |
| Somalo | | Sample No: | 13 |
| Sample | Pinkish brown clayey SAND and GRAVEL | Depth (m): | 5.50 - 6.00 |
| Description: | | Date Tested: | 26/11/2013 |



| Sievir | ng | Sediment | tation |
|---------------------|-----------|---------------------|-----------|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | | |
| 90 | 100 | | |
| 75 | 100 | | |
| 63 | 100 | | |
| 50 | 100 | | |
| 37.5 | 100 | | |
| 28 | 100 | | |
| 20 | 92 | | |
| 14 | 85 | | |
| 10 | 79 | | |
| 6.3 | 74 | | |
| 5 | 72 | | |
| 3.35 | 70 | | |
| 2 | 67 | | |
| 1.18 | 65 | | |
| 0.6 | 61 | | |
| 0.425 | 58 | | |
| 0.3 | 54 | | |
| 0.212 | 50 | | |
| 0.15 | 47 | | |
| 0.063 | 38 | | |

| Test Method | | | |
|-------------------------|-------------------|--|--|
| BS 1377 : Part 2 : 1990 | | | |
| Sieving | Clause Depth (m): | | |
| Sedimentation | N/A | | |

| Sample Proportions | | | |
|--------------------|------|--|--|
| Cobbles | 0.0 | | |
| Gravel | 33.0 | | |
| Sand | 29.0 | | |
| Silt & Clay | 38.0 | | |

| Grading Analysis | | | |
|------------------------|------|--|--|
| D60 D10 | 0.54 | | |
| Uniformity Coefficient | N/A | | |

Date:

09/12/2013

Checked and

d Agata K-Roche Senior Technician

Unit 10 Wessex Road Bourne end Buckinghamshire SL8 5DT

Sheet 1 of 1

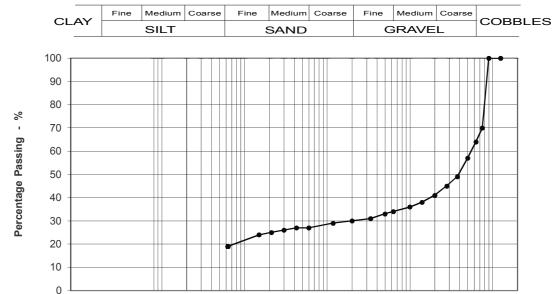
Remarks:

Approved:



DETERMINATION OF PARTICLE SIZE DISTRIBUTION WET SIEVING METHOD

| BS1377 : Part 2 : 1990 Clause 9.2 | | | |
|-----------------------------------|---|----------------|-------------|
| Client: | Aberdeenshire Council | Lab Sample No: | S8810 |
| Contract No: | 5414 | Hole ID: | BH13 |
| Contract Name: | Stonehaven FAS | Sample Type: | В |
| Samula | | Sample No: | 16 |
| Sample | Brown sandy clayey GRAVEL with frequent cobbles | Depth (m): | 6.75 - 7.50 |
| Description: | | Date Tested: | 28/11/2013 |



0.03

| Sievir | ng | Sediment | tation |
|---------------------|-----------|---------------------|-----------|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | | |
| 90 | 100 | | |
| 75 | 70 | | |
| 63 | 64 | | |
| 50 | 57 | | |
| 37.5 | 49 | | |
| 28 | 45 | | |
| 20 | 41 | | |
| 14 | 38 | | |
| 10 | 36 | | |
| 6.3 | 34 | | |
| 5 | 33 | | |
| 3.35 | 31 | | |
| 2 | 30 | | |
| 1.18 | 29 | | |
| 0.6 | 27 | | |
| 0.425 | 27 | | |
| 0.3 | 26 | | |
| 0.212 | 25 | | |
| 0.15 | 24 | | |
| 0.063 | 19 | | |

| 0 00 Particl | 0 iN e Size - | 0 0 • mm | N | თ | 20 | 60 | 200 |
|--------------------|---------------------|-------------------------|-----------|--------|-------|---------|------|
| tion | | | | Test M | ethod | | |
| % Passing | | BS 1377 : Part 2 : 1990 | | | 90 | | |
| /o Fassing | | | Sieving | | Claus | e Depth | (m): |
| | | Se | dimentati | on | | N/A | |

| Sample Propo | ortions |
|--------------|---------|
| Cobbles | 36.0 |
| Gravel | 34.0 |
| Sand | 11.0 |
| Silt & Clay | 19.0 |
| | |

| Grading Analysis | | | |
|------------------------|-------|--|--|
| D60 D10 | 55.57 | | |
| Uniformity Coefficient | N/A | | |



Sheet 1 of 1

Remarks:

Checked and Approved:

Whole sample used

Agata K-Roche

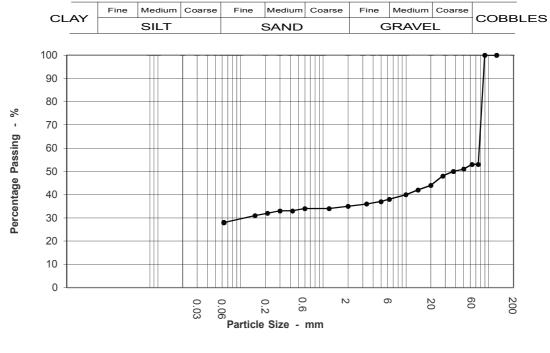
Senior Technician

Unit 10 Wessex Road Bourne end Buckinghamshire SL8 5DT



DETERMINATION OF PARTICLE SIZE DISTRIBUTION WET SIEVING METHOD

| BS1377 : Part 2 : 1990 Clause 9.2 | | | | |
|-----------------------------------|---|----------------|-------------|--|
| Client: | Aberdeenshire Council | Lab Sample No: | S8811 | |
| Contract No: | 5414 | Hole ID: | BH13 | |
| Contract Name: | Stonehaven FAS | Sample Type: | В | |
| Sample | Pinkish brown alightly condy alightly grovally CLAX with 2 | Sample No: | 18 | |
| - | Pinkish brown slightly sandy slightly gravelly CLAY with 2 intact SANDSTONE cores | Depth (m): | 7.50 - 8.50 | |
| Description: | Intact SANDSTONE COles | Date Tested: | 29/11/2013 | |



| Sieving | | Sedimentation | |
|---------------------|-----------|---------------------|-----------|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | | |
| 90 | 100 | | |
| 75 | 53 | | |
| 63 | 53 | | |
| 50 | 51 | | |
| 37.5 | 50 | | |
| 28 | 48 | | |
| 20 | 44 | | |
| 14 | 42 | | |
| 10 | 40 | | |
| 6.3 | 38 | | |
| 5 | 37 | | |
| 3.35 | 36 | | |
| 2 | 35 | | |
| 1.18 | 34 | | |
| 0.6 | 34 | | |
| 0.425 | 33 | | |
| 0.3 | 33 | | |
| 0.212 | 32 | | |
| 0.15 | 31 | | |
| 0.063 | 28 | | |

| Test Method | | |
|-------------------------|-------------------|--|
| BS 1377 : Part 2 : 1990 | | |
| Sieving | Clause Depth (m): | |
| Sedimentation | N/A | |

| Sample Proportions | | | |
|--------------------|------|--|--|
| Cobbles | 47.0 | | |
| Gravel | 18.0 | | |
| Sand | 7.0 | | |
| Silt & Clay | 28.0 | | |

| Grading Analysis | | |
|------------------------|-------|--|
| D60 D10 | 77.23 | |
| Uniformity Coefficient | N/A | |



Unit 10 Wessex Road Bourne end Buckinghamshire SL8 5DT Sheet 1 of 1

Remarks:

Checked and Approved:

Whole sample used

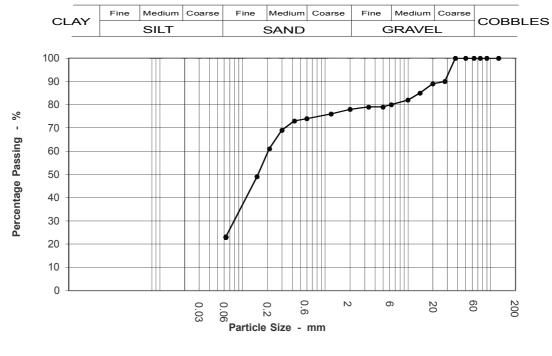
Agata K-Roche

Senior Technician



DETERMINATION OF PARTICLE SIZE DISTRIBUTION WET SIEVING METHOD

| BS1377 : Part 2 : 199 | 00 Clause 9.2 | | |
|-----------------------|---------------------------|----------------|-------------|
| Client: | Aberdeenshire Council | Lab Sample No: | S8813 |
| Contract No: | 5414 | Hole ID: | BH14 |
| Contract Name: | Stonehaven FAS | Sample Type: | В |
| Samula | | Sample No: | 2 |
| Sample | Brown gravelly silty SAND | Depth (m): | 0.80 - 1.20 |
| Description: | | Date Tested: | 27/11/2013 |



| Sievir | ng | Sediment | tation |
|---------------------|-----------|---------------------|-----------|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| | 100 | 111111 | |
| 125 | 100 | | |
| 90 | 100 | | |
| 75 | 100 | | |
| 63 | 100 | | |
| 50 | 100 | | |
| 37.5 | 100 | | |
| 28 | 90 | | |
| 20 | 89 | | |
| 14 | 85 | | |
| 10 | 82 | | |
| 6.3 | 80 | | |
| 5 | 79 | | |
| 3.35 | 79 | | |
| 2 | 78 | | |
| 1.18 | 76 | | |
| 0.6 | 74 | | |
| 0.425 | 73 | | |
| 0.3 | 69 | | |
| 0.212 | 61 | | |
| 0.15 | 49 | | |
| 0.063 | 23 | | |

Agata K-Roche

Senior Technician

| Test Method | | |
|-------------------------|-------------------|--|
| BS 1377 : Part 2 : 1990 | | |
| Sieving | Clause Depth (m): | |
| Sedimentation | N/A | |

| Sample Proportions | | | |
|--------------------|------|--|--|
| Cobbles | 0.0 | | |
| Gravel | 22.0 | | |
| Sand | 55.0 | | |
| Silt & Clay | 23.0 | | |

| Grading Analysis | | |
|------------------------|------|--|
| D60 D10 | 0.21 | |
| Uniformity Coefficient | N/A | |

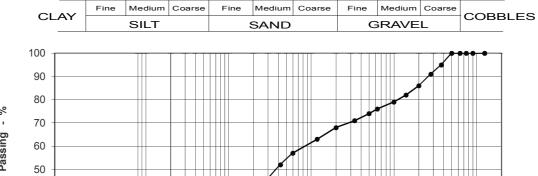
Remarks:

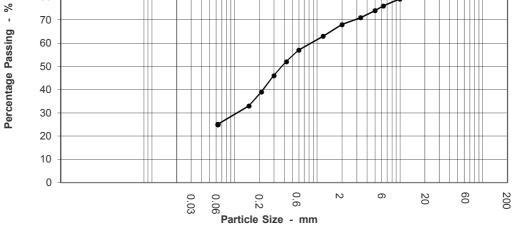
Checked and Approved:



DETERMINATION OF PARTICLE SIZE DISTRIBUTION WET SIEVING METHOD

| BS1377 : Part 2 : 19 | 90 Clause 9.2 | | |
|----------------------|---|----------------|-------------|
| Client: | Aberdeenshire Council | Lab Sample No: | S8814 |
| Contract No: | 5414 | Hole ID: | BH14 |
| Contract Name: | Stonehaven FAS | Sample Type: | В |
| Somalo | | Sample No: | 6 |
| Sample | Reddish brown gravelly sandy silty CLAY | Depth (m): | 2.40 - 3.00 |
| Description: | | Date Tested: | 26/11/2013 |







| Sieving | | Sedimen | tation |
|---------------------|-----------|---------------------|-----------|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | | |
| 90 | 100 | | |
| 75 | 100 | | |
| 63 | 100 | | |
| 50 | 100 | | |
| 37.5 | 95 | | |
| 28 | 91 | | |
| 20 | 86 | | |
| 14 | 82 | | |
| 10 | 79 | | |
| 6.3 | 76 | | |
| 5 | 74 | | |
| 3.35 | 71 | | |
| 2 | 68 | | |
| 1.18 | 63 | | |
| 0.6 | 57 | | |
| 0.425 | 52 | | |
| 0.3 | 46 | | |
| 0.212 | 39 | | |
| 0.15 | 33 | | |
| 0.063 | 25 | | |

| Test Method | | |
|---------------------------|-----|--|
| BS 1377 : Part 2 : 1990 | | |
| Sieving Clause Depth (m): | | |
| Sedimentation | N/A | |

| Sample Proportions | | | |
|--------------------|------|--|--|
| Cobbles | 0.0 | | |
| Gravel | 32.0 | | |
| Sand | 43.0 | | |
| Silt & Clay | 25.0 | | |

| Grading Analysis | | |
|------------------------|------|--|
| D60 D10 | 0.89 | |
| Uniformity Coefficient | N/A | |

1489

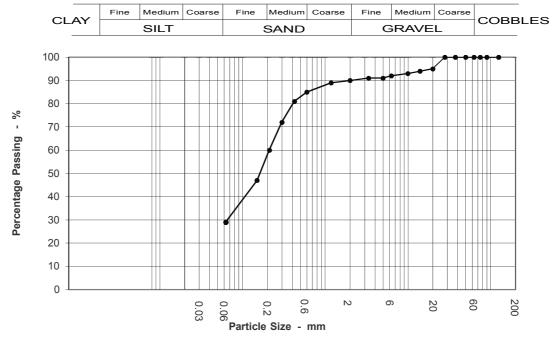
| Remarks: |
|----------|
|----------|

| Checked and | Agata K-Roche |
|-------------|-------------------|
| Approved: | Senior Technician |



DETERMINATION OF PARTICLE SIZE DISTRIBUTION WET SIEVING METHOD

| BS1377 : Part 2 : 19 | 90 Clause 9.2 | | |
|----------------------|---|----------------|-------------|
| Client: | Aberdeenshire Council | Lab Sample No: | S8816 |
| Contract No: | 5414 | Hole ID: | BH14 |
| Contract Name: | Stonehaven FAS | Sample Type: | D |
| Somalo | | Sample No: | 10 |
| Sample | Brown slightly gravelly very sandy silty CLAY | Depth (m): | 3.50 - 3.75 |
| Description: | | Date Tested: | 26/11/2013 |



| Sievir | ng | Sedimen | tation |
|---------------------|-----------|---------------------|-----------|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | | |
| 90 | 100 | | |
| 75 | 100 | | |
| 63 | 100 | | |
| 50 | 100 | | |
| 37.5 | 100 | | |
| 28 | 100 | | |
| 20 | 95 | | |
| 14 | 94 | | |
| 10 | 93 | | |
| 6.3 | 92 | | |
| 5 | 91 | | |
| 3.35 | 91 | | |
| 2 | 90 | | |
| 1.18 | 89 | | |
| 0.6 | 85 | | |
| 0.425 | 81 | | |
| 0.3 | 72 | | |
| 0.212 | 60 | | |
| 0.15 | 47 | | |
| 0.063 | 29 | | |

| Test Method | | |
|-------------------------|-------------------|--|
| BS 1377 : Part 2 : 1990 | | |
| Sieving | Clause Depth (m): | |
| Sedimentation | N/A | |

| Sample Proportions | | | |
|--------------------|------|--|--|
| Cobbles | 0.0 | | |
| Gravel | 10.0 | | |
| Sand | 61.0 | | |
| Silt & Clay | 29.0 | | |
| | | | |

| Grading Analysis | | |
|------------------------|------|--|
| D60 D10 | 0.21 | |
| Uniformity Coefficient | N/A | |



Sheet 1 of 1

Remarks:

Checked and Approved:

Whole sample used

Agata K-Roche

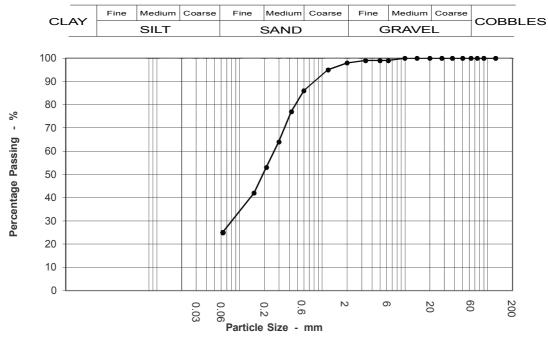
Senior Technician

Unit 10 Wessex Road Bourne end Buckinghamshire SL8 5DT



DETERMINATION OF PARTICLE SIZE DISTRIBUTION WET SIEVING METHOD

| BS1377 : Part 2 : 199 | 90 Clause 9.2 | | |
|-----------------------|---|----------------|-------------|
| Client: | Aberdeenshire Council | Lab Sample No: | S8815 |
| Contract No: | 5414 | Hole ID: | BH14 |
| Contract Name: | Stonehaven FAS | Sample Type: | В |
| Somalo | | Sample No: | 8 |
| Sample | Brownish grey slightly gravelly clayey SAND | Depth (m): | 3.00 - 3.40 |
| Description: | | Date Tested: | 27/11/2013 |



| Sievir | ng | Sediment | tation |
|---------------------|-----------|---------------------|-----------|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | | |
| 90 | 100 | | |
| 75 | 100 | | |
| 63 | 100 | | |
| 50 | 100 | | |
| 37.5 | 100 | | |
| 28 | 100 | | |
| 20 | 100 | | |
| 14 | 100 | | |
| 10 | 100 | | |
| 6.3 | 99 | | |
| 5 | 99 | | |
| 3.35 | 99 | | |
| 2 | 98 | | |
| 1.18 | 95 | | |
| 0.6 | 86 | | |
| 0.425 | 77 | | |
| 0.3 | 64 | | |
| 0.212 | 53 | | |
| 0.15 | 42 | | |
| 0.063 | 25 | | |

| Test Method | | |
|-------------------------|-------------------|--|
| BS 1377 : Part 2 : 1990 | | |
| Sieving | Clause Depth (m): | |
| Sedimentation | N/A | |

| Sample Proportions | | | |
|--------------------|------|--|--|
| Cobbles | 0.0 | | |
| Gravel | 2.0 | | |
| Sand | 73.0 | | |
| Silt & Clay | 25.0 | | |

| Grading Analysis | | |
|------------------------|------|--|
| D60 D10 | 0.27 | |
| Uniformity Coefficient | N/A | |

Date:

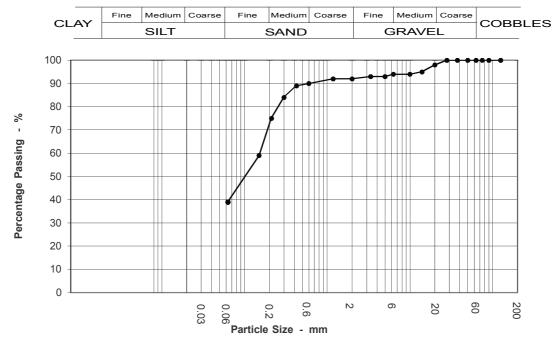
09/12/2013

| Checked and | Agata K-Roche |
|-------------|-------------------|
| Approved: | Senior Technician |



DETERMINATION OF PARTICLE SIZE DISTRIBUTION WET SIEVING METHOD

| BS1377 : Part 2 : 19 | 00 Clause 9.2 | | |
|----------------------|----------------------------|----------------|------------|
| Client: | Aberdeenshire Council | Lab Sample No: | S8817 |
| Contract No: | 5414 | Hole ID: | BH14 |
| Contract Name: | Stonehaven FAS | Sample Type: | D |
| Sampla | | Sample No: | 12 |
| Sample | Brown gravelly clayey SAND | Depth (m): | 4.3 |
| Description: | | Date Tested: | 26/11/2013 |



| Sievir | ng | Sediment | tation |
|---------------------|-----------|---------------------|-----------|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | | |
| 90 | 100 | | |
| 75 | 100 | | |
| 63 | 100 | | |
| 50 | 100 | | |
| 37.5 | 100 | | |
| 28 | 100 | | |
| 20 | 98 | | |
| 14 | 95 | | |
| 10 | 94 | | |
| 6.3 | 94 | | |
| 5 | 93 | | |
| 3.35 | 93 | | |
| 2 | 92 | | |
| 1.18 | 92 | | |
| 0.6 | 90 | | |
| 0.425 | 89 | | |
| 0.3 | 84 | | |
| 0.212 | 75 | | |
| 0.15 | 59 | | |
| 0.063 | 39 | | |

| Test Method | | |
|-------------------------|-------------------|--|
| BS 1377 : Part 2 : 1990 | | |
| Sieving | Clause Depth (m): | |
| Sedimentation | N/A | |

| Sample Proportions | | | |
|--------------------|------|--|--|
| Cobbles | 0.0 | | |
| Gravel | 8.0 | | |
| Sand | 53.0 | | |
| Silt & Clay | 39.0 | | |

| Grading Analysis | | |
|------------------------|------|--|
| D60 D10 | 0.15 | |
| Uniformity Coefficient | N/A | |



 Approved:
 Senior Technician

 Unit 10 Wessex Road Bourne end Buckinghamshire SL8 5DT

Whole sample used

Agata K-Roche

Date: 09/12/2013

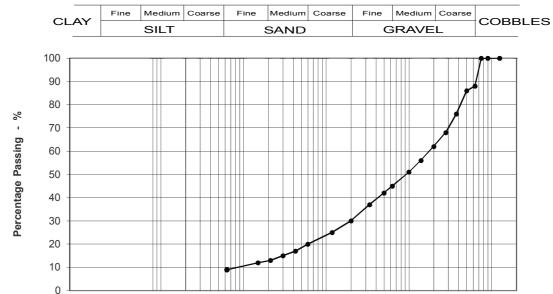
Remarks:

Checked and



DETERMINATION OF PARTICLE SIZE DISTRIBUTION WET SIEVING METHOD

| BS1377 : Part 2 : 19 | 90 Clause 9.2 | | |
|----------------------|---|----------------|-------------|
| Client: | Aberdeenshire Council | Lab Sample No: | S8820 |
| Contract No: | 5414 | Hole ID: | BH15 |
| Contract Name: | Stonehaven FAS | Sample Type: | В |
| Commis | | Sample No: | 5 |
| Sample | Brown slightly clayey sandy GRAVEL with cobbles | Depth (m): | 1.50 - 3.00 |
| Description: | | Date Tested: | 05/12/2013 |



0.03

| Sievir | Sieving | | tation |
|---------------------|-----------|---------------------|-----------|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | | |
| 90 | 100 | | |
| 75 | 100 | | |
| 63 | 88 | | |
| 50 | 86 | | |
| 37.5 | 76 | | |
| 28 | 68 | | |
| 20 | 62 | | |
| 14 | 56 | | |
| 10 | 51 | | |
| 6.3 | 45 | | |
| 5 | 42 | | |
| 3.35 | 37 | | |
| 2 | 30 | | |
| 1.18 | 25 | | |
| 0.6 | 20 | | |
| 0.425 | 17 | | |
| 0.3 | 15 | | |
| 0.212 | 13 | | |
| 0.15 | 12 | | |
| 0.063 | 9 | | |

| 0 06 Particl | 0 12 e Size - | റ്റെ തെ mm | ა | თ | 20 | 60 | 200 |
|--------------------|---------------------|------------------|-----------|-----------|-------------|-----------|------|
| tion | | | | Test Me | ethod | | |
| % Passing | | | BS | 1377 : Pa | art 2 : 199 | 90 | |
| /o Fassing | | 5 | Sieving | | Claus | e Depth (| (m): |
| | | Sed | imentatio | on | | N/A | |

| Sample Proportions | | | |
|--------------------|------|--|--|
| Cobbles | 12.0 | | |
| Gravel | 58.0 | | |
| Sand | 21.0 | | |
| Silt & Clay | 9.0 | | |

| Grading Analysis | | |
|------------------------|--------|--|
| D60 | 18.00 | |
| D10 | 0.09 | |
| Uniformity Coefficient | 195.65 | |

Date:

09/12/2013



Agata K-Roche Checked and Approved: Senior Technician

Unit 10 Wessex Road Bourne end Buckinghamshire SL8 5DT

Whole sample used

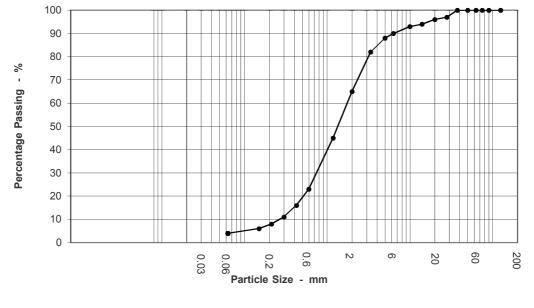
Remarks:



DETERMINATION OF PARTICLE SIZE DISTRIBUTION WET SIEVING METHOD

| BS1377 : Part 2 : 199 | 00 Clause 9.2 | | |
|-----------------------|--------------------------|----------------|-------------|
| Client: | Aberdeenshire Council | Lab Sample No: | S8819 |
| Contract No: | 5414 | Hole ID: | BH15 |
| Contract Name: | Stonehaven FAS | Sample Type: | В |
| Somalo | | Sample No: | 4 |
| Sample | Brown very gravelly SAND | Depth (m): | 1.20 - 1.50 |
| Description: | | Date Tested: | 27/11/2013 |





| Sievir | ng | Sediment | tation |
|---------------------|-----------|---------------------|-----------|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | | |
| 90 | 100 | | |
| 75 | 100 | | |
| 63 | 100 | | |
| 50 | 100 | | |
| 37.5 | 100 | | |
| 28 | 97 | | |
| 20 | 96 | | |
| 14 | 94 | | |
| 10 | 93 | | |
| 6.3 | 90 | | |
| 5 | 88 | | |
| 3.35 | 82 | | |
| 2 | 65 | | |
| 1.18 | 45 | | |
| 0.6 | 23 | | |
| 0.425 | 16 | | |
| 0.3 | 11 | | |
| 0.212 | 8 | | |
| 0.15 | 6 | | |
| 0.063 | 4 | | |

| Test Method | | |
|-------------------------|-------------------|--|
| BS 1377 : Part 2 : 1990 | | |
| Sieving | Clause Depth (m): | |
| Sedimentation | N/A | |

| Sample Proportions | | |
|--------------------|------|--|
| Cobbles | 0.0 | |
| Gravel | 35.0 | |
| Sand | 61.0 | |
| Silt & Clay | 4.0 | |

| Grading Analysis | | |
|------------------------|------|--|
| D60 | 1.80 | |
| D10 | 0.27 | |
| Uniformity Coefficient | 6.63 | |

Date:

09/12/2013



Agata K-Roche Senior Technician

Unit 10 Wessex Road Bourne end Buckinghamshire SL8 5DT

Whole sample used

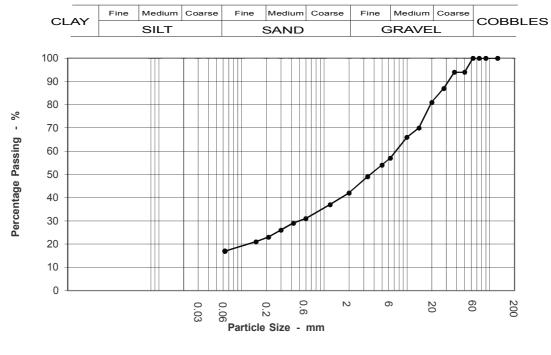
Remarks:

Checked and Approved:



DETERMINATION OF PARTICLE SIZE DISTRIBUTION WET SIEVING METHOD

| BS1377 : Part 2 : 19 | 90 Clause 9.2 | | |
|----------------------|---|----------------|-------------|
| Client: | Aberdeenshire Council | Lab Sample No: | S8823 |
| Contract No: | 5414 | Hole ID: | BH15 |
| Contract Name: | Stonehaven FAS | Sample Type: | В |
| Somalo | | Sample No: | 8 |
| Sample | Orange brown slightly sandy gravelly silty CLAY | Depth (m): | 3.00 - 3.30 |
| Description: | | Date Tested: | 26/11/2013 |



| | Sievir | ng | Sediment | tation |
|----------|--------|-------------|---------------|-------------|
| Particle | e Size | % Passing | Particle Size | % Passing |
| mn | n | 70 T assing | mm | 70 T assing |
| 12 | 5 | 100 | | |
| 90 |) | 100 | | |
| 75 | 5 | 100 | | |
| 63 | 3 | 100 | | |
| 50 |) | 94 | | |
| 37. | 5 | 94 | | |
| 28 | 3 | 87 | | |
| 20 |) | 81 | | |
| 14 | ł | 70 | | |
| 10 |) | 66 | | |
| 6.3 | 3 | 57 | | |
| 5 | | 54 | | |
| 3.3 | 5 | 49 | | |
| 2 | | 42 | | |
| 1.1 | 8 | 37 | | |
| 0.6 | 6 | 31 | | |
| 0.42 | 25 | 29 | | |
| 0.3 | 3 | 26 | | |
| 0.2 | 12 | 23 | | |
| 0.1 | 5 | 21 | | |
| 0.06 | 63 | 17 | | |

| Test Method | | |
|-------------------------|-------------------|--|
| BS 1377 : Part 2 : 1990 | | |
| Sieving | Clause Depth (m): | |
| Sedimentation | N/A | |

| Sample Proportions | | |
|--------------------|------|--|
| Cobbles | 0.0 | |
| Gravel | 58.0 | |
| Sand | 25.0 | |
| Silt & Clay | 17.0 | |

| Grading Analysis | | |
|------------------------|------|--|
| D60 D10 | 7.53 | |
| Uniformity Coefficient | N/A | |



 Approved:
 Senior Technician

 Unit 10 Wessex Road Bourne end Buckinghamshire SL8 5DT

Whole sample used

Agata K-Roche

Date: 09/12/2013

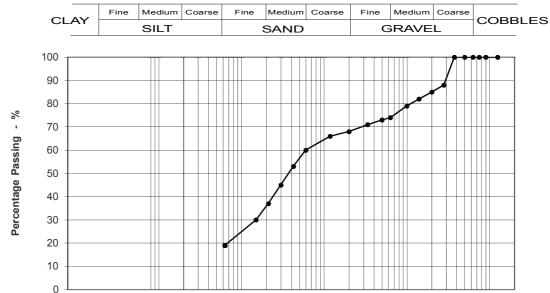
Remarks:

Checked and



DETERMINATION OF PARTICLE SIZE DISTRIBUTION WET SIEVING METHOD

| BS1377 : Part 2 : 19 | 90 Clause 9.2 | | |
|----------------------|---|----------------|-------------|
| Client: | Aberdeenshire Council | Lab Sample No: | S8824 |
| Contract No: | 5414 | Hole ID: | BH15 |
| Contract Name: | Stonehaven FAS | Sample Type: | В |
| Somalo | | Sample No: | 13 |
| Sample | Brownish grey clayey very gravelly SAND | Depth (m): | 4.50 - 5.00 |
| Description: | | Date Tested: | 27/11/2013 |



0.03

| Sievir | ng | Sediment | tation |
|---------------------|-----------|---------------------|-----------|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | | |
| 90 | 100 | | |
| 75 | 100 | | |
| 63 | 100 | | |
| 50 | 100 | | |
| 37.5 | 100 | | |
| 28 | 88 | | |
| 20 | 85 | | |
| 14 | 82 | | |
| 10 | 79 | | |
| 6.3 | 74 | | |
| 5 | 73 | | |
| 3.35 | 71 | | |
| 2 | 68 | | |
| 1.18 | 66 | | |
| 0.6 | 60 | | |
| 0.425 | 53 | | |
| 0.3 | 45 | | |
| 0.212 | 37 | | |
| 0.15 | 30 | | |
| 0.063 | 19 | | |

| 0 06 Particl | 0 12 e Size - | റ്റെ തെ mm | ა | თ | 20 | 60 | 200 |
|--------------------|---------------------|------------------|-----------|-----------|-------------|-----------|------|
| tion | | | | Test Me | ethod | | |
| % Passing | | | BS | 1377 : Pa | art 2 : 199 | 90 | |
| /o Fassing | | 5 | Sieving | | Claus | e Depth (| (m): |
| | | Sed | imentatio | on | | N/A | |

| Sample Proportions | | | |
|--------------------|------|--|--|
| Cobbles | 0.0 | | |
| Gravel | 32.0 | | |
| Sand | 49.0 | | |
| Silt & Clay | 19.0 | | |

| Grading Analysis | | |
|------------------------|------|--|
| D60 D10 | 0.60 | |
| Uniformity Coefficient | N/A | |

1489

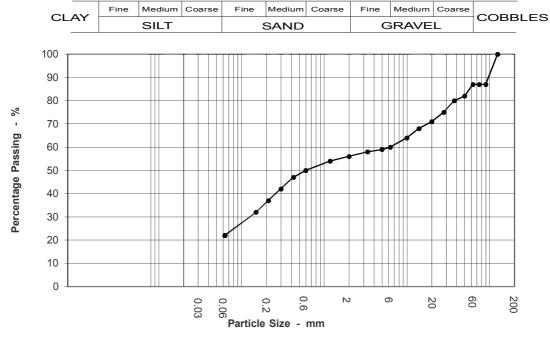
| Remarks: |
|----------|
|----------|

| Checked and | Agata K-Roche |
|-------------|-------------------|
| Approved: | Senior Technician |



DETERMINATION OF PARTICLE SIZE DISTRIBUTION WET SIEVING METHOD

| BS1377 : Part 2 : 199 | 90 Clause 9.2 | | |
|-----------------------|--|----------------|-------------|
| Client: | Aberdeenshire Council | Lab Sample No: | S8825 |
| Contract No: | 5414 | Hole ID: | BH17 |
| Contract Name: | Stonehaven FAS | Sample Type: | В |
| Samula | | Sample No: | 3 |
| Sample | Brown clayey very gravelly SAND with cobbles | Depth (m): | 0.50 - 1.00 |
| Description: | | Date Tested: | 29/11/2013 |



| Sievir | ng | Sedimen | tation |
|---------------------|-----------|---------------------|-----------|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | | |
| 90 | 87 | | |
| 75 | 87 | | |
| 63 | 87 | | |
| 50 | 82 | | |
| 37.5 | 80 | | |
| 28 | 75 | | |
| 20 | 71 | | |
| 14 | 68 | | |
| 10 | 64 | | |
| 6.3 | 60 | | |
| 5 | 59 | | |
| 3.35 | 58 | | |
| 2 | 56 | | |
| 1.18 | 54 | | |
| 0.6 | 50 | | |
| 0.425 | 47 | | |
| 0.3 | 42 | | |
| 0.212 | 37 | | |
| 0.15 | 32 | | |
| 0.063 | 22 | | |

| Test Method | | |
|-------------------------|-------------------|--|
| BS 1377 : Part 2 : 1990 | | |
| Sieving | Clause Depth (m): | |
| Sedimentation | N/A | |

| Sample Proportions | | | |
|--------------------|------|--|--|
| Cobbles | 13.0 | | |
| Gravel | 31.0 | | |
| Sand | 34.0 | | |
| Silt & Clay | 22.0 | | |

| Grading Analysis | | |
|------------------------|------|--|
| D60 D10 | 6.30 | |
| Uniformity Coefficient | N/A | |

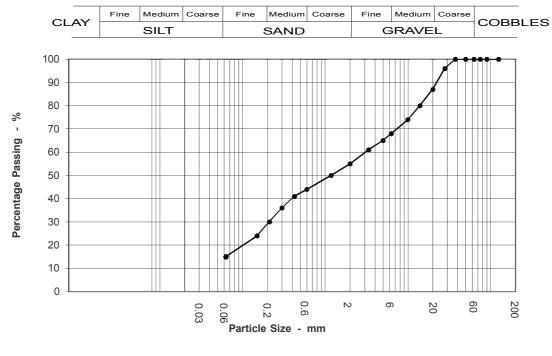
1489

| Checked and | Agata K-Roche | |
|-------------|-------------------|--|
| Approved: | Senior Technician | |
| | | |



DETERMINATION OF PARTICLE SIZE DISTRIBUTION WET SIEVING METHOD

| BS1377 : Part 2 : 19 | 90 Clause 9.2 | | |
|----------------------|------------------------------|----------------|-------------|
| Client: | Aberdeenshire Council | Lab Sample No: | S8826 |
| Contract No: | 5414 | Hole ID: | BH17 |
| Contract Name: | Stonehaven FAS | Sample Type: | В |
| Samula | | Sample No: | 5 |
| Sample | Brown clayey SAND and GRAVEL | Depth (m): | 1.20 - 1.55 |
| Description: | | Date Tested: | 27/11/2013 |



| Sieving | | Sediment | tation |
|---------------------|-----------|---------------------|-----------|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | | |
| 90 | 100 | | |
| 75 | 100 | | |
| 63 | 100 | | |
| 50 | 100 | | |
| 37.5 | 100 | | |
| 28 | 96 | | |
| 20 | 87 | | |
| 14 | 80 | | |
| 10 | 74 | | |
| 6.3 | 68 | | |
| 5 | 65 | | |
| 3.35 | 61 | | |
| 2 | 55 | | |
| 1.18 | 50 | | |
| 0.6 | 44 | | |
| 0.425 | 41 | | |
| 0.3 | 36 | | |
| 0.212 | 30 | | |
| 0.15 | 24 | | |
| 0.063 | 15 | | |

Agata K-Roche

Senior Technician

Unit 10 Wessex Road Bourne end Buckinghamshire SL8 5DT

| Test Method | | |
|---------------------------|-----|--|
| BS 1377 : Part 2 : 1990 | | |
| Sieving Clause Depth (m): | | |
| Sedimentation | N/A | |

| Sample Proportions | | | |
|--------------------|------|--|--|
| Cobbles | 0.0 | | |
| Gravel | 45.0 | | |
| Sand | 40.0 | | |
| Silt & Clay | 15.0 | | |

| Grading Analysis | | |
|------------------------|------|--|
| D60 D10 | 3.13 | |
| Uniformity Coefficient | N/A | |

Sheet 1 of 1

Remarks:

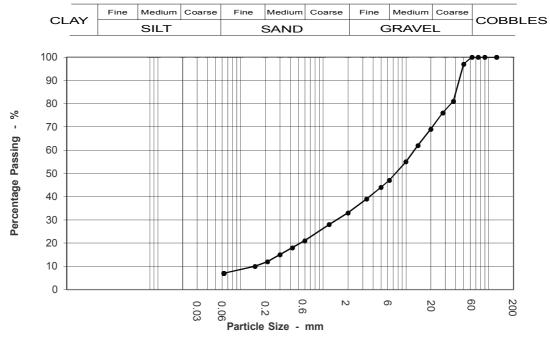
Checked and Approved:





DETERMINATION OF PARTICLE SIZE DISTRIBUTION WET SIEVING METHOD

| BS1377 : Part 2 : 19 | 90 Clause 9.2 | | |
|----------------------|---|----------------|-------------|
| Client: | Aberdeenshire Council | Lab Sample No: | S8828 |
| Contract No: | 5414 | Hole ID: | BH17 |
| Contract Name: | Stonehaven FAS | Sample Type: | В |
| Somalo | | Sample No: | 9 |
| Sample | Brown slightly clayey very sandy GRAVEL | Depth (m): | 2.00 - 2.50 |
| Description: | | Date Tested: | 26/11/2013 |



| Sieving | | Sediment | tation |
|---------------------|-----------|---------------------|-----------|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | | |
| 90 | 100 | | |
| 75 | 100 | | |
| 63 | 100 | | |
| 50 | 97 | | |
| 37.5 | 81 | | |
| 28 | 76 | | |
| 20 | 69 | | |
| 14 | 62 | | |
| 10 | 55 | | |
| 6.3 | 47 | | |
| 5 | 44 | | |
| 3.35 | 39 | | |
| 2 | 33 | | |
| 1.18 | 28 | | |
| 0.6 | 21 | | |
| 0.425 | 18 | | |
| 0.3 | 15 | | |
| 0.212 | 12 | | |
| 0.15 | 10 | | |
| 0.063 | 7 | | |

| Test Method | | |
|---------------------------|-----|--|
| BS 1377 : Part 2 : 1990 | | |
| Sieving Clause Depth (m): | | |
| Sedimentation | N/A | |

| Sample Proportions | | | |
|--------------------|------|--|--|
| Cobbles | 0.0 | | |
| Gravel | 67.0 | | |
| Sand | 26.0 | | |
| Silt & Clay | 7.0 | | |

| Grading Analysis | | |
|------------------------|-------|--|
| D60 | 12.86 | |
| D10 | 0.15 | |
| Uniformity Coefficient | 85.71 | |



Remarks:

Checked and Approved:

Whole sample used

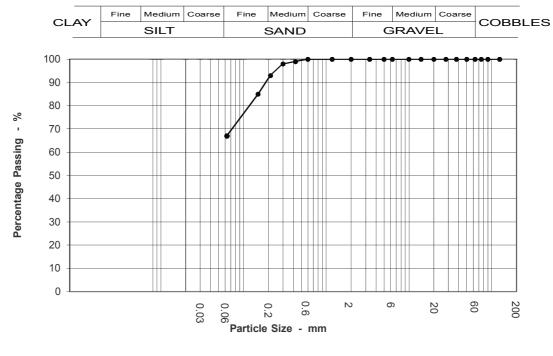
Agata K-Roche

Senior Technician



DETERMINATION OF PARTICLE SIZE DISTRIBUTION WET SIEVING METHOD

| BS1377 : Part 2 : 199 | 00 Clause 9.2 | | |
|-----------------------|--------------------------|----------------|-------------|
| Client: | Aberdeenshire Council | Lab Sample No: | S8829 |
| Contract No: | 5414 | Hole ID: | BH17 |
| Contract Name: | Stonehaven FAS | Sample Type: | В |
| Samula | | Sample No: | 13 |
| Sample | Reddish brown sandy SILT | Depth (m): | 4.00 - 5.00 |
| Description: | | Date Tested: | 26/11/2013 |



| Sieving | | Sediment | Sedimentation | |
|---------------------|-----------|---------------------|---------------|--|
| Particle Size mm | % Passing | Particle Size mm | % Passing | |
| 125 | 100 | | | |
| 90 | 100 | | | |
| 75 | 100 | | | |
| 63 | 100 | | | |
| 50 | 100 | | | |
| 37.5 | 100 | | | |
| 28 | 100 | | | |
| 20 | 100 | | | |
| 14 | 100 | | | |
| 10 | 100 | | | |
| 6.3 | 100 | | | |
| 5 | 100 | | | |
| 3.35 | 100 | | | |
| 2 | 100 | | | |
| 1.18 | 100 | | | |
| 0.6 | 100 | | | |
| 0.425 | 99 | | | |
| 0.3 | 98 | | | |
| 0.212 | 93 | | | |
| 0.15 | 85 | | | |
| 0.063 | 67 | | | |

Agata K-Roche

Senior Technician

Unit 10 Wessex Road Bourne end Buckinghamshire SL8 5DT

| Test Method | | | |
|-------------------------|-------------------|--|--|
| BS 1377 : Part 2 : 1990 | | | |
| Sieving | Clause Depth (m): | | |
| Sedimentation | N/A | | |

| Sample Proportions | | | |
|--------------------|------|--|--|
| Cobbles | 0.0 | | |
| Gravel | 0.0 | | |
| Sand | 33.0 | | |
| Silt & Clay | 67.0 | | |

| Grading Analysis | | | |
|------------------------|-----|--|--|
| D60 D10 | | | |
| Uniformity Coefficient | N/A | | |

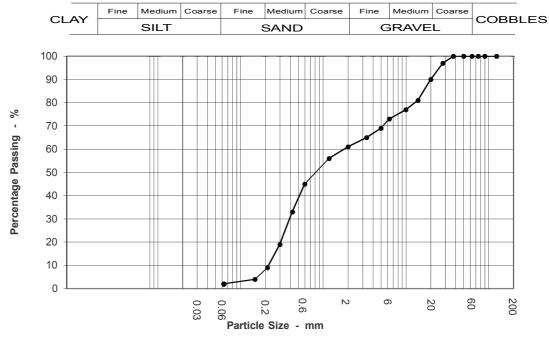
Remarks:

Checked and Approved:



DETERMINATION OF PARTICLE SIZE DISTRIBUTION WET SIEVING METHOD

| BS1377 : Part 2 : 19 | 00 Clause 9.2 | | |
|----------------------|--------------------------|----------------|-------------|
| Client: | Aberdeenshire Council | Lab Sample No: | S8830 |
| Contract No: | 5414 | Hole ID: | BH18 |
| Contract Name: | Stonehaven FAS | Sample Type: | В |
| Somalo | | Sample No: | 3 |
| Sample | Brown very gravelly SAND | Depth (m): | 0.50 - 1.00 |
| Description: | | Date Tested: | 26/11/2013 |



| Sieving | | Sedimentation | |
|---------------------|-----------|---------------------|-----------|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | | |
| 90 | 100 | | |
| 75 | 100 | | |
| 63 | 100 | | |
| 50 | 100 | | |
| 37.5 | 100 | | |
| 28 | 97 | | |
| 20 | 90 | | |
| 14 | 81 | | |
| 10 | 77 | | |
| 6.3 | 73 | | |
| 5 | 69 | | |
| 3.35 | 65 | | |
| 2 | 61 | | |
| 1.18 | 56 | | |
| 0.6 | 45 | | |
| 0.425 | 33 | | |
| 0.3 | 19 | | |
| 0.212 | 9 | | |
| 0.15 | 4 | | |
| 0.063 | 2 | | |

| Test Method | | | |
|-------------------------|-------------------|--|--|
| BS 1377 : Part 2 : 1990 | | | |
| Sieving | Clause Depth (m): | | |
| Sedimentation | N/A | | |

| Sample Proportions | | | |
|--------------------|------|--|--|
| Cobbles | 0.0 | | |
| Gravel | 39.0 | | |
| Sand | 59.0 | | |
| Silt & Clay | 2.0 | | |

| Grading Analysis | | | |
|------------------------|------|--|--|
| D60 | 1.84 | | |
| D10 | 0.22 | | |
| Uniformity Coefficient | 8.32 | | |

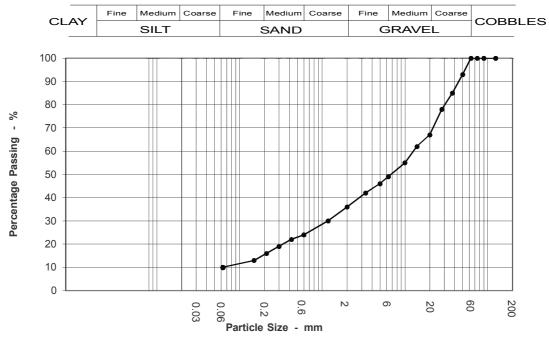
1489

| Checked and | Agata K-Roche |
|--------------------|--------------------------------------|
| Approved: | Senior Technician |
| Unit 10 Wessex Roa | d Bourne end Buckinghamshire SL8 5DT |



DETERMINATION OF PARTICLE SIZE DISTRIBUTION WET SIEVING METHOD

| BS1377 : Part 2 : 199 | 00 Clause 9.2 | | |
|-----------------------|--|----------------|-------------|
| Client: | Aberdeenshire Council | Lab Sample No: | S8831 |
| Contract No: | 5414 | Hole ID: | BH18 |
| Contract Name: | Stonehaven FAS | Sample Type: | В |
| Somalo | | Sample No: | 5 |
| Sample | Brown slightly silty very sandy GRAVEL | Depth (m): | 1.20 - 2.00 |
| Description: | | Date Tested: | 28/11/2013 |



| Sievir | ng | Sediment | tation |
|---------------------|-----------|---------------------|-----------|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | | |
| 90 | 100 | | |
| 75 | 100 | | |
| 63 | 100 | | |
| 50 | 93 | | |
| 37.5 | 85 | | |
| 28 | 78 | | |
| 20 | 67 | | |
| 14 | 62 | | |
| 10 | 55 | | |
| 6.3 | 49 | | |
| 5 | 46 | | |
| 3.35 | 42 | | |
| 2 | 36 | | |
| 1.18 | 30 | | |
| 0.6 | 24 | | |
| 0.425 | 22 | | |
| 0.3 | 19 | | |
| 0.212 | 16 | | |
| 0.15 | 13 | | |
| 0.063 | 10 | | |

| Test Method | | |
|-------------------------|-------------------|--|
| BS 1377 : Part 2 : 1990 | | |
| Sieving | Clause Depth (m): | |
| Sedimentation | N/A | |

| Sample Proportions | | |
|--------------------|------|--|
| Cobbles | 0.0 | |
| Gravel | 64.0 | |
| Sand | 26.0 | |
| Silt & Clay | 10.0 | |

| Grading Analysis | | |
|------------------------|--------|--|
| D60 | 12.86 | |
| D10 | 0.06 | |
| Uniformity Coefficient | 204.08 | |



Sheet 1 of 1

Remarks:

Checked and Approved:

Whole sample used

Agata K-Roche

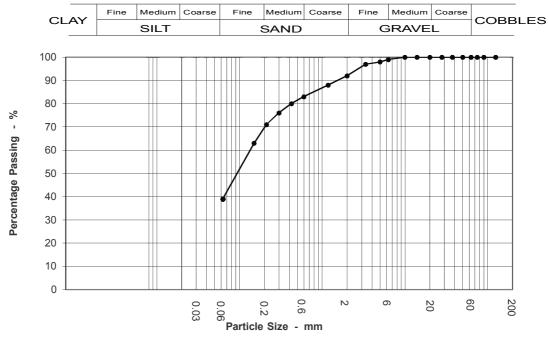
Senior Technician

Unit 10 Wessex Road Bourne end Buckinghamshire SL8 5DT



DETERMINATION OF PARTICLE SIZE DISTRIBUTION WET SIEVING METHOD

| BS1377 : Part 2 : 19 | 90 Clause 9.2 | | |
|----------------------|--|----------------|-------------|
| Client: | Aberdeenshire Council | Lab Sample No: | S8833 |
| Contract No: | 5414 | Hole ID: | BH18 |
| Contract Name: | Stonehaven FAS | Sample Type: | В |
| Somalo | | Sample No: | 7 |
| Sample | Dark grey slightly gravelly sandy SILT | Depth (m): | 2.00 - 3.00 |
| Description: | | Date Tested: | 26/11/2013 |



| Sievir | Sieving | | tation |
|---------------------|-----------|---------------------|-----------|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | | |
| 90 | 100 | | |
| 75 | 100 | | |
| 63 | 100 | | |
| 50 | 100 | | |
| 37.5 | 100 | | |
| 28 | 100 | | |
| 20 | 100 | | |
| 14 | 100 | | |
| 10 | 100 | | |
| 6.3 | 99 | | |
| 5 | 98 | | |
| 3.35 | 97 | | |
| 2 | 92 | | |
| 1.18 | 88 | | |
| 0.6 | 83 | | |
| 0.425 | 80 | | |
| 0.3 | 76 | | |
| 0.212 | 71 | | |
| 0.15 | 63 | | |
| 0.063 | 39 | | |

| Test Method | | |
|-------------------------|-------------------|--|
| BS 1377 : Part 2 : 1990 | | |
| Sieving | Clause Depth (m): | |
| Sedimentation | N/A | |

| Sample Proportions | | |
|--------------------|------|--|
| Cobbles | 0.0 | |
| Gravel | 8.0 | |
| Sand | 53.0 | |
| Silt & Clay | 39.0 | |

| Grading Analysis | | |
|------------------------|------|--|
| D60 D10 | 0.14 | |
| Uniformity Coefficient | N/A | |

Remarks:

Checked and Approved:

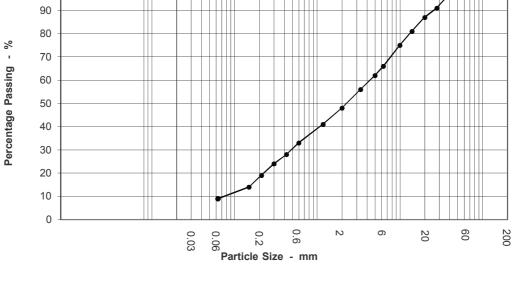
Agat K-Roche Senior Technician



DETERMINATION OF PARTICLE SIZE DISTRIBUTION WET SIEVING METHOD

| BS1377 : Part 2 : 199 | 90 Clause 9.2 | | |
|-----------------------|--|----------------|-------------|
| Client: | Aberdeenshire Council | Lab Sample No: | S8834 |
| Contract No: | 5414 | Hole ID: | BH18 |
| Contract Name: | Stonehaven FAS | Sample Type: | В |
| Somalo | | Sample No: | 10 |
| Sample | Dark greyish brown slightly clayey very sandy GRAVEL | Depth (m): | 3.30 - 4.00 |
| Description: | | Date Tested: | 26/11/2013 |





| Sievir | ng | Sediment | tation |
|---------------------|-----------|---------------------|-----------|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | | |
| 90 | 100 | | |
| 75 | 100 | | |
| 63 | 100 | | |
| 50 | 100 | | |
| 37.5 | 96 | | |
| 28 | 91 | | |
| 20 | 87 | | |
| 14 | 81 | | |
| 10 | 75 | | |
| 6.3 | 66 | | |
| 5 | 62 | | |
| 3.35 | 56 | | |
| 2 | 48 | | |
| 1.18 | 41 | | |
| 0.6 | 33 | | |
| 0.425 | 28 | | |
| 0.3 | 24 | | |
| 0.212 | 19 | | |
| 0.15 | 14 | | |
| 0.063 | 9 | | |

| Test Method | | |
|-------------------------|-------------------|--|
| BS 1377 : Part 2 : 1990 | | |
| Sieving | Clause Depth (m): | |
| Sedimentation | N/A | |

| Sample Proportions | | | |
|--------------------|------|--|--|
| Cobbles | 0.0 | | |
| Gravel | 52.0 | | |
| Sand | 39.0 | | |
| Silt & Clay | 9.0 | | |

| Grading Analysis | | |
|------------------------|-------|--|
| D60 | 4,45 | |
| D10 | 0.08 | |
| Uniformity Coefficient | 55.35 | |

Date:

09/12/2013

| Remarks: |
|----------|
|----------|

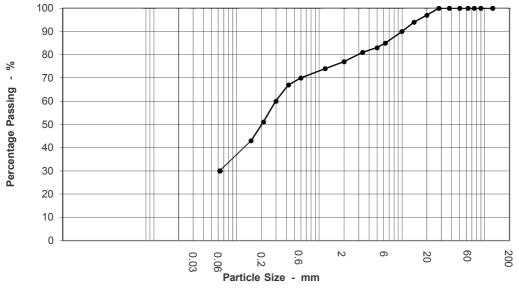
| Checked and | Agata K-Roche |
|-------------|-------------------|
| Approved: | Senior Technician |



DETERMINATION OF PARTICLE SIZE DISTRIBUTION WET SIEVING METHOD

| 90 Clause 9.2 | | |
|--|---|---|
| Aberdeenshire Council | Lab Sample No: | S8835 |
| 5414 | Hole ID: | BH18 |
| Stonehaven FAS | Sample Type: | В |
| | Sample No: | 13 |
| Orange brown sandy gravelly silty CLAY | Depth (m): | 4.50 - 5.00 |
| | Date Tested: | 26/11/2013 |
| | Aberdeenshire Council 5414 Stonehaven FAS | Aberdeenshire CouncilLab Sample No:5414Hole ID:Stonehaven FASSample Type:Orange brown sandy gravelly silty CLAYDepth (m): |





| Sieving | | Sediment | tation |
|---------------------|-----------|---------------------|-----------|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | | |
| 90 | 100 | | |
| 75 | 100 | | |
| 63 | 100 | | |
| 50 | 100 | | |
| 37.5 | 100 | | |
| 28 | 100 | | |
| 20 | 97 | | |
| 14 | 94 | | |
| 10 | 90 | | |
| 6.3 | 85 | | |
| 5 | 83 | | |
| 3.35 | 81 | | |
| 2 | 77 | | |
| 1.18 | 74 | | |
| 0.6 | 70 | | |
| 0.425 | 67 | | |
| 0.3 | 60 | | |
| 0.212 | 51 | | |
| 0.15 | 43 | | |
| 0.063 | 30 | | |

Agata K-Roche

Senior Technician

Unit 10 Wessex Road Bourne end Buckinghamshire SL8 5DT

| Test Method | | |
|-------------------------|-------------------|--|
| BS 1377 : Part 2 : 1990 | | |
| Sieving | Clause Depth (m): | |
| Sedimentation | N/A | |

| Sample Proportions | | | |
|--------------------|------|--|--|
| Cobbles | 0.0 | | |
| Gravel | 23.0 | | |
| Sand | 47.0 | | |
| Silt & Clay | 30.0 | | |

| Grading Analysis | | |
|------------------------|------|--|
| D60 D10 | 0.30 | |
| Uniformity Coefficient | N/A | |

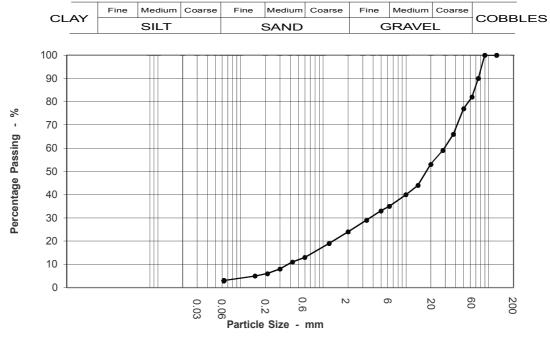
Remarks:

Checked and Approved:



DETERMINATION OF PARTICLE SIZE DISTRIBUTION WET SIEVING METHOD

| BS1377 : Part 2 : 19 | 90 Clause 9.2 | | |
|----------------------|--------------------------------------|----------------|-------------|
| Client: | Aberdeenshire Council | Lab Sample No: | S8836 |
| Contract No: | 5414 | Hole ID: | BH19 |
| Contract Name: | Stonehaven FAS | Sample Type: | В |
| Somalo | | Sample No: | 3 |
| Sample | Brown very sandy GRAVEL with cobbles | Depth (m): | 0.80 - 1.20 |
| Description: | | Date Tested: | 29/11/2013 |



| Sieving | | Sedimen | tation |
|---------------------|-----------|---------------------|-----------|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | | |
| 90 | 100 | | |
| 75 | 90 | | |
| 63 | 82 | | |
| 50 | 77 | | |
| 37.5 | 66 | | |
| 28 | 59 | | |
| 20 | 53 | | |
| 14 | 44 | | |
| 10 | 40 | | |
| 6.3 | 35 | | |
| 5 | 33 | | |
| 3.35 | 29 | | |
| 2 | 24 | | |
| 1.18 | 19 | | |
| 0.6 | 13 | | |
| 0.425 | 11 | | |
| 0.3 | 8 | | |
| 0.212 | 6 | | |
| 0.15 | 5 | | |
| 0.063 | 3 | | |

| Test Method | | |
|-------------------------|-------------------|--|
| BS 1377 : Part 2 : 1990 | | |
| Sieving | Clause Depth (m): | |
| Sedimentation | N/A | |

| Sample Proportions | | | |
|--------------------|------|--|--|
| Cobbles | 18.0 | | |
| Gravel | 58.0 | | |
| Sand | 21.0 | | |
| Silt & Clay | 3.0 | | |

| Grading Analysis | | |
|------------------------|-------|--|
| D60 | 29.36 | |
| D10 | 0.38 | |
| Uniformity Coefficient | 76.58 | |

Date:

09/12/2013

1489

Unit 10 Wessex Road Bourne end Buckinghamshire SL8 5DT

Agata K-Roche

Senior Technician

Sheet 1 of 1

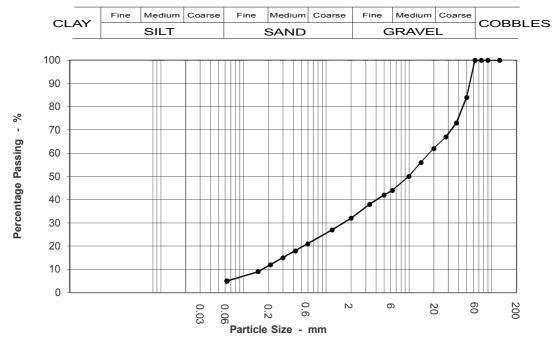
Remarks:

Checked and Approved:



DETERMINATION OF PARTICLE SIZE DISTRIBUTION WET SIEVING METHOD

| BS1377 : Part 2 : 19 | 00 Clause 9.2 | | |
|------------------------|-------------------------|----------------|-------------|
| Client: | Aberdeenshire Council | Lab Sample No: | S8837 |
| Contract No: | 5414 | Hole ID: | BH19 |
| Contract Name: | Stonehaven FAS | Sample Type: | В |
| Somalo | | Sample No: | 5 |
| Sample Description: | Brown very sandy GRAVEL | Depth (m): | 1.20 - 2.00 |
| Description: | | Date Tested: | 29/11/2013 |



| Sievir | ng | Sediment | tation |
|---------------------|-----------|---------------------|-----------|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| | 100 | | |
| 125 | | | |
| 90 | 100 | | |
| 75 | 100 | | |
| 63 | 100 | | |
| 50 | 84 | | |
| 37.5 | 73 | | |
| 28 | 67 | | |
| 20 | 62 | | |
| 14 | 56 | | |
| 10 | 50 | | |
| 6.3 | 44 | | |
| 5 | 42 | | |
| 3.35 | 38 | | |
| 2 | 32 | | |
| 1.18 | 27 | | |
| 0.6 | 21 | | |
| 0.425 | 18 | | |
| 0.3 | 15 | | |
| 0.212 | 12 | | |
| 0.15 | 9 | | |
| 0.063 | 5 | | |

| Test Method | |
|---------------------------|-----|
| BS 1377 : Part 2 : 1990 | |
| Sieving Clause Depth (m): | |
| Sedimentation | N/A |

| Sample Proportions | | | |
|--------------------|------|--|--|
| Cobbles | 0.0 | | |
| Gravel | 68.0 | | |
| Sand | 27.0 | | |
| Silt & Clay | 5.0 | | |
| | | | |

| Grading Analysis | | |
|------------------------|--------|--|
| D60 | 18.00 | |
| D10 | 0.17 | |
| Uniformity Coefficient | 105.47 | |

Date:

09/12/2013



Sheet 1 of 1

Remarks:

Checked and Approved:

Whole sample used

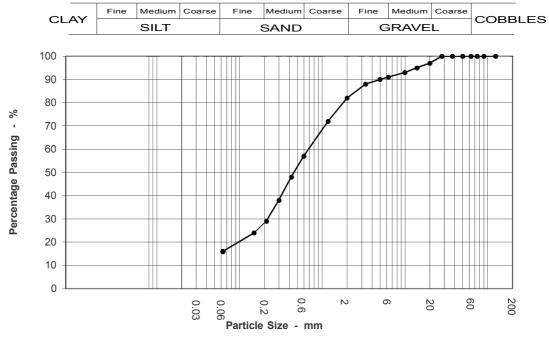
Agata K-Roche

Senior Technician



DETERMINATION OF PARTICLE SIZE DISTRIBUTION WET SIEVING METHOD

| BS1377 : Part 2 : 19 | 00 Clause 9.2 | | |
|----------------------|---------------------------|----------------|-------------|
| Client: | Aberdeenshire Council | Lab Sample No: | S8840 |
| Contract No: | 5414 | Hole ID: | BH19 |
| Contract Name: | Stonehaven FAS | Sample Type: | В |
| Samula | | Sample No: | 11 |
| Sample | Grey clayey gravelly SAND | Depth (m): | 3.00 - 4.00 |
| Description: | | Date Tested: | 02/12/2013 |





| Sievi | ng | Sedimen | tation |
|---------------------|-----------|---------------------|-----------|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | | |
| 90 | 100 | | |
| 75 | 100 | | |
| 63 | 100 | | |
| 50 | 100 | | |
| 37.5 | 100 | | |
| 28 | 100 | | |
| 20 | 97 | | |
| 14 | 95 | | |
| 10 | 93 | | |
| 6.3 | 91 | | |
| 5 | 90 | | |
| 3.35 | 88 | | |
| 2 | 82 | | |
| 1.18 | 72 | | |
| 0.6 | 57 | | |
| 0.425 | 48 | | |
| 0.3 | 38 | | |
| 0.212 | 29 | | |
| 0.15 | 24 | | |
| 0.063 | 16 | | |

| Test Method | |
|-------------------------|-------------------|
| BS 1377 : Part 2 : 1990 | |
| Sieving | Clause Depth (m): |
| Sedimentation | N/A |

| Sample Proportions | | |
|--------------------|------|--|
| Cobbles | 0.0 | |
| Gravel | 18.0 | |
| Sand | 66.0 | |
| Silt & Clay | 16.0 | |

| Grading Analysis | | |
|------------------------|------|--|
| D60 D10 | 0.72 | |
| Uniformity Coefficient | N/A | |

1489

Unit 10 Wessex Road Bourne end Buckinghamshire SL8 5DT

Agata K-Roche

Senior Technician

Date: 09/12/2013

Remarks:

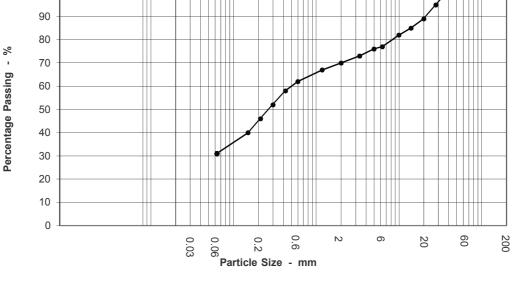
Checked and Approved:



DETERMINATION OF PARTICLE SIZE DISTRIBUTION WET SIEVING METHOD

| Client: | Aberdeenshire Council | Lab Sample No: | S8842 |
|----------------|-----------------------------------|----------------|-------------|
| Contract No: | 5414 | Hole ID: | BH19 |
| Contract Name: | Stonehaven FAS | Sample Type: | В |
| Commis | | Sample No: | 14 |
| Sample | Reddish brown gravelly sandy CLAY | Depth (m): | 4.80 - 5.00 |
| Description: | | Date Tested: | 29/11/2013 |





| Sieving | | Sediment | tation |
|---------------------|-----------|---------------------|-----------|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | | |
| 90 | 100 | | |
| 75 | 100 | | |
| 63 | 100 | | |
| 50 | 100 | | |
| 37.5 | 100 | | |
| 28 | 95 | | |
| 20 | 89 | | |
| 14 | 85 | | |
| 10 | 82 | | |
| 6.3 | 77 | | |
| 5 | 76 | | |
| 3.35 | 73 | | |
| 2 | 70 | | |
| 1.18 | 67 | | |
| 0.6 | 62 | | |
| 0.425 | 58 | | |
| 0.3 | 52 | | |
| 0.212 | 46 | | |
| 0.15 | 40 | | |
| 0.063 | 31 | | |

| Test Method | | |
|-------------------------|-------------------|--|
| BS 1377 : Part 2 : 1990 | | |
| Sieving | Clause Depth (m): | |
| Sedimentation | N/A | |

| Sample Proportions | | |
|--------------------|------|--|
| Cobbles | 0.0 | |
| Gravel | 30.0 | |
| Sand | 39.0 | |
| Silt & Clay | 31.0 | |

| Grading Ana | lysis |
|------------------------|-------|
| D60 D10 | 0.51 |
| Uniformity Coefficient | N/A |

Date:

09/12/2013



Approved: Senior Technician

Unit 10 Wessex Road Bourne end Buckinghamshire SL8 5DT

Agata K-Roche

Whole sample used

Sheet 1 of 1

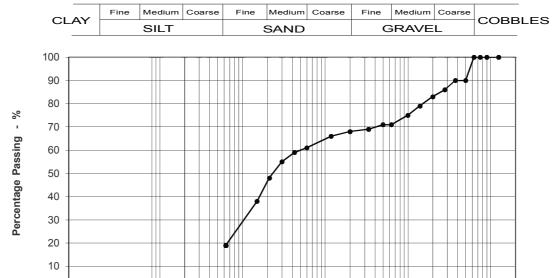
Remarks:

Checked and



DETERMINATION OF PARTICLE SIZE DISTRIBUTION WET SIEVING METHOD

| BS1377 : Part 2 : 19 | 90 Clause 9.2 | | |
|----------------------|---------------------------------|----------------|-------------|
| Client: | Aberdeenshire Council | Lab Sample No: | S8843 |
| Contract No: | 5414 | Hole ID: | BH20 |
| Contract Name: | Stonehaven FAS | Sample Type: | В |
| Somalo | | Sample No: | 4 |
| Sample | Brown clayey very gravelly SAND | Depth (m): | 0.90 - 1.20 |
| Description: | | Date Tested: | 27/11/2013 |



0.00 N.N.00 Particle Size - mm

0.03

N

ი

| Sieving | | Sedimen | tation |
|---------------------|-----------|---------------------|-----------|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | | |
| 90 | 100 | | |
| 75 | 100 | | |
| 63 | 100 | | |
| 50 | 90 | | |
| 37.5 | 90 | | |
| 28 | 86 | | |
| 20 | 83 | | |
| 14 | 79 | | |
| 10 | 75 | | |
| 6.3 | 71 | | |
| 5 | 71 | | |
| 3.35 | 69 | | |
| 2 | 68 | | |
| 1.18 | 66 | | |
| 0.6 | 61 | | |
| 0.425 | 59 | | |
| 0.3 | 55 | | |
| 0.212 | 48 | | |
| 0.15 | 38 | | |
| 0.063 | 19 | | |

| Test Method | | |
|-------------------------|-------------------|--|
| BS 1377 : Part 2 : 1990 | | |
| Sieving | Clause Depth (m): | |
| Sedimentation | N/A | |

20

60

200

| Sample Proportions | | |
|--------------------|------|--|
| Cobbles | 0.0 | |
| Gravel | 32.0 | |
| Sand | 49.0 | |
| Silt & Clay | 19.0 | |

| Grading Ana | alysis |
|------------------------|--------|
| D60 D10 | 0.51 |
| Uniformity Coefficient | N/A |

Date:

| Remarks: |
|----------|
|----------|

| Checked and | Agata K-Roche |
|-------------|-------------------|
| Approved: | Senior Technician |

0

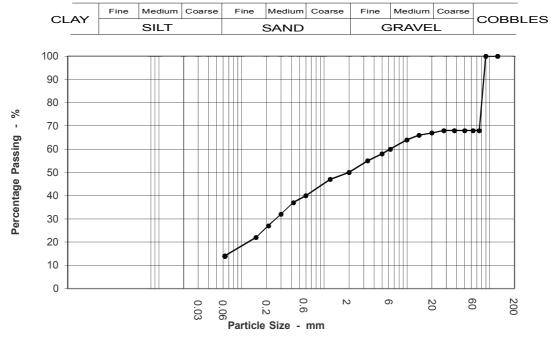
Unit 10 Wessex Road Bourne end Buckinghamshire SL8 5DT

09/12/2013



DETERMINATION OF PARTICLE SIZE DISTRIBUTION WET SIEVING METHOD

| BS1377 : Part 2 : 1990 Clause 9.2 | | | | |
|-----------------------------------|---|----------------|-------------|--|
| Client: | Aberdeenshire Council | Lab Sample No: | S8844 | |
| Contract No: | 5414 | Hole ID: | BH20 | |
| Contract Name: | Stonehaven FAS | Sample Type: | В | |
| Samula | | Sample No: | 10 | |
| Sample | Brown silty gravelly SAND with frequent cobbles | Depth (m): | 2.00 - 3.00 | |
| Description: | | Date Tested: | 29/11/2013 | |



| Sieving | | Sedimentation | |
|---------------------|-----------|---------------------|-----------|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | | |
| 90 | 100 | | |
| 75 | 68 | | |
| 63 | 68 | | |
| 50 | 68 | | |
| 37.5 | 68 | | |
| 28 | 68 | | |
| 20 | 67 | | |
| 14 | 66 | | |
| 10 | 64 | | |
| 6.3 | 60 | | |
| 5 | 58 | | |
| 3.35 | 55 | | |
| 2 | 50 | | |
| 1.18 | 47 | | |
| 0.6 | 40 | | |
| 0.425 | 37 | | |
| 0.3 | 32 | | |
| 0.212 | 27 | | |
| 0.15 | 22 | | |
| 0.063 | 14 | | |

| Test Method | | | |
|---------------------------|-----|--|--|
| BS 1377 : Part 2 : 1990 | | | |
| Sieving Clause Depth (m): | | | |
| Sedimentation | N/A | | |

| Sample Proportions | | | | |
|--------------------|------|--|--|--|
| Cobbles | 32.0 | | | |
| Gravel | 18.0 | | | |
| Sand | 36.0 | | | |
| Silt & Clay | 14.0 | | | |
| | | | | |

| Grading Analysis | | |
|------------------------|------|--|
| D60 D10 | 6.30 | |
| Uniformity Coefficient | N/A | |

Date:

09/12/2013



Agata K-Roche Checked and Approved: Senior Technician

Unit 10 Wessex Road Bourne end Buckinghamshire SL8 5DT

Whole sample used

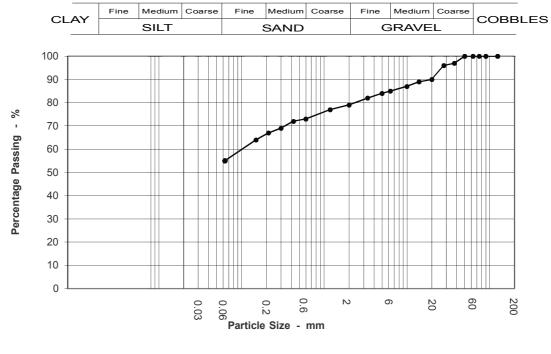
Sheet 1 of 1

Remarks:



DETERMINATION OF PARTICLE SIZE DISTRIBUTION WET SIEVING METHOD

| BS1377 : Part 2 : 199 | 00 Clause 9.2 | | |
|-----------------------|---|----------------|-------------|
| Client: | Aberdeenshire Council | Lab Sample No: | S8846 |
| Contract No: | 5414 | Hole ID: | BH20 |
| Contract Name: | Stonehaven FAS | Sample Type: | В |
| Samula | | Sample No: | 14 |
| Sample | Reddish brown slightly gravelly slightly sandy silty CLAY | Depth (m): | 3.60 - 4.00 |
| Description: | | Date Tested: | 29/11/2013 |



| Sieving | | Sedimentation | |
|---------------------|-----------|---------------------|-----------|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | | |
| 90 | 100 | | |
| 75 | 100 | | |
| 63 | 100 | | |
| 50 | 100 | | |
| 37.5 | 97 | | |
| 28 | 96 | | |
| 20 | 90 | | |
| 14 | 89 | | |
| 10 | 87 | | |
| 6.3 | 85 | | |
| 5 | 84 | | |
| 3.35 | 82 | | |
| 2 | 79 | | |
| 1.18 | 77 | | |
| 0.6 | 73 | | |
| 0.425 | 72 | | |
| 0.3 | 69 | | |
| 0.212 | 67 | | |
| 0.15 | 64 | | |
| 0.063 | 55 | | |

| Test Method | | | |
|-------------------------|-------------------|--|--|
| BS 1377 : Part 2 : 1990 | | | |
| Sieving | Clause Depth (m): | | |
| Sedimentation | N/A | | |

| Sample Proportions | | | |
|--------------------|------|--|--|
| Cobbles | 0.0 | | |
| Gravel | 21.0 | | |
| Sand | 24.0 | | |
| Silt & Clay | 55.0 | | |

| Grading Analysis | | | |
|------------------------|------|--|--|
| D60 D10 | 0.11 | | |
| Uniformity Coefficient | N/A | | |

Date:

09/12/2013

1489

Senior Technician Unit 10 Wessex Road Bourne end Buckinghamshire SL8 5DT

Agata K-Roche

Sheet 1 of 1

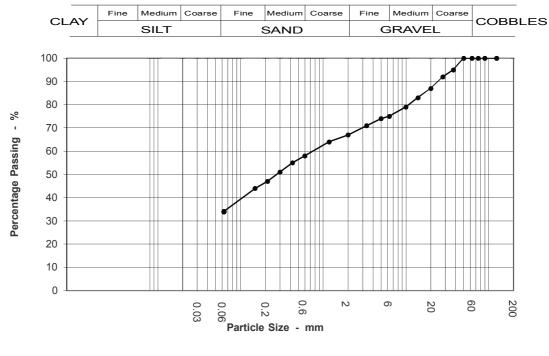
Remarks:

Checked and Approved:



DETERMINATION OF PARTICLE SIZE DISTRIBUTION WET SIEVING METHOD

| BS1377 : Part 2 : 1990 Clause 9.2 | | | | |
|-----------------------------------|---|----------------|-------------|--|
| Client: | Aberdeenshire Council | Lab Sample No: | S8848 | |
| Contract No: | 5414 | Hole ID: | BH20 | |
| Contract Name: | Stonehaven FAS | Sample Type: | В | |
| Somalo | | Sample No: | 17 | |
| Sample | Reddish brown slightly sandy slightly gravelly CLAY | Depth (m): | 4.50 - 5.00 | |
| Description: | | Date Tested: | 26/11/2013 | |



| Sievir | Sieving | | ation |
|---------------------|-----------|---------------------|-----------|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | | |
| 90 | 100 | | |
| 75 | 100 | | |
| 63 | 100 | | |
| 50 | 100 | | |
| 37.5 | 95 | | |
| 28 | 92 | | |
| 20 | 87 | | |
| 14 | 83 | | |
| 10 | 79 | | |
| 6.3 | 75 | | |
| 5 | 74 | | |
| 3.35 | 71 | | |
| 2 | 67 | | |
| 1.18 | 64 | | |
| 0.6 | 58 | | |
| 0.425 | 55 | | |
| 0.3 | 51 | | |
| 0.212 | 47 | | |
| 0.15 | 44 | | |
| 0.063 | 34 | | |

| Test Method | |
|-------------------------|-------------------|
| BS 1377 : Part 2 : 1990 | |
| Sieving | Clause Depth (m): |
| Sedimentation | N/A |

| Sample Proportions | |
|--------------------|------|
| Cobbles | 0.0 |
| Gravel | 33.0 |
| Sand | 33.0 |
| Silt & Clay | 34.0 |

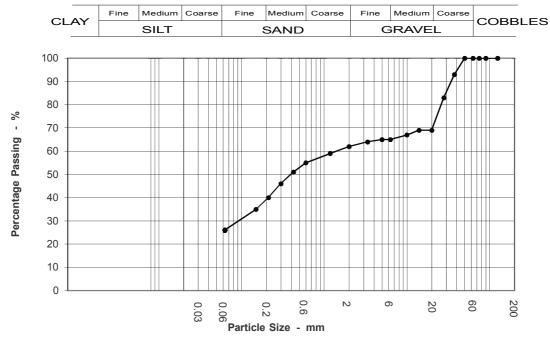
| Grading Analysis | |
|------------------------|------|
| D60 D10 | 0.79 |
| Uniformity Coefficient | N/A |

| Checked and | Agata K-Roche |
|-------------|-------------------|
| Approved: | Senior Technician |
| | |



DETERMINATION OF PARTICLE SIZE DISTRIBUTION WET SIEVING METHOD

| BS1377 : Part 2 : 19 | 00 Clause 9.2 | | |
|----------------------|---|----------------|-------------|
| Client: | Aberdeenshire Council | Lab Sample No: | S8850 |
| Contract No: | 5414 | Hole ID: | BH20 |
| Contract Name: | Stonehaven FAS | Sample Type: | В |
| Somalo | | Sample No: | 23 |
| Sample | Pinkish brown very clayey very sandy GRAVEL | Depth (m): | 6.20 - 6.75 |
| Description: | | Date Tested: | 02/12/2013 |



| Sieving | | Sediment | tation |
|---------------------|-----------|---------------------|-----------|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | | |
| 90 | 100 | | |
| 75 | 100 | | |
| 63 | 100 | | |
| 50 | 100 | | |
| 37.5 | 93 | | |
| 28 | 83 | | |
| 20 | 69 | | |
| 14 | 69 | | |
| 10 | 67 | | |
| 6.3 | 65 | | |
| 5 | 65 | | |
| 3.35 | 64 | | |
| 2 | 62 | | |
| 1.18 | 59 | | |
| 0.6 | 55 | | |
| 0.425 | 51 | | |
| 0.3 | 46 | | |
| 0.212 | 40 | | |
| 0.15 | 35 | | |
| 0.063 | 26 | | |

| Test Method | |
|-------------------------|-------------------|
| BS 1377 : Part 2 : 1990 | |
| Sieving | Clause Depth (m): |
| Sedimentation | N/A |

| Sample Proportions | |
|--------------------|------|
| Cobbles | 0.0 |
| Gravel | 38.0 |
| Sand | 36.0 |
| Silt & Clay | 26.0 |

| Grading Analysis | |
|------------------------|------|
| D60 D10 | 1.45 |
| Uniformity Coefficient | N/A |

Date:

09/12/2013

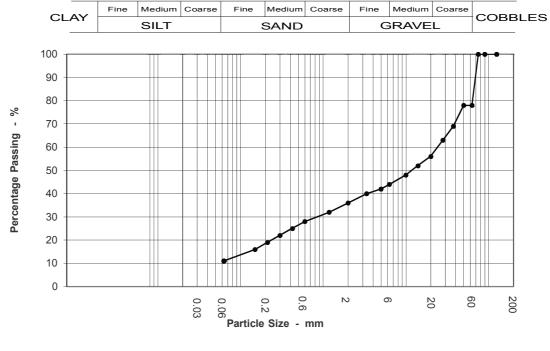
| Remarks: |
|----------|
|----------|

| Checked and | Agata K-Roche |
|-------------|-------------------|
| Approved: | Senior Technician |



DETERMINATION OF PARTICLE SIZE DISTRIBUTION WET SIEVING METHOD

| BS1377 : Part 2 : 19 | 90 Clause 9.2 | | |
|----------------------|--|----------------|-------------|
| Client: | Aberdeenshire Council | Lab Sample No: | S8854 |
| Contract No: | 5414 | Hole ID: | BH21B |
| Contract Name: | Stonehaven FAS | Sample Type: | В |
| Somalo | | Sample No: | 6 |
| Sample | Brown clayey very sandy GRAVEL with frequent cobbles | Depth (m): | 1.80 - 2.00 |
| Description: | | Date Tested: | 27/11/2013 |



| Sieving | | Sedimen | tation |
|---------------------|-----------|---------------------|-----------|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | | |
| 90 | 100 | | |
| 75 | 100 | | |
| 63 | 78 | | |
| 50 | 78 | | |
| 37.5 | 69 | | |
| 28 | 63 | | |
| 20 | 56 | | |
| 14 | 52 | | |
| 10 | 48 | | |
| 6.3 | 44 | | |
| 5 | 42 | | |
| 3.35 | 40 | | |
| 2 | 36 | | |
| 1.18 | 32 | | |
| 0.6 | 28 | | |
| 0.425 | 25 | | |
| 0.3 | 22 | | |
| 0.212 | 19 | | |
| 0.15 | 16 | | |
| 0.063 | 11 | | |

| Test Method | | |
|-------------------------|-------------------|--|
| BS 1377 : Part 2 : 1990 | | |
| Sieving | Clause Depth (m): | |
| Sedimentation | N/A | |

| Sample Proportions | | |
|--------------------|------|--|
| Cobbles | 22.0 | |
| Gravel | 42.0 | |
| Sand | 25.0 | |
| Silt & Clay | 11.0 | |
| | | |

| Grading Analysis | | |
|------------------------|-------|--|
| D60 D10 | 24.57 | |
| Uniformity Coefficient | N/A | |

Date:

09/12/2013



Remarks:

Checked and Approved:

Agata K-Roche Senior Technician

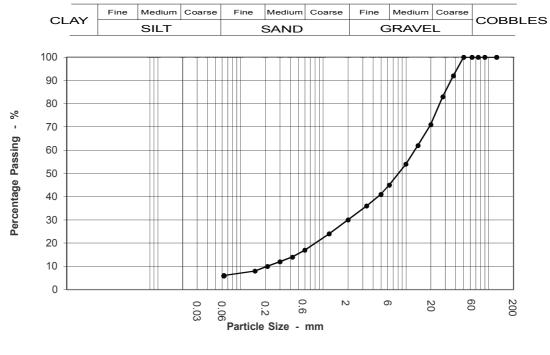
Unit 10 Wessex Road Bourne end Buckinghamshire SL8 5DT

Whole sample used



DETERMINATION OF PARTICLE SIZE DISTRIBUTION WET SIEVING METHOD

| BS1377 : Part 2 : 19 | 90 Clause 9.2 | | |
|----------------------|---|----------------|-------------|
| Client: | Aberdeenshire Council | Lab Sample No: | S8855 |
| Contract No: | 5414 | Hole ID: | BH21B |
| Contract Name: | Stonehaven FAS | Sample Type: | В |
| Somalo | | Sample No: | 8 |
| Sample | Brown slightly calyey very sandy GRAVEL | Depth (m): | 2.00 - 3.00 |
| Description: | | Date Tested: | 26/11/2013 |



| Sieving | | Sediment | tation |
|---------------|-----------|---------------|-----------|
| Particle Size | % Passing | Particle Size | % Passing |
| mm | | mm | |
| 125 | 100 | | |
| 90 | 100 | | |
| 75 | 100 | | |
| 63 | 100 | | |
| 50 | 100 | | |
| 37.5 | 92 | | |
| 28 | 83 | | |
| 20 | 71 | | |
| 14 | 62 | | |
| 10 | 54 | | |
| 6.3 | 45 | | |
| 5 | 41 | | |
| 3.35 | 36 | | |
| 2 | 30 | | |
| 1.18 | 24 | | |
| 0.6 | 17 | | |
| 0.425 | 14 | | |
| 0.3 | 12 | | |
| 0.212 | 10 | | |
| 0.15 | 8 | | |
| 0.063 | 6 | | |

| Test Method | |
|---------------------------|--|
| BS 1377 : Part 2 : 1990 | |
| Sieving Clause Depth (m): | |
| Sedimentation N/A | |

| Sample Proportions | | |
|--------------------|------|--|
| Cobbles | 0.0 | |
| Gravel | 70.0 | |
| Sand | 24.0 | |
| Silt & Clay | 6.0 | |

| Grading Analysis | | |
|------------------------|-------|--|
| D60 | 13.00 | |
| D10 | 0.21 | |
| Uniformity Coefficient | 61.32 | |

Date:

09/12/2013

| Remarks: |
|----------|
| |

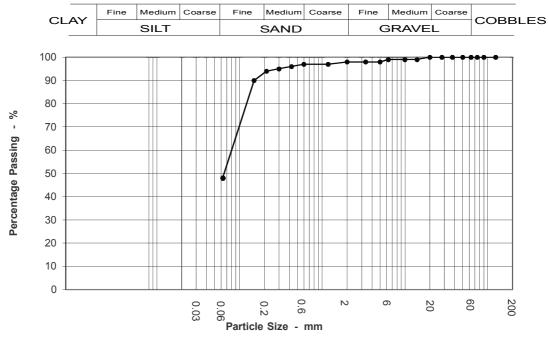
| Checked and | Agata K-Roche | |
|--|-------------------|--|
| Approved: | Senior Technician | |
| Unit 10 Wessex Road Bourne end Buckinghamshire SL8 5DT | | |

Sheet 1 of 1



DETERMINATION OF PARTICLE SIZE DISTRIBUTION WET SIEVING METHOD

| BS1377 : Part 2 : 19 | 90 Clause 9.2 | | |
|------------------------|---|----------------|-------------|
| Client: | Aberdeenshire Council | Lab Sample No: | S8857 |
| Contract No: | 5414 | Hole ID: | BH21B |
| Contract Name: | Stonehaven FAS | Sample Type: | В |
| Samula | | Sample No: | 11 |
| Sample Description: | Brown slightly gravelly very silty SAND | Depth (m): | 3.30 - 4.00 |
| Description: | | Date Tested: | 26/11/2013 |



| Sieving | | Sediment | tation |
|---------------------|-----------|---------------------|-----------|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | | |
| 90 | 100 | | |
| 75 | 100 | | |
| 63 | 100 | | |
| 50 | 100 | | |
| 37.5 | 100 | | |
| 28 | 100 | | |
| 20 | 100 | | |
| 14 | 99 | | |
| 10 | 99 | | |
| 6.3 | 99 | | |
| 5 | 98 | | |
| 3.35 | 98 | | |
| 2 | 98 | | |
| 1.18 | 97 | | |
| 0.6 | 97 | | |
| 0.425 | 96 | | |
| 0.3 | 95 | | |
| 0.212 | 94 | | |
| 0.15 | 90 | | |
| 0.063 | 48 | | |

| Test Method | | |
|-------------------------|-------------------|--|
| BS 1377 : Part 2 : 1990 | | |
| Sieving | Clause Depth (m): | |
| Sedimentation | N/A | |

| Sample Proportions | | | |
|--------------------|------|--|--|
| Cobbles | 0.0 | | |
| Gravel | 2.0 | | |
| Sand | 50.0 | | |
| Silt & Clay | 48.0 | | |

| Grading Analysis | | |
|------------------------|------|--|
| D60 D10 | 0.09 | |
| Uniformity Coefficient | N/A | |

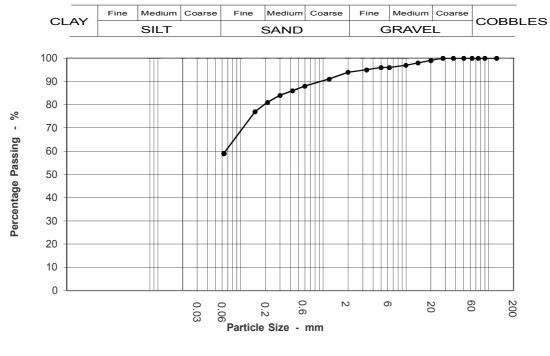
| Remarks: |
|----------|
|----------|

| Checked and | Agata K-Roche | |
|---------------------|--------------------------------------|--|
| Approved: | Senior Technician | |
| Unit 10 Wessex Road | d Bourne end Buckinghamshire SL8 5DT | |



DETERMINATION OF PARTICLE SIZE DISTRIBUTION WET SIEVING METHOD

| BS1377 : Part 2 : 19 | 90 Clause 9.2 | | |
|----------------------|--|----------------|-------------|
| Client: | Aberdeenshire Council | Lab Sample No: | S8858 |
| Contract No: | 5414 | Hole ID: | BH21B |
| Contract Name: | Stonehaven FAS | Sample Type: | В |
| Somalo | | Sample No: | 13 |
| Sample | Reddish brown slightly gravelly sandy silty CLAY | Depth (m): | 4.00 - 4.40 |
| Description: | | Date Tested: | 27/11/2013 |



| Sieving | | Sediment | tation |
|---------------------|-----------|---------------------|-----------|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | | |
| 90 | 100 | | |
| 75 | 100 | | |
| 63 | 100 | | |
| 50 | 100 | | |
| 37.5 | 100 | | |
| 28 | 100 | | |
| 20 | 99 | | |
| 14 | 98 | | |
| 10 | 97 | | |
| 6.3 | 96 | | |
| 5 | 96 | | |
| 3.35 | 95 | | |
| 2 | 94 | | |
| 1.18 | 91 | | |
| 0.6 | 88 | | |
| 0.425 | 86 | | |
| 0.3 | 84 | | |
| 0.212 | 81 | | |
| 0.15 | 77 | | |
| 0.063 | 59 | | |

Agata K-Roche

Senior Technician

Unit 10 Wessex Road Bourne end Buckinghamshire SL8 5DT

| Test Method | | |
|-------------------------|-------------------|--|
| BS 1377 : Part 2 : 1990 | | |
| Sieving | Clause Depth (m): | |
| Sedimentation | N/A | |

| Sample Proportions | | | |
|--------------------|------|--|--|
| Cobbles | 0.0 | | |
| Gravel | 6.0 | | |
| Sand | 35.0 | | |
| Silt & Clay | 59.0 | | |

| Grading Analysis | | |
|------------------------|------|--|
| D60 D10 | 0.07 | |
| Uniformity Coefficient | N/A | |

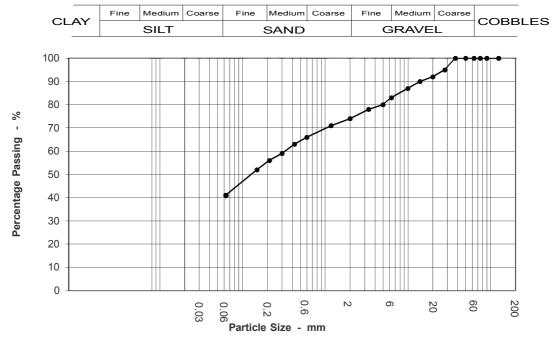
Remarks:

Checked and Approved:



DETERMINATION OF PARTICLE SIZE DISTRIBUTION WET SIEVING METHOD

| BS1377 : Part 2 : 1990 Clause 9.2 | | | | |
|-----------------------------------|---|----------------|-------------|--|
| Client: | Aberdeenshire Council | Lab Sample No: | S8859 | |
| Contract No: | 5414 | Hole ID: | BH21B | |
| Contract Name: | Stonehaven FAS | Sample Type: | В | |
| Somalo | | Sample No: | 15 | |
| Sample | Reddish brown slightly gravelly slightly sandy CLAY | Depth (m): | 4.50 - 5.00 | |
| Description: | | Date Tested: | 02/12/2013 | |



| Sieving | | Sediment | tation |
|---------------|--------------|---------------|------------|
| Particle Size | % Passing | Particle Size | % Passing |
| mm | 70 T dooling | mm | /or assing |
| 125 | 100 | | |
| 90 | 100 | | |
| 75 | 100 | | |
| 63 | 100 | | |
| 50 | 100 | | |
| 37.5 | 100 | | |
| 28 | 95 | | |
| 20 | 92 | | |
| 14 | 90 | | |
| 10 | 87 | | |
| 6.3 | 83 | | |
| 5 | 80 | | |
| 3.35 | 78 | | |
| 2 | 74 | | |
| 1.18 | 71 | | |
| 0.6 | 66 | | |
| 0.425 | 63 | | |
| 0.3 | 59 | | |
| 0.212 | 56 | | |
| 0.15 | 52 | | |
| 0.063 | 41 | | |

| Test Method | | | |
|-------------------------|-------------------|--|--|
| BS 1377 : Part 2 : 1990 | | | |
| Sieving | Clause Depth (m): | | |
| Sedimentation | N/A | | |

| Sample Proportions | | | |
|--------------------|------|--|--|
| Cobbles | 0.0 | | |
| Gravel | 26.0 | | |
| Sand | 33.0 | | |
| Silt & Clay | 41.0 | | |

| Grading Analysis | | |
|------------------------|------|--|
| D60 D10 | 0.33 | |
| Uniformity Coefficient | N/A | |

Date:

09/12/2013



Checked and Approved: Senior Technician

Unit 10 Wessex Road Bourne end Buckinghamshire SL8 5DT

Agata K-Roche

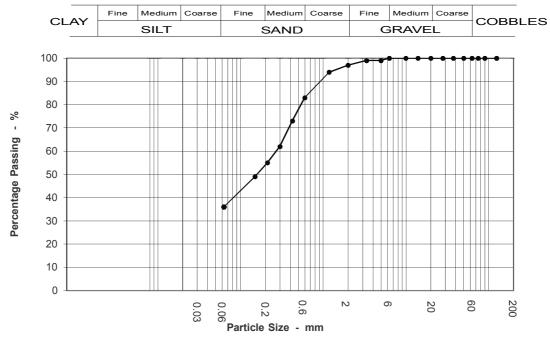
Whole sample used

Remarks:



DETERMINATION OF PARTICLE SIZE DISTRIBUTION WET SIEVING METHOD

| BS1377 : Part 2 : 1990 Clause 9.2 | | | | |
|-----------------------------------|---|----------------|-------------|--|
| Client: | Aberdeenshire Council | Lab Sample No: | S8861 | |
| Contract No: | 5414 | Hole ID: | BH21B | |
| Contract Name: | Stonehaven FAS | Sample Type: | В | |
| Samula | | Sample No: | 20 | |
| Sample | Light brown slightly gravelly very silty SAND | Depth (m): | 6.35 - 7.50 | |
| Description: | | Date Tested: | 29/11/2013 | |



| Sieving | | Sediment | tation |
|---------------------|-----------|------------------|-----------|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | | |
| 90 | 100 | | |
| 75 | 100 | | |
| 63 | 100 | | |
| 50 | 100 | | |
| 37.5 | 100 | | |
| 28 | 100 | | |
| 20 | 100 | | |
| 14 | 100 | | |
| 10 | 100 | | |
| 6.3 | 100 | | |
| 5 | 99 | | |
| 3.35 | 99 | | |
| 2 | 97 | | |
| 1.18 | 94 | | |
| 0.6 | 83 | | |
| 0.425 | 73 | | |
| 0.3 | 62 | | |
| 0.212 | 55 | | |
| 0.15 | 49 | | |
| 0.063 | 36 | | |

| Test Method | | | |
|-------------------------|-------------------|--|--|
| BS 1377 : Part 2 : 1990 | | | |
| Sieving | Clause Depth (m): | | |
| Sedimentation | N/A | | |

| Sample Proportions | | | |
|--------------------|------|--|--|
| Cobbles | 0.0 | | |
| Gravel | 3.0 | | |
| Sand | 61.0 | | |
| Silt & Clay | 36.0 | | |

| Grading Analysis | | | |
|------------------------|------|--|--|
| D60 D10 | 0.27 | | |
| Uniformity Coefficient | N/A | | |

Date:

09/12/2013

| Approved: | Senior Technician |
|---------------------|------------------------------------|
| Unit 10 Wessex Road | Bourne end Buckinghamshire SL8 5DT |

Agata K-Roche

Sheet 1 of 1

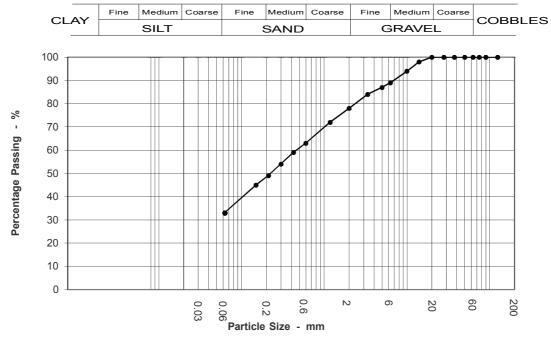
Remarks:

Checked and Approved:



DETERMINATION OF PARTICLE SIZE DISTRIBUTION WET SIEVING METHOD

| BS1377 : Part 2 : 1990 Clause 9.2 | | | | |
|-----------------------------------|---|----------------|-------------|--|
| Client: | Aberdeenshire Council | Lab Sample No: | S8862 | |
| Contract No: | 5414 | Hole ID: | BH21B | |
| Contract Name: | Stonehaven FAS | Sample Type: | В | |
| Somalo | | Sample No: | 23 | |
| Sample | Light brown slightly gravelly very silty SAND | Depth (m): | 8.00 - 9.00 | |
| Description: | | Date Tested: | 27/11/2013 | |



| Sievir | ng | Sediment | tation |
|---------------|------------|---------------|------------|
| Particle Size | % Passing | Particle Size | % Passing |
| mm | 10 Fassing | mm | 70 Fassing |
| 125 | 100 | | |
| 90 | 100 | | |
| 75 | 100 | | |
| 63 | 100 | | |
| 50 | 100 | | |
| 37.5 | 100 | | |
| 28 | 100 | | |
| 20 | 100 | | |
| 14 | 98 | | |
| 10 | 94 | | |
| 6.3 | 89 | | |
| 5 | 87 | | |
| 3.35 | 84 | | |
| 2 | 78 | | |
| 1.18 | 72 | | |
| 0.6 | 63 | | |
| 0.425 | 59 | | |
| 0.3 | 54 | | |
| 0.212 | 49 | | |
| 0.15 | 45 | | |
| 0.063 | 33 | | |

Agata K-Roche

Senior Technician

Unit 10 Wessex Road Bourne end Buckinghamshire SL8 5DT

| Test Method | | |
|---------------------------|-----|--|
| BS 1377 : Part 2 : 1990 | | |
| Sieving Clause Depth (m): | | |
| Sedimentation | N/A | |

| Sample Proportions | | |
|--------------------|------|--|
| Cobbles | 0.0 | |
| Gravel | 22.0 | |
| Sand | 45.0 | |
| Silt & Clay | 33.0 | |

| Grading Analysis | | |
|------------------------|------|--|
| D60 D10 | 0.47 | |
| Uniformity Coefficient | N/A | |

Remarks:

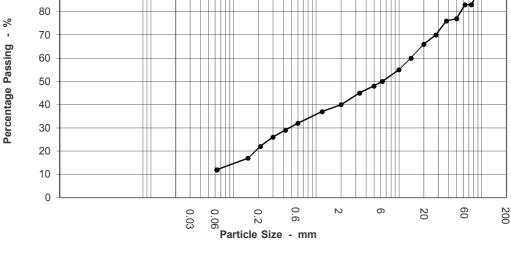
Checked and Approved:



DETERMINATION OF PARTICLE SIZE DISTRIBUTION WET SIEVING METHOD

| BS1377 : Part 2 : 199 | 90 Clause 9.2 | | |
|-----------------------|---|----------------|-------------|
| Client: | Aberdeenshire Council | Lab Sample No: | S8863 |
| Contract No: | 5414 | Hole ID: | BH22 |
| Contract Name: | Stonehaven FAS | Sample Type: | В |
| Somalo | | Sample No: | 3 |
| Sample | Brown clayey very sandy GRAVEL with cobbles | Depth (m): | 0.80 - 1.20 |
| Description: | | Date Tested: | 02/12/2013 |





| Sievir | ng | Sediment | tation |
|---------------------|-----------|---------------------|-----------|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | | |
| 90 | 88 | | |
| 75 | 83 | | |
| 63 | 83 | | |
| 50 | 77 | | |
| 37.5 | 76 | | |
| 28 | 70 | | |
| 20 | 66 | | |
| 14 | 60 | | |
| 10 | 55 | | |
| 6.3 | 50 | | |
| 5 | 48 | | |
| 3.35 | 45 | | |
| 2 | 40 | | |
| 1.18 | 37 | | |
| 0.6 | 32 | | |
| 0.425 | 29 | | |
| 0.3 | 26 | | |
| 0.212 | 22 | | |
| 0.15 | 17 | | |
| 0.063 | 12 | | |

| Test Method | | |
|-------------------------|-------------------|--|
| BS 1377 : Part 2 : 1990 | | |
| Sieving | Clause Depth (m): | |
| Sedimentation | N/A | |

| Sample Proportions | | |
|--------------------|------|--|
| Cobbles | 17.0 | |
| Gravel | 43.0 | |
| Sand | 28.0 | |
| Silt & Clay | 12.0 | |

| Grading Analysis | | |
|------------------------|-------|--|
| D60 D10 | 14.00 | |
| Uniformity Coefficient | N/A | |

Date:

09/12/2013

Checked and Approved:

Remarks:

 Approved:
 Senior Technician

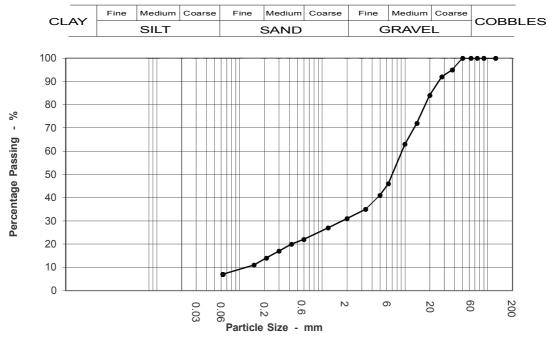
 Unit 10 Wessex Road Bourne end Buckinghamshire SL8 5DT

Agata K-Roche



DETERMINATION OF PARTICLE SIZE DISTRIBUTION WET SIEVING METHOD

| BS1377 : Part 2 : 199 | 90 Clause 9.2 | | |
|-----------------------|--|----------------|-------------|
| Client: | Aberdeenshire Council | Lab Sample No: | S8864 |
| Contract No: | 5414 | Hole ID: | BH22 |
| Contract Name: | Stonehaven FAS | Sample Type: | В |
| Somalo | | Sample No: | 7 |
| Sample | Brown slightly silty very sandy GRAVEL | Depth (m): | 2.20 - 2.80 |
| Description: | | Date Tested: | 28/11/2013 |



| Sievir | ng | Sediment | tation |
|---------------------|-----------|---------------------|-----------|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | | |
| 90 | 100 | | |
| 75 | 100 | | |
| 63 | 100 | | |
| 50 | 100 | | |
| 37.5 | 95 | | |
| 28 | 92 | | |
| 20 | 84 | | |
| 14 | 72 | | |
| 10 | 63 | | |
| 6.3 | 46 | | |
| 5 | 41 | | |
| 3.35 | 35 | | |
| 2 | 31 | | |
| 1.18 | 27 | | |
| 0.6 | 22 | | |
| 0.425 | 20 | | |
| 0.3 | 17 | | |
| 0.212 | 14 | | |
| 0.15 | 11 | | |
| 0.063 | 7 | | |

| Test Method | | |
|-------------------------|-------------------|--|
| BS 1377 : Part 2 : 1990 | | |
| Sieving | Clause Depth (m): | |
| Sedimentation | N/A | |

| Sample Proportions | | | |
|--------------------|------|--|--|
| Cobbles | 0.0 | | |
| Gravel | 69.0 | | |
| Sand | 24.0 | | |
| Silt & Clay | 7.0 | | |

| Grading Analysis | | |
|------------------------|-------|--|
| D60 | 9.35 | |
| D10 | 0.13 | |
| Uniformity Coefficient | 72.88 | |



Sheet 1 of 1

Remarks:

Checked and Approved:

Whole sample used

Agata K-Roche

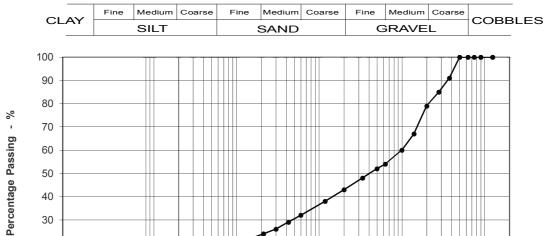
Senior Technician

Unit 10 Wessex Road Bourne end Buckinghamshire SL8 5DT



DETERMINATION OF PARTICLE SIZE DISTRIBUTION WET SIEVING METHOD

| BS1377 : Part 2 : 1990 Clause 9.2 | | | | |
|-----------------------------------|--|----------------|-------------|--|
| Client: | Aberdeenshire Council | Lab Sample No: | S8865 | |
| Contract No: | 5414 | Hole ID: | BH22 | |
| Contract Name: | Stonehaven FAS | Sample Type: | В | |
| Somalo | | Sample No: | 10 | |
| Sample | Reddish brown clayey very sandy GRAVEL | Depth (m): | 3.00 - 3.40 | |
| Description: | | Date Tested: | 02/12/2013 | |



| Sieving Sedimentation Particle Size % Passing Particle Size % Passing 125 100 mm % Passing 125 100 mm % Passing 90 100 mm % Passing 125 100 mm % Passing 125 100 mm % 90 100 100 100 75 100 100 100 50 100 100 100 37.5 91 10 60 6.3 54 10 60 6.3 54 10 60 6.3 54 10 60 1.18 38 1.18 38 0.6 32 0.425 29 0.3 26 1 1 | 10 | | | | |
|---|--------|-----------|----------|-------------------|---|
| Sieving Sedimentation Particle Size % Passing 125 100 90 100 75 100 63 100 50 100 37.5 91 28 85 20 79 14 67 10 60 6.3 54 5 52 3.35 48 2 43 1.18 38 0.6 32 0.425 29 | 0 | | | | |
| Particle Size mm % Passing Particle Size mm % Passing 125 100 % < | | | 0.03 | O O Particl | |
| mm % Passing 125 100 90 100 75 100 63 100 50 100 37.5 91 28 85 20 79 14 67 10 60 6.3 54 5 52 3.35 48 2 43 1.18 38 0.6 32 0.425 29 | Sievir | ng | Sediment | tation | |
| $\begin{array}{ c c c c c c c c c c c c c c c c c c c$ | | % Passing | | % Passing | |
| $ \begin{array}{ c c c c c c c c c c c c c c c c c c c$ | 125 | 100 | | | |
| | | | | | |
| 50 100 37.5 91 28 85 20 79 14 67 10 60 6.3 54 5 52 3.35 48 2 43 1.18 38 0.6 32 0.425 29 | 75 | 100 | | | |
| 37.5 91 28 85 20 79 14 67 10 60 6.3 54 5 52 3.35 48 2 43 1.18 38 0.6 32 0.425 29 | 63 | 100 | | | |
| 28 85 20 79 14 67 10 60 6.3 54 5 52 3.35 48 2 43 1.18 38 0.6 32 0.425 29 | 50 | 100 | | | |
| 20 79 14 67 10 60 6.3 54 5 52 3.35 48 2 43 1.18 38 0.6 32 0.425 29 | | 91 | | | |
| 14 67 10 60 6.3 54 5 52 3.35 48 2 43 1.18 38 0.6 32 0.425 29 | 28 | 85 | | | |
| 10 60 6.3 54 5 52 3.35 48 2 43 1.18 38 0.6 32 0.425 29 | | _ | | | |
| 6.3 54 5 52 3.35 48 2 43 1.18 38 0.6 32 0.425 29 | | - | | | |
| 5 52 3.35 48 2 43 1.18 38 0.6 32 0.425 29 | 10 | 60 | | | |
| 3.35 48 2 43 1.18 38 0.6 32 0.425 29 | | | | | |
| 2 43 1.18 38 0.6 32 0.425 29 | - | | | | |
| 1.18 38 0.6 32 0.425 29 | | - | | | |
| 0.6 32 0.425 29 | | - | | | |
| 0.425 29 | - | | | | |
| | | | | | |
| | | | | | |
| 0.0 20 | 0.3 | 26 | | | |
| 0.212 24 | | | | | |
| 0.15 22 | 0.15 | | | | |
| 0.063 17 | 0.063 | 17 | | | U |

30 20

| Test Method | | |
|-------------------------|-------------------|--|
| BS 1377 : Part 2 : 1990 | | |
| Sieving | Clause Depth (m): | |
| Sedimentation | N/A | |

20

200

60

N

ი

| Sample Proportions | | | |
|--------------------|------|--|--|
| Cobbles | 0.0 | | |
| Gravel | 57.0 | | |
| Sand | 26.0 | | |
| Silt & Clay | 17.0 | | |

| Grading Analysis | | |
|------------------------|-------|--|
| D60 D10 | 10.00 | |
| Uniformity Coefficient | N/A | |

1489

Agata K-Roche

Senior Technician

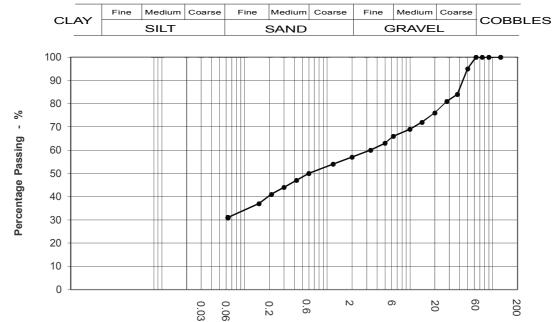
Remarks:

Checked and Approved:



DETERMINATION OF PARTICLE SIZE DISTRIBUTION WET SIEVING METHOD

| BS1377 : Part 2 : 1990 Clause 9.2 | | | | |
|-----------------------------------|--|----------------|-------------|--|
| Client: | Aberdeenshire Council | Lab Sample No: | S8868 | |
| Contract No: | 5414 | Hole ID: | BH22 | |
| Contract Name: | Stonehaven FAS | Sample Type: | В | |
| Samula | | Sample No: | 19 | |
| Sample | Reddish brown slightly sandy gravelly CLAY | Depth (m): | 6.50 - 7.50 | |
| Description: | | Date Tested: | 04/12/2013 | |



| 0 | | 0.03 | 0 | 0 iN e Size | 0. 6 - mm |
|---------------------|-----------|------------------|-----------|-------------------|-----------------|
| Qiavia | | C a dima a m | | 1 | |
| Sievir | ng | Sediment | tation | | |
| Particle Size mm | % Passing | Particle Size mm | % Passing | | |
| 125 | 100 | | | | 5 |
| 90 | 100 | | | | |
| 75 | 100 | | | | |
| 63 | 100 | | | | |
| 50 | 95 | | | | |
| 37.5 | 84 | | | | |
| 28 | 81 | | | | |
| 20 | 76 | | | | |
| 14 | 72 | | | | |
| 10 | 69 | | | | |
| 6.3 | 66 | | | | |
| 5 | 63 | | | | |
| 3.35 | 60 | | | | |
| 2 | 57 | | | | |
| 1.18 | 54 | | | | |
| 0.6 | 50 | | | | |
| 0.425 | 47 | | | | |
| 0.3 | 44 | | | | |
| 0.212 | 41 | | | | |
| 0.15 | 37 | | | | |
| 0.063 | 31 | | | | Uı |

| Test Method | | |
|-------------------------|-------------------|--|
| BS 1377 : Part 2 : 1990 | | |
| Sieving | Clause Depth (m): | |
| Sedimentation | N/A | |

20

| Sample Proportions | | | |
|--------------------|------|--|--|
| Cobbles | 0.0 | | |
| Gravel | 43.0 | | |
| Sand | 26.0 | | |
| Silt & Clay | 31.0 | | |
| | | | |

| Grading Analysis | | |
|------------------------|------|--|
| D60 D10 | 3.35 | |
| Uniformity Coefficient | N/A | |

1489

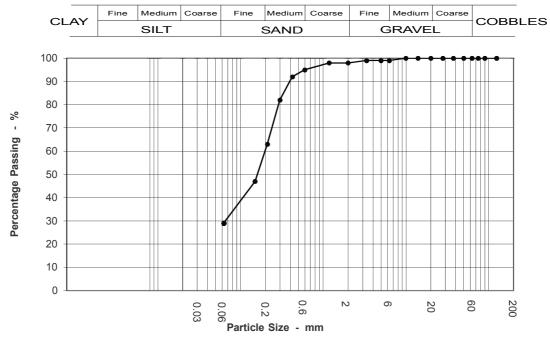
Remarks:

| Checked and | Agata K-Roche | |
|--|-------------------|--|
| Approved: | Senior Technician | |
| Unit 10 Wessex Road Bourne end Buckinghamshire SL8 5DT | | |



DETERMINATION OF PARTICLE SIZE DISTRIBUTION WET SIEVING METHOD

| BS1377 : Part 2 : 19 | 90 Clause 9.2 | | |
|----------------------|---|----------------|--------------|
| Client: | Aberdeenshire Council | Lab Sample No: | S8869 |
| Contract No: | 5414 | Hole ID: | BH22 |
| Contract Name: | Stonehaven FAS | Sample Type: | В |
| Somalo | | Sample No: | 26 |
| Sample | Light yellowish brown slightly gravelly very silty SAND | Depth (m): | 9.30 - 10.00 |
| Description: | | Date Tested: | 05/12/2013 |



| Sieving | | Sediment | tation |
|---------------------|-----------|---------------------|-----------|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | | |
| 90 | 100 | | |
| 75 | 100 | | |
| 63 | 100 | | |
| 50 | 100 | | |
| 37.5 | 100 | | |
| 28 | 100 | | |
| 20 | 100 | | |
| 14 | 100 | | |
| 10 | 100 | | |
| 6.3 | 99 | | |
| 5 | 99 | | |
| 3.35 | 99 | | |
| 2 | 98 | | |
| 1.18 | 98 | | |
| 0.6 | 95 | | |
| 0.425 | 92 | | |
| 0.3 | 82 | | |
| 0.212 | 63 | | |
| 0.15 | 47 | | |
| 0.063 | 29 | | |

Agata K-Roche

Senior Technician

Unit 10 Wessex Road Bourne end Buckinghamshire SL8 5DT

| Test Method | | |
|-------------------------|-------------------|--|
| BS 1377 : Part 2 : 1990 | | |
| Sieving | Clause Depth (m): | |
| Sedimentation | N/A | |

| Sample Proportions | | | |
|--------------------|------|--|--|
| Cobbles | 0.0 | | |
| Gravel | 2.0 | | |
| Sand | 69.0 | | |
| Silt & Clay | 29.0 | | |

| Grading Analysis | | |
|------------------------|------|--|
| D60 D10 | 0.20 | |
| Uniformity Coefficient | N/A | |

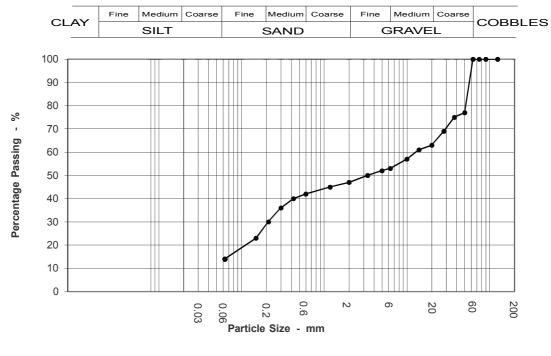
Remarks:

Checked and Approved:



DETERMINATION OF PARTICLE SIZE DISTRIBUTION WET SIEVING METHOD

| BS1377 : Part 2 : 19 | 90 Clause 9.2 | | |
|----------------------|-------------------------------|----------------|-------------|
| Client: | Aberdeenshire Council | Lab Sample No: | S8870 |
| Contract No: | 5414 | Hole ID: | BH23 |
| Contract Name: | Stonehaven FAS | Sample Type: | В |
| Sampla | | Sample No: | 3 |
| Sample | Brown silty very sandy GRAVEL | Depth (m): | 0.50 - 1.00 |
| Description: | | Date Tested: | 02/12/2013 |



| Sieving | | Sediment | tation |
|---------------------|-----------|---------------------|-----------|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | | |
| 90 | 100 | | |
| 75 | 100 | | |
| 63 | 100 | | |
| 50 | 77 | | |
| 37.5 | 75 | | |
| 28 | 69 | | |
| 20 | 63 | | |
| 14 | 61 | | |
| 10 | 57 | | |
| 6.3 | 53 | | |
| 5 | 52 | | |
| 3.35 | 50 | | |
| 2 | 47 | | |
| 1.18 | 45 | | |
| 0.6 | 42 | | |
| 0.425 | 40 | | |
| 0.3 | 36 | | |
| 0.212 | 30 | | |
| 0.15 | 23 | | |
| 0.063 | 14 | | |

| Test Method | | |
|---------------------------|-----|--|
| BS 1377 : Part 2 : 1990 | | |
| Sieving Clause Depth (m): | | |
| Sedimentation | N/A | |

| Sample Proportions | | | |
|--------------------|------|--|--|
| Cobbles | 0.0 | | |
| Gravel | 53.0 | | |
| Sand | 33.0 | | |
| Silt & Clay | 14.0 | | |

| Grading Analysis | | |
|------------------------|-------|--|
| D60 D10 | 13.00 | |
| Uniformity Coefficient | N/A | |

Date:

09/12/2013



Remarks:

Checked and Approved:

Whole sample used

Agata K-Roche

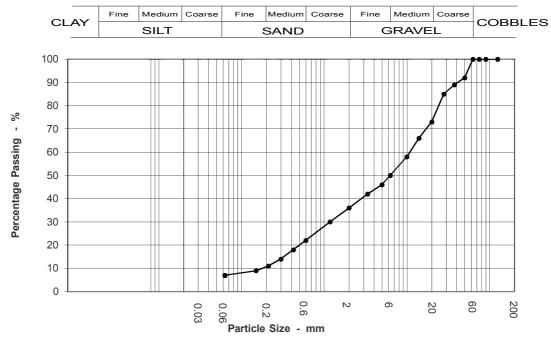
Senior Technician

Unit 10 Wessex Road Bourne end Buckinghamshire SL8 5DT



DETERMINATION OF PARTICLE SIZE DISTRIBUTION WET SIEVING METHOD

| BS1377 : Part 2 : 19 | 90 Clause 9.2 | | |
|----------------------|-------------------------------|----------------|-------------|
| Client: | Aberdeenshire Council | Lab Sample No: | S8871 |
| Contract No: | 5414 | Hole ID: | BH23 |
| Contract Name: | Stonehaven FAS | Sample Type: | В |
| Somalo | | Sample No: | 5 |
| Sample | Brown silty very sandy GRAVEL | Depth (m): | 1.20 - 2.40 |
| Description: | | Date Tested: | 29/11/2013 |



| Sievir | ng | Sediment | tation |
|---------------------|-----------|---------------------|-----------|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| | 100 | | |
| 125 | 100 | | |
| 90 | 100 | | |
| 75 | 100 | | |
| 63 | 100 | | |
| 50 | 92 | | |
| 37.5 | 89 | | |
| 28 | 85 | | |
| 20 | 73 | | |
| 14 | 66 | | |
| 10 | 58 | | |
| 6.3 | 50 | | |
| 5 | 46 | | |
| 3.35 | 42 | | |
| 2 | 36 | | |
| 1.18 | 30 | | |
| 0.6 | 22 | | |
| 0.425 | 18 | | |
| 0.3 | 14 | | |
| 0.212 | 11 | | |
| 0.15 | 9 | | |
| 0.063 | 7 | | |

| Test Method | | |
|---------------------------|-----|--|
| BS 1377 : Part 2 : 1990 | | |
| Sieving Clause Depth (m): | | |
| Sedimentation | N/A | |

| Sample Proportions | | | |
|--------------------|------|--|--|
| Cobbles | 0.0 | | |
| Gravel | 64.0 | | |
| Sand | 29.0 | | |
| Silt & Clay | 7.0 | | |

| Grading Analysis | | |
|------------------------|-------|--|
| D60 | 11.00 | |
| D10 | 0.18 | |
| Uniformity Coefficient | 60.77 | |



Sheet 1 of 1

Remarks:

Checked and Approved:

Whole sample used

Agata K-Roche

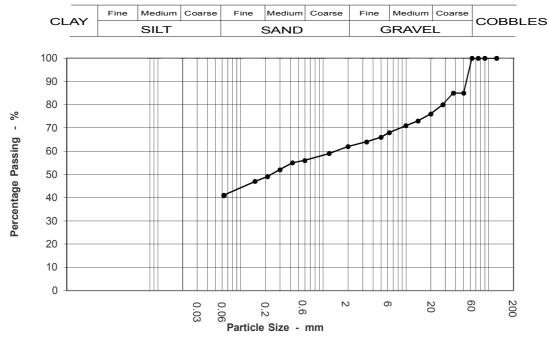
Senior Technician

Unit 10 Wessex Road Bourne end Buckinghamshire SL8 5DT



DETERMINATION OF PARTICLE SIZE DISTRIBUTION WET SIEVING METHOD

| BS1377 : Part 2 : 1990 Clause 9.2 | | | | |
|-----------------------------------|--|----------------|-------------|--|
| Client: | Aberdeenshire Council | Lab Sample No: | S8872 | |
| Contract No: | 5414 | Hole ID: | BH23 | |
| Contract Name: | Stonehaven FAS | Sample Type: | В | |
| Sample | | Sample No: | 8 | |
| - | Reddish brown slightly sandy gravelly silty CLAY | Depth (m): | 2.50 - 3.00 | |
| Description: | | Date Tested: | 04/12/2013 | |



| Sievir | ng | Sediment | tation |
|---------------------|-----------|---------------------|-----------|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | | |
| 90 | 100 | | |
| 75 | 100 | | |
| 63 | 100 | | |
| 50 | 85 | | |
| 37.5 | 85 | | |
| 28 | 80 | | |
| 20 | 76 | | |
| 14 | 73 | | |
| 10 | 71 | | |
| 6.3 | 68 | | |
| 5 | 66 | | |
| 3.35 | 64 | | |
| 2 | 62 | | |
| 1.18 | 59 | | |
| 0.6 | 56 | | |
| 0.425 | 55 | | |
| 0.3 | 52 | | |
| 0.212 | 49 | | |
| 0.15 | 47 | | |
| 0.063 | 41 | | |

| Test Method | | |
|-------------------------|-------------------|--|
| BS 1377 : Part 2 : 1990 | | |
| Sieving | Clause Depth (m): | |
| Sedimentation | N/A | |

| Sample Proportions | | |
|--------------------|------|--|
| Cobbles | 0.0 | |
| Gravel | 38.0 | |
| Sand | 21.0 | |
| Silt & Clay | 41.0 | |

| Grading Analysis | | |
|------------------------|------|--|
| D60 D10 | 1.45 | |
| Uniformity Coefficient | N/A | |

| Remarks: |
|----------|
|----------|

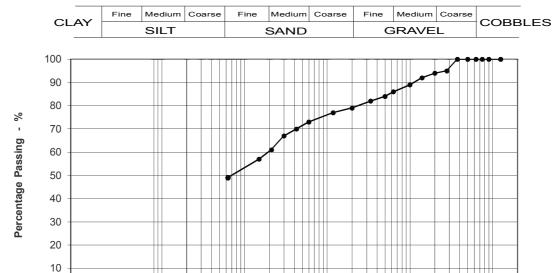
| Checked and | Agata K-Roche |
|-------------|-------------------|
| Approved: | Senior Technician |

Unit 10 Wessex Road Bourne end Buckinghamshire SL8 5DT



DETERMINATION OF PARTICLE SIZE DISTRIBUTION WET SIEVING METHOD

| BS1377 : Part 2 : 1990 Clause 9.2 | | | | |
|-----------------------------------|---|----------------|-------------|--|
| Client: | Aberdeenshire Council | Lab Sample No: | S8874 | |
| Contract No: | 5414 | Hole ID: | BH23 | |
| Contract Name: | Stonehaven FAS | Sample Type: | В | |
| Somalo | | Sample No: | 12 | |
| Sample | Reddish brown slightly garvelly slightly sandy silty CLAY | Depth (m): | 3.50 - 3.75 | |
| Description: | | Date Tested: | 04/12/2013 | |



0.06 Particle Size - mm

0.03

0.6

N

ი

| Sievir | ng | Sediment | tation |
|---------------|-------------|---------------|-------------|
| Particle Size | % Passing | Particle Size | % Passing |
| mm | 70 T 233119 | mm | 70 T 43311g |
| 125 | 100 | | |
| 90 | 100 | | |
| 75 | 100 | | |
| 63 | 100 | | |
| 50 | 100 | | |
| 37.5 | 100 | | |
| 28 | 95 | | |
| 20 | 94 | | |
| 14 | 92 | | |
| 10 | 89 | | |
| 6.3 | 86 | | |
| 5 | 84 | | |
| 3.35 | 82 | | |
| 2 | 79 | | |
| 1.18 | 77 | | |
| 0.6 | 73 | | |
| 0.425 | 70 | | |
| 0.3 | 67 | | |
| 0.212 | 61 | | |
| 0.15 | 57 | | |
| 0.063 | 49 | | |

0

| Test Method | | |
|---------------------------|-----|--|
| BS 1377 : Part 2 : 1990 | | |
| Sieving Clause Depth (m): | | |
| Sedimentation | N/A | |

20

60

200

| Sample Proportions | | |
|--------------------|------|--|
| Cobbles | 0.0 | |
| Gravel | 21.0 | |
| Sand | 30.0 | |
| Silt & Clay | 49.0 | |

| Grading Analysis | | |
|------------------------|------|--|
| D60 D10 | 0.20 | |
| Uniformity Coefficient | N/A | |



Sheet 1 of 1

Remarks:

Checked and Approved:

Whole sample used

Agata K-Roche

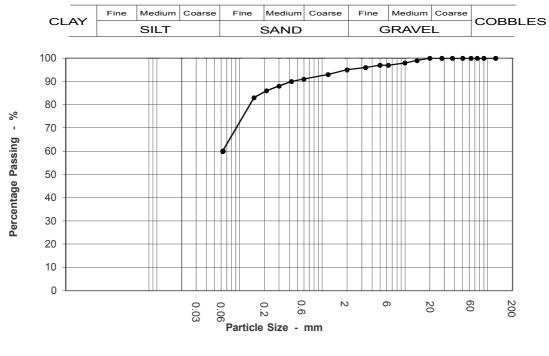
Senior Technician

Unit 10 Wessex Road Bourne end Buckinghamshire SL8 5DT



DETERMINATION OF PARTICLE SIZE DISTRIBUTION WET SIEVING METHOD

| BS1377 : Part 2 : 199 | 90 Clause 9.2 | | |
|-----------------------|--|----------------|-------------|
| Client: | Aberdeenshire Council | Lab Sample No: | S8875 |
| Contract No: | 5414 | Hole ID: | BH23 |
| Contract Name: | Stonehaven FAS | Sample Type: | В |
| Somalo | | Sample No: | 13 |
| Sample | Reddish brown slightly gravelly sandy SILT | Depth (m): | 3.75 - 4.00 |
| Description: | | Date Tested: | 04/12/2013 |



| Sievir | ng | Sediment | tation |
|---------------|-------------|---------------|-------------|
| Particle Size | % Passing | Particle Size | % Passing |
| mm | 70 T assing | mm | 70 T assing |
| 125 | 100 | | |
| 90 | 100 | | |
| 75 | 100 | | |
| 63 | 100 | | |
| 50 | 100 | | |
| 37.5 | 100 | | |
| 28 | 100 | | |
| 20 | 100 | | |
| 14 | 99 | | |
| 10 | 98 | | |
| 6.3 | 97 | | |
| 5 | 97 | | |
| 3.35 | 96 | | |
| 2 | 95 | | |
| 1.18 | 93 | | |
| 0.6 | 91 | | |
| 0.425 | 90 | | |
| 0.3 | 88 | | |
| 0.212 | 86 | | |
| 0.15 | 83 | | |
| 0.063 | 60 | | |

| Test Method | | |
|-------------------------|-------------------|--|
| BS 1377 : Part 2 : 1990 | | |
| Sieving | Clause Depth (m): | |
| Sedimentation | N/A | |

| Sample Proportions | | |
|--------------------|------|--|
| Cobbles | 0.0 | |
| Gravel | 5.0 | |
| Sand | 35.0 | |
| Silt & Clay | 60.0 | |

| Grading Analysis | | |
|------------------------|------|--|
| D60 D10 | 0.06 | |
| Uniformity Coefficient | N/A | |



Remarks:

Checked and Approved:

Whole sample used

Agata K-Roche

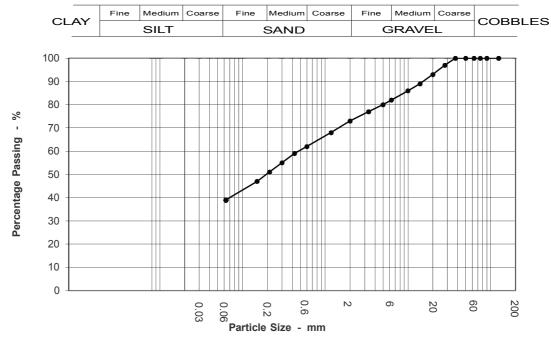
Senior Technician

Unit 10 Wessex Road Bourne end Buckinghamshire SL8 5DT



DETERMINATION OF PARTICLE SIZE DISTRIBUTION WET SIEVING METHOD

| BS1377 : Part 2 : 19 | 90 Clause 9.2 | | |
|----------------------|---|----------------|-------------|
| Client: | Aberdeenshire Council | Lab Sample No: | S8876 |
| Contract No: | 5414 | Hole ID: | BH23 |
| Contract Name: | Stonehaven FAS | Sample Type: | В |
| Somalo | | Sample No: | 15 |
| Sample | Reddish brown slightly sandy slightly gravelly CLAY | Depth (m): | 4.00 - 5.00 |
| Description: | | Date Tested: | 05/12/2013 |



| Sievir | ng | Sediment | tation |
|---------------------|-----------|---------------------|-----------|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | | |
| 90 | 100 | | |
| 75 | 100 | | |
| 63 | 100 | | |
| 50 | 100 | | |
| 37.5 | 100 | | |
| 28 | 97 | | |
| 20 | 93 | | |
| 14 | 89 | | |
| 10 | 86 | | |
| 6.3 | 82 | | |
| 5 | 80 | | |
| 3.35 | 77 | | |
| 2 | 73 | | |
| 1.18 | 68 | | |
| 0.6 | 62 | | |
| 0.425 | 59 | | |
| 0.3 | 55 | | |
| 0.212 | 51 | | |
| 0.15 | 47 | | |
| 0.063 | 39 | | |

| Test Method | | |
|-------------------------|-------------------|--|
| BS 1377 : Part 2 : 1990 | | |
| Sieving | Clause Depth (m): | |
| Sedimentation | N/A | |

| Sample Proportions | | |
|--------------------|------|--|
| Cobbles | 0.0 | |
| Gravel | 27.0 | |
| Sand | 34.0 | |
| Silt & Clay | 39.0 | |

| Grading Analysis | |
|------------------------|------|
| D60 D10 | 0.48 |
| Uniformity Coefficient | N/A |

Date:

09/12/2013

| Remarks: | |
|----------|--|
|----------|--|

| Checked and | Agata K-Roche |
|-------------|-------------------|
| Approved: | Senior Technician |

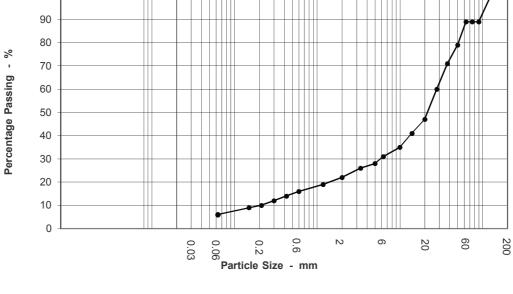
Unit 10 Wessex Road Bourne end Buckinghamshire SL8 5DT



DETERMINATION OF PARTICLE SIZE DISTRIBUTION WET SIEVING METHOD

| BS1377 : Part 2 : 19 | 90 Clause 9.2 | | |
|----------------------|---|----------------|-------------|
| Client: | Aberdeenshire Council | Lab Sample No: | S8877 |
| Contract No: | 5414 | Hole ID: | BH24 |
| Contract Name: | Stonehaven FAS | Sample Type: | В |
| Somalo | | Sample No: | 3 |
| Sample | Brown slightly clayey sandy GRAVEL with cobbles | Depth (m): | 0.50 - 1.00 |
| Description: | | Date Tested: | 28/11/2013 |





| Sievir | ng | Sediment | ation |
|---------------------|-----------|---------------------|-----------|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | | |
| 90 | 89 | | |
| 75 | 89 | | |
| 63 | 89 | | |
| 50 | 79 | | |
| 37.5 | 71 | | |
| 28 | 60 | | |
| 20 | 47 | | |
| 14 | 41 | | |
| 10 | 35 | | |
| 6.3 | 31 | | |
| 5 | 28 | | |
| 3.35 | 26 | | |
| 2 | 22 | | |
| 1.18 | 19 | | |
| 0.6 | 16 | | |
| 0.425 | 14 | | |
| 0.3 | 12 | | |
| 0.212 | 10 | | |
| 0.15 | 9 | | |
| 0.063 | 6 | | |

| Test Method | | |
|-------------------------|-------------------|--|
| BS 1377 : Part 2 : 1990 | | |
| Sieving | Clause Depth (m): | |
| Sedimentation | N/A | |

| Sample Proportions | | |
|--------------------|------|--|
| Cobbles | 11.0 | |
| Gravel | 67.0 | |
| Sand | 16.0 | |
| Silt & Clay | 6.0 | |
| | | |

| Grading Analysis | | |
|------------------------|--------|--|
| D60 | 28.00 | |
| D10 | 0.21 | |
| Uniformity Coefficient | 132.08 | |

Date:

09/12/2013

Remarks: Whole sample used. 3.5 kg, 150mm diameter cobble recovered from test sample.



 Approved:
 Senior Technician

 Unit 10 Wessex Road Bourne end Buckinghamshire SL8 5DT

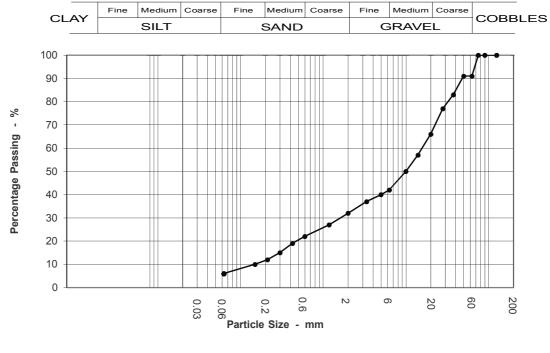
Agata K-Roche

Checked and



DETERMINATION OF PARTICLE SIZE DISTRIBUTION WET SIEVING METHOD

| BS1377 : Part 2 : 19 | 90 Clause 9.2 | | |
|----------------------|--|----------------|-------------|
| Client: | Aberdeenshire Council | Lab Sample No: | S8878 |
| Contract No: | 5414 | Hole ID: | BH24 |
| Contract Name: | Stonehaven FAS | Sample Type: | В |
| Somalo | | Sample No: | 6 |
| Sample | Brown slightly clayey very sandy GRAVEL with cobbles | Depth (m): | 1.20 - 1.70 |
| Description: | | Date Tested: | 05/12/2013 |



| Sievir | ng | Sedimen | tation |
|---------------------|-----------|---------------------|-----------|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | | |
| 90 | 100 | | |
| 75 | 100 | | |
| 63 | 91 | | |
| 50 | 91 | | |
| 37.5 | 83 | | |
| 28 | 77 | | |
| 20 | 66 | | |
| 14 | 57 | | |
| 10 | 50 | | |
| 6.3 | 42 | | |
| 5 | 40 | | |
| 3.35 | 37 | | |
| 2 | 32 | | |
| 1.18 | 27 | | |
| 0.6 | 22 | | |
| 0.425 | 19 | | |
| 0.3 | 15 | | |
| 0.212 | 12 | | |
| 0.15 | 10 | | |
| 0.063 | 6 | | |

| Test Method | |
|---------------------------|-----|
| BS 1377 : Part 2 : 1990 | |
| Sieving Clause Depth (m): | |
| Sedimentation | N/A |

| Sample Proportions | | |
|--------------------|------|--|
| Cobbles | 9.0 | |
| Gravel | 59.0 | |
| Sand | 26.0 | |
| Silt & Clay | 6.0 | |

| Grading Analysis | | |
|------------------------|--------|--|
| D60 | 16.00 | |
| D10 | 0.15 | |
| Uniformity Coefficient | 106.67 | |



Unit 10 Wessex Road Bourne end Buckinghamshire SL8 5DT Sheet 1 of 1

Remarks:

Checked and Approved:

Whole sample used

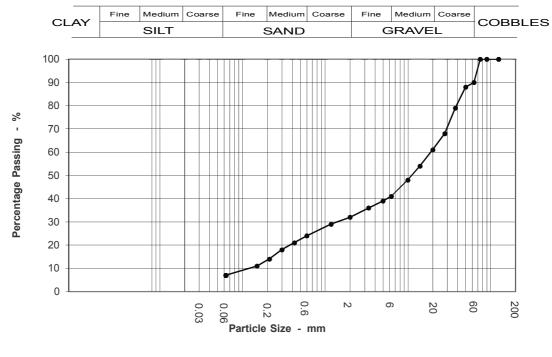
Agata K-Roche

Senior Technician



DETERMINATION OF PARTICLE SIZE DISTRIBUTION WET SIEVING METHOD

| BS1377 : Part 2 : 199 | 00 Clause 9.2 | | |
|-----------------------|---|----------------|-------------|
| Client: | Aberdeenshire Council | Lab Sample No: | S8879 |
| Contract No: | 5414 | Hole ID: | BH24 |
| Contract Name: | Stonehaven FAS | Sample Type: | В |
| Samula | | Sample No: | 9 |
| Sample | Brown slightly silty very sandy GRAVEL with cobbles | Depth (m): | 2.00 - 3.00 |
| Description: | | Date Tested: | 27/11/2013 |



| Sievir | ng | Sediment | tation |
|---------------|-----------|---------------|-------------|
| Particle Size | % Passing | Particle Size | % Passing |
| mm | _ | mm | ,or accorng |
| 125 | 100 | | |
| 90 | 100 | | |
| 75 | 100 | | |
| 63 | 90 | | |
| 50 | 88 | | |
| 37.5 | 79 | | |
| 28 | 68 | | |
| 20 | 61 | | |
| 14 | 54 | | |
| 10 | 48 | | |
| 6.3 | 41 | | |
| 5 | 39 | | |
| 3.35 | 36 | | |
| 2 | 32 | | |
| 1.18 | 29 | | |
| 0.6 | 24 | | |
| 0.425 | 21 | | |
| 0.3 | 18 | | |
| 0.212 | 14 | | |
| 0.15 | 11 | | |
| 0.063 | 7 | | |

| Test Method | |
|---------------------------|-----|
| BS 1377 : Part 2 : 1990 | |
| Sieving Clause Depth (m): | |
| Sedimentation | N/A |

| Sample Proportions | | |
|--------------------|------|--|
| Cobbles | 10.0 | |
| Gravel | 58.0 | |
| Sand | 25.0 | |
| Silt & Clay | 7.0 | |

| Grading Analysis | | |
|------------------------|--------|--|
| D60 | 19.14 | |
| D10 | 0.13 | |
| Uniformity Coefficient | 149.26 | |



Remarks:

Checked and Approved:

Whole sample used

Agata K-Roche

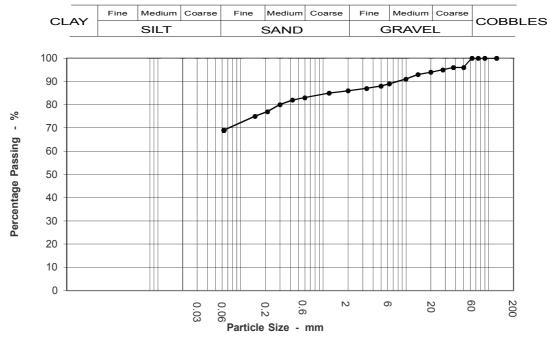
Senior Technician

Unit 10 Wessex Road Bourne end Buckinghamshire SL8 5DT



DETERMINATION OF PARTICLE SIZE DISTRIBUTION WET SIEVING METHOD

| BS1377 : Part 2 : 199 | 90 Clause 9.2 | | |
|-----------------------|--|----------------|-------------|
| Client: | Aberdeenshire Council | Lab Sample No: | S8880 |
| Contract No: | 5414 | Hole ID: | BH24 |
| Contract Name: | Stonehaven FAS | Sample Type: | В |
| Samula | | Sample No: | 11 |
| Sample | Brown clayey slightly garvelly slightly sandy SILT | Depth (m): | 3.20 - 4.00 |
| Description: | | Date Tested: | 05/12/2013 |



| Sievir | ng | Sediment | tation |
|---------------|-------------|---------------|-------------|
| Particle Size | % Passing | Particle Size | % Passing |
| mm | 70 T 23311g | mm | 70 T 43311g |
| 125 | 100 | | |
| 90 | 100 | | |
| 75 | 100 | | |
| 63 | 100 | | |
| 50 | 96 | | |
| 37.5 | 96 | | |
| 28 | 95 | | |
| 20 | 94 | | |
| 14 | 93 | | |
| 10 | 91 | | |
| 6.3 | 89 | | |
| 5 | 88 | | |
| 3.35 | 87 | | |
| 2 | 86 | | |
| 1.18 | 85 | | |
| 0.6 | 83 | | |
| 0.425 | 82 | | |
| 0.3 | 80 | | |
| 0.212 | 77 | | |
| 0.15 | 75 | | |
| 0.063 | 69 | | |

| Test Method | |
|---------------------------|-----|
| BS 1377 : Part 2 : 1990 | |
| Sieving Clause Depth (m): | |
| Sedimentation | N/A |

| Sample Proportions | | |
|--------------------|------|--|
| Cobbles | 0.0 | |
| Gravel | 14.0 | |
| Sand | 17.0 | |
| Silt & Clay | 69.0 | |

| Grading Analysis | | |
|------------------------|-----|--|
| D60 D10 | | |
| Uniformity Coefficient | N/A | |



Remarks:

Checked and Approved:

Whole sample used

Agata K-Roche

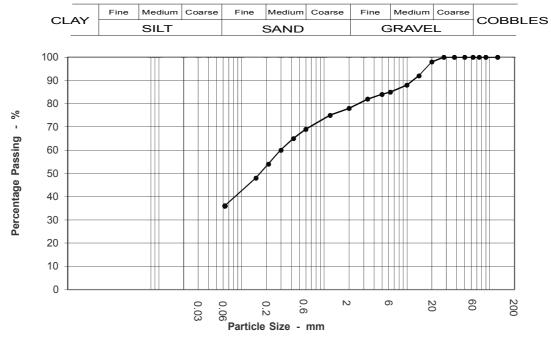
Senior Technician

Unit 10 Wessex Road Bourne end Buckinghamshire SL8 5DT



DETERMINATION OF PARTICLE SIZE DISTRIBUTION WET SIEVING METHOD

| BS1377 : Part 2 : 19 | 90 Clause 9.2 | | |
|----------------------|--|----------------|-------------|
| Client: | Aberdeenshire Council | Lab Sample No: | S8884 |
| Contract No: | 5414 | Hole ID: | BH24 |
| Contract Name: | Stonehaven FAS | Sample Type: | В |
| Somalo | | Sample No: | 17 |
| Sample | Reddish brown slightly gravelly sandy silty CLAY | Depth (m): | 5.00 - 5.50 |
| Description: | | Date Tested: | 05/12/2013 |



| Sievir | ng | Sedimen | tation |
|---------------------|-----------|---------------------|-----------|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | | |
| 90 | 100 | | |
| 75 | 100 | | |
| 63 | 100 | | |
| 50 | 100 | | |
| 37.5 | 100 | | |
| 28 | 100 | | |
| 20 | 98 | | |
| 14 | 92 | | |
| 10 | 88 | | |
| 6.3 | 85 | | |
| 5 | 84 | | |
| 3.35 | 82 | | |
| 2 | 78 | | |
| 1.18 | 75 | | |
| 0.6 | 69 | | |
| 0.425 | 65 | | |
| 0.3 | 60 | | |
| 0.212 | 54 | | |
| 0.15 | 48 | | |
| 0.063 | 36 | | |

| Test Method | | | | |
|-------------------------|-------------------|--|--|--|
| BS 1377 : Part 2 : 1990 | | | | |
| Sieving | Clause Depth (m): | | | |
| Sedimentation | N/A | | | |

| Sample Proportions | | | | |
|--------------------|------|--|--|--|
| Cobbles | 0.0 | | | |
| Gravel | 22.0 | | | |
| Sand | 42.0 | | | |
| Silt & Clay | 36.0 | | | |

| Grading Analysis | | | | |
|------------------------|------|--|--|--|
| D60 D10 | 0.30 | | | |
| Uniformity Coefficient | N/A | | | |

Date:

09/12/2013

1489

Senior Technician

Unit 10 Wessex Road Bourne end Buckinghamshire SL8 5DT

Agata K-Roche

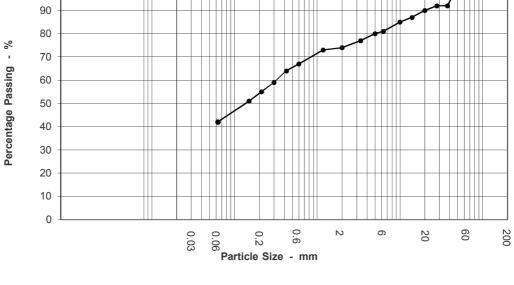
Remarks:

Checked and Approved:



DETERMINATION OF PARTICLE SIZE DISTRIBUTION WET SIEVING METHOD

| Client: | Aberdeenshire Council | | | | | | | Lab Sample No: | | | S8886 |
|----------------|-----------------------|------------------------|-----------|-----------|---------|------------|--------|----------------|---------|--------|-------------|
| Contract No: | 5414 | | | | | | Hole | D: | | BH24 | |
| Contract Name: | Stonehaven FAS | | | | | Sam | ple Ty | oe: | В | | |
| Somalo | | | | | | Sample No: | | 20 | | | |
| Sample | Redish brown | ı slightl ^ı | y gravell | y slightl | y sandy | / silty CL | AY | Dep | th (m): | | 6.00 - 6.75 |
| Description: | | | | | | | | Date | Teste | d: | 02/12/2013 |
| | | Fine | Medium | Coarse | Fine | Medium | Coarse | Fine | Medium | Coarse | |
| | CLAY | | SILT | | | SAND | | G | RAVE | L | COBBLES |
| | | | | | | | | | | | · |
| | | | | | | | | | | | |
| | 100 | | | | | | | | | | ₽⋳⋪⊢●──┐ |



| Sievir | ng | Sediment | tation |
|---------------------|-----------|---------------------|-----------|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | | |
| 90 | 100 | | |
| 75 | 100 | | |
| 63 | 100 | | |
| 50 | 100 | | |
| 37.5 | 92 | | |
| 28 | 92 | | |
| 20 | 90 | | |
| 14 | 87 | | |
| 10 | 85 | | |
| 6.3 | 81 | | |
| 5 | 80 | | |
| 3.35 | 77 | | |
| 2 | 74 | | |
| 1.18 | 73 | | |
| 0.6 | 67 | | |
| 0.425 | 64 | | |
| 0.3 | 59 | | |
| 0.212 | 55 | | |
| 0.15 | 51 | | |
| 0.063 | 42 | | |

| Test Method | | | | |
|-------------------------|-------------------|--|--|--|
| BS 1377 : Part 2 : 1990 | | | | |
| Sieving | Clause Depth (m): | | | |
| Sedimentation | N/A | | | |

| Sample Proportions | | | | |
|--------------------|------|--|--|--|
| Cobbles | 0.0 | | | |
| Gravel | 26.0 | | | |
| Sand | 32.0 | | | |
| Silt & Clay | 42.0 | | | |

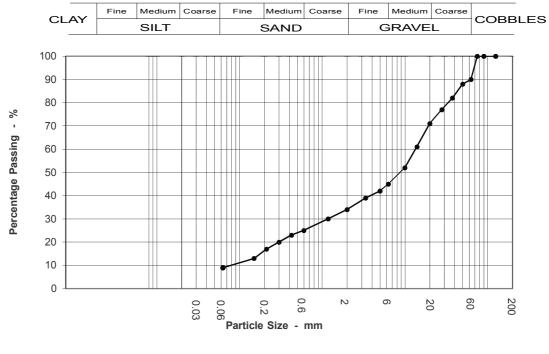
| Grading Ana | lysis |
|------------------------|-------|
| D60 D10 | 0.33 |
| Uniformity Coefficient | N/A |

| Checked and | Agata K-Roche | | | |
|--------------------|--------------------------------------|--|--|--|
| Approved: | Senior Technician | | | |
| Unit 10 Wessex Roa | d Bourne end Buckinghamshire SL8 5DT | | | |



DETERMINATION OF PARTICLE SIZE DISTRIBUTION WET SIEVING METHOD

| BS1377 : Part 2 : 19 | 90 Clause 9.2 | | |
|----------------------|---|----------------|-------------|
| Client: | Aberdeenshire Council | Lab Sample No: | S8887 |
| Contract No: | 5414 | Hole ID: | BH25 |
| Contract Name: | Stonehaven FAS | Sample Type: | В |
| Somalo | | Sample No: | 3 |
| Sample | Brown clayey very sandy GRAVEL with cobbles | Depth (m): | 0.50 - 1.00 |
| Description: | | Date Tested: | 02/12/2013 |



| Sieving | | Sedimen | tation |
|---------------------|-----------|---------------------|-----------|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | | |
| 90 | 100 | | |
| 75 | 100 | | |
| 63 | 90 | | |
| 50 | 88 | | |
| 37.5 | 82 | | |
| 28 | 77 | | |
| 20 | 71 | | |
| 14 | 61 | | |
| 10 | 52 | | |
| 6.3 | 45 | | |
| 5 | 42 | | |
| 3.35 | 39 | | |
| 2 | 34 | | |
| 1.18 | 30 | | |
| 0.6 | 25 | | |
| 0.425 | 23 | | |
| 0.3 | 20 | | |
| 0.212 | 17 | | |
| 0.15 | 13 | | |
| 0.063 | 9 | | |

| Test Method | | |
|-------------------------|-------------------|--|
| BS 1377 : Part 2 : 1990 | | |
| Sieving | Clause Depth (m): | |
| Sedimentation | N/A | |

| Sample Proportions | | |
|--------------------|------|--|
| Cobbles | 10.0 | |
| Gravel | 56.0 | |
| Sand | 25.0 | |
| Silt & Clay | 9.0 | |

| Grading Analysis | | |
|------------------------|--------|--|
| D60 | 13.56 | |
| D10 | 0.08 | |
| Uniformity Coefficient | 159.95 | |

1489

| Approved: | Senior Technician |
|---------------------|------------------------------------|
| Unit 10 Wessex Road | Bourne end Buckinghamshire SL8 5DT |

Agata K-Roche

Date: 09/12/2013

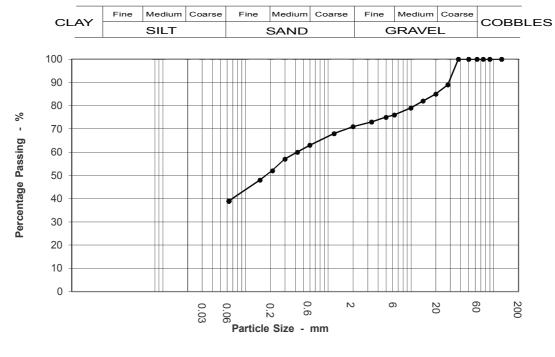
Remarks:

Checked and Approved:



DETERMINATION OF PARTICLE SIZE DISTRIBUTION WET SIEVING METHOD

| BS1377 : Part 2 : 19 | 90 Clause 9.2 | | |
|----------------------|---|----------------|-------------|
| Client: | Aberdeenshire Council | Lab Sample No: | S8889 |
| Contract No: | 5414 | Hole ID: | BH25 |
| Contract Name: | Stonehaven FAS | Sample Type: | В |
| Somalo | | Sample No: | 10 |
| Sample | Reddish brown slightly sandy slightly gravelly silty CLAY | Depth (m): | 2.60 - 3.00 |
| Description: | | Date Tested: | 29/11/2013 |



| Sieving | | Sedimen | tation |
|---------------------|-----------|---------------------|-----------|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | | |
| 90 | 100 | | |
| 75 | 100 | | |
| 63 | 100 | | |
| 50 | 100 | | |
| 37.5 | 100 | | |
| 28 | 89 | | |
| 20 | 85 | | |
| 14 | 82 | | |
| 10 | 79 | | |
| 6.3 | 76 | | |
| 5 | 75 | | |
| 3.35 | 73 | | |
| 2 | 71 | | |
| 1.18 | 68 | | |
| 0.6 | 63 | | |
| 0.425 | 60 | | |
| 0.3 | 57 | | |
| 0.212 | 52 | | |
| 0.15 | 48 | | |
| 0.063 | 39 | | |

| Test Method | |
|-------------------------|-------------------|
| BS 1377 : Part 2 : 1990 | |
| Sieving | Clause Depth (m): |
| Sedimentation | N/A |

| Sample Proportions | | |
|--------------------|------|--|
| Cobbles | 0.0 | |
| Gravel | 29.0 | |
| Sand | 32.0 | |
| Silt & Clay | 39.0 | |

| Grading Analysis | |
|------------------------|------|
| D60 D10 | 0.43 |
| Uniformity Coefficient | N/A |

1489

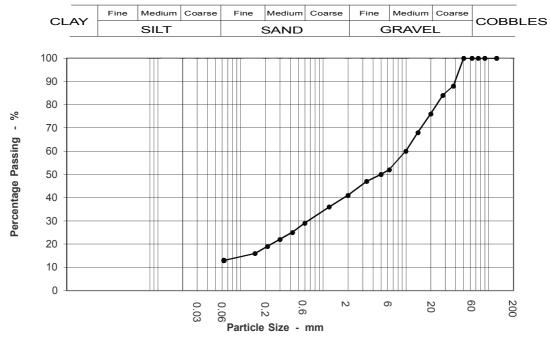
Remarks:

| Checked and | Agata K-Roche | |
|---------------------|--------------------------------------|--|
| Approved: | Senior Technician | |
| Unit 10 Wessex Road | d Bourne end Buckinghamshire SL8 5DT | |



DETERMINATION OF PARTICLE SIZE DISTRIBUTION WET SIEVING METHOD

| BS1377 : Part 2 : 19 | 90 Clause 9.2 | | |
|----------------------|--------------------------------|----------------|-------------|
| Client: | Aberdeenshire Council | Lab Sample No: | S8888 |
| Contract No: | 5414 | Hole ID: | BH25 |
| Contract Name: | Stonehaven FAS | Sample Type: | D |
| Somalo | | Sample No: | 7 |
| Sample | Brown clayey very sandy GRAVEL | Depth (m): | 2.00 - 2.45 |
| Description: | | Date Tested: | 02/12/2013 |



| Sieving | | Sediment | tation |
|---------------------|-----------|---------------------|-----------|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | | |
| 90 | 100 | | |
| 75 | 100 | | |
| 63 | 100 | | |
| 50 | 100 | | |
| 37.5 | 88 | | |
| 28 | 84 | | |
| 20 | 76 | | |
| 14 | 68 | | |
| 10 | 60 | | |
| 6.3 | 52 | | |
| 5 | 50 | | |
| 3.35 | 47 | | |
| 2 | 41 | | |
| 1.18 | 36 | | |
| 0.6 | 29 | | |
| 0.425 | 25 | | |
| 0.3 | 22 | | |
| 0.212 | 19 | | |
| 0.15 | 16 | | |
| 0.063 | 13 | | |

| Test Method | | |
|---------------------------|-----|--|
| BS 1377 : Part 2 : 1990 | | |
| Sieving Clause Depth (m): | | |
| Sedimentation | N/A | |

| Sample Proportions | | | |
|--------------------|------|--|--|
| Cobbles | 0.0 | | |
| Gravel | 59.0 | | |
| Sand | 28.0 | | |
| Silt & Clay | 13.0 | | |

| Grading Analysis | | |
|------------------------|-------|--|
| D60 D10 | 10.00 | |
| Uniformity Coefficient | N/A | |



| Remarks: | Sample combined with B8 @ 2.0-2.5m |
|-------------|------------------------------------|
| Checked and | Agata K-Roche |

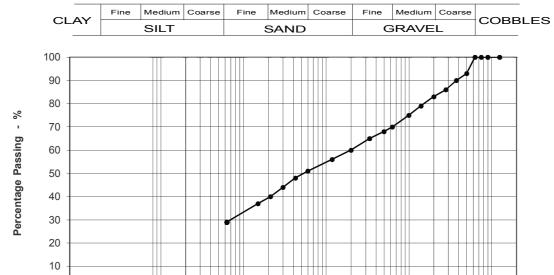
Checked andAgata K-RocheApproved:Senior Technician

Unit 10 Wessex Road Bourne end Buckinghamshire SL8 5DT



DETERMINATION OF PARTICLE SIZE DISTRIBUTION WET SIEVING METHOD

| BS1377 : Part 2 : 19 | 90 Clause 9.2 | | |
|----------------------|--|----------------|-------------|
| Client: | Aberdeenshire Council | Lab Sample No: | S8891 |
| Contract No: | 5414 | Hole ID: | BH25 |
| Contract Name: | Stonehaven FAS | Sample Type: | В |
| Samala | | Sample No: | 17 |
| Sample | Reddish brown slightly sandy gravelly CLAY | Depth (m): | 4.60 - 5.00 |
| Description: | | Date Tested: | 29/11/2013 |



0.00 N.N.00 Particle Size - mm

0.03

N

ი

| Sieving | | Sedimen | mentation | |
|---------------------|-----------|---------------------|-----------|--|
| Particle Size mm | % Passing | Particle Size mm | % Passing | |
| 125 | 100 | | | |
| 90 | 100 | | | |
| 75 | 100 | | | |
| 63 | 100 | | | |
| 50 | 93 | | | |
| 37.5 | 90 | | | |
| 28 | 86 | | | |
| 20 | 83 | | | |
| 14 | 79 | | | |
| 10 | 75 | | | |
| 6.3 | 70 | | | |
| 5 | 68 | | | |
| 3.35 | 65 | | | |
| 2 | 60 | | | |
| 1.18 | 56 | | | |
| 0.6 | 51 | | | |
| 0.425 | 48 | | | |
| 0.3 | 44 | | | |
| 0.212 | 40 | | | |
| 0.15 | 37 | | | |
| 0.063 | 29 | | | |

0

| Test Method | | |
|---------------------------|-----|--|
| BS 1377 : Part 2 : 1990 | | |
| Sieving Clause Depth (m): | | |
| Sedimentation | N/A | |

20

60

200

| Sample Proportions | | | |
|--------------------|------|--|--|
| Cobbles | 0.0 | | |
| Gravel | 40.0 | | |
| Sand | 31.0 | | |
| Silt & Clay | 29.0 | | |

| Grading Analysis | | |
|------------------------|------|--|
| D60 D10 | 2.00 | |
| Uniformity Coefficient | N/A | |



Unit 10 Wessex Road Bourne end Buckinghamshire SL8 5DT Sheet 1 of 1

Remarks:

Checked and Approved:

Whole sample used

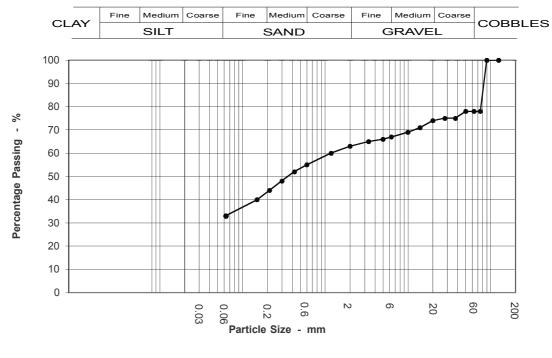
Agata K-Roche

Senior Technician



DETERMINATION OF PARTICLE SIZE DISTRIBUTION WET SIEVING METHOD

| BS1377 : Part 2 : 1990 Clause 9.2 | | | |
|-----------------------------------|---|----------------|-------------|
| Client: | Aberdeenshire Council | Lab Sample No: | S8893 |
| Contract No: | 5414 | Hole ID: | BH25 |
| Contract Name: | Stonehaven FAS | Sample Type: | В |
| Sample | Reddish brown gravelly very clayey SAND with frequent | Sample No: | 22 |
| - | cobbles | Depth (m): | 6.00 - 6.50 |
| Description: | | Date Tested: | 05/12/2013 |



| Sievir | ng | Sediment | tation |
|---------------------|-----------|---------------------|-----------|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | | |
| 90 | 100 | | |
| 75 | 78 | | |
| 63 | 78 | | |
| 50 | 78 | | |
| 37.5 | 75 | | |
| 28 | 75 | | |
| 20 | 74 | | |
| 14 | 71 | | |
| 10 | 69 | | |
| 6.3 | 67 | | |
| 5 | 66 | | |
| 3.35 | 65 | | |
| 2 | 63 | | |
| 1.18 | 60 | | |
| 0.6 | 55 | | |
| 0.425 | 52 | | |
| 0.3 | 48 | | |
| 0.212 | 44 | | |
| 0.15 | 40 | | |
| 0.063 | 33 | | |

| Test Method | | |
|-------------------------|-------------------|--|
| BS 1377 : Part 2 : 1990 | | |
| Sieving | Clause Depth (m): | |
| Sedimentation | N/A | |

| Sample Proportions | | | |
|--------------------|------|--|--|
| Cobbles | 22.0 | | |
| Gravel | 15.0 | | |
| Sand | 30.0 | | |
| Silt & Clay | 33.0 | | |

| Grading Analysis | | |
|------------------------|------|--|
| D60 D10 | 1.18 | |
| Uniformity Coefficient | N/A | |



Remarks:

Checked and Approved:

Whole sample used

Agata K-Roche

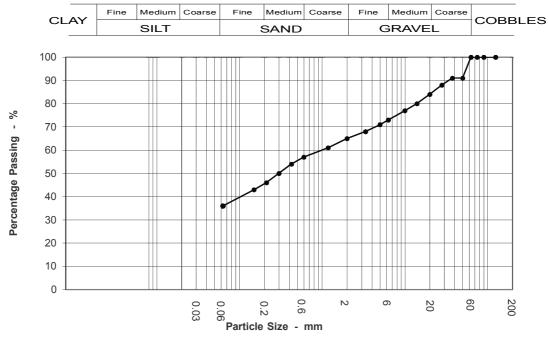
Senior Technician

Unit 10 Wessex Road Bourne end Buckinghamshire SL8 5DT



DETERMINATION OF PARTICLE SIZE DISTRIBUTION WET SIEVING METHOD

| BS1377 : Part 2 : 19 | 90 Clause 9.2 | | |
|----------------------|--|----------------|-------------|
| Client: | Aberdeenshire Council | Lab Sample No: | S8895 |
| Contract No: | 5414 | Hole ID: | BH25 |
| Contract Name: | Stonehaven FAS | Sample Type: | В |
| Sample | | Sample No: | 29 |
| | Reddish brown slightly sandy gravelly CLAY | Depth (m): | 8.00 - 8.50 |
| Description: | | Date Tested: | 02/12/2013 |



| Sievir | ng | Sediment | tation |
|---------------|-------------|---------------|-------------|
| Particle Size | % Passing | Particle Size | % Passing |
| mm | 70 T assing | mm | 70 T assing |
| 125 | 100 | | |
| 90 | 100 | | |
| 75 | 100 | | |
| 63 | 100 | | |
| 50 | 91 | | |
| 37.5 | 91 | | |
| 28 | 88 | | |
| 20 | 84 | | |
| 14 | 80 | | |
| 10 | 77 | | |
| 6.3 | 73 | | |
| 5 | 71 | | |
| 3.35 | 68 | | |
| 2 | 65 | | |
| 1.18 | 61 | | |
| 0.6 | 57 | | |
| 0.425 | 54 | | |
| 0.3 | 50 | | |
| 0.212 | 46 | | |
| 0.15 | 43 | | |
| 0.063 | 36 | | |

| Test Method | | |
|-------------------------|-------------------|--|
| BS 1377 : Part 2 : 1990 | | |
| Sieving | Clause Depth (m): | |
| Sedimentation | N/A | |

| Sample Proportions | | | |
|--------------------|------|--|--|
| Cobbles | 0.0 | | |
| Gravel | 35.0 | | |
| Sand | 29.0 | | |
| Silt & Clay | 36.0 | | |

| Grading Analysis | | |
|------------------------|------|--|
| D60 D10 | 1.04 | |
| Uniformity Coefficient | N/A | |



Sheet 1 of 1

Remarks:

Checked and Approved:

Whole sample used

Agata K-Roche

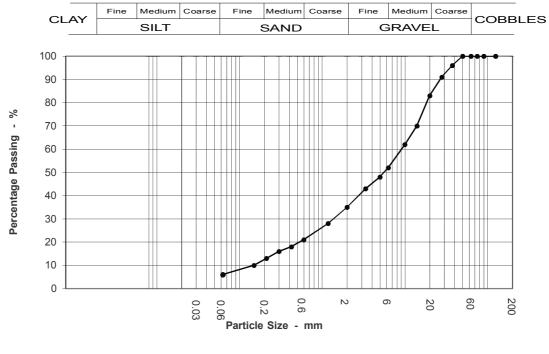
Senior Technician

Unit 10 Wessex Road Bourne end Buckinghamshire SL8 5DT



DETERMINATION OF PARTICLE SIZE DISTRIBUTION WET SIEVING METHOD

| BS1377 : Part 2 : 19 | 90 Clause 9.2 | | |
|----------------------|-------------------------|----------------|-------------|
| Client: | Aberdeenshire Council | Lab Sample No: | S8896 |
| Contract No: | 5414 | Hole ID: | BH26 |
| Contract Name: | Stonehaven FAS | Sample Type: | В |
| Commis | | Sample No: | 5 |
| Sample | Brown very sandy GRAVEL | Depth (m): | 0.80 - 1.20 |
| Description: | | Date Tested: | 04/12/2013 |



| Sievir | ng | Sedimen | tation |
|---------------------|-----------|---------------------|-----------|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | | |
| 90 | 100 | | |
| 75 | 100 | | |
| 63 | 100 | | |
| 50 | 100 | | |
| 37.5 | 96 | | |
| 28 | 91 | | |
| 20 | 83 | | |
| 14 | 70 | | |
| 10 | 62 | | |
| 6.3 | 52 | | |
| 5 | 48 | | |
| 3.35 | 43 | | |
| 2 | 35 | | |
| 1.18 | 28 | | |
| 0.6 | 21 | | |
| 0.425 | 18 | | |
| 0.3 | 16 | | |
| 0.212 | 13 | | |
| 0.15 | 10 | | |
| 0.063 | 6 | | |

| Test Method | | |
|-------------------------|-------------------|--|
| BS 1377 : Part 2 : 1990 | | |
| Sieving | Clause Depth (m): | |
| Sedimentation | N/A | |

| Sample Proportions | | |
|--------------------|------|--|
| Cobbles | 0.0 | |
| Gravel | 65.0 | |
| Sand | 29.0 | |
| Silt & Clay | 6.0 | |

| Grading Analysis | | |
|------------------------|-------|--|
| D60 | 9.26 | |
| D10 | 0.15 | |
| Uniformity Coefficient | 61.73 | |

Date:

09/12/2013



Approved:

Senior Technician

Unit 10 Wessex Road Bourne end Buckinghamshire SL8 5DT

Agata K-Roche

Whole sample used

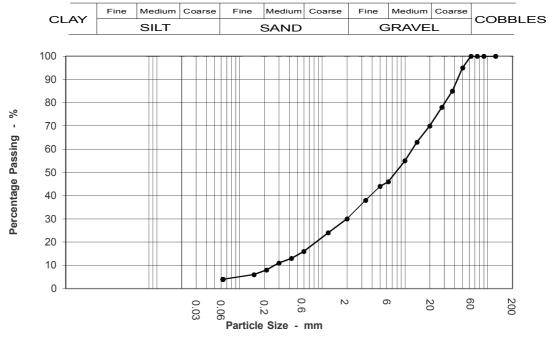
Remarks:

Checked and



DETERMINATION OF PARTICLE SIZE DISTRIBUTION WET SIEVING METHOD

| BS1377 : Part 2 : 19 | 00 Clause 9.2 | | |
|----------------------|-------------------------|----------------|-------------|
| Client: | Aberdeenshire Council | Lab Sample No: | S8897 |
| Contract No: | 5414 | Hole ID: | BH26 |
| Contract Name: | Stonehaven FAS | Sample Type: | В |
| Samula | | Sample No: | 7 |
| Sample | Brown very sandy GRAVEL | Depth (m): | 1.20 - 2.00 |
| Description: | | Date Tested: | 02/12/2013 |



| Sievir | ng | Sedimen | tation |
|---------------------|-----------|---------------------|-----------|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | | |
| 90 | 100 | | |
| 75 | 100 | | |
| 63 | 100 | | |
| 50 | 95 | | |
| 37.5 | 85 | | |
| 28 | 78 | | |
| 20 | 70 | | |
| 14 | 63 | | |
| 10 | 55 | | |
| 6.3 | 46 | | |
| 5 | 44 | | |
| 3.35 | 38 | | |
| 2 | 30 | | |
| 1.18 | 24 | | |
| 0.6 | 16 | | |
| 0.425 | 13 | | |
| 0.3 | 11 | | |
| 0.212 | 8 | | |
| 0.15 | 6 | | |
| 0.063 | 4 | | |

| Test Method | |
|---------------------------|-----|
| BS 1377 : Part 2 : 1990 | |
| Sieving Clause Depth (m): | |
| Sedimentation | N/A |

| Sample Proportions | | |
|--------------------|------|--|
| Cobbles | 0.0 | |
| Gravel | 70.0 | |
| Sand | 26.0 | |
| Silt & Clay | 4.0 | |

| Grading Analysis | | |
|------------------------|---------------|--|
| D60 D10 | 12.50 0.27 | |
| Uniformity Coefficient | 46.18 | |

Date:

09/12/2013



Remarks:

Checked and Approved:

Senior Technician

Unit 10 Wessex Road Bourne end Buckinghamshire SL8 5DT

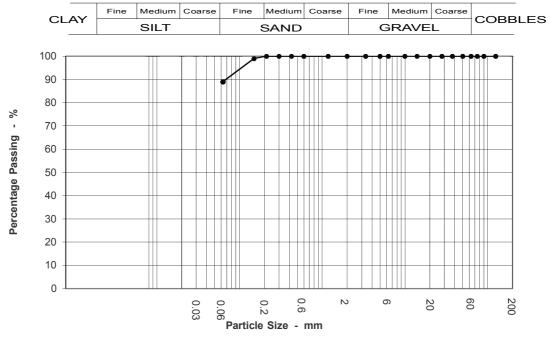
Agata K-Roche

Whole sample used



DETERMINATION OF PARTICLE SIZE DISTRIBUTION WET SIEVING METHOD

| BS1377 : Part 2 : 19 | 90 Clause 9.2 | | |
|----------------------|---------------------------|----------------|-------------|
| Client: | Aberdeenshire Council | Lab Sample No: | S8899 |
| Contract No: | 5414 | Hole ID: | BH26 |
| Contract Name: | Stonehaven FAS | Sample Type: | В |
| Samula | | Sample No: | 11 |
| Sample | Brown slightly sandy SILT | Depth (m): | 2.30 - 3.00 |
| Description: | | Date Tested: | 29/11/2013 |



| Sievi | ng | Sedimen | tation |
|---------------------|-----------|---------------------|-----------|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | | |
| 90 | 100 | | |
| 75 | 100 | | |
| 63 | 100 | | |
| 50 | 100 | | |
| 37.5 | 100 | | |
| 28 | 100 | | |
| 20 | 100 | | |
| 14 | 100 | | |
| 10 | 100 | | |
| 6.3 | 100 | | |
| 5 | 100 | | |
| 3.35 | 100 | | |
| 2 | 100 | | |
| 1.18 | 100 | | |
| 0.6 | 100 | | |
| 0.425 | 100 | | |
| 0.3 | 100 | | |
| 0.212 | 100 | | |
| 0.15 | 99 | | |
| 0.063 | 89 | | |

| Test Method | |
|---------------------------|--|
| BS 1377 : Part 2 : 1990 | |
| Sieving Clause Depth (m): | |
| Sedimentation N/A | |

| Sample Proportions | | |
|--------------------|------|--|
| • • | | |
| Cobbles | 0.0 | |
| Gravel | 0.0 | |
| Sand | 11.0 | |
| Silt & Clay | 89.0 | |
| | | |

| Grading Analysis | | |
|------------------------|-----|--|
| D60 | | |
| D10 | | |
| Uniformity Coefficient | N/A | |

Date:

09/12/2013

1489

Remarks: Ch

| Checked and | Agata K-Roche |
|-------------|-------------------|
| Approved: | Senior Technician |

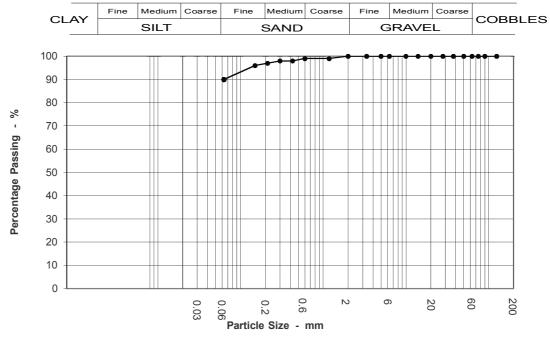
Senior Technician

Unit 10 Wessex Road Bourne end Buckinghamshire SL8 5DT



DETERMINATION OF PARTICLE SIZE DISTRIBUTION WET SIEVING METHOD

| Client: | Aberdeenshire Council | Lab Sample No: | S8901 |
|----------------|-----------------------------------|----------------|-------------|
| Contract No: | 5414 | Hole ID: | BH26 |
| Contract Name: | Stonehaven FAS | Sample Type: | В |
| Sampla | | Sample No: | 14 |
| Sample | Reddish brown slightly sandy SILT | Depth (m): | 3.00 - 4.00 |
| Description: | | Date Tested: | 29/11/2013 |



| Sievir | ng | Sediment | tation |
|---------------|-------------|---------------|--------------|
| Particle Size | % Passing | Particle Size | % Passing |
| mm | /or dooling | mm | 70 T dooling |
| 125 | 100 | | |
| 90 | 100 | | |
| 75 | 100 | | |
| 63 | 100 | | |
| 50 | 100 | | |
| 37.5 | 100 | | |
| 28 | 100 | | |
| 20 | 100 | | |
| 14 | 100 | | |
| 10 | 100 | | |
| 6.3 | 100 | | |
| 5 | 100 | | |
| 3.35 | 100 | | |
| 2 | 100 | | |
| 1.18 | 99 | | |
| 0.6 | 99 | | |
| 0.425 | 98 | | |
| 0.3 | 98 | | |
| 0.212 | 97 | | |
| 0.15 | 96 | | |
| 0.063 | 90 | | |

Agata K-Roche

Senior Technician

Unit 10 Wessex Road Bourne end Buckinghamshire SL8 5DT

| Test Method | | | |
|---------------------------|-----|--|--|
| BS 1377 : Part 2 : 1990 | | | |
| Sieving Clause Depth (m): | | | |
| Sedimentation | N/A | | |

| Sample Proportions | | |
|--------------------|------|--|
| Cobbles | 0.0 | |
| Gravel | 0.0 | |
| Sand | 10.0 | |
| Silt & Clay | 90.0 | |

| Grading Analysis | | |
|------------------------|-----|--|
| D60 D10 | | |
| Uniformity Coefficient | N/A | |

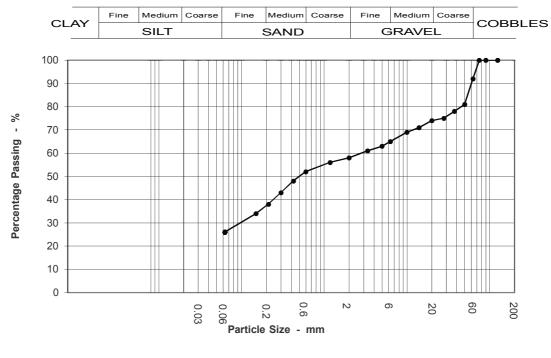
Remarks:

Checked and Approved:



DETERMINATION OF PARTICLE SIZE DISTRIBUTION WET SIEVING METHOD

| BS1377 : Part 2 : 199 | 00 Clause 9.2 | | |
|-----------------------|--|----------------|-------------|
| Client: | Aberdeenshire Council | Lab Sample No: | S8903 |
| Contract No: | 5414 | Hole ID: | BH26 |
| Contract Name: | Stonehaven FAS | Sample Type: | В |
| Sampla | Reddish brown slightly sandy slightly gravelly CLAY with | Sample No: | 21 |
| • | cobbles | Depth (m): | 5.60 - 6.00 |
| Description: | CODICS | Date Tested: | 05/12/2013 |



| Sievir | ng | Sediment | tation |
|---------------------|-----------|---------------------|-----------|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | | |
| 90 | 100 | | |
| 75 | 100 | | |
| 63 | 92 | | |
| 50 | 81 | | |
| 37.5 | 78 | | |
| 28 | 75 | | |
| 20 | 74 | | |
| 14 | 71 | | |
| 10 | 69 | | |
| 6.3 | 65 | | |
| 5 | 63 | | |
| 3.35 | 61 | | |
| 2 | 58 | | |
| 1.18 | 56 | | |
| 0.6 | 52 | | |
| 0.425 | 48 | | |
| 0.3 | 43 | | |
| 0.212 | 38 | | |
| 0.15 | 34 | | |
| 0.063 | 26 | | |

| Test Method | | |
|-------------------------|-------------------|--|
| BS 1377 : Part 2 : 1990 | | |
| Sieving | Clause Depth (m): | |
| Sedimentation | N/A | |

| Sample Proportions | | |
|--------------------|------|--|
| Cobbles | 8.0 | |
| Gravel | 34.0 | |
| Sand | 32.0 | |
| Silt & Clay | 26.0 | |

| Grading Analysis | | |
|------------------------|------|--|
| D60 D10 | 2.90 | |
| Uniformity Coefficient | N/A | |



Approved: Unit 10 Wessex Road Bourne end Buckinghamshire SL8 5DT

Remarks:

Checked and

Whole sample used

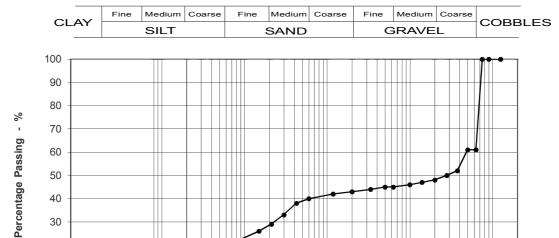
Agata K-Roche

Senior Technician



DETERMINATION OF PARTICLE SIZE DISTRIBUTION WET SIEVING METHOD

| BS1377 : Part 2 : 199 | 90 Clause 9.2 | | |
|-----------------------|--|----------------|-------------|
| Client: | Aberdeenshire Council | Lab Sample No: | S8905 |
| Contract No: | 5414 | Hole ID: | BH26 |
| Contract Name: | Stonehaven FAS | Sample Type: | В |
| Somalo | | Sample No: | 24 |
| Sample | Light brown gravelly very silty SAND with frequent cobbles | Depth (m): | 7.00 - 7.50 |
| Description: | | Date Tested: | 02/12/2013 |



N

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| 0 | | 0.03 | 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 | 0 22 e Size - | 0.6 mm |
|---------------------|-----------|---------------------|---|---------------------|-----------|
| | | | T artici | 0 0120 - | |
| Sievir | ng | Sedimen | tation | | |
| Particle Size mm | % Passing | Particle Size mm | % Passing | | |
| 125 | 100 | | | 1 | 9 |
| 90 | 100 | | | | |
| 75 | 100 | | | | |
| 63 | 61 | | | | |
| 50 | 61 | | | | |
| 37.5 | 52 | | | | - |
| 28 | 50 | | | | |
| 20 | 48 | | | | |
| 14 | 47 | | | | |
| 10 | 46 | | | | |
| 6.3 | 45 | | | | |
| 5 | 45 | | | | |
| 3.35 | 44 | | | | |
| 2 | 43 | | | | |
| 1.18 | 42 | | | | 6 |
| 0.6 | 40 | | | | |
| 0.425 | 38 | | | | |
| 0.3 | 33 | | | | |
| 0.212 | 29 | | | | |
| 0.15 | 26 | | | | |
| 0.063 | 20 | | | | U |

20 10 0

| Test Method | | | | | |
|-------------------------|-------------------|--|--|--|--|
| BS 1377 : Part 2 : 1990 | | | | | |
| Sieving | Clause Depth (m): | | | | |
| Sedimentation | N/A | | | | |

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| Sample Proportions | | | | |
|--------------------|------|--|--|--|
| Cobbles | 39.0 | | | |
| Gravel | 18.0 | | | |
| Sand | 23.0 | | | |
| Silt & Clay | 20.0 | | | |

| Grading Analysis | | | | | |
|------------------------|-------|--|--|--|--|
| D60 D10 | 48.61 | | | | |
| Uniformity Coefficient | N/A | | | | |



Unit 10 Wessex Road Bourne end Buckinghamshire SL8 5DT Sheet 1 of 1

Remarks:

Checked and Approved:

Whole sample used

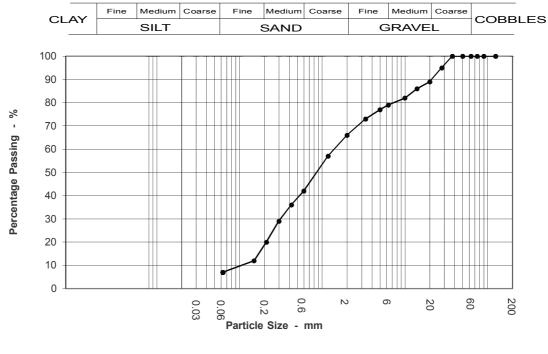
Agata K-Roche

Senior Technician



DETERMINATION OF PARTICLE SIZE DISTRIBUTION WET SIEVING METHOD

| BS1377 : Part 2 : 19 | 90 Clause 9.2 | | |
|----------------------|---------------------------------|----------------|-------------|
| Client: | Aberdeenshire Council | Lab Sample No: | S8907 |
| Contract No: | 5414 | Hole ID: | BH27 |
| Contract Name: | Stonehaven FAS | Sample Type: | В |
| Sampla | | Sample No: | 5 |
| Sample | Brown clayey very gravelly SAND | Depth (m): | 0.50 - 1.20 |
| Description: | | Date Tested: | 04/12/2013 |



| Sieving | | Sedimen | tation |
|---------------------|-----------|---------------------|-----------|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | | |
| 90 | 100 | | |
| 75 | 100 | | |
| 63 | 100 | | |
| 50 | 100 | | |
| 37.5 | 100 | | |
| 28 | 95 | | |
| 20 | 89 | | |
| 14 | 86 | | |
| 10 | 82 | | |
| 6.3 | 79 | | |
| 5 | 77 | | |
| 3.35 | 73 | | |
| 2 | 66 | | |
| 1.18 | 57 | | |
| 0.6 | 42 | | |
| 0.425 | 36 | | |
| 0.3 | 29 | | |
| 0.212 | 20 | | |
| 0.15 | 12 | | |
| 0.063 | 7 | | |

| Test Method | | |
|---------------------------|-----|--|
| BS 1377 : Part 2 : 1990 | | |
| Sieving Clause Depth (m): | | |
| Sedimentation | N/A | |

| Sample Proportions | | | |
|--------------------|------|--|--|
| Cobbles | 0.0 | | |
| Gravel | 34.0 | | |
| Sand | 59.0 | | |
| Silt & Clay | 7.0 | | |

| Grading Analysis | | | |
|------------------------|-------|--|--|
| D60 | 1.45 | | |
| D10 | 0.12 | | |
| Uniformity Coefficient | 12.62 | | |

Date:

09/12/2013

1489

Senior Technician Unit 10 Wessex Road Bourne end Buckinghamshire SL8 5DT

Agata K-Roche

Sheet 1 of 1

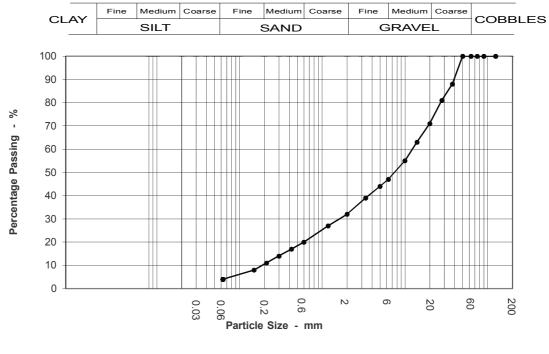
Remarks:

Checked and Approved:



DETERMINATION OF PARTICLE SIZE DISTRIBUTION WET SIEVING METHOD

| BS1377 : Part 2 : 19 | 90 Clause 9.2 | | |
|----------------------|---|----------------|-------------|
| Client: | Aberdeenshire Council | Lab Sample No: | S8908 |
| Contract No: | 5414 | Hole ID: | BH27 |
| Contract Name: | Stonehaven FAS | Sample Type: | В |
| Somalo | | Sample No: | 7 |
| Sample | Brown slightly clayey very sandy GRAVEL | Depth (m): | 1.20 - 2.00 |
| Description: | | Date Tested: | 04/12/2013 |



| Sieving | | Sedimentation | |
|---------------------|-----------|---------------------|-----------|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | | |
| 90 | 100 | | |
| 75 | 100 | | |
| 63 | 100 | | |
| 50 | 100 | | |
| 37.5 | 88 | | |
| 28 | 81 | | |
| 20 | 71 | | |
| 14 | 63 | | |
| 10 | 55 | | |
| 6.3 | 47 | | |
| 5 | 44 | | |
| 3.35 | 39 | | |
| 2 | 32 | | |
| 1.18 | 27 | | |
| 0.6 | 20 | | |
| 0.425 | 17 | | |
| 0.3 | 14 | | |
| 0.212 | 11 | | |
| 0.15 | 8 | | |
| 0.063 | 4 | | |

| Test Method | | |
|---------------------------|-----|--|
| BS 1377 : Part 2 : 1990 | | |
| Sieving Clause Depth (m): | | |
| Sedimentation | N/A | |

| Sample Proportions | | | |
|--------------------|------|--|--|
| Cobbles | 0.0 | | |
| Gravel | 68.0 | | |
| Sand | 28.0 | | |
| Silt & Clay | 4.0 | | |

| Grading Analysis | | | |
|------------------------|-------|--|--|
| D60 | 12.50 | | |
| D10 | 0.19 | | |
| Uniformity Coefficient | 65.33 | | |

Date:

09/12/2013



Senior Technician

Unit 10 Wessex Road Bourne end Buckinghamshire SL8 5DT

Agata K-Roche

Whole sample used

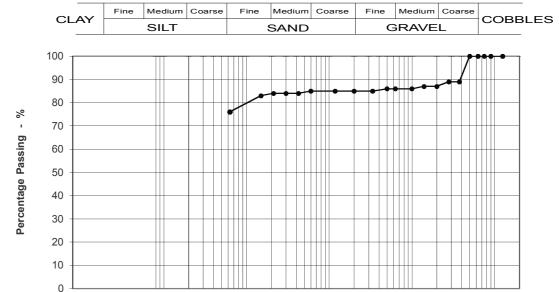
Remarks:

Checked and Approved:



DETERMINATION OF PARTICLE SIZE DISTRIBUTION WET SIEVING METHOD

| 90 Clause 9.2 | | |
|--|------------------------|---|
| Aberdeenshire Council | Lab Sample No: | S8911 |
| 5414 | Hole ID: | BH27 |
| Stonehaven FAS | Sample Type: | В |
| | Sample No: | 11 |
| Reddish brown slightly sandy slightly gravelly clayey SILT | Depth (m): | 2.60 - 3.40 |
| | Date Tested: | 02/12/2013 |
| | 5414 Stonehaven FAS | Aberdeenshire CouncilLab Sample No:5414Hole ID:Stonehaven FASSample Type:Reddish brown slightly sandy slightly gravelly clayey SILTDepth (m): |



0.00 N.N.00 Particle Size - mm

0.03

N

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| Sieving | | Sedimen | tation |
|---------------------|-----------|---------------------|-----------|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | | |
| 90 | 100 | | |
| 75 | 100 | | |
| 63 | 100 | | |
| 50 | 100 | | |
| 37.5 | 89 | | |
| 28 | 89 | | |
| 20 | 87 | | |
| 14 | 87 | | |
| 10 | 86 | | |
| 6.3 | 86 | | |
| 5 | 86 | | |
| 3.35 | 85 | | |
| 2 | 85 | | |
| 1.18 | 85 | | |
| 0.6 | 85 | | |
| 0.425 | 84 | | |
| 0.3 | 84 | | |
| 0.212 | 84 | | |
| 0.15 | 83 | | |
| 0.063 | 76 | | |

| Test Method | | |
|---------------------------|-----|--|
| BS 1377 : Part 2 : 1990 | | |
| Sieving Clause Depth (m): | | |
| Sedimentation | N/A | |

20

60

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| Sample Proportions | | | |
|--------------------|------|--|--|
| Cobbles | 0.0 | | |
| Gravel | 15.0 | | |
| Sand | 9.0 | | |
| Silt & Clay | 76.0 | | |
| | | | |

| Grading Analysis | | |
|------------------------|-----|--|
| D60 D10 | | |
| Uniformity Coefficient | N/A | |

| Remarks: |
|----------|
|----------|

| Checked and | Agata K-Roche |
|-------------|-------------------|
| Approved: | Senior Technician |

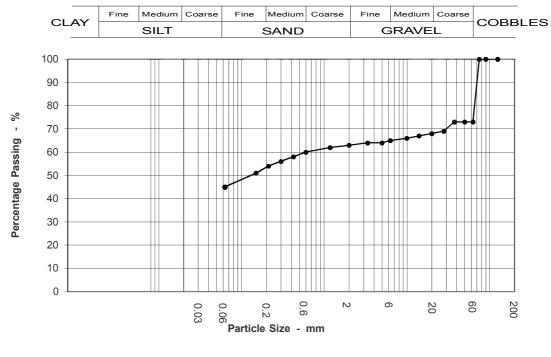
Unit 10 Wessex Road Bourne end Buckinghamshire SL8 5DT

Date: 09/12/2013



DETERMINATION OF PARTICLE SIZE DISTRIBUTION WET SIEVING METHOD

| BS1377 : Part 2 : 199 | 00 Clause 9.2 | | |
|-----------------------|--|----------------|-------------|
| Client: | Aberdeenshire Council | Lab Sample No: | S8912 |
| Contract No: | 5414 | Hole ID: | BH27 |
| Contract Name: | Stonehaven FAS | Sample Type: | В |
| Sample | Reddish brown slightly gravelly slightly sandy silty CLAY with | Sample No: | 13 |
| | frequent cobbles | Depth (m): | 3.40 - 4.00 |
| Description: | | Date Tested: | 04/12/2013 |



| Sieving | | Sedimentation | |
|---------------------|-----------|---------------------|-----------|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | | |
| 90 | 100 | | |
| 75 | 100 | | |
| 63 | 73 | | |
| 50 | 73 | | |
| 37.5 | 73 | | |
| 28 | 69 | | |
| 20 | 68 | | |
| 14 | 67 | | |
| 10 | 66 | | |
| 6.3 | 65 | | |
| 5 | 64 | | |
| 3.35 | 64 | | |
| 2 | 63 | | |
| 1.18 | 62 | | |
| 0.6 | 60 | | |
| 0.425 | 58 | | |
| 0.3 | 56 | | |
| 0.212 | 54 | | |
| 0.15 | 51 | | |
| 0.063 | 45 | | |

| Test Method | | |
|---------------------------|-----|--|
| BS 1377 : Part 2 : 1990 | | |
| Sieving Clause Depth (m): | | |
| Sedimentation | N/A | |

| Sample Proportions | | | |
|--------------------|------|--|--|
| Cobbles | 27.0 | | |
| Gravel | 10.0 | | |
| Sand | 18.0 | | |
| Silt & Clay | 45.0 | | |

| Grading Analysis | | |
|------------------------|------|--|
| D60 D10 | 0.60 | |
| Uniformity Coefficient | N/A | |



Remarks:

Checked and Approved:

Whole sample used

Agata K-Roche

Senior Technician

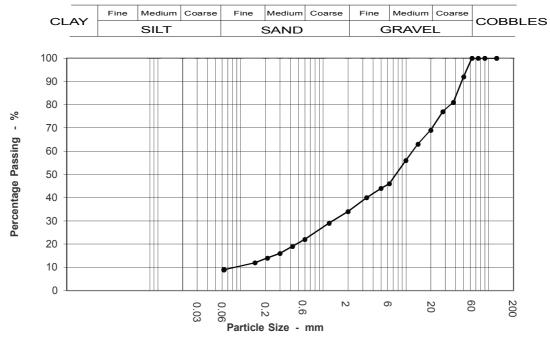
Unit 10 Wessex Road Bourne end Buckinghamshire SL8 5DT

Date: 09/12/2013



DETERMINATION OF PARTICLE SIZE DISTRIBUTION WET SIEVING METHOD

| BS1377 : Part 2 : 19 | 90 Clause 9.2 | | |
|----------------------|--------------------------------|----------------|-------------|
| Client: | Aberdeenshire Council | Lab Sample No: | S8914 |
| Contract No: | 5414 | Hole ID: | BH27 |
| Contract Name: | Stonehaven FAS | Sample Type: | D |
| Somalo | | Sample No: | 17 |
| Sample | Brown clayey very sandy GRAVEL | Depth (m): | 5.00 - 5.45 |
| Description: | | Date Tested: | 02/12/2013 |



| Sievir | ng | Sediment | tation |
|---------------------|-----------|---------------------|-----------|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | | |
| 90 | 100 | | |
| 75 | 100 | | |
| 63 | 100 | | |
| 50 | 92 | | |
| 37.5 | 81 | | |
| 28 | 77 | | |
| 20 | 69 | | |
| 14 | 63 | | |
| 10 | 56 | | |
| 6.3 | 46 | | |
| 5 | 44 | | |
| 3.35 | 40 | | |
| 2 | 34 | | |
| 1.18 | 29 | | |
| 0.6 | 22 | | |
| 0.425 | 19 | | |
| 0.3 | 16 | | |
| 0.212 | 14 | | |
| 0.15 | 12 | | |
| 0.063 | 9 | | |

| Test Method | | |
|---------------------------|--|--|
| BS 1377 : Part 2 : 1990 | | |
| Sieving Clause Depth (m): | | |
| Sedimentation N/A | | |

| Sample Proportions | | | |
|--------------------|------|--|--|
| Cobbles | 0.0 | | |
| Gravel | 66.0 | | |
| Sand | 25.0 | | |
| Silt & Clay | 9.0 | | |

| Grading Analysis | | |
|------------------------|--------|--|
| D60 | 12.29 | |
| D10 | 0.09 | |
| Uniformity Coefficient | 133.54 | |

Date:



Remarks: Sample combine with B18 @ 5.0-6.0m.

| Checked and | Agata K-Roche |
|-------------|-------------------|
| Approved: | Senior Technician |

Unit 10 Wessex Road Bourne end Buckinghamshire SL8 5DT

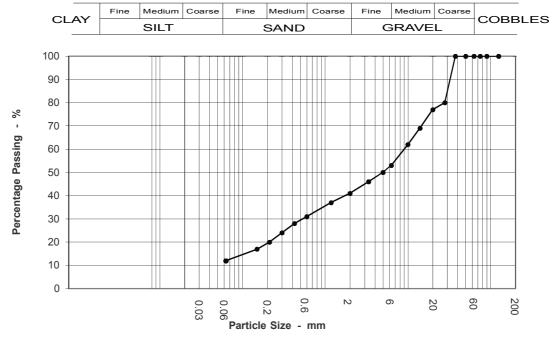
Sheet 1 of 1

09/12/2013



DETERMINATION OF PARTICLE SIZE DISTRIBUTION WET SIEVING METHOD

| BS1377 : Part 2 : 19 | 90 Clause 9.2 | | |
|----------------------|--|----------------|-------------|
| Client: | Aberdeenshire Council | Lab Sample No: | S8915 |
| Contract No: | 5414 | Hole ID: | BH27 |
| Contract Name: | Stonehaven FAS | Sample Type: | В |
| Samula | | Sample No: | 20 |
| Sample | Reddish brown clayey very sandy GRAVEL | Depth (m): | 6.00 - 6.20 |
| Description: | | Date Tested: | 29/11/2013 |



| Sieving | | Sedimen | tation |
|---------------------|-----------|---------------------|-----------|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | | |
| 90 | 100 | | |
| 75 | 100 | | |
| 63 | 100 | | |
| 50 | 100 | | |
| 37.5 | 100 | | |
| 28 | 80 | | |
| 20 | 77 | | |
| 14 | 69 | | |
| 10 | 62 | | |
| 6.3 | 53 | | |
| 5 | 50 | | |
| 3.35 | 46 | | |
| 2 | 41 | | |
| 1.18 | 37 | | |
| 0.6 | 31 | | |
| 0.425 | 28 | | |
| 0.3 | 24 | | |
| 0.212 | 20 | | |
| 0.15 | 17 | | |
| 0.063 | 12 | | |

| Test Method | | |
|---------------------------|--|--|
| BS 1377 : Part 2 : 1990 | | |
| Sieving Clause Depth (m): | | |
| Sedimentation N/A | | |

| Sample Proportions | | | |
|--------------------|------|--|--|
| Cobbles | 0.0 | | |
| Gravel | 59.0 | | |
| Sand | 29.0 | | |
| Silt & Clay | 12.0 | | |

| Grading Analysis | | |
|------------------------|------|--|
| D60 D10 | 9.18 | |
| Uniformity Coefficient | N/A | |

Date:

09/12/2013



Agata K-Roche Checked and Approved: Senior Technician

Unit 10 Wessex Road Bourne end Buckinghamshire SL8 5DT

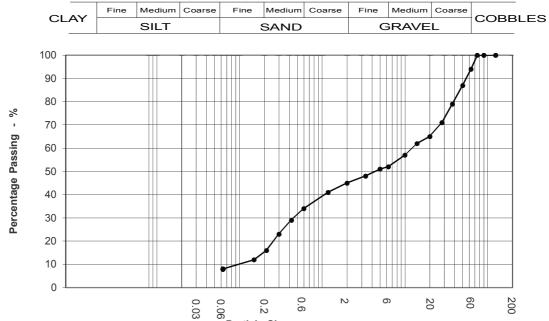
Whole sample used

Remarks:



DETERMINATION OF PARTICLE SIZE DISTRIBUTION WET SIEVING METHOD

| BS1377 : Part 2 : 199 | 90 Clause 9.2 | | |
|-----------------------|---|----------------|-------------|
| Client: | Aberdeenshire Council | Lab Sample No: | S8916 |
| Contract No: | 5414 | Hole ID: | BH28 |
| Contract Name: | Stonehaven FAS | Sample Type: | В |
| Somalo | | Sample No: | 5 |
| Sample | Brown clayey very sandy GRAVEL with cobbles | Depth (m): | 0.80 - 1.20 |
| Description: | | Date Tested: | 05/12/2013 |



| Particle | Size | - | mm |
|----------|------|---|----|
| | | | |

| Sievir | Sieving Sedimentation | | tation |
|---------------------|-----------------------|---------------------|-----------|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | | |
| 90 | 100 | | |
| 75 | 100 | | |
| 63 | 94 | | |
| 50 | 87 | | |
| 37.5 | 79 | | |
| 28 | 71 | | |
| 20 | 65 | | |
| 14 | 62 | | |
| 10 | 57 | | |
| 6.3 | 52 | | |
| 5 | 51 | | |
| 3.35 | 48 | | |
| 2 | 45 | | |
| 1.18 | 41 | | |
| 0.6 | 34 | | |
| 0.425 | 29 | | |
| 0.3 | 23 | | |
| 0.212 | 16 | | |
| 0.15 | 12 | | |
| 0.063 | 8 | | |

Agata K-Roche

Senior Technician

Unit 10 Wessex Road Bourne end Buckinghamshire SL8 5DT

| Test Method | | |
|-------------------------|-------------------|--|
| BS 1377 : Part 2 : 1990 | | |
| Sieving | Clause Depth (m): | |
| Sedimentation | N/A | |

| Sample Proportions | | |
|--------------------|------|--|
| Cobbles | 6.0 | |
| Gravel | 49.0 | |
| Sand | 37.0 | |
| Silt & Clay | 8.0 | |

| Grading Analysis | | |
|------------------------|--------|--|
| D60 | 12.40 | |
| D10 | 0.11 | |
| Uniformity Coefficient | 116.43 | |

Date:

09/12/2013

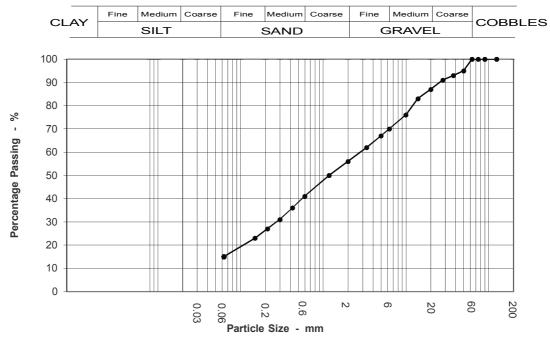
Remarks:

Checked and Approved:



DETERMINATION OF PARTICLE SIZE DISTRIBUTION WET SIEVING METHOD

| BS1377 : Part 2 : 199 | 00 Clause 9.2 | | |
|------------------------|------------------------------|----------------|-------------|
| Client: | Aberdeenshire Council | Lab Sample No: | S8918 |
| Contract No: | 5414 | Hole ID: | BH28 |
| Contract Name: | Stonehaven FAS | Sample Type: | В |
| Samula | | Sample No: | 10 |
| Sample Description: | Black clayey SAND and GRAVEL | Depth (m): | 2.40 - 3.00 |
| Description: | | Date Tested: | 05/12/2013 |



| Sievir | ng | Sediment | tation |
|---------------------|-----------|---------------------|-----------|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | | |
| 90 | 100 | | |
| 75 | 100 | | |
| 63 | 100 | | |
| 50 | 95 | | |
| 37.5 | 93 | | |
| 28 | 91 | | |
| 20 | 87 | | |
| 14 | 83 | | |
| 10 | 76 | | |
| 6.3 | 70 | | |
| 5 | 67 | | |
| 3.35 | 62 | | |
| 2 | 56 | | |
| 1.18 | 50 | | |
| 0.6 | 41 | | |
| 0.425 | 36 | | |
| 0.3 | 31 | | |
| 0.212 | 27 | | |
| 0.15 | 23 | | |
| 0.063 | 15 | | |

| Test Method | | |
|-------------------------|-------------------|--|
| BS 1377 : Part 2 : 1990 | | |
| Sieving | Clause Depth (m): | |
| Sedimentation | N/A | |

| Sample Proportions | | |
|--------------------|------|--|
| Cobbles | 0.0 | |
| Gravel | 44.0 | |
| Sand | 41.0 | |
| Silt & Clay | 15.0 | |

| Grading Analysis | |
|------------------------|------|
| D60 D10 | 2.90 |
| Uniformity Coefficient | N/A |

Date:

09/12/2013



Remarks:

Checked and Approved:

Whole sample used

Agata K-Roche

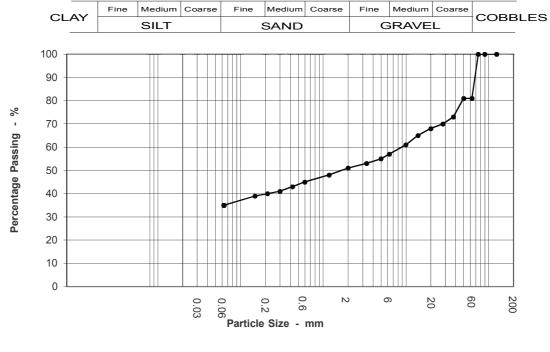
Senior Technician

Unit 10 Wessex Road Bourne end Buckinghamshire SL8 5DT



DETERMINATION OF PARTICLE SIZE DISTRIBUTION WET SIEVING METHOD

| BS1377 : Part 2 : 199 | 00 Clause 9.2 | | |
|-----------------------|--|----------------|-------------|
| Client: | Aberdeenshire Council | Lab Sample No: | S8919 |
| Contract No: | 5414 | Hole ID: | BH28 |
| Contract Name: | Stonehaven FAS | Sample Type: | В |
| Samula | Prown alightly condy alightly grouply alovey CILT with | Sample No: | 12 |
| - | Brown slightly sandy slightly gravelly clayey SILT with cobbles | Depth (m): | 3.00 - 3.50 |
| Description: | cobbies | Date Tested: | 28/11/2013 |



| Sieving | | Sedimen | tation |
|---------------------|-----------|------------------|-----------|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | | |
| 90 | 100 | | |
| 75 | 100 | | |
| 63 | 81 | | |
| 50 | 81 | | |
| 37.5 | 73 | | |
| 28 | 70 | | |
| 20 | 68 | | |
| 14 | 65 | | |
| 10 | 61 | | |
| 6.3 | 57 | | |
| 5 | 55 | | |
| 3.35 | 53 | | |
| 2 | 51 | | |
| 1.18 | 48 | | |
| 0.6 | 45 | | |
| 0.425 | 43 | | |
| 0.3 | 41 | | |
| 0.212 | 40 | | |
| 0.15 | 39 | | |
| 0.063 | 35 | | |

| Test Method | | |
|-------------------------|-------------------|--|
| BS 1377 : Part 2 : 1990 | | |
| Sieving | Clause Depth (m): | |
| Sedimentation | N/A | |

| Sample Proportions | | | |
|--------------------|------|--|--|
| Cobbles | 19.0 | | |
| Gravel | 30.0 | | |
| Sand | 16.0 | | |
| Silt & Clay | 35.0 | | |

| Grading Analysis | | |
|------------------------|------|--|
| D60 D10 | 9.08 | |
| Uniformity Coefficient | N/A | |

Date:

09/12/2013



Agata K-Roche Checked and Approved: Senior Technician

Whole sample used

Unit 10 Wessex Road Bourne end Buckinghamshire SL8 5DT

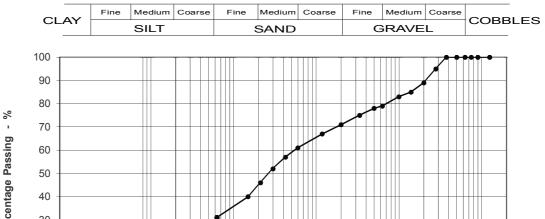
Sheet 1 of 1

Remarks:



DETERMINATION OF PARTICLE SIZE DISTRIBUTION WET SIEVING METHOD

| BS1377 : Part 2 : 1990 Clause 9.2 | | | | |
|-----------------------------------|------------------------------------|----------------|-------------|--|
| Client: | Aberdeenshire Council | Lab Sample No: | S8920 | |
| Contract No: | 5414 | Hole ID: | BH28 | |
| Contract Name: | Stonehaven FAS | Sample Type: | В | |
| Somalo | | Sample No: | 14 | |
| Sample | Brown slightly gravelly sandy CLAY | Depth (m): | 3.50 - 4.00 | |
| Description: | | Date Tested: | 29/11/2013 | |



| | 30 20 10 0 | | 0.03 | 2 | O.N. e Size - | 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0 | N | |
|---|---------------------|-----------|---------------------|-----------|------------------|---|---------------|---|
| 1 | Sievir | ng | Sedimen | tation | 1 | | | - |
| | Particle Size mm | % Passing | Particle Size mm | % Passing | | | BS Sieving | |
| | 125 | 100 | | | 1 | | Sedimenta | |
| | 90 | 100 | | | | | | |
| | 75 | 100 | | | | | | |
| | 63 | 100 | | | | | | |
| | 50 | 100 | | | | | | |
| | 37.5 | 100 | | | | | | |
| | 28 | 95 | | | | | S | _ |
| | 20 | 89 | | | | | Cobbl | (|
| | 14 | 85 | | | | | Grav | e |
| | 10 | 83 | | | | ĺ | San | |
| | 6.3 | 79 | | | | | Silt & C | 2 |
| | 5 | 78 | | | | | | |
| | 3.35 | 75 | | | | | | |
| | 2 | 71 | | | | | | |

| Test Method | | |
|-------------------------|-------------------|--|
| BS 1377 : Part 2 : 1990 | | |
| Sieving | Clause Depth (m): | |
| Sedimentation | N/A | |

20

200

60

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| Sample Proportions | | | |
|--------------------|------|--|--|
| Cobbles | 0.0 | | |
| Gravel | 29.0 | | |
| Sand | 40.0 | | |
| Silt & Clay | 31.0 | | |

| Grading Analysis | | |
|------------------------|------|--|
| D60 D10 | 0.56 | |
| Uniformity Coefficient | N/A | |

Date:

09/12/2013

1489

| Checked and | ed and Agata K-Roche | |
|-------------|----------------------|--|
| Approved: | Senior Technician | |
| | | |

1.18

0.6

0.425

0.3

0.212

0.15

0.063

Unit 10 Wessex Road Bourne end Buckinghamshire SL8 5DT

67

61

57

52

46

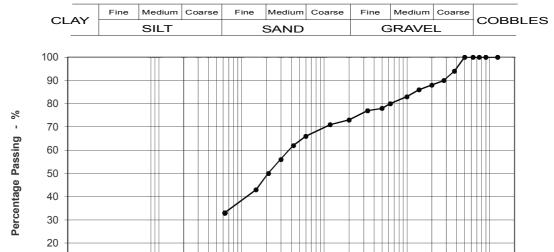
40

31



DETERMINATION OF PARTICLE SIZE DISTRIBUTION WET SIEVING METHOD

| BS1377 : Part 2 : 1990 Clause 9.2 | | | | |
|-----------------------------------|--|----------------|-------------|--|
| Client: | Aberdeenshire Council | Lab Sample No: | S8922 | |
| Contract No: | 5414 | Hole ID: | BH28 | |
| Contract Name: | Stonehaven FAS | Sample Type: | В | |
| Samala | | Sample No: | 22 | |
| Sample | Reddish brown slightly gravelly sandy CLAY | Depth (m): | 6.60 - 7.25 | |
| Description: | | Date Tested: | 02/12/2013 | |



N

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| 0 | | 0.03 | 0 06 Particl | 0 iN e Size - | 0 6 mm |
|---------------------|-----------|---------------------|--------------------|---------------------|--------------|
| Sievir | ng | Sediment | tation | | |
| Particle Size mm | % Passing | Particle Size mm | % Passing | | |
| 125 | 100 | | | | 5 |
| 90 | 100 | | | | |
| 75 | 100 | | | | |
| 63 | 100 | | | | |
| 50 | 100 | | | | |
| 37.5 | 94 | | | | |
| 28 | 90 | | | | |
| 20 | 88 | | | | |
| 14 | 86 | | | | |
| 10 | 83 | | | | |
| 6.3 | 80 | | | | |
| 5 | 78 | | | | |
| 3.35 | 77 | | | | |
| 2 | 73 | | | | |
| 1.18 | 71 | | | | r |
| 0.6 | 66 | | | | |
| 0.425 | 62 | | | | |
| 0.3 | 56 | | | | |
| 0.212 | 50 | | | | |
| 0.15 | 43 | | | | |
| 0.063 | 33 | | | l | Uı |

| Test Method | | |
|-------------------------|-------------------|--|
| BS 1377 : Part 2 : 1990 | | |
| Sieving | Clause Depth (m): | |
| Sedimentation | N/A | |

20

60

200

| Sample Proportions | | | |
|--------------------|------|--|--|
| Cobbles | 0.0 | | |
| Gravel | 27.0 | | |
| Sand | 40.0 | | |
| Silt & Clay | 33.0 | | |

| Grading Ana | alysis |
|------------------------|--------|
| D60 D10 | 0.38 |
| Uniformity Coefficient | N/A |

1489

Remarks:

| Checked and | Agata K-Roche |
|-------------|-------------------|
| Approved: | Senior Technician |

10 0

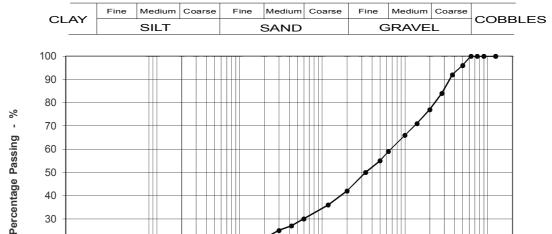
Unit 10 Wessex Road Bourne end Buckinghamshire SL8 5DT

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DETERMINATION OF PARTICLE SIZE DISTRIBUTION WET SIEVING METHOD

| BS1377 : Part 2 : 19 | 90 Clause 9.2 | | |
|----------------------|---------------------------------|----------------|-------------|
| Client: | Aberdeenshire Council | Lab Sample No: | S8923 |
| Contract No: | 5414 | Hole ID: | BH28 |
| Contract Name: | Stonehaven FAS | Sample Type: | В |
| Samula | | Sample No: | 26 |
| Sample | Light brown sandy gravelly CLAY | Depth (m): | 8.60 - 9.00 |
| Description: | | Date Tested: | 05/12/2013 |



| 20 10 0 | | 0.03 | | 0. N e Size - | 0. N 6. mm |
|---------------------|-----------|---------------------|-----------|---------------------|---------------|
| Sievir | ng | Sediment | ation | 1 | |
| Particle Size mm | % Passing | Particle Size mm | % Passing | | E Sievir |
| 125 | 100 | | | | Sedimen |
| 90 | 100 | | | | |
| 75 | 100 | | | | |
| 63 | 100 | | | | |
| 50 | 96 | | | | |
| 37.5 | 92 | | | | |
| 28 | 84 | | | | |
| 20 | 77 | | | | Cob |
| 14 | 71 | | | | Gra |
| 10 | 66 | | | | Sa |
| 6.3 | 59 | | | | Silt 8 |
| 5 | 55 | | | | |
| 3.35 | 50 | | | | |
| 2 | 42 | | | | |
| 1.18 | 36 | | | | |
| 0.6 | 30 | | | | |
| 0.425 | 27 | | | | |
| | | | | | |

| Test Method | | |
|-------------------------|-------------------|--|
| BS 1377 : Part 2 : 1990 | | |
| Sieving | Clause Depth (m): | |
| Sedimentation | N/A | |

20

200

60

ი

| Sample Proportions | | | |
|--------------------|------|--|--|
| Cobbles | 0.0 | | |
| Gravel | 58.0 | | |
| Sand | 26.0 | | |
| Silt & Clay | 16.0 | | |
| | | | |

| Grading Analysis | | |
|------------------------|------|--|
| D60 D10 | 6.83 | |
| Uniformity Coefficient | N/A | |



 Approved:
 Senior Technician

 Unit 10 Wessex Road Bourne end Buckinghamshire SL8 5DT

0.3

0.212

0.15 0.063

Whole sample used

Agata K-Roche

25

22

20

16

Date: 09/12/2013

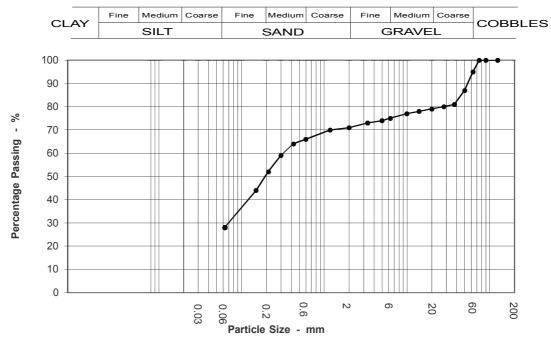


Remarks:



DETERMINATION OF PARTICLE SIZE DISTRIBUTION WET SIEVING METHOD

| BS1377 : Part 2 : 199 | 00 Clause 9.2 | | |
|-----------------------|---|----------------|-------------|
| Client: | Aberdeenshire Council | Lab Sample No: | S8924 |
| Contract No: | 5414 | Hole ID: | BH29 |
| Contract Name: | Stonehaven FAS | Sample Type: | В |
| Sampla | Reddich brown clightly grouply yory clovey SAND with | Sample No: | 3 |
| - | Reddish brown slightly gravelly very clayey SAND with occasional cobbles | Depth (m): | 0.50 - 1.00 |
| Description: | | Date Tested: | 02/12/2013 |



| Sievir | ng | Sediment | tation |
|---------------------|-----------|---------------------|-----------|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | | |
| 90 | 100 | | |
| 75 | 100 | | |
| 63 | 95 | | |
| 50 | 87 | | |
| 37.5 | 81 | | |
| 28 | 80 | | |
| 20 | 79 | | |
| 14 | 78 | | |
| 10 | 77 | | |
| 6.3 | 75 | | |
| 5 | 74 | | |
| 3.35 | 73 | | |
| 2 | 71 | | |
| 1.18 | 70 | | |
| 0.6 | 66 | | |
| 0.425 | 64 | | |
| 0.3 | 59 | | |
| 0.212 | 52 | | |
| 0.15 | 44 | | |
| 0.063 | 28 | | |

| Test Method | | |
|-------------------------|-------------------|--|
| BS 1377 : Part 2 : 1990 | | |
| Sieving | Clause Depth (m): | |
| Sedimentation | N/A | |

| Sample Proportions | | | |
|--------------------|------|--|--|
| Cobbles | 5.0 | | |
| Gravel | 24.0 | | |
| Sand | 43.0 | | |
| Silt & Clay | 28.0 | | |

| Grading Analysis | | |
|------------------------|------|--|
| D60 D10 | 0.33 | |
| Uniformity Coefficient | N/A | |

Date:

09/12/2013

1489

Remarks:

Sheet 1 of 1

Checked and Approved:

Senior Technician

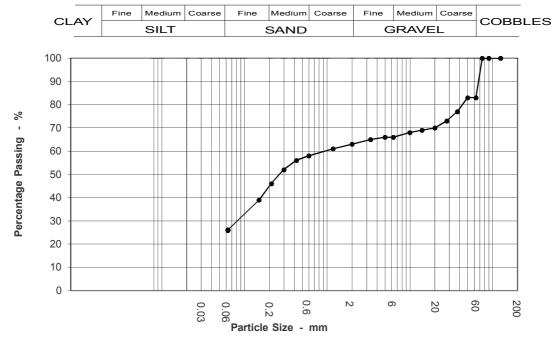
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Agata K-Roche



DETERMINATION OF PARTICLE SIZE DISTRIBUTION WET SIEVING METHOD

| BS1377 : Part 2 : 199 | 90 Clause 9.2 | | |
|-----------------------|--|----------------|-------------|
| Client: | Aberdeenshire Council | Lab Sample No: | S8925 |
| Contract No: | 5414 | Hole ID: | BH29 |
| Contract Name: | Stonehaven FAS | Sample Type: | В |
| Samula | | Sample No: | 5 |
| Sample | Brown gravelly very clayey SAND with cobbles | Depth (m): | 1.20 - 2.00 |
| Description: | | Date Tested: | 03/12/2013 |



| Sievir | ng | Sediment | tation |
|---------------------|-----------|---------------------|-----------|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | | |
| 90 | 100 | | |
| 75 | 100 | | |
| 63 | 83 | | |
| 50 | 83 | | |
| 37.5 | 77 | | |
| 28 | 73 | | |
| 20 | 70 | | |
| 14 | 69 | | |
| 10 | 68 | | |
| 6.3 | 66 | | |
| 5 | 66 | | |
| 3.35 | 65 | | |
| 2 | 63 | | |
| 1.18 | 61 | | |
| 0.6 | 58 | | |
| 0.425 | 56 | | |
| 0.3 | 52 | | |
| 0.212 | 46 | | |
| 0.15 | 39 | | |
| 0.063 | 26 | | |

| Test Method | | |
|---------------------------|-----|--|
| BS 1377 : Part 2 : 1990 | | |
| Sieving Clause Depth (m): | | |
| Sedimentation | N/A | |

| Sample Proportions | | |
|--------------------|------|--|
| Cobbles | 17.0 | |
| Gravel | 20.0 | |
| Sand | 37.0 | |
| Silt & Clay | 26.0 | |

| Grading Analysis | | |
|------------------------|------|--|
| D60 D10 | 0.99 | |
| Uniformity Coefficient | N/A | |

Date:

09/12/2013



Approved: Senior Technician

Unit 10 Wessex Road Bourne end Buckinghamshire SL8 5DT

Agata K-Roche

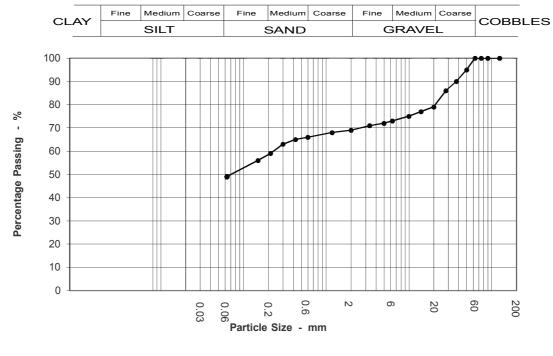
Whole sample used

Remarks:



DETERMINATION OF PARTICLE SIZE DISTRIBUTION WET SIEVING METHOD

| BS1377 : Part 2 : 199 | 90 Clause 9.2 | | |
|-----------------------|---|----------------|-------------|
| Client: | Aberdeenshire Council | Lab Sample No: | S8928 |
| Contract No: | 5414 | Hole ID: | BH29 |
| Contract Name: | Stonehaven FAS | Sample Type: | В |
| Samula | | Sample No: | 9 |
| Sample | Reddish brown slightly sandy slightly gravelly silty CLAY | Depth (m): | 2.60 - 3.00 |
| Description: | | Date Tested: | 04/12/2013 |



| Sievir | ng | Sediment | tation |
|---------------|--------------|---------------|-------------|
| Particle Size | % Passing | Particle Size | % Passing |
| mm | 70 T assiriy | mm | 70 T assing |
| 125 | 100 | | |
| 90 | 100 | | |
| 75 | 100 | | |
| 63 | 100 | | |
| 50 | 95 | | |
| 37.5 | 90 | | |
| 28 | 86 | | |
| 20 | 79 | | |
| 14 | 77 | | |
| 10 | 75 | | |
| 6.3 | 73 | | |
| 5 | 72 | | |
| 3.35 | 71 | | |
| 2 | 69 | | |
| 1.18 | 68 | | |
| 0.6 | 66 | | |
| 0.425 | 65 | | |
| 0.3 | 63 | | |
| 0.212 | 59 | | |
| 0.15 | 56 | | |
| 0.063 | 49 | | |

| Test Method | | |
|---------------------------|-----|--|
| BS 1377 : Part 2 : 1990 | | |
| Sieving Clause Depth (m): | | |
| Sedimentation | N/A | |

| Sample Proportions | | |
|--------------------|------|--|
| Cobbles | 0.0 | |
| Gravel | 31.0 | |
| Sand | 20.0 | |
| Silt & Clay | 49.0 | |

| Grading Analysis | | |
|------------------------|------|--|
| D60 D10 | 0.23 | |
| Uniformity Coefficient | N/A | |

Date:

09/12/2013



Approved: Senior Unit 10 Wessex Road Bourne

Senior Technician

Unit 10 Wessex Road Bourne end Buckinghamshire SL8 5DT

Agata K-Roche

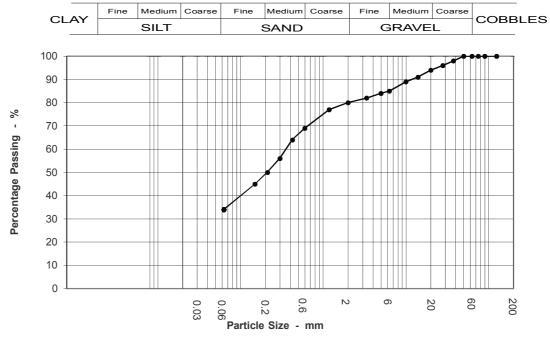
Whole sample used

Remarks:



DETERMINATION OF PARTICLE SIZE DISTRIBUTION WET SIEVING METHOD

| BS1377 : Part 2 : 199 | 90 Clause 9.2 | | |
|-----------------------|--|----------------|-------------|
| Client: | Aberdeenshire Council | Lab Sample No: | S8930 |
| Contract No: | 5414 | Hole ID: | BH29 |
| Contract Name: | Stonehaven FAS | Sample Type: | В |
| Somalo | | Sample No: | 16 |
| Sample | Reddish brown slightly gravelly sandy CLAY | Depth (m): | 4.70 - 5.00 |
| Description: | | Date Tested: | 04/12/2013 |



| Siev | ing | Sedimen | tation |
|---------------------|-----------|---------------------|-----------|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | | |
| 90 | 100 | | |
| 75 | 100 | | |
| 63 | 100 | | |
| 50 | 100 | | |
| 37.5 | 98 | | |
| 28 | 96 | | |
| 20 | 94 | | |
| 14 | 91 | | |
| 10 | 89 | | |
| 6.3 | 85 | | |
| 5 | 84 | | |
| 3.35 | 82 | | |
| 2 | 80 | | |
| 1.18 | 77 | | |
| 0.6 | 69 | | |
| 0.425 | 64 | | |
| 0.3 | 56 | | |
| 0.212 | 50 | | |
| 0.15 | 45 | | |
| 0.063 | 34 | | |

| Test Method | | | | |
|-------------------------|-------------------|--|--|--|
| BS 1377 : Part 2 : 1990 | | | | |
| Sieving | Clause Depth (m): | | | |
| Sedimentation | N/A | | | |

| Sample Proportions | | | | | |
|--------------------|------|--|--|--|--|
| Cobbles | 0.0 | | | | |
| Gravel | 20.0 | | | | |
| Sand | 46.0 | | | | |
| Silt & Clay | 34.0 | | | | |

| Grading Analysis | | | | | |
|------------------------|------|--|--|--|--|
| D60 D10 | 0.36 | | | | |
| Uniformity Coefficient | N/A | | | | |

Date:

09/12/2013



Approved: Unit 10 Wessex Road Bourne end Buckinghamshire SL8 5DT

Senior Technician

Whole sample used

Agata K-Roche

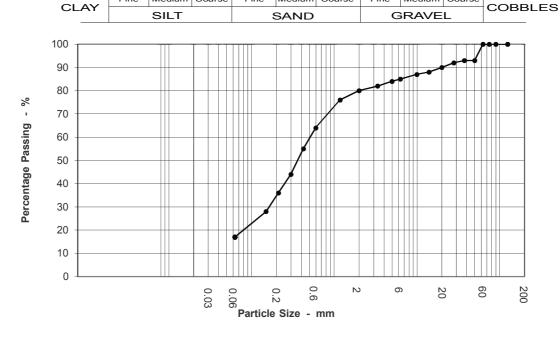
Sheet 1 of 1

Remarks:



DETERMINATION OF PARTICLE SIZE DISTRIBUTION WET SIEVING METHOD

| Client: | Aberdeenshir | e Coun | cil | | | | Lab | Sampl | e No: | S8929 |
|----------------|--------------|---------|----------|---------|---|--|------|---------|-------|-------------|
| Contract No: | 5414 | | | | | | Hole | e ID: | | BH29 |
| Contract Name: | Stonehaven F | AS | | | | | San | nple Ty | pe: | В |
| Comula | | | | | | | San | nple No | : | 15 |
| Sample | Reddish brow | n claye | y gravel | Iy SANE |) | | Dep | th (m): | | 4.00 - 4.70 |
| Description: | | | | | | | - | e Tèste | | 02/12/2013 |



| Sievir | ng | Sediment | tation |
|---------------------|-----------|---------------------|-----------|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | | |
| 90 | 100 | | |
| 75 | 100 | | |
| 63 | 100 | | |
| 50 | 93 | | |
| 37.5 | 93 | | |
| 28 | 92 | | |
| 20 | 90 | | |
| 14 | 88 | | |
| 10 | 87 | | |
| 6.3 | 85 | | |
| 5 | 84 | | |
| 3.35 | 82 | | |
| 2 | 80 | | |
| 1.18 | 76 | | |
| 0.6 | 64 | | |
| 0.425 | 55 | | |
| 0.3 | 44 | | |
| 0.212 | 36 | | |
| 0.15 | 28 | | |
| 0.063 | 17 | | |

| Test Method | | | | |
|-------------------------|-------------------|--|--|--|
| BS 1377 : Part 2 : 1990 | | | | |
| Sieving | Clause Depth (m): | | | |
| Sedimentation | N/A | | | |

| Sample Proportions | | | | | | |
|--------------------|------|--|--|--|--|--|
| Cobbles | 0.0 | | | | | |
| Gravel | 20.0 | | | | | |
| Sand | 63.0 | | | | | |
| Silt & Clay | 17.0 | | | | | |

| Grading Analysis | | | | | |
|------------------------|------|--|--|--|--|
| D60 D10 | 0.52 | | | | |
| Uniformity Coefficient | N/A | | | | |

Date:

09/12/2013

| Remarks: | |
|-----------------|--|
|-----------------|--|

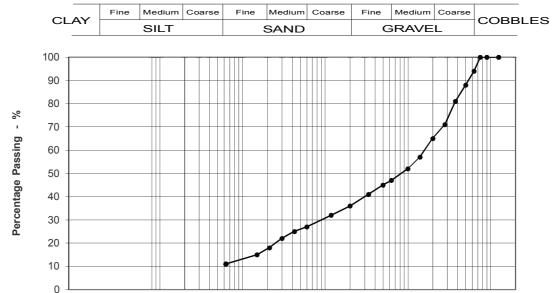
| Checked and | Agata K-Roche |
|-------------|-------------------|
| Approved: | Senior Technician |

Unit 10 Wessex Road Bourne end Buckinghamshire SL8 5DT



DETERMINATION OF PARTICLE SIZE DISTRIBUTION WET SIEVING METHOD

| BS1377 : Part 2 : 199 | 90 Clause 9.2 | | |
|-----------------------|--|----------------|-------------|
| Client: | Aberdeenshire Council | Lab Sample No: | S8689 |
| Contract No: | 5414 | Hole ID: | CDR1 |
| Contract Name: | Stonehaven FAS | Sample Type: | В |
| Sample | | Sample No: | 5 |
| | Brown silty very sandy GRAVEL with cobbles | Depth (m): | 1.20 - 2.00 |
| Description: | | Date Tested: | 28/11/2013 |



0.06 Particle Size - mm

0.03

0.6

N

ი

| Sieving | | Sedimentation | | |
|---------------|-------------|---------------|-------------|--|
| Particle Size | % Passing | Particle Size | % Passing | |
| mm | 70 T 233119 | mm | 70 T 43311g | |
| 125 | 100 | | | |
| 90 | 100 | | | |
| 75 | 100 | | | |
| 63 | 94 | | | |
| 50 | 88 | | | |
| 37.5 | 81 | | | |
| 28 | 71 | | | |
| 20 | 65 | | | |
| 14 | 57 | | | |
| 10 | 52 | | | |
| 6.3 | 47 | | | |
| 5 | 45 | | | |
| 3.35 | 41 | | | |
| 2 | 36 | | | |
| 1.18 | 32 | | | |
| 0.6 | 27 | | | |
| 0.425 | 25 | | | |
| 0.3 | 22 | | | |
| 0.212 | 18 | | | |
| 0.15 | 15 | | | |
| 0.063 | 11 | | | |

| Test Method | | | |
|-------------------------|-------------------|--|--|
| BS 1377 : Part 2 : 1990 | | | |
| Sieving | Clause Depth (m): | | |
| Sedimentation | N/A | | |

20

60

200

| Sample Proportions | | | | |
|--------------------|------|--|--|--|
| Cobbles | 6.0 | | | |
| Gravel | 58.0 | | | |
| Sand | 25.0 | | | |
| Silt & Clay | 11.0 | | | |

| Grading Analysis | | | |
|------------------------|-------|--|--|
| D60 D10 | 16.25 | | |
| Uniformity Coefficient | N/A | | |



Sheet 1 of 1

Remarks:

Checked and Approved:

Whole sample used

Agata K-Roche

Senior Technician

Unit 10 Wessex Road Bourne end Buckinghamshire SL8 5DT

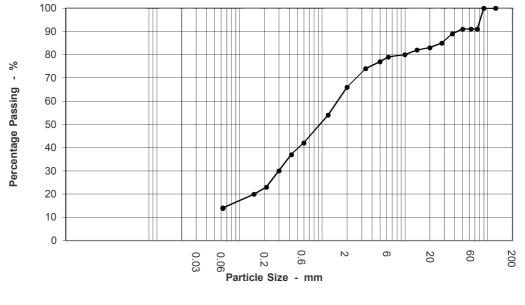
Date: 09/12/2013



DETERMINATION OF PARTICLE SIZE DISTRIBUTION WET SIEVING METHOD

| BS1377 : Part 2 : 1990 Clause 9.2 | | | | | |
|-----------------------------------|---|----------------|-------------|--|--|
| Client: | Aberdeenshire Council | Lab Sample No: | S8690 | | |
| Contract No: | 5414 | Hole ID: | CDR1 | | |
| Contract Name: | Stonehaven FAS | Sample Type: | В | | |
| Samula | | Sample No: | 7 | | |
| Sample | Brown silty very gravelly SAND with cobbles | Depth (m): | 2.00 - 3.00 | | |
| Description: | | Date Tested: | 05/12/2013 | | |





| Sieving | | Sediment | tation |
|---------------------|-----------|---------------------|-----------|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | | |
| 90 | 100 | | |
| 75 | 91 | | |
| 63 | 91 | | |
| 50 | 91 | | |
| 37.5 | 89 | | |
| 28 | 85 | | |
| 20 | 83 | | |
| 14 | 82 | | |
| 10 | 80 | | |
| 6.3 | 79 | | |
| 5 | 77 | | |
| 3.35 | 74 | | |
| 2 | 66 | | |
| 1.18 | 54 | | |
| 0.6 | 42 | | |
| 0.425 | 37 | | |
| 0.3 | 30 | | |
| 0.212 | 23 | | |
| 0.15 | 20 | | |
| 0.063 | 14 | | |

| Test Method | | | |
|-------------------------|-------------------|--|--|
| BS 1377 : Part 2 : 1990 | | | |
| Sieving | Clause Depth (m): | | |
| Sedimentation | N/A | | |

| Sample Proportions | | | | |
|--------------------|------|--|--|--|
| Cobbles | 9.0 | | | |
| Gravel | 25.0 | | | |
| Sand | 52.0 | | | |
| Silt & Clay | 14.0 | | | |

| Grading Analysis | | | |
|------------------------|------|--|--|
| D60 D10 | 1.59 | | |
| Uniformity Coefficient | N/A | | |

Date:

09/12/2013



Remarks:

Checked and Approved:

Whole sample used

Agata K-Roche

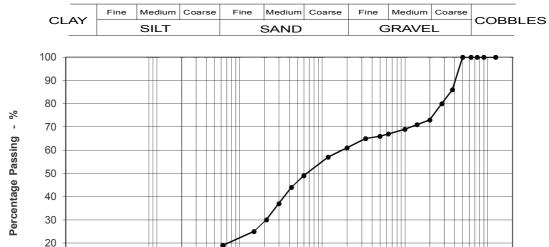
Senior Technician

Unit 10 Wessex Road Bourne end Buckinghamshire SL8 5DT



DETERMINATION OF PARTICLE SIZE DISTRIBUTION WET SIEVING METHOD

| BS1377 : Part 2 : 19 | 90 Clause 9.2 | | |
|----------------------|---------------------------|----------------|-------------|
| Client: | Aberdeenshire Council | Lab Sample No: | S8691 |
| Contract No: | 5414 | Hole ID: | CDR1 |
| Contract Name: | Stonehaven FAS | Sample Type: | В |
| Somolo | | Sample No: | 9 |
| Sample | Black gravelly sandy PEAT | Depth (m): | 3.00 - 4.00 |
| Description: | | Date Tested: | 28/11/2013 |



0.03

| Sieving | | Sediment | tation |
|---------------------|-----------|---------------------|-----------|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | | |
| 90 | 100 | | |
| 75 | 100 | | |
| 63 | 100 | | |
| 50 | 100 | | |
| 37.5 | 86 | | |
| 28 | 80 | | |
| 20 | 73 | | |
| 14 | 71 | | |
| 10 | 69 | | |
| 6.3 | 67 | | |
| 5 | 66 | | |
| 3.35 | 65 | | |
| 2 | 61 | | |
| 1.18 | 57 | | |
| 0.6 | 49 | | |
| 0.425 | 44 | | |
| 0.3 | 37 | | |
| 0.212 | 30 | | |
| 0.15 | 25 | | |
| 0.063 | 19 | | |

Agata K-Roche

Senior Technician

Unit 10 Wessex Road Bourne end Buckinghamshire SL8 5DT

10 0

| 0 00 Particl | 0 iN e Size - | 0 N 60 mm | σ | 20 | 60 | 200 |
|--------------------|---------------------|------------------------|----------|--------------|---------|---------|
| tion | | | Test | t Method | | |
| % Passing | | | BS 1377 | : Part 2 : 1 | 1990 | |
| /o Fassing | | Sie | ving | Cla | use Dep | th (m): |
| | | Sedime | entation | | N/A | |

| Sample Proportions | | | | |
|--------------------|------|--|--|--|
| Cobbles | 0.0 | | | |
| Gravel | 39.0 | | | |
| Sand | 42.0 | | | |
| Silt & Clay | 19.0 | | | |

| Grading Analysis | | | |
|------------------------|------|--|--|
| D60 D10 | 1.80 | | |
| Uniformity Coefficient | N/A | | |

1489

Remarks:

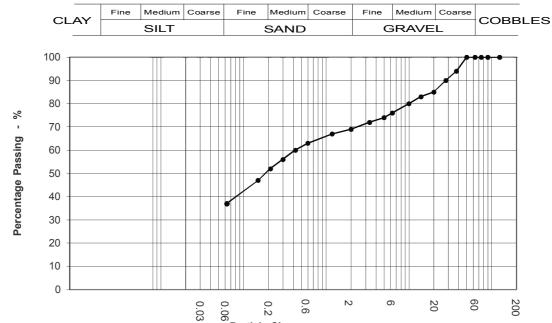
Checked and Approved:

Date: 09/12/2013



DETERMINATION OF PARTICLE SIZE DISTRIBUTION WET SIEVING METHOD

| BS1377 : Part 2 : 199 | 00 Clause 9.2 | | |
|------------------------|---|----------------|-------------|
| Client: | Aberdeenshire Council | Lab Sample No: | S8692 |
| Contract No: | 5414 | Hole ID: | CDR1 |
| Contract Name: | Stonehaven FAS | Sample Type: | В |
| Samala | | Sample No: | 11 |
| Sample Descriptions | Reddish brown slightly sandy slightly gravelly silty CLAY | Depth (m): | 5.00 - 5.50 |
| Description: | | Date Tested: | 04/12/2013 |



| | 50 U | 0 06 Particle | 0 N 9 Size - | 0 6 • mm | Ν | o | 20 | 60 | 200 |
|------------|------|---------------------|--------------------|-------------------------|-----------|--------|-------|----------|------|
| Sedimer | ntat | tion | | | | Test M | ethod | | |
| ticle Size | 0 | % Passing | | BS 1377 : Part 2 : 1990 | | | | | |
| mm | 1 | o rassing | | | Sieving | | Claus | se Depth | (m): |
| | | | | Se | edimentat | ion | | N/A | |
| | | | | | | | | | |

| Sample Proportions | | | | |
|--------------------|------|--|--|--|
| Cobbles | 0.0 | | | |
| Gravel | 31.0 | | | |
| Sand | 32.0 | | | |
| Silt & Clay | 37.0 | | | |
| | | | | |

| Grading Analysis | | | | |
|------------------------|------|--|--|--|
| D60 D10 | 0.43 | | | |
| Uniformity Coefficient | N/A | | | |



| . = • | | |
|-------|-----|--|
| 90 | 100 | |
| 75 | 100 | |
| 63 | 100 | |
| 50 | 100 | |
| 37.5 | 94 | |
| 28 | 90 | |
| 20 | 85 | |
| 14 | 83 | |
| 10 | 80 | |
| 6.3 | 76 | |
| 5 | 74 | |
| 3.35 | 72 | |
| 2 | 69 | |
| 1.18 | 67 | |
| 0.6 | 63 | |
| 0.425 | 60 | |
| 0.3 | 56 | |
| 0.212 | 52 | |
| 0.15 | 47 | |
| 0.063 | 37 | |

Particle Size

Sieving

Whole sample used

Agata K-Roche

Senior Technician

Unit 10 Wessex Road Bourne end Buckinghamshire SL8 5DT

% Passing

100

Particle Size

mm

125

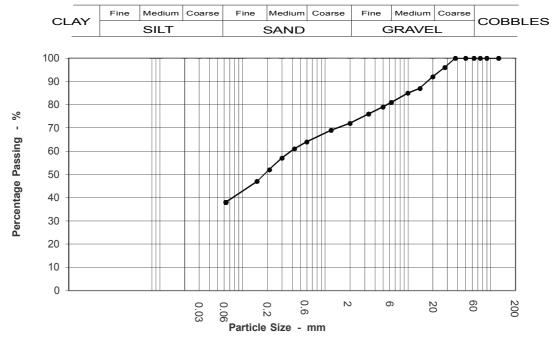
Remarks:

Checked and Approved:



DETERMINATION OF PARTICLE SIZE DISTRIBUTION WET SIEVING METHOD

| BS1377 : Part 2 : 1990 Clause 9.2 | | | | | |
|-----------------------------------|---|----------------|-------------|--|--|
| Client: | Aberdeenshire Council | Lab Sample No: | S8693 | | |
| Contract No: | 5414 | Hole ID: | CDR1 | | |
| Contract Name: | Stonehaven FAS | Sample Type: | В | | |
| Somalo | | Sample No: | 15 | | |
| Sample | Reddish brown slightly gravelly slightly sandy CLAY | Depth (m): | 6.50 - 7.00 | | |
| Description: | | Date Tested: | 27/11/2013 | | |



| Sievir | ng | Sediment | tation |
|---------------------|-----------|---------------------|-----------|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | | |
| 90 | 100 | | |
| 75 | 100 | | |
| 63 | 100 | | |
| 50 | 100 | | |
| 37.5 | 100 | | |
| 28 | 96 | | |
| 20 | 92 | | |
| 14 | 87 | | |
| 10 | 85 | | |
| 6.3 | 81 | | |
| 5 | 79 | | |
| 3.35 | 76 | | |
| 2 | 72 | | |
| 1.18 | 69 | | |
| 0.6 | 64 | | |
| 0.425 | 61 | | |
| 0.3 | 57 | | |
| 0.212 | 52 | | |
| 0.15 | 47 | | |
| 0.063 | 38 | | |

| Test Method | | | |
|-------------------------|-------------------|--|--|
| BS 1377 : Part 2 : 1990 | | | |
| Sieving | Clause Depth (m): | | |
| Sedimentation | N/A | | |

| Sample Proportions | | | | |
|--------------------|------|--|--|--|
| Cobbles | 0.0 | | | |
| Gravel | 28.0 | | | |
| Sand | 34.0 | | | |
| Silt & Clay | 38.0 | | | |

| Grading Analysis | | | |
|------------------------|------|--|--|
| D60 D10 | 0.39 | | |
| Uniformity Coefficient | N/A | | |

Remarks:

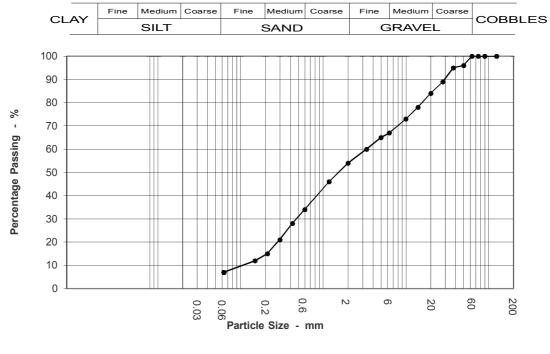
| Checked and | Agata K-Roche |
|--------------------|--------------------------------------|
| Approved: | Senior Technician |
| Unit 10 Wessex Roa | d Bourne end Buckinghamshire SL8 5DT |

Date: 09/12/2013



DETERMINATION OF PARTICLE SIZE DISTRIBUTION WET SIEVING METHOD

| BS1377 : Part 2 : 199 | 00 Clause 9.2 | | |
|-----------------------|----------------------------------|----------------|-------------|
| Client: | Aberdeenshire Council | Lab Sample No: | S8695 |
| Contract No: | 5414 | Hole ID: | CDR1 |
| Contract Name: | Stonehaven FAS | Sample Type: | В |
| Samula | | Sample No: | 19 |
| Sample | Reddish brown very gravelly SAND | Depth (m): | 8.00 - 8.30 |
| Description: | | Date Tested: | 27/11/2013 |



| Sieving | | Sedimen | tation |
|---------------------|-----------|---------------------|-----------|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | | |
| 90 | 100 | | |
| 75 | 100 | | |
| 63 | 100 | | |
| 50 | 96 | | |
| 37.5 | 95 | | |
| 28 | 89 | | |
| 20 | 84 | | |
| 14 | 78 | | |
| 10 | 73 | | |
| 6.3 | 67 | | |
| 5 | 65 | | |
| 3.35 | 60 | | |
| 2 | 54 | | |
| 1.18 | 46 | | |
| 0.6 | 34 | | |
| 0.425 | 28 | | |
| 0.3 | 21 | | |
| 0.212 | 15 | | |
| 0.15 | 12 | | |
| 0.063 | 7 | | |

| Test Method | | |
|-------------------------|-------------------|--|
| BS 1377 : Part 2 : 1990 | | |
| Sieving | Clause Depth (m): | |
| Sedimentation | N/A | |

| Sample Proportions | | | |
|--------------------|------|--|--|
| Cobbles | 0.0 | | |
| Gravel | 46.0 | | |
| Sand | 47.0 | | |
| Silt & Clay | 7.0 | | |

| Grading Analysis | | |
|------------------------|-------|--|
| D60 | 3.35 | |
| D10 | 0.12 | |
| Uniformity Coefficient | 29.08 | |

Date:

09/12/2013



Agata K-Roche Checked and Approved: Senior Technician

Unit 10 Wessex Road Bourne end Buckinghamshire SL8 5DT

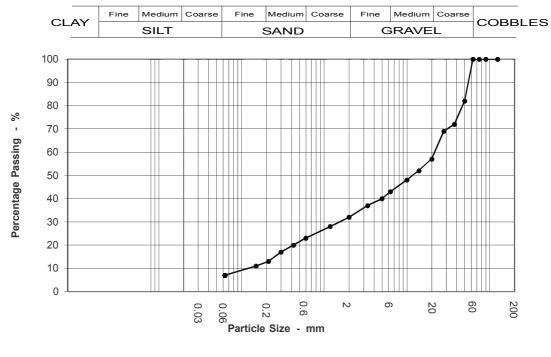
Whole sample used

Remarks:



DETERMINATION OF PARTICLE SIZE DISTRIBUTION WET SIEVING METHOD

| BS1377 : Part 2 : 19 | 90 Clause 9.2 | | |
|----------------------|-----------------------------------|----------------|-------------|
| Client: | Aberdeenshire Council | Lab Sample No: | S8696 |
| Contract No: | 5414 | Hole ID: | CDR2 |
| Contract Name: | Stonehaven FAS | Sample Type: | В |
| Sampla | | Sample No: | 6 |
| Sample | Brown slightly silty sandy GRAVEL | Depth (m): | 1.00 - 1.50 |
| Description: | | Date Tested: | 28/11/2013 |



| Sievir | Sieving | | tation |
|---------------------|-----------|---------------------|-----------|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | | |
| 90 | 100 | | |
| 75 | 100 | | |
| 63 | 100 | | |
| 50 | 82 | | |
| 37.5 | 72 | | |
| 28 | 69 | | |
| 20 | 57 | | |
| 14 | 52 | | |
| 10 | 48 | | |
| 6.3 | 43 | | |
| 5 | 40 | | |
| 3.35 | 37 | | |
| 2 | 32 | | |
| 1.18 | 28 | | |
| 0.6 | 23 | | |
| 0.425 | 20 | | |
| 0.3 | 17 | | |
| 0.212 | 13 | | |
| 0.15 | 11 | | |
| 0.063 | 7 | | |

| Test Method | | |
|---------------------------|-----|--|
| BS 1377 : Part 2 : 1990 | | |
| Sieving Clause Depth (m): | | |
| Sedimentation | N/A | |

| Sample Proportions | | | |
|--------------------|------|--|--|
| Cobbles | 0.0 | | |
| Gravel | 68.0 | | |
| Sand | 25.0 | | |
| Silt & Clay | 7.0 | | |

| Grading Analysis | | |
|------------------------|--------|--|
| D60 | 22.00 | |
| D10 | 0.13 | |
| Uniformity Coefficient | 171.54 | |



Remarks:

Checked and Approved:

Whole sample used

Agata K-Roche

Senior Technician

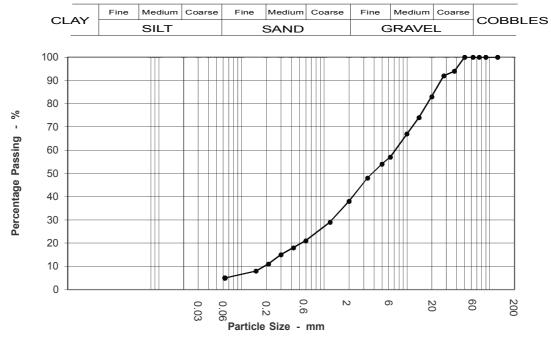
Unit 10 Wessex Road Bourne end Buckinghamshire SL8 5DT

Date: 09/12/2013



DETERMINATION OF PARTICLE SIZE DISTRIBUTION WET SIEVING METHOD

| BS1377 : Part 2 : 19 | 90 Clause 9.2 | | |
|----------------------|---|----------------|-------------|
| Client: | Aberdeenshire Council | Lab Sample No: | S8697 |
| Contract No: | 5414 | Hole ID: | CDR3 |
| Contract Name: | Stonehaven FAS | Sample Type: | В |
| Samula | | Sample No: | 4 |
| Sample | Brown slightly clayey very sandy GRAVEL | Depth (m): | 1.00 - 1.20 |
| Description: | | Date Tested: | 26/11/2013 |



| Sieving | | Sediment | tation |
|---------------|------------|---------------|------------|
| Particle Size | % Passing | Particle Size | % Passing |
| mm | 10 Fassing | mm | 70 Fassing |
| 125 | 100 | | |
| 90 | 100 | | |
| 75 | 100 | | |
| 63 | 100 | | |
| 50 | 100 | | |
| 37.5 | 94 | | |
| 28 | 92 | | |
| 20 | 83 | | |
| 14 | 74 | | |
| 10 | 67 | | |
| 6.3 | 57 | | |
| 5 | 54 | | |
| 3.35 | 48 | | |
| 2 | 38 | | |
| 1.18 | 29 | | |
| 0.6 | 21 | | |
| 0.425 | 18 | | |
| 0.3 | 15 | | |
| 0.212 | 11 | | |
| 0.15 | 8 | | |
| 0.063 | 5 | | |

| Test Method | | |
|-------------------------|-------------------|--|
| BS 1377 : Part 2 : 1990 | | |
| Sieving | Clause Depth (m): | |
| Sedimentation | N/A | |

| Sample Proportions | | | |
|--------------------|------|--|--|
| Cobbles | 0.0 | | |
| Gravel | 62.0 | | |
| Sand | 33.0 | | |
| Silt & Clay | 5.0 | | |

| Grading Analysis | | |
|------------------------|-------|--|
| D60 | 7.41 | |
| D10 | 0.19 | |
| Uniformity Coefficient | 38.73 | |

Date:

09/12/2013



Checked andAgata K-RocheApproved:Senior Technician

Unit 10 Wessex Road Bourne end Buckinghamshire SL8 5DT

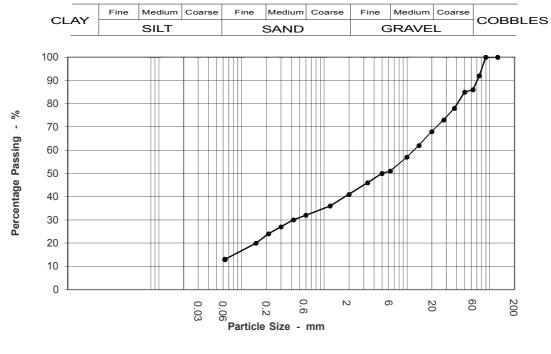
Whole sample used

Remarks:



DETERMINATION OF PARTICLE SIZE DISTRIBUTION WET SIEVING METHOD

| BS1377 : Part 2 : 19 | 90 Clause 9.2 | | |
|----------------------|--|----------------|-------------|
| Client: | Aberdeenshire Council | Lab Sample No: | S8698 |
| Contract No: | 5414 | Hole ID: | CDR3 |
| Contract Name: | Stonehaven FAS | Sample Type: | В |
| Somolo | | Sample No: | 6 |
| Sample | Dark grey and brown sandy silty GRAVEL | Depth (m): | 1.20 - 2.00 |
| Description: | | Date Tested: | 29/11/2013 |



| Sieving | | Sediment | tation |
|---------------------|-----------|---------------------|-----------|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | | |
| 90 | 100 | | |
| 75 | 92 | | |
| 63 | 86 | | |
| 50 | 85 | | |
| 37.5 | 78 | | |
| 28 | 73 | | |
| 20 | 68 | | |
| 14 | 62 | | |
| 10 | 57 | | |
| 6.3 | 51 | | |
| 5 | 50 | | |
| 3.35 | 46 | | |
| 2 | 41 | | |
| 1.18 | 36 | | |
| 0.6 | 32 | | |
| 0.425 | 30 | | |
| 0.3 | 27 | | |
| 0.212 | 24 | | |
| 0.15 | 20 | | |
| 0.063 | 13 | | |

| Test Method | | |
|-------------------------|-------------------|--|
| BS 1377 : Part 2 : 1990 | | |
| Sieving | Clause Depth (m): | |
| Sedimentation | N/A | |

| Sample Proportions | | | |
|--------------------|------|--|--|
| Cobbles | 14.0 | | |
| Gravel | 45.0 | | |
| Sand | 28.0 | | |
| Silt & Clay | 13.0 | | |

| Grading Analysis | | |
|------------------------|-------|--|
| D60 D10 | 12.40 | |
| Uniformity Coefficient | N/A | |



Remarks:

Checked and Approved:

Whole sample used

Agata K-Roche

Senior Technician

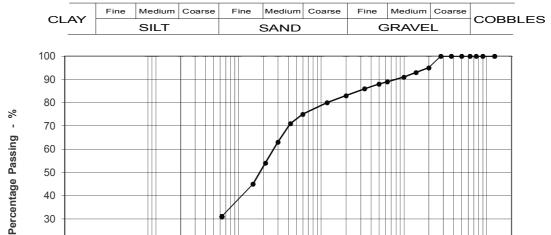
Unit 10 Wessex Road Bourne end Buckinghamshire SL8 5DT

Date: 09/12/2013



DETERMINATION OF PARTICLE SIZE DISTRIBUTION WET SIEVING METHOD

| BS1377 : Part 2 : 1990 Clause 9.2 | | | | |
|-----------------------------------|---|----------------|-------------|--|
| Client: | Aberdeenshire Council | Lab Sample No: | S8700 | |
| Contract No: | 5414 | Hole ID: | CDR3 | |
| Contract Name: | Stonehaven FAS | Sample Type: | В | |
| Samula | | Sample No: | 10 | |
| Sample Description: | Dark brown slightly gravelly sandy PEAT | Depth (m): | 2.00 - 2.50 | |
| Description: | | Date Tested: | 28/11/2013 | |



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| 0 | | 0.03 | 0 00 Particl | 0 N e Size - | ი თ mm |
|---------------------|-----------|---------------------|--------------------|--------------------|--------------|
| Sievir | ng | Sediment | tation | 1 | |
| Particle Size mm | % Passing | Particle Size mm | % Passing | | |
| 125 | 100 | | | | 5 |
| 90 | 100 | | | | |
| 75 | 100 | | | | |
| 63 | 100 | | | | |
| 50 | 100 | | | | |
| 37.5 | 100 | | | | |
| 28 | 100 | | | | |
| 20 | 95 | | | | |
| 14 | 93 | | | | |
| 10 | 91 | | | | |
| 6.3 | 89 | | | | |
| 5 | 88 | | | | |
| 3.35 | 86 | | | | |
| 2 | 83 | | | | |
| 1.18 | 80 | | | | - |
| 0.6 | 75 | | | | |
| 0.425 | 71 | | | | |
| 0.3 | 63 | | | | |
| 0.212 | 54 | | | | |
| 0.15 | 45 | | | | |
| 0.063 | 31 | | | | Ui |

| Test Method | | |
|-------------------------|-------------------|--|
| BS 1377 : Part 2 : 1990 | | |
| Sieving | Clause Depth (m): | |
| Sedimentation | N/A | |

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| Sample Proportions | | |
|--------------------|------|--|
| Cobbles | 0.0 | |
| Gravel | 17.0 | |
| Sand | 52.0 | |
| Silt & Clay | 31.0 | |

| Grading Analysis | | |
|------------------------|------|--|
| D60 D10 | 0.27 | |
| Uniformity Coefficient | N/A | |

1489

Remarks:

| Checked and | Agata K-Roche | |
|-------------|-------------------|--|
| Approved: | Senior Technician | |
| | | |

20 10 0

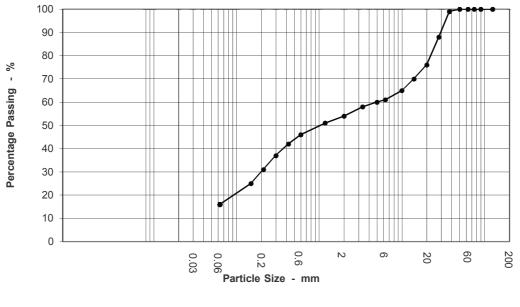
Unit 10 Wessex Road Bourne end Buckinghamshire SL8 5DT



DETERMINATION OF PARTICLE SIZE DISTRIBUTION WET SIEVING METHOD

| Client: | Aberdeenshire Council | Lab Sample No: | S8701 |
|----------------|------------------------------------|----------------|-------------|
| Contract No: | 5414 | Hole ID: | CDR3 |
| Contract Name: | Stonehaven FAS | Sample Type: | В |
| 0 | | Sample No: | 12 |
| Sample | Dark grey very gravelly silty SAND | Depth (m): | 3.00 - 3.50 |
| Description: | Date Tested: | 05/12/2013 | |





| Sievir | ng | Sediment | tation |
|---------------------|-----------|---------------------|-----------|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | | |
| 90 | 100 | | |
| 75 | 100 | | |
| 63 | 100 | | |
| 50 | 100 | | |
| 37.5 | 99 | | |
| 28 | 88 | | |
| 20 | 76 | | |
| 14 | 70 | | |
| 10 | 65 | | |
| 6.3 | 61 | | |
| 5 | 60 | | |
| 3.35 | 58 | | |
| 2 | 54 | | |
| 1.18 | 51 | | |
| 0.6 | 46 | | |
| 0.425 | 42 | | |
| 0.3 | 37 | | |
| 0.212 | 31 | | |
| 0.15 | 25 | | |
| 0.063 | 16 | | |

| Test Method | |
|-------------------------|-------------------|
| BS 1377 : Part 2 : 1990 | |
| Sieving | Clause Depth (m): |
| Sedimentation | N/A |

| Sample Proportions | | |
|--------------------|------|--|
| Cobbles | 0.0 | |
| Gravel | 46.0 | |
| Sand | 38.0 | |
| Silt & Clay | 16.0 | |

| Grading Analysis | |
|------------------------|------|
| D60 D10 | 5.00 |
| Uniformity Coefficient | N/A |



Unit 10 Wessex Road Bourne end Buckinghamshire SL8 5DT

Whole sample used

Agata K-Roche

Senior Technician

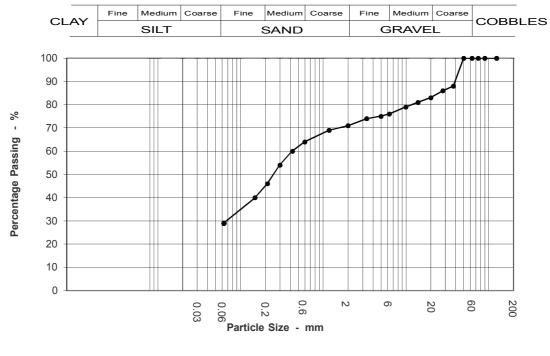
Remarks:

Checked and Approved:



DETERMINATION OF PARTICLE SIZE DISTRIBUTION WET SIEVING METHOD

| BS1377 : Part 2 : 19 | 90 Clause 9.2 | | |
|----------------------|---|----------------|-------------|
| Client: | Aberdeenshire Council | Lab Sample No: | S8703 |
| Contract No: | 5414 | Hole ID: | CDR3 |
| Contract Name: | Stonehaven FAS | Sample Type: | В |
| Somalo | | Sample No: | 16 |
| Sample | Reddish brown slightly gravelly sandy clayey SILT | Depth (m): | 5.00 - 5.50 |
| Description: | | Date Tested: | 27/11/2013 |



| Sievir | ng | Sediment | tation |
|---------------------|-----------|---------------------|-----------|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | | |
| 90 | 100 | | |
| 75 | 100 | | |
| 63 | 100 | | |
| 50 | 100 | | |
| 37.5 | 88 | | |
| 28 | 86 | | |
| 20 | 83 | | |
| 14 | 81 | | |
| 10 | 79 | | |
| 6.3 | 76 | | |
| 5 | 75 | | |
| 3.35 | 74 | | |
| 2 | 71 | | |
| 1.18 | 69 | | |
| 0.6 | 64 | | |
| 0.425 | 60 | | |
| 0.3 | 54 | | |
| 0.212 | 46 | | |
| 0.15 | 40 | | |
| 0.063 | 29 | | |

Agata K-Roche

Senior Technician

| Test Method | |
|-------------------------|-------------------|
| BS 1377 : Part 2 : 1990 | |
| Sieving | Clause Depth (m): |
| Sedimentation | N/A |

| Sample Proportions | | |
|--------------------|------|--|
| Cobbles | 0.0 | |
| Gravel | 29.0 | |
| Sand | 42.0 | |
| Silt & Clay | 29.0 | |

| Grading Analysis | | |
|------------------------|------|--|
| D60 D10 | 0.43 | |
| Uniformity Coefficient | N/A | |

Remarks:

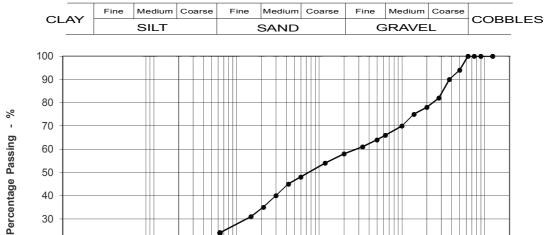
Checked and Approved:

Date: 09/12/2013



DETERMINATION OF PARTICLE SIZE DISTRIBUTION WET SIEVING METHOD

| BS1377 : Part 2 : 19 | 90 Clause 9.2 | | |
|------------------------|------------------------------------|----------------|-------------|
| Client: | Aberdeenshire Council | Lab Sample No: | S8704 |
| Contract No: | 5414 | Hole ID: | CDR3 |
| Contract Name: | Stonehaven FAS | Sample Type: | В |
| Samala | | Sample No: | 18 |
| Sample Description: | Brown slightly sandy gravelly SILT | Depth (m): | 6.00 - 6.50 |
| Description: | | Date Tested: | 03/12/2013 |



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| 0 | | 0.03 | 0.06 | | 0.6 |
|---------------------|-----------|---------------------|-----------|----------|-----|
| | | | Particl | e Size - | mm |
| Sievir | ng | Sediment | tation | | |
| Particle Size mm | % Passing | Particle Size mm | % Passing | | |
| 125 | 100 | | | | 5 |
| 90 | 100 | | | | |
| 75 | 100 | | | | |
| 63 | 100 | | | | |
| 50 | 94 | | | | |
| 37.5 | 90 | | | | |
| 28 | 82 | | | | |
| 20 | 78 | | | | |
| 14 | 75 | | | | |
| 10 | 70 | | | | |
| 6.3 | 66 | | | | |
| 5 | 64 | | | | |
| 3.35 | 61 | | | | |
| 2 | 58 | | | | |
| 1.18 | 54 | | | | F |
| 0.6 | 48 | | | | |
| 0.425 | 45 | | | | |
| 0.3 | 40 | | | | |
| 0.212 | 35 | | | | |
| 0.15 | 31 | | | | |
| 0.063 | 24 | | | | Uı |

| Test Method | | |
|---------------------------|-----|--|
| BS 1377 : Part 2 : 1990 | | |
| Sieving Clause Depth (m): | | |
| Sedimentation | N/A | |

20

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| Sample Proportions | | |
|--------------------|------|--|
| Cobbles | 0.0 | |
| Gravel | 42.0 | |
| Sand | 34.0 | |
| Silt & Clay | 24.0 | |

| Grading Analysis | | |
|------------------------|------|--|
| D60 D10 | 2.90 | |
| Uniformity Coefficient | N/A | |

Date:

09/12/2013

1489

Remarks:

Checked and Approved:

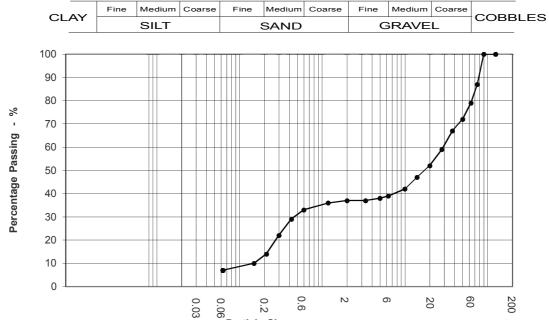
Agata K-Roche Senior Technician

Unit 10 Wessex Road Bourne end Buckinghamshire SL8 5DT



DETERMINATION OF PARTICLE SIZE DISTRIBUTION WET SIEVING METHOD

| BS1377 : Part 2 : 199 | 90 Clause 9.2 | | |
|------------------------|---|----------------|-------------|
| Client: | Aberdeenshire Council | Lab Sample No: | S8705 |
| Contract No: | 5414 | Hole ID: | CDR4 |
| Contract Name: | Stonehaven FAS | Sample Type: | В |
| Somalo | Prownich grow clightly cilty condy CDAV/EL with frequent | Sample No: | 4 |
| Sample Description: | Brownish grey slightly silty sandy GRAVEL with frequent cobbles | Depth (m): | 0.60 - 0.80 |
| Description: | CODDIES | Date Tested: | 28/11/2013 |



| Particle S | Size - mm |
|------------|-----------|
|------------|-----------|

| Sievii | ng | Sedimen | tation |
|---------------------|-----------|---------------------|-----------|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | | |
| 90 | 100 | | |
| 75 | 87 | | |
| 63 | 79 | | |
| 50 | 72 | | |
| 37.5 | 67 | | |
| 28 | 59 | | |
| 20 | 52 | | |
| 14 | 47 | | |
| 10 | 42 | | |
| 6.3 | 39 | | |
| 5 | 38 | | |
| 3.35 | 37 | | |
| 2 | 37 | | |
| 1.18 | 36 | | |
| 0.6 | 33 | | |
| 0.425 | 29 | | |
| 0.3 | 22 | | |
| 0.212 | 14 | | |
| 0.15 | 10 | | |
| 0.063 | 7 | | |

| Test Method | | |
|-------------------------|-------------------|--|
| BS 1377 : Part 2 : 1990 | | |
| Sieving | Clause Depth (m): | |
| Sedimentation | N/A | |

| Sample Proportions | | |
|--------------------|------|--|
| Cobbles | 21.0 | |
| Gravel | 42.0 | |
| Sand | 30.0 | |
| Silt & Clay | 7.0 | |

| Grading Analysis | | |
|------------------------|--------|--|
| D60 | 29.19 | |
| D10 | 0.15 | |
| Uniformity Coefficient | 194.58 | |

Date:

09/12/2013



Remarks:

Checked and Approved:

Whole sample used

Agata K-Roche

Senior Technician

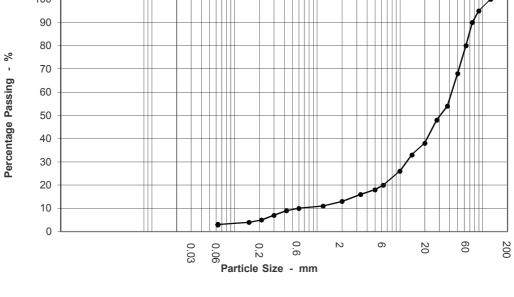
Unit 10 Wessex Road Bourne end Buckinghamshire SL8 5DT



DETERMINATION OF PARTICLE SIZE DISTRIBUTION WET SIEVING METHOD

| BS1377 : Part 2 : 19 | 90 Clause 9.2 | | |
|----------------------|--|----------------|-------------|
| Client: | Aberdeenshire Council | Lab Sample No: | S8706 |
| Contract No: | 5414 | Hole ID: | CDR4 |
| Contract Name: | Stonehaven FAS | Sample Type: | В |
| Comula | | Sample No: | 6 |
| Sample | Brown sandy GRAVEL with frequent cobbles | Depth (m): | 0.90 - 1.10 |
| Description: | | Date Tested: | 29/11/2013 |





| Sieving | | Sediment | tation |
|---------------------|-----------|---------------------|-----------|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | | |
| 90 | 95 | | |
| 75 | 90 | | |
| 63 | 80 | | |
| 50 | 68 | | |
| 37.5 | 54 | | |
| 28 | 48 | | |
| 20 | 38 | | |
| 14 | 33 | | |
| 10 | 26 | | |
| 6.3 | 20 | | |
| 5 | 18 | | |
| 3.35 | 16 | | |
| 2 | 13 | | |
| 1.18 | 11 | | |
| 0.6 | 10 | | |
| 0.425 | 9 | | |
| 0.3 | 7 | | |
| 0.212 | 5 | | |
| 0.15 | 4 | | |
| 0.063 | 3 | | |

| Test Method | | |
|-------------------------|-------------------|--|
| BS 1377 : Part 2 : 1990 | | |
| Sieving | Clause Depth (m): | |
| Sedimentation | N/A | |

| Sample Proportions | | |
|--------------------|------|--|
| Cobbles | 20.0 | |
| Gravel | 67.0 | |
| Sand | 10.0 | |
| Silt & Clay | 3.0 | |

| Grading Analysis | | |
|------------------------|-------|--|
| D60 | 42.86 | |
| D10 | 0.60 | |
| Uniformity Coefficient | 71.43 | |



Sheet 1 of 1

Remarks:

Checked and Approved:

Whole sample used

Agata K-Roche

Senior Technician

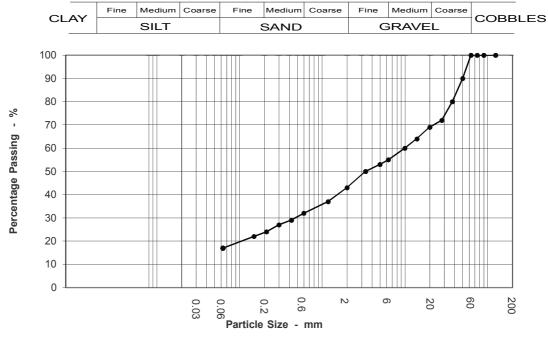
Unit 10 Wessex Road Bourne end Buckinghamshire SL8 5DT

Date: 09/12/2013



DETERMINATION OF PARTICLE SIZE DISTRIBUTION WET SIEVING METHOD

| BS1377 : Part 2 : 19 | 90 Clause 9.2 | | |
|----------------------|---|----------------|-------------|
| Client: | Aberdeenshire Council | Lab Sample No: | S8707 |
| Contract No: | 5414 | Hole ID: | CDR4 |
| Contract Name: | Stonehaven FAS | Sample Type: | В |
| Somalo | | Sample No: | 8 |
| Sample | Black and light brown silty very sandy GRAVEL | Depth (m): | 1.20 - 2.00 |
| Description: | | Date Tested: | 28/11/2013 |



| Sieving | | Sedimen | tation |
|---------------------|-----------|---------------------|-----------|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | | |
| 90 | 100 | | |
| 75 | 100 | | |
| 63 | 100 | | |
| 50 | 90 | | |
| 37.5 | 80 | | |
| 28 | 72 | | |
| 20 | 69 | | |
| 14 | 64 | | |
| 10 | 60 | | |
| 6.3 | 55 | | |
| 5 | 53 | | |
| 3.35 | 50 | | |
| 2 | 43 | | |
| 1.18 | 37 | | |
| 0.6 | 32 | | |
| 0.425 | 29 | | |
| 0.3 | 27 | | |
| 0.212 | 24 | | |
| 0.15 | 22 | | |
| 0.063 | 17 | | |

| Test Method | | |
|---------------------------|-----|--|
| BS 1377 : Part 2 : 1990 | | |
| Sieving Clause Depth (m): | | |
| Sedimentation | N/A | |

| Sample Proportions | | |
|--------------------|------|--|
| Cobbles | 0.0 | |
| Gravel | 57.0 | |
| Sand | 26.0 | |
| Silt & Clay | 17.0 | |

| Grading Ana | alysis |
|------------------------|--------|
| D60 D10 | 10.00 |
| Uniformity Coefficient | N/A |

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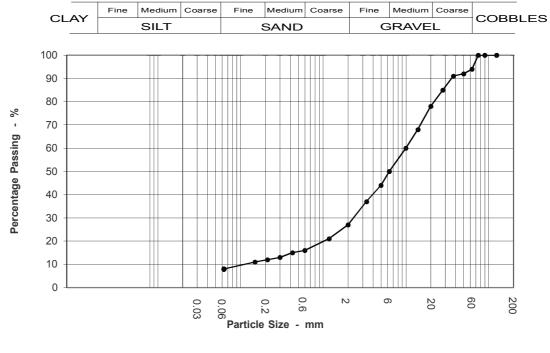
| Checked and | Agata K-Roche |
|--------------------|--------------------------------------|
| Approved: | Senior Technician |
| Unit 10 Wessex Roa | d Bourne end Buckinghamshire SL8 5DT |

Date: 09/12/2013



DETERMINATION OF PARTICLE SIZE DISTRIBUTION WET SIEVING METHOD

| BS1377 : Part 2 : 199 | 90 Clause 9.2 | | |
|-----------------------|--|----------------|-------------|
| Client: | Aberdeenshire Council | Lab Sample No: | S8710 |
| Contract No: | 5414 | Hole ID: | CDR4 |
| Contract Name: | Stonehaven FAS | Sample Type: | В |
| Samula | Prown ailty condy CRAVEL with apphlac and poskate of group | Sample No: | 14 |
| • | Brown silty sandy GRAVEL with cobbles and pockets of grey CLAY | Depth (m): | 3.00 - 3.50 |
| Description: | | Date Tested: | 05/12/2013 |



| Sieving | | Sedimen | tation |
|---------------------|-----------|---------------------|-----------|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | | |
| 90 | 100 | | |
| 75 | 100 | | |
| 63 | 94 | | |
| 50 | 92 | | |
| 37.5 | 91 | | |
| 28 | 85 | | |
| 20 | 78 | | |
| 14 | 68 | | |
| 10 | 60 | | |
| 6.3 | 50 | | |
| 5 | 44 | | |
| 3.35 | 37 | | |
| 2 | 27 | | |
| 1.18 | 21 | | |
| 0.6 | 16 | | |
| 0.425 | 15 | | |
| 0.3 | 13 | | |
| 0.212 | 12 | | |
| 0.15 | 11 | | |
| 0.063 | 8 | | |

Whole sample used

Agata K-Roche

Senior Technician

Unit 10 Wessex Road Bourne end Buckinghamshire SL8 5DT

| Test Method | |
|-------------------------|-------------------|
| BS 1377 : Part 2 : 1990 | |
| Sieving | Clause Depth (m): |
| Sedimentation | N/A |

| Sample Proportions | | |
|--------------------|------|--|
| Cobbles | 6.0 | |
| Gravel | 67.0 | |
| Sand | 19.0 | |
| Silt & Clay | 8.0 | |

| Grading Analysis | | |
|------------------------|-------|--|
| D60 | 10.00 | |
| D10 | 0.12 | |
| Uniformity Coefficient | 82.64 | |

Date:

09/12/2013



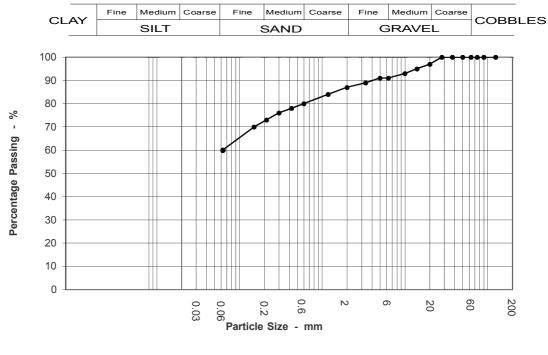
Remarks:

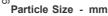
Checked and Approved:



DETERMINATION OF PARTICLE SIZE DISTRIBUTION WET SIEVING METHOD

| BS1377 : Part 2 : 199 | 90 Clause 9.2 | | |
|-----------------------|--|----------------|-------------|
| Client: | Aberdeenshire Council | Lab Sample No: | S8711 |
| Contract No: | 5414 | Hole ID: | CDR4 |
| Contract Name: | Stonehaven FAS | Sample Type: | В |
| Sample | | Sample No: | 17 |
| • | Brown slightly gravelly slightly sandy clayey SILT | Depth (m): | 4.00 - 5.00 |
| Description: | | Date Tested: | 27/11/2013 |





| Sieving | | Sedimentatio | on |
|-------------------|--------------|-----------------|---------|
| Particle Si mm | ze % Passing | Particle Size % | Passing |
| 125 | 100 | | |
| 90 | 100 | | |
| 75 | 100 | | |
| 63 | 100 | | |
| 50 | 100 | | |
| 37.5 | 100 | | |
| 28 | 100 | | |
| 20 | 97 | | |
| 14 | 95 | | |
| 10 | 93 | | |
| 6.3 | 91 | | |
| 5 | 91 | | |
| 3.35 | 89 | | |
| 2 | 87 | | |
| 1.18 | 84 | | |
| 0.6 | 80 | | |
| 0.425 | 78 | | |
| 0.3 | 76 | | |
| 0.212 | 73 | | |
| 0.15 | 70 | | |
| 0.063 | 60 | | |

| Test Method | |
|-------------------------|-------------------|
| BS 1377 : Part 2 : 1990 | |
| Sieving | Clause Depth (m): |
| Sedimentation | N/A |

| Sample Proportions | | |
|--------------------|------|--|
| Cobbles | 0.0 | |
| Gravel | 13.0 | |
| Sand | 27.0 | |
| Silt & Clay | 60.0 | |

| Grading Analysis | | |
|------------------------|------|--|
| D60 D10 | 0.06 | |
| Uniformity Coefficient | N/A | |

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| Remarks: | |
|-----------------|--|
|-----------------|--|

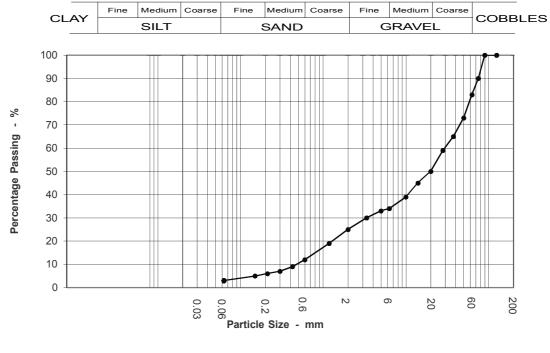
| Checked and | Agata K-Roche |
|-------------|-------------------|
| Approved: | Senior Technician |

Unit 10 Wessex Road Bourne end Buckinghamshire SL8 5DT



DETERMINATION OF PARTICLE SIZE DISTRIBUTION WET SIEVING METHOD

| BS1377 : Part 2 : 1990 Clause 9.2 | | | | |
|-----------------------------------|---------------------------------|----------------|-------------|--|
| Client: | Aberdeenshire Council | Lab Sample No: | S8931 | |
| Contract No: | 5414 | Hole ID: | TP3 | |
| Contract Name: | Stonehaven FAS | Sample Type: | LB | |
| Somalo | | Sample No: | 3 | |
| Sample | Brown sandy GRAVEL with cobbles | Depth (m): | 0.20 - 0.80 | |
| Description: | | Date Tested: | 28/11/2013 | |



| Sievir | ng | Sedimentation | |
|---------------------|-----------|---------------------|-----------|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | | |
| 90 | 100 | | |
| 75 | 90 | | |
| 63 | 83 | | |
| 50 | 73 | | |
| 37.5 | 65 | | |
| 28 | 59 | | |
| 20 | 50 | | |
| 14 | 45 | | |
| 10 | 39 | | |
| 6.3 | 34 | | |
| 5 | 33 | | |
| 3.35 | 30 | | |
| 2 | 25 | | |
| 1.18 | 19 | | |
| 0.6 | 12 | | |
| 0.425 | 9 | | |
| 0.3 | 7 | | |
| 0.212 | 6 | | |
| 0.15 | 5 | | |
| 0.063 | 3 | | |

| Test Method | | | |
|-------------------------|-------------------|--|--|
| BS 1377 : Part 2 : 1990 | | | |
| Sieving | Clause Depth (m): | | |
| Sedimentation | N/A | | |

| Sample Proportions | | | | |
|--------------------|------|--|--|--|
| Cobbles | 17.0 | | | |
| Gravel | 58.0 | | | |
| Sand | 22.0 | | | |
| Silt & Clay | 3.0 | | | |

| Grading Analysis | | | | |
|------------------------|-------|--|--|--|
| D60 | 29.58 | | | |
| D10 | 0.48 | | | |
| Uniformity Coefficient | 61.21 | | | |



Unit 10 Wessex Road Bourne end Buckinghamshire SL8 5DT Sheet 1 of 1

Remarks:

Checked and Approved:

Whole sample used

Agata K-Roche

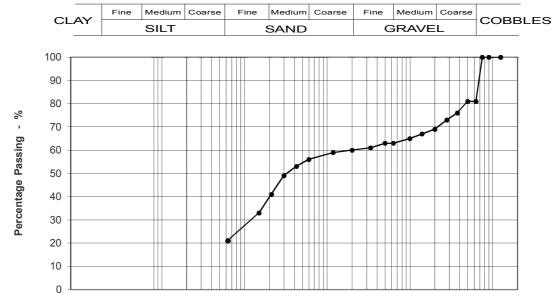
Senior Technician

Date: 09/12/2013



DETERMINATION OF PARTICLE SIZE DISTRIBUTION WET SIEVING METHOD

| BS1377 : Part 2 : 19 | 90 Clause 9.2 | | |
|----------------------|--|----------------|-------------|
| Client: | Aberdeenshire Council | Lab Sample No: | S8932 |
| Contract No: | 5414 | Hole ID: | TP5 |
| Contract Name: | Stonehaven FAS | Sample Type: | LB |
| Samula | | Sample No: | 4 |
| Sample | Brownish grey slightly gravelly silty SAND | Depth (m): | 0.50 - 1.30 |
| Description: | | Date Tested: | 28/11/2013 |



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| | 0 | | 0.03 | 0.00 Particl | 0 i2 e Size - | 0.6 • mm |
|---|---------------------|-----------|---------------------|-----------------|---------------------|-------------|
| 1 | Sievir | na | Sediment | tation | 1 | |
| | Particle Size mm | % Passing | Particle Size mm | % Passing | | |
| | 125 | 100 | | | | 5 |
| | 90 | 100 | | | | |
| | 75 | 100 | | | | |
| | 63 | 81 | | | | |
| | 50 | 81 | | | | |
| | 37.5 | 76 | | | | - |
| | 28 | 73 | | | | |
| | 20 | 69 | | | | |
| | 14 | 67 | | | | |
| | 10 | 65 | | | | |
| | 6.3 | 63 | | | | |
| | 5 | 63 | | | | |
| | 3.35 | 61 | | | | |
| | 2 | 60 | | | | |
| | 1.18 | 59 | | | | |
| | 0.6 | 56 | | | | |
| | 0.425 | 53 | | | | |
| | 0.3 | 49 | | | | |
| | 0.212 | 41 | | | | |
| | 0.15 | 33 | | | | |
| ļ | 0.063 | 21 | | | | U |

| Test Method | | | |
|---------------------------|-----|--|--|
| BS 1377 : Part 2 : 1990 | | | |
| Sieving Clause Depth (m): | | | |
| Sedimentation | N/A | | |

20

60

200

| Sample Proportions | | | |
|--------------------|------|--|--|
| Cobbles | 19.0 | | |
| Gravel | 21.0 | | |
| Sand | 39.0 | | |
| Silt & Clay | 21.0 | | |

| Grading Analysis | | | |
|------------------------|------|--|--|
| D60 D10 | 2.00 | | |
| Uniformity Coefficient | N/A | | |

Date:

09/12/2013



Remarks: Whole sample used Agata K-Roche Checked and Approved:

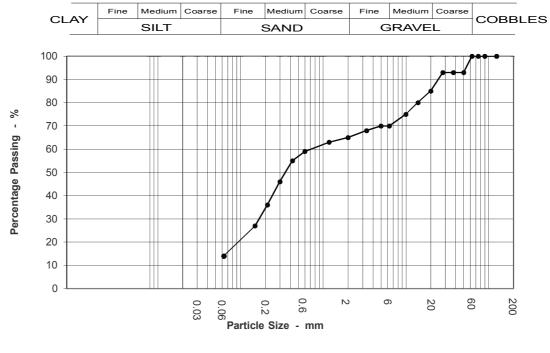
Senior Technician

Unit 10 Wessex Road Bourne end Buckinghamshire SL8 5DT



DETERMINATION OF PARTICLE SIZE DISTRIBUTION WET SIEVING METHOD

| BS1377 : Part 2 : 19 | 90 Clause 9.2 | | |
|----------------------|---------------------------------------|----------------|-------------|
| Client: | Aberdeenshire Council | Lab Sample No: | S8933 |
| Contract No: | 5414 | Hole ID: | TP5 |
| Contract Name: | Stonehaven FAS | Sample Type: | В |
| Somalo | | Sample No: | 6 |
| Sample | Brown slightly slightly gravelly SAND | Depth (m): | 1.30 - 1.50 |
| Description: | | Date Tested: | 28/11/2013 |





| Sieving | | Sedimentation | |
|---------------------|-----------|---------------------|-----------|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | | |
| 90 | 100 | | |
| 75 | 100 | | |
| 63 | 100 | | |
| 50 | 93 | | |
| 37.5 | 93 | | |
| 28 | 93 | | |
| 20 | 85 | | |
| 14 | 80 | | |
| 10 | 75 | | |
| 6.3 | 70 | | |
| 5 | 70 | | |
| 3.35 | 68 | | |
| 2 | 65 | | |
| 1.18 | 63 | | |
| 0.6 | 59 | | |
| 0.425 | 55 | | |
| 0.3 | 46 | | |
| 0.212 | 36 | | |
| 0.15 | 27 | | |
| 0.063 | 14 | | |

| Test Method | | | |
|---------------------------|-----|--|--|
| BS 1377 : Part 2 : 1990 | | | |
| Sieving Clause Depth (m): | | | |
| Sedimentation | N/A | | |

| Sample Proportions | | | |
|--------------------|------|--|--|
| Cobbles | 0.0 | | |
| Gravel | 35.0 | | |
| Sand | 51.0 | | |
| Silt & Clay | 14.0 | | |

| Grading Analysis | | | |
|------------------------|------|--|--|
| D60 D10 | 0.75 | | |
| Uniformity Coefficient | N/A | | |

1489

Unit 10 Wessex Road Bourne end Buckinghamshire SL8 5DT

Agata K-Roche

Senior Technician

Date: 09/12/2013



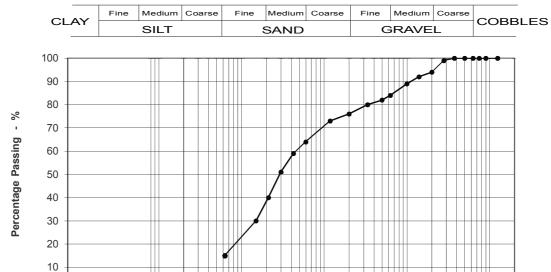
Remarks:

Checked and Approved:



DETERMINATION OF PARTICLE SIZE DISTRIBUTION WET SIEVING METHOD

| BS1377 : Part 2 : 19 | 90 Clause 9.2 | | |
|----------------------|--|----------------|-------------|
| Client: | Aberdeenshire Council | Lab Sample No: | S8934 |
| Contract No: | 5414 | Hole ID: | TP6 |
| Contract Name: | Stonehaven FAS | Sample Type: | LB |
| Samula | | Sample No: | 2 |
| Sample | Dark brown slightly silty slightly gravelly SAND | Depth (m): | 0.30 - 0.70 |
| Description: | | Date Tested: | 27/11/2013 |



0.00 N 0.00 Particle Size - mm

0.03

N

ი

| Sieving | | Sedimen | tation |
|---------------------|-----------|---------------------|-----------|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | | |
| 90 | 100 | | |
| 75 | 100 | | |
| 63 | 100 | | |
| 50 | 100 | | |
| 37.5 | 100 | | |
| 28 | 99 | | |
| 20 | 94 | | |
| 14 | 92 | | |
| 10 | 89 | | |
| 6.3 | 84 | | |
| 5 | 82 | | |
| 3.35 | 80 | | |
| 2 | 76 | | |
| 1.18 | 73 | | |
| 0.6 | 64 | | |
| 0.425 | 59 | | |
| 0.3 | 51 | | |
| 0.212 | 40 | | |
| 0.15 | 30 | | |
| 0.063 | 15 | | |

0

| Test Method | | |
|-------------------------|-------------------|--|
| BS 1377 : Part 2 : 1990 | | |
| Sieving | Clause Depth (m): | |
| Sedimentation | N/A | |

20

60

200

| Sample Proportions | | |
|--------------------|------|--|
| Cobbles | 0.0 | |
| Gravel | 24.0 | |
| Sand | 61.0 | |
| Silt & Clay | 15.0 | |

| Grading Analysis | |
|------------------------|------|
| D60 D10 | 0.46 |
| Uniformity Coefficient | N/A |

Unit 10 Wessex Road Bourne end Buckinghamshire SL8 5DT

Agata K-Roche

Senior Technician

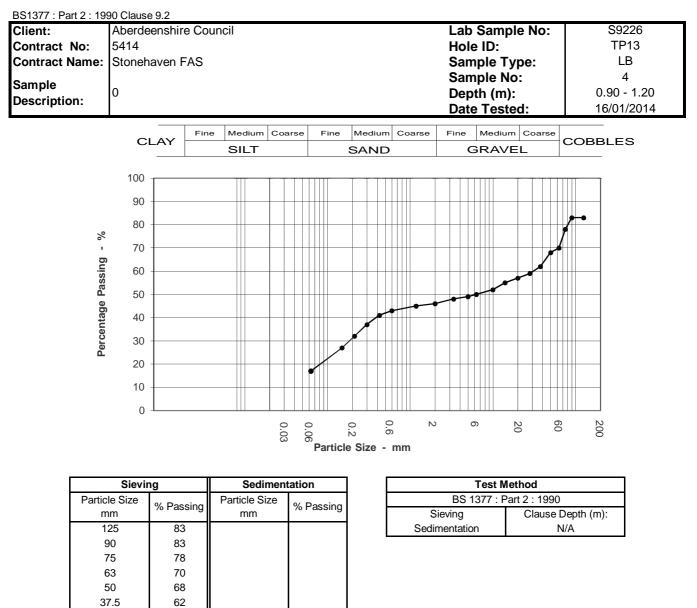
Date: 09/12/2013

Remarks:

Checked and Approved:



DETERMINATION OF PARTICLE SIZE DISTRIBUTION WET SIEVING METHOD



| Sample Proportions | | |
|--------------------|------|--|
| Cobbles | 30.0 | |
| Gravel | 24.0 | |
| Sand | 29.0 | |
| Silt & Clay | 17.0 | |
| | | |

| Grading Analysis | |
|------------------------|-------|
| D60 D10 | 31.17 |
| Uniformity Coefficient | N/A |

16/01/2014

Remarks:

28

20

14

10

6.3

5 3.35

2

1.18 0.6

0.425

0.3

0.212

0.15

0.063

59

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32 27

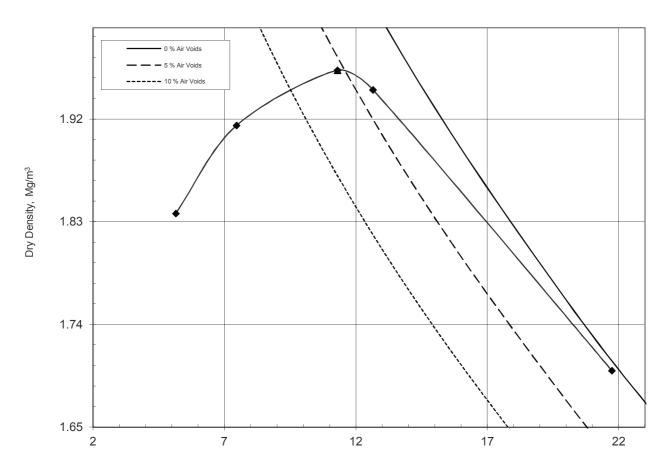
17

| Checked and | D Oates | |
|---------------------|------------------------------------|-------|
| Approved: | Quality Co-ordinator | Date: |
| Unit 10 Wessex Road | Bourne end Buckinghamshire SL8 5DT | |



Environmental Services MOISTURE CONTENT/DRY DENSITY RELATIONSHIP

| BS1377 : Part 4 : 19 | 90 | | | | |
|------------------------|--|----------------|------|--------|------|
| Client: | Aberdeenshire Council | Lab Sample No: | | S8740 |) |
| Contract No: | 5414 | Hole ID: | | BH4 | |
| Contract Name: | Stonehaven FAS | Sample Type: | | В | |
| Sampla | | Sample No: | | 6 | |
| Sample Description: | Brown slightly clayey slightly gravelly SAND | Depth (m): | 1.90 | - | 3.00 |
| Description: | | Date Tested: | 25/ | /11/20 | 13 |



Moisture Content, %

| Preparation | | AIR DRIED |
|--------------------------------|-------|---------------|
| Test Method | | 2.5 kg Rammer |
| Mould Type | | STANDARD |
| Samples Used | | SINGLE SAMPLE |
| Mass Retained on 37.5 mm Sieve | % | 0 |
| Mass Retained on 20.0 mm Sieve | % | 2 |
| Particle Density - ASSUMED | Mg/m³ | 2.72 |
| Maximum Dry Density | Mg/m³ | 1.96 |
| Optimum Moisture Content | % | 11 |

Remarks:

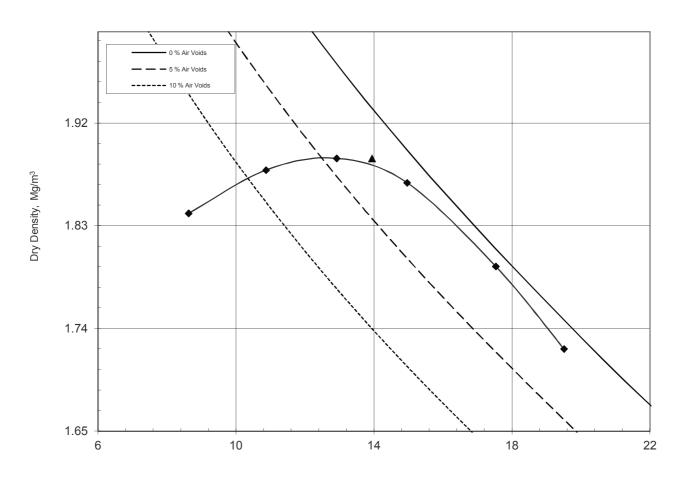
| Checked and Approved | Agata K- Roche | |
|--|-------------------|--|
| Unit 10 Wessex Road Bourne end Buckinghamshire SL8 5DT | | |





Environmental Services MOISTURE CONTENT/DRY DENSITY RELATIONSHIP

| BS1377 : Part 4 : 199 | 90 | | |
|------------------------|--|----------------|-------------|
| Client: | Aberdeenshire Council | Lab Sample No: | S8765 |
| Contract No: | 5414 | Hole ID: | BH6 |
| Contract Name: | Stonehaven FAS | Sample Type: | В |
| Sampla | | Sample No: | 17 |
| Sample Description: | Greyish brown slightly gravelly very clayey SAND | Depth (m): | 5.00 - 6.00 |
| Description: | | Date Tested: | 28/11/2013 |



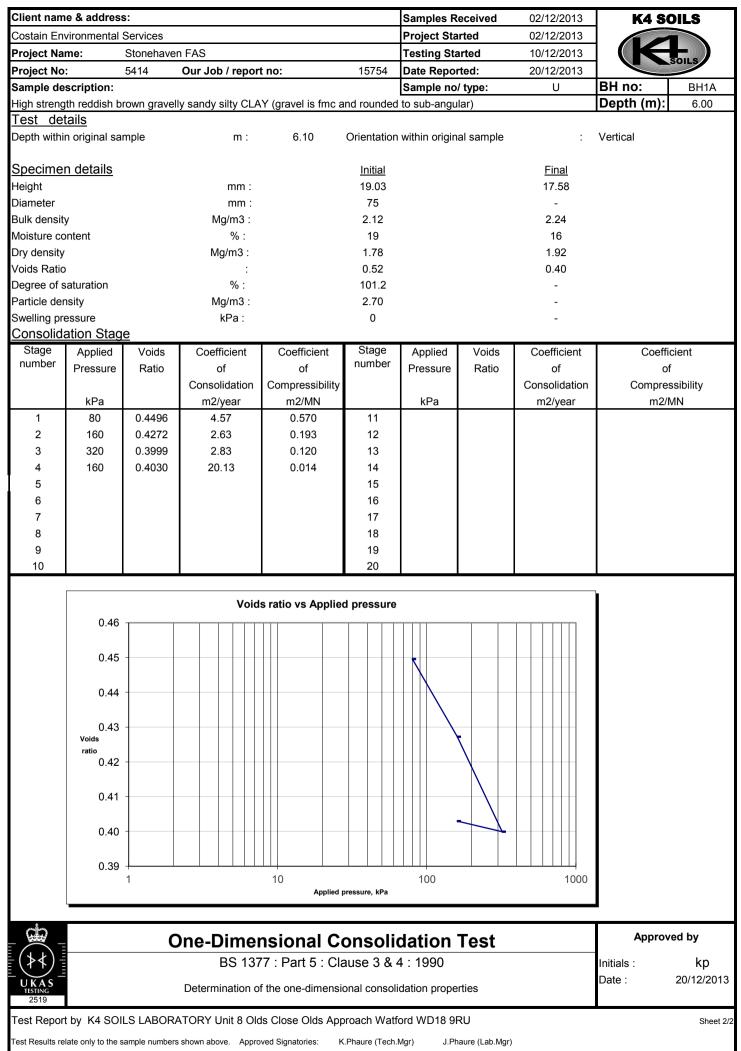
Moisture Content, %

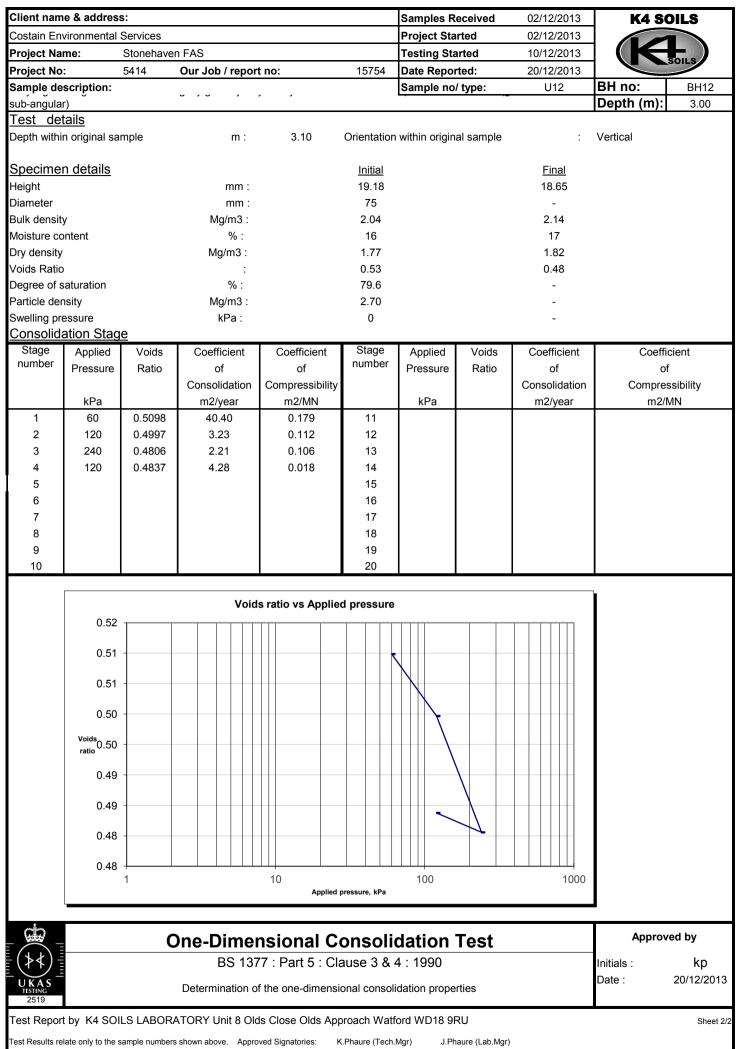
| Preparation | | AIR DRIED |
|--------------------------------|-------|------------------|
| Test Method | | 2.5 kg Rammer |
| Mould Type | | STANDARD |
| Samples Used | | SEPARATE SAMPLES |
| Mass Retained on 37.5 mm Sieve | % | 0 |
| Mass Retained on 20.0 mm Sieve | % | 0 |
| Particle Density - ASSUMED | Mg/m³ | 2.65 |
| Maximum Dry Density | Mg/m³ | 1.89 |
| Optimum Moisture Content | % | 14 |

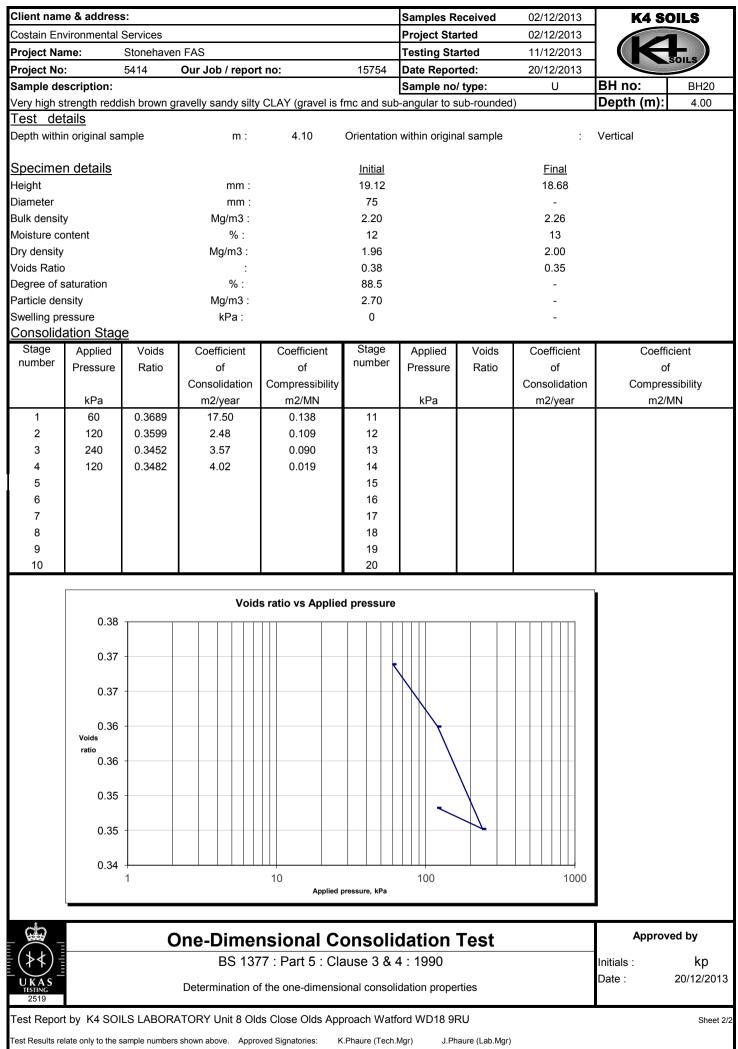
Remarks:

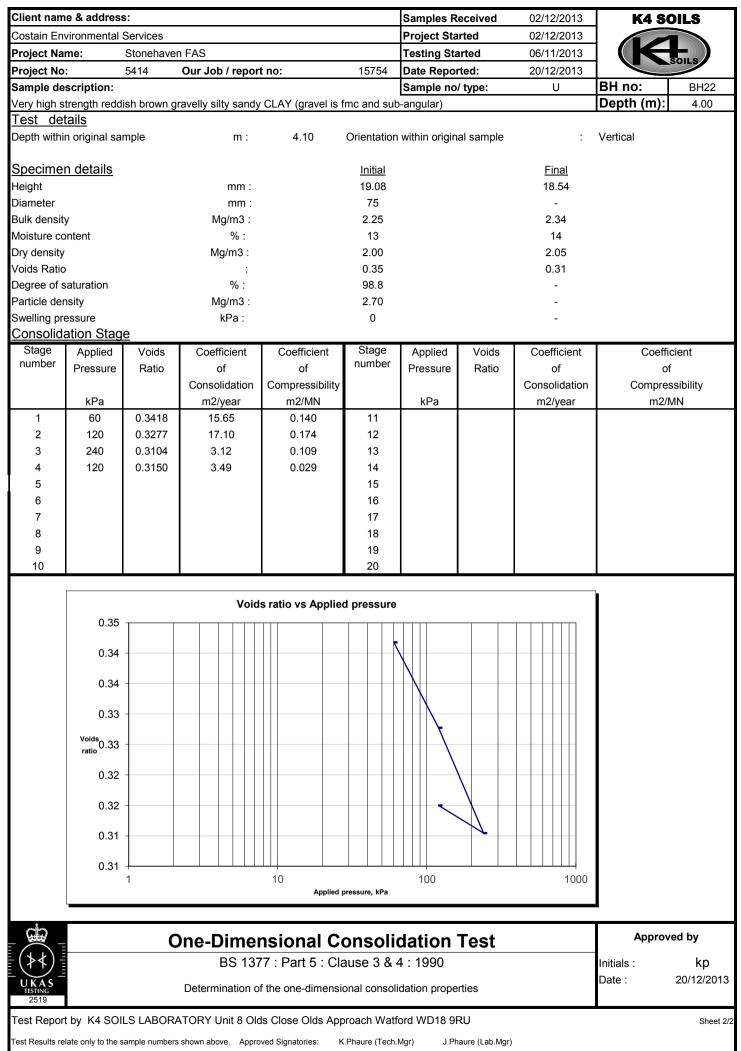
| Checked and Approved | Agata K- Roche | |
|--|-------------------|--|
| Unit 10 Wessex Road Bourne end Buckinghamshire SL8 5DT | | |

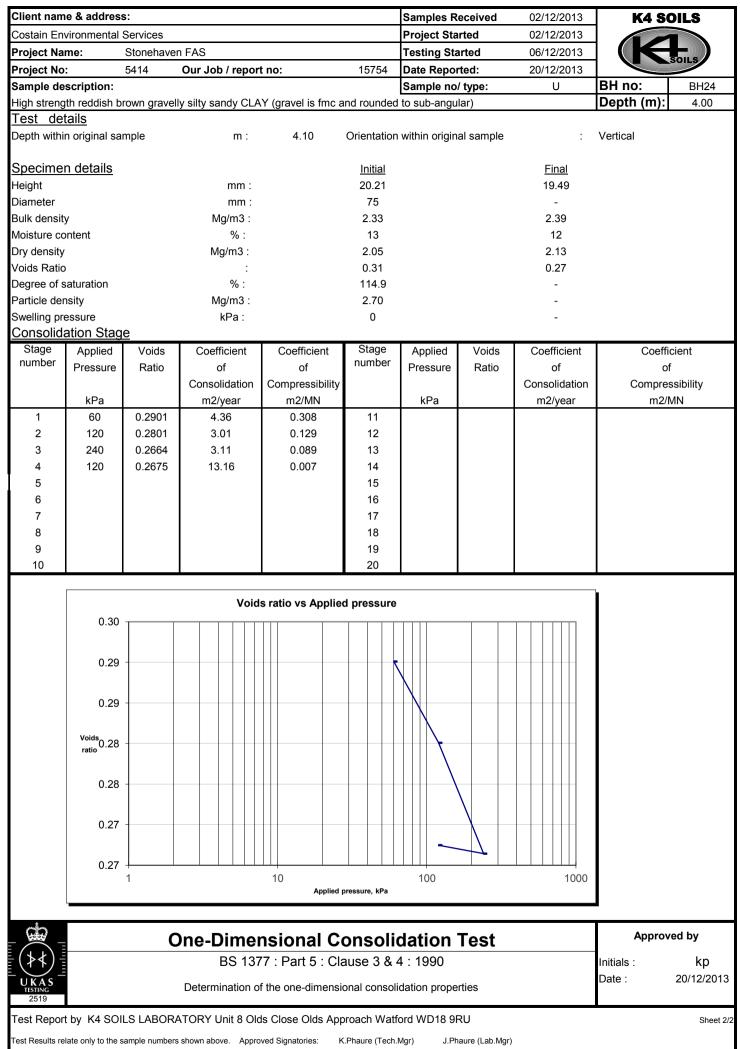


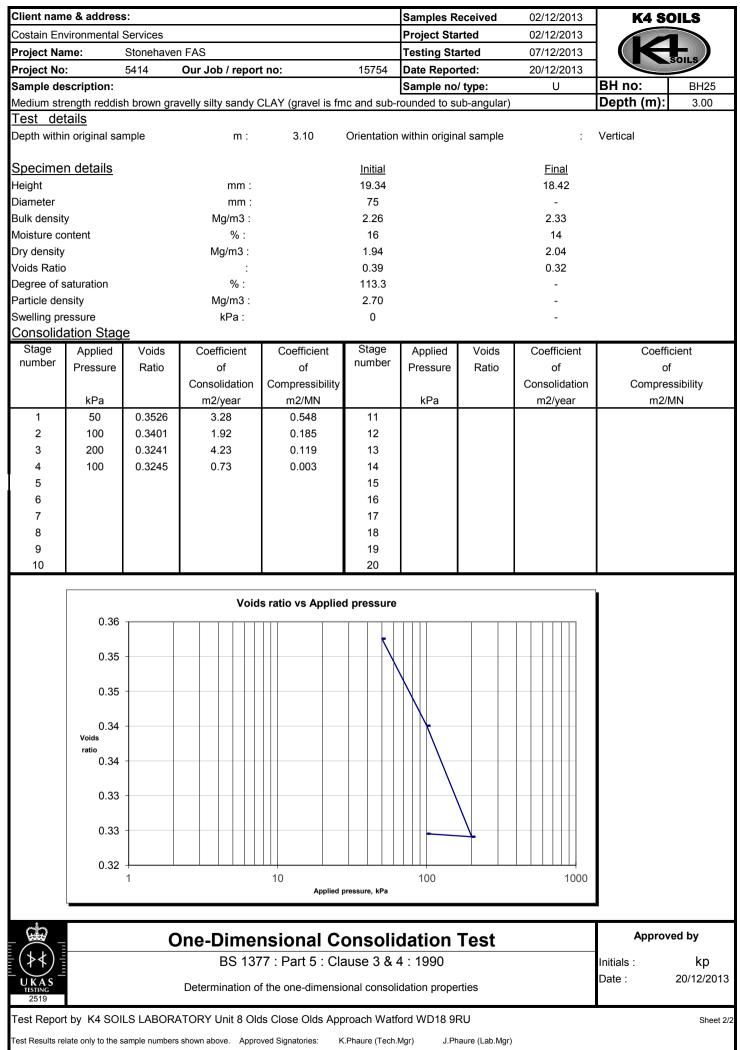


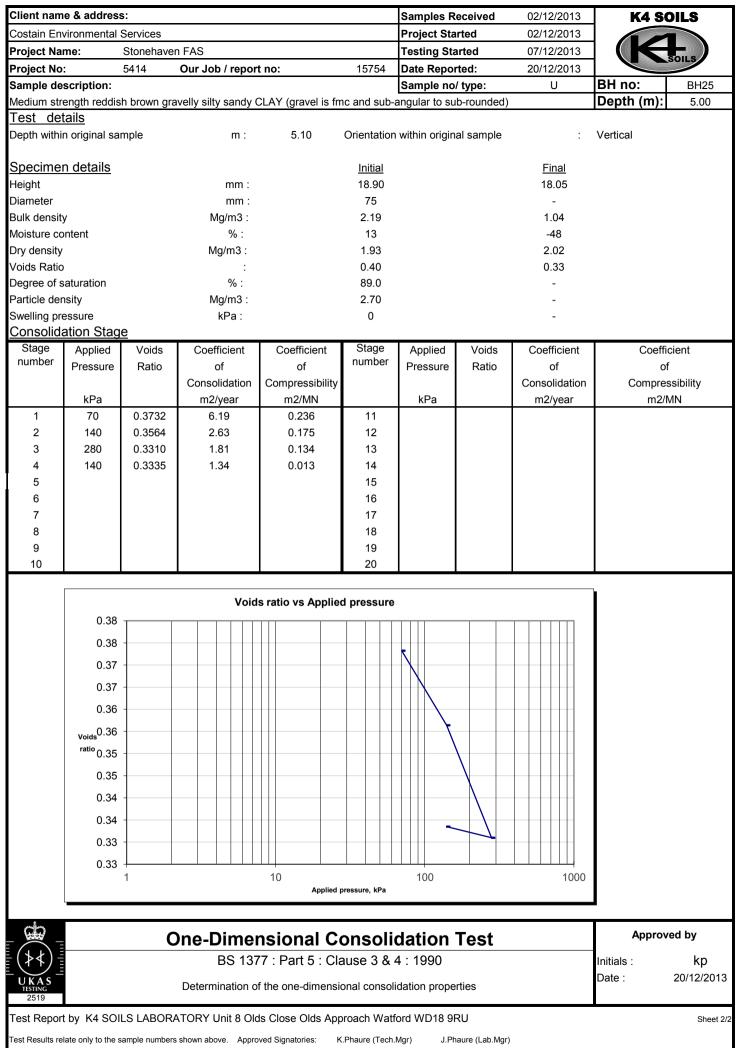


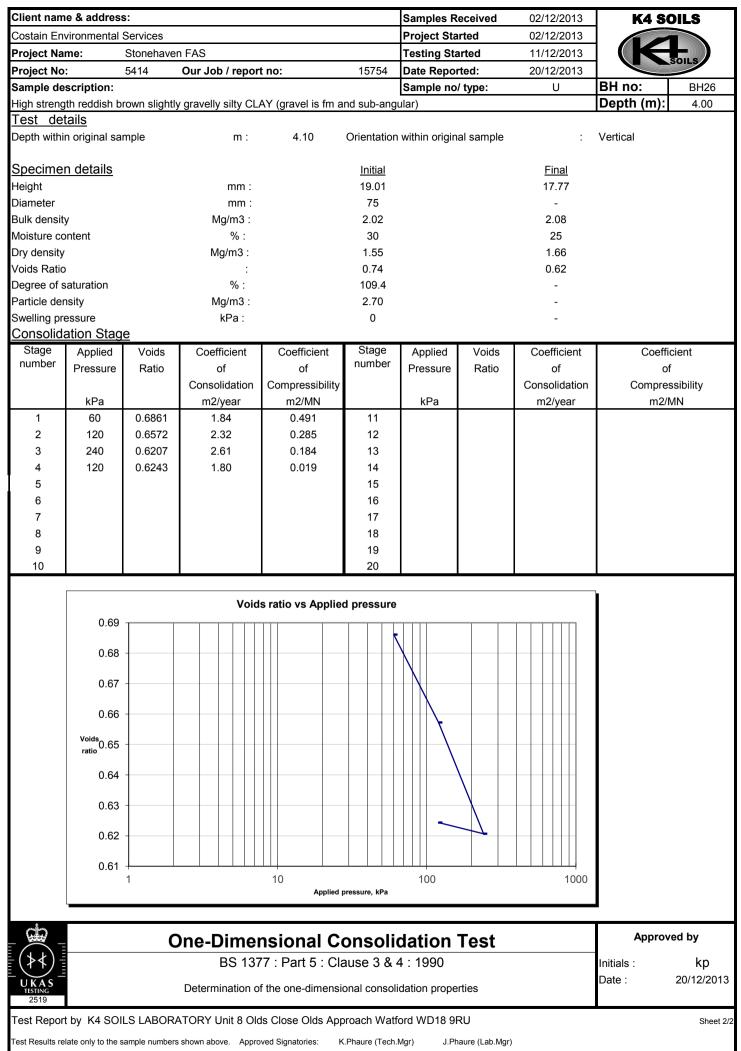


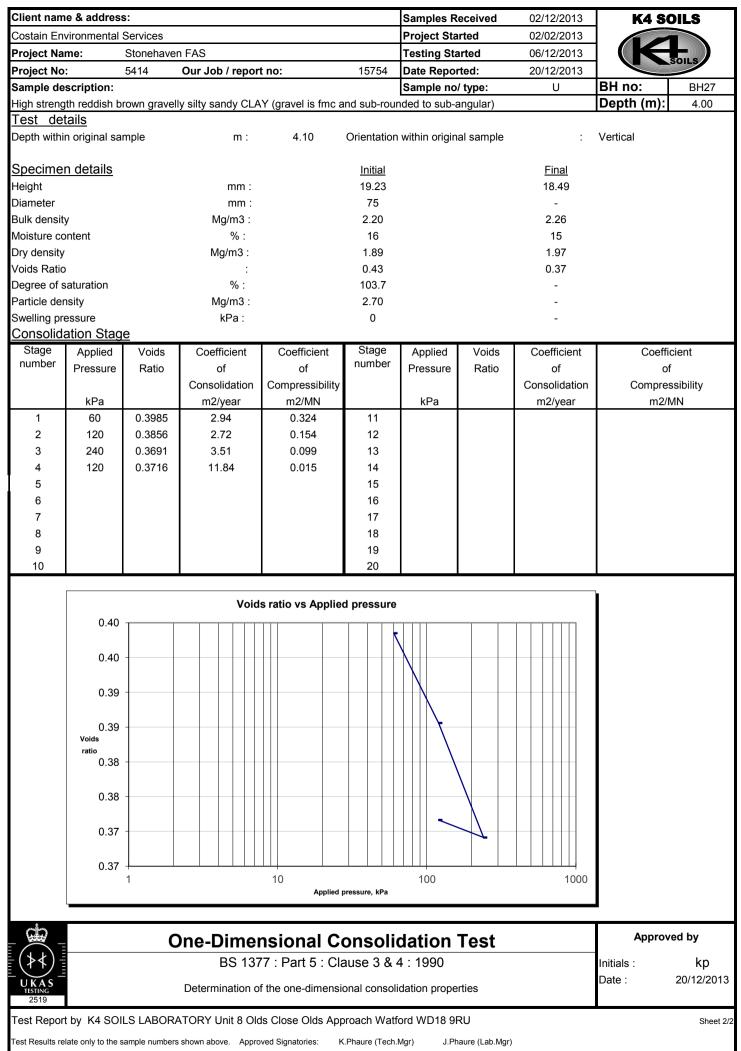


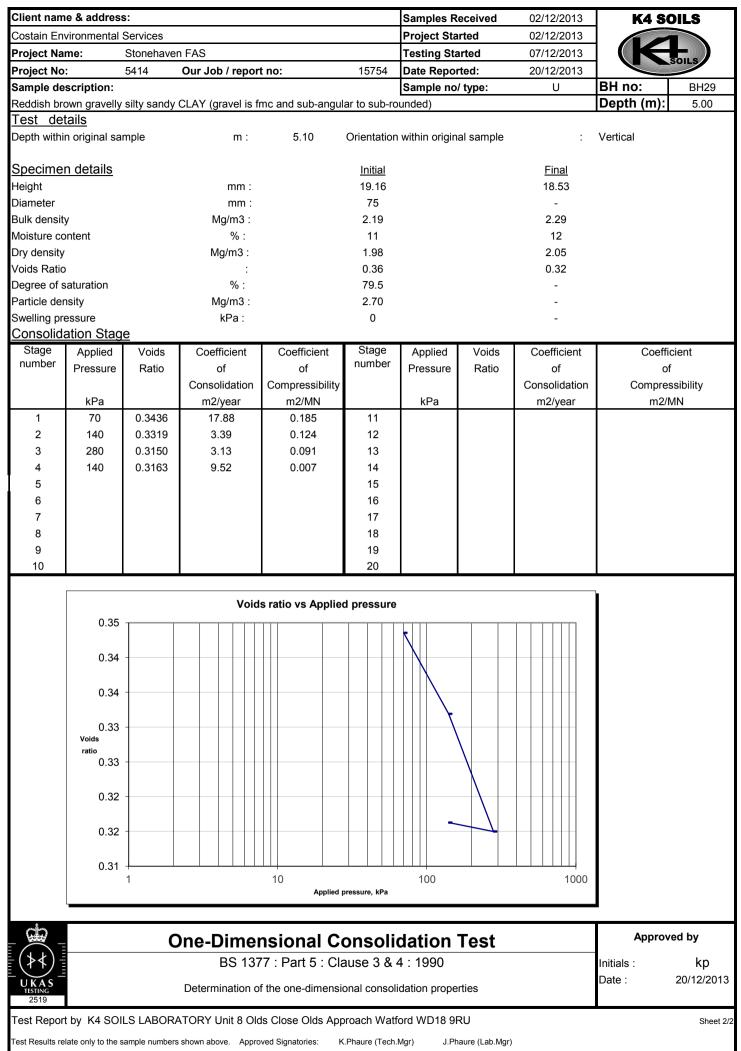


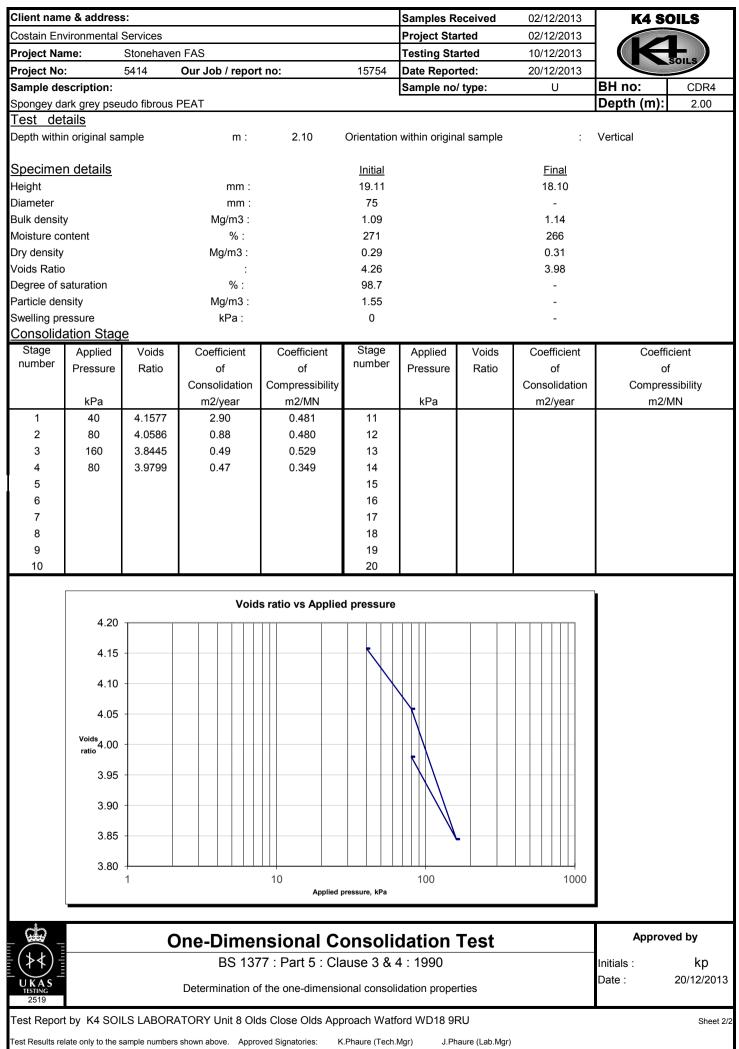












| Client : | | | Costain Environmental Services | | Our Job/repor | rt no: | 15754 | Samples Rec | : 02/12/20 | 13 Testing S | Started: 07 | 7/12/2013 |
|-----------|--------------------|---------------------|--|-----------------------------------|---------------------------|------------------------|---------------------------|--------------------------------|------------------------------|--------------------|----------------------------|-----------|
| Project r | name: | | Stonehaven FAS | | Project No: | 541 | 4 | Project Starte | d: - | Date repo | |)/12/2013 |
| - | Sample no / ref | Sample depth (m) | Description | Moisture content (%) | Bulk Density (Mg/m3) | Dry density (Mg/m3) | Cell Pressure (kPa) | Strain at failure (%) | Max Deviator Stress (kPa) | Mode of failure | Shear Strength (kPa) | Phi (deg) |
| CDR4 | U18 | 5.00 | Very high strength reddish brown gravelly silty sandy CLAY (gravel is fmc and sub-angular to sub-rounded) | 10 | 2.34 | 2.13 | 150 | 13.9 | 556 | Brittle | 278 | NA |
| BH1A | U20 | 6.00 | High strength reddish brown gravelly sandy silty CLAY (gravel is fmc and rounded to sub-angular) | 11 | 2.45 | 2.21 | 150 | 18.7 | 257 | Brittle | 129 | NA |
| BH03 | U16 | 5.00 | Medium strength reddish brown gravelly silty sandy CLAY (gravel is fmc and sub-rounded to sub-angular) | 11 | 2.24 | 2.03 | 150 | 18.6 | 87 | Brittle | 44 | NA |
| BH12 | U12 | | Very high strength reddish brown slightly gravelly silty sandy CLAY with occasional pockets of red sand (gravel is fm and sub-angular) | 16 | 2.16 | 1.86 | 100 | 11.6 | 579 | Brittle | 290 | NA |
| BH20 | U15 | 4.00 | Very high strength reddish brown gravelly sandy silty CLAY (gravel is fmc and sub-angular to sub-rounded) | 11 | 2.30 | 2.07 | 150 | 11.6 | 541 | Brittle | 271 | NA |
| BH22 | U12 | 4.00 | Very high strength reddish brown gravelly silty sandy CLAY (gravel is fmc and sub-angular) | 10 | 2.29 | 2.09 | 150 | 16.2 | 540 | Brittle | 270 | NA |
| BH24 | U12 | 4.00 | High strength reddish brown gravelly silty sandy CLAY (gravel is fmc and rounded to sub-angular) | 9.2 | 2.43 | 2.22 | 150 | 19.2 | 213 | Brittle | 107 | NA |
| BH25 | U11 | 3.00 | Medium strength reddish brown gravelly silty sandy CLAY (gravel is fmc and sub-rounded to sub-angular) | 17 | 2.38 | 2.02 | 100 | 20.2 | 89 | Plastic | 45 | NA |
| BH26 | U15 | 4.00 | High strength reddish brown slightly gravelly silty CLAY (gravel is fm and sub-angular) | 27 | 2.11 | 1.67 | 150 | 20.2 | 212 | Brittle | 106 | NA |
| BH27 | U14 | 4.00 | High strength reddish brown gravelly silty sandy CLAY (gravel is fmc and sub-rounded to sub-angular) | 16 | 2.31 | 2.00 | 150 | 20.2 | 168 | Brittle | 84 | NA |
| | | | | | | | | | | | | |
| K4 SC | oils | | Summary of Undrained Tr | iaxial (| Compress | ion Testir | ng | | | | Checked approv | |
| | | | BS 1377 : Part | 7 : Clause 8 | : 1990 | | | | | $- \smile -$ | Initials | kp |
| | OILS | | Results relate only to the sample numbers shown above. All samples connected with this report, incl any o | a de altales de la composición de | and and the second states | | | a di Barra da Cara da Martina. | | U K A S TESTING | | |

K4 SOILS Report of Undrained Triaxial Compression Test BS 1377 : Part 7 : 1990 Clause 8.0 Stonehaven FAS Project name: Samples Received: 02/12/2013 Project Started: 02/12/2013 Client: Costain Environmental Services 07/12/2013 **Testing Started:** 20/12/2013 5414 15754 Date Reported: Project no: Our job /report no: BH / TP no: U20 BH1A Sample no: Depth (m): 6.00 Soil Description: High strength reddish brown gravelly sandy silty CLAY (gravel is fmc and rounded to sub-angular) Sample Details 1 Specimen Sample Condition Undisturbed Position and orientation within Height mm 198.0 the original sample Diameter mm 100.0 Moisture Content % 11 Bulk Density Mg/m³ 2.45 Dry Density Mg/m³ 2.21 **Test Details** Membrane Thickness mm 0.2 Membrane Correction kPa 0.73 Rate of Axial Displacement %/min 2.02 Cell Pressure kPa 150 Strain at Failure % Shear Strength 18.7 Parameters Maximum Deviator Stress kPa 257 Shear Strength kPa С 128 kPa 128 Mode of Failure Brittle Phi 0.0° Specimen 1 300 250 Deviator Stress - kPa 200 150 100 50 0

> 2 4 6 8 10 18 20 0 Strain - % 500 400 Shear Stress - kPa 300 200 100 0 100 200 300 700 1000 0 400 500 600 800 900 Normal Stress - kPa

12

14

16

-50

Fax:01923711311

Tel:01923711288

-mail: k4soils@aol.com

Approved Signatories: K.Phaure(Tech.Mgr) **K4 SOILS LABORATORY** Checked and Approved Unit 8, Olds Close, Watford, Herts, WD18 9RU. J.Phaure(Lab.Mgr) Initials: kp

Test results relate only to the sample numbers shown above

Il samples connected with this report, incl any on 'hold' will be disposed off according to Company Policy. A copy of this policy is available on request.



20/12/2013

MSF-11/R9 Sheet 2/2

Date:

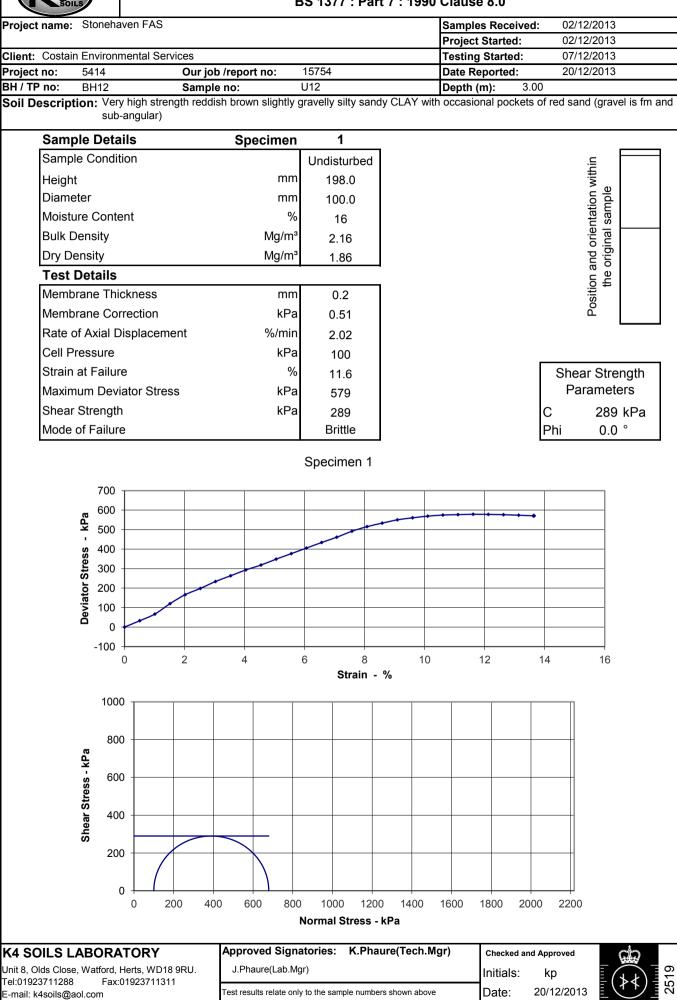
Report of Undrained Triaxial Compression Test

| onehav | ven FAS | | | | BS | 1377 : F | art 7 : | 1990 C | lause 8. | 0 | | |
|---|---|--|--|---|---|---|---|--|---|---|--|---|
| oneha | ven FAS | | | | | | | | | | | |
| | | | | | | | | | amples Re | | | 12/2013 |
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| 14 103 | | Our job | - | t no: | 157 | | | | ate Repor | | | 12/2013 |
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| Conte | nt | | | Q | 6 | 10 | | | | | | san |
| sity | | | | Mg/m | 1 ³ | | | | | | | nal |
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| | | | | | <u> </u> | 2.00 | | | | | | on and orientation v the original sample |
| | kness | | | mr | n | 0.2 | | | | | | Position and orientation within the original sample |
| | | | | | | | | | | | | Pos |
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| | ispiaceme | JIT | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | 18.6 | | | | | | ar Strength |
| Devia | ator Stress | 5 | | kP | а | 87 | | | | | Pa | arameters |
| ength | | | | kP | а | 44 | | | | | С | 44 kPa |
| ailure | ; | | | | | Brittle | | | | | Phi | 0.0 ° |
| 80 - 70 - 60 - 50 - 30 - 20 - 10 - 0 - | | | | | | | · · · · · · · · | | • • • • • | | | |
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| 250 | ' | | | | | | | | | | | |
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| 150 | | | | | | | | | | | | |
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| 50 | | | | | | _ | | | | | | |
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| | | | | 17 | 1 | A 1 | 1 | | 1 | | | |
| 0 | | | | <u> </u> | | | | | | | | |
| | 103 : Medi Detai Conditi Contestity ity tails e Thick e Thick ails e Thick ails e Thick ails e Thick ails ails ails ailor ailor </td <td>103 Medium strengtl Details Condition Content sity tails e Thickness e Correction xial Displaceme sure Failure Deviator Stress ength Failure 100 90 0 70 0 60 0 70 0 100 0</td> <td>103 Sample Medium strength reddish Details condition Content sity ity tails e Thickness e Correction xial Displacement sure =ailure Deviator Stress ength =ailure 100 90 80 70 60 50 40 30 20 10 0</td> <td>103 Sample no: : Medium strength reddish brown Details Spectral condition Content sity ity tails e Thickness e Correction xial Displacement sure =ailure Deviator Stress ength -ailure 100 90 80 70 60 50 40 20 10 0 50 250 250 250 250 100</td> <td>Sample no: Medium strength reddish brown gravelly Details Specime Condition mr Content og sity Mg/m tails mr e Thickness mr e Correction kP Failure 9 Deviator Stress kP Failure 9 100 0 90 0 100 0 100 5</td> <td>IO3 Sample no: U10 : Medium strength reddish brown gravelly silty silty Image: Specimen condition U Details Specimen condition U Content % Mg/m³ ity Mg/m³ Image: Specimen condition U Content % Mg/m³ ity Mg/m³ Image: Specimen condition U Content % Mg/m³ ity Mg/m³ Image: Specimen condition U content % Mg/m³ ity Mg/m³ Image: Specimen condition U content % Mg/m³ Image: Specimen condition ealler % Mg/m³ Image: Specimen condition sure kPa Specimen condition KPa Failure % Deviator Stress kPa Failure % Specimen condition Specimen condition 100 5 1 Image: Specimen condition 250 1 1 1 250 1 1 1 100 1 1 1</td> <td>IO3 Sample no: U16 : Medium strength reddish brown gravelly silty sandy CL/ Details Specimen 1 Condition Undisturbe 199.0 mm 100.0 Content % 10 sity Mg/m³ 2.24 ity Mg/m³ 2.03 tails 0.2 e Thickness mm 0.2 correction kPa sure kPa Failure % Deviator Stress kPa ength kPa failure 5 100 5 100 5 100 5 100 5</td> <td>Image: 103 Sample no: U16 : Medium strength reddish brown gravelly silty sandy CLAY (grave Details Specimen 1 Details Specimen 1 Condition Undisturbed 199.0 mm 100.0 10 Content % 10 sity Mg/m³ 2.24 tity Mg/m³ 2.03 tails 0.2 0.72 e Thickness mm 0.2 e Correction kPa 150 sure kPa 150 ailure %/min 2.01 sure kPa 44 Brittle Specimen 1</td> <td>Image: Note of the second s</td> <td>Io3 Sample no: U16 Depth (m): : Medium strength reddish brown gravelly silty sandy CLAY (gravel is fmc and sub-round sub-round) Image: Specimen 1 Details Specimen 1 iondition Image: Image</td> <td>103 Sample no: U16 Depth (m): 5.0 : Medium strength reddish brown gravelly silty sandy CLAY (gravel is fmc and sub-rounded to Details Specimen 1 Details Specimen 1 iondition Undisturbed 199.0 mm 100.0 content % ity Mg/m³ 2.24 ity Mg/m³ 2.03 sails 0.72 e Thickness mm 0.2 c Correction kPa alure % Bay and the set of the s</td> <td>Idia Sample no: U16 Depth (m): 5.00 Medium strength reddish brown gravelly silty sandy CLAY (gravel is fmc and sub-rounded to sub-and td> | 103 Medium strengtl Details Condition Content sity tails e Thickness e Correction xial Displaceme sure Failure Deviator Stress ength Failure 100 90 0 70 0 60 0 70 0 100 0 | 103 Sample Medium strength reddish Details condition Content sity ity tails e Thickness e Correction xial Displacement sure =ailure Deviator Stress ength =ailure 100 90 80 70 60 50 40 30 20 10 0 | 103 Sample no: : Medium strength reddish brown Details Spectral condition Content sity ity tails e Thickness e Correction xial Displacement sure =ailure Deviator Stress ength -ailure 100 90 80 70 60 50 40 20 10 0 50 250 250 250 250 100 | Sample no: Medium strength reddish brown gravelly Details Specime Condition mr Content og sity Mg/m tails mr e Thickness mr e Correction kP Failure 9 Deviator Stress kP Failure 9 100 0 90 0 100 0 100 5 | IO3 Sample no: U10 : Medium strength reddish brown gravelly silty silty Image: Specimen condition U Details Specimen condition U Content % Mg/m³ ity Mg/m³ Image: Specimen condition U Content % Mg/m³ ity Mg/m³ Image: Specimen condition U Content % Mg/m³ ity Mg/m³ Image: Specimen condition U content % Mg/m³ ity Mg/m³ Image: Specimen condition U content % Mg/m³ Image: Specimen condition ealler % Mg/m³ Image: Specimen condition sure kPa Specimen condition KPa Failure % Deviator Stress kPa Failure % Specimen condition Specimen condition 100 5 1 Image: Specimen condition 250 1 1 1 250 1 1 1 100 1 1 1 | IO3 Sample no: U16 : Medium strength reddish brown gravelly silty sandy CL/ Details Specimen 1 Condition Undisturbe 199.0 mm 100.0 Content % 10 sity Mg/m³ 2.24 ity Mg/m³ 2.03 tails 0.2 e Thickness mm 0.2 correction kPa sure kPa Failure % Deviator Stress kPa ength kPa failure 5 100 5 100 5 100 5 100 5 | Image: 103 Sample no: U16 : Medium strength reddish brown gravelly silty sandy CLAY (grave Details Specimen 1 Details Specimen 1 Condition Undisturbed 199.0 mm 100.0 10 Content % 10 sity Mg/m³ 2.24 tity Mg/m³ 2.03 tails 0.2 0.72 e Thickness mm 0.2 e Correction kPa 150 sure kPa 150 ailure %/min 2.01 sure kPa 44 Brittle Specimen 1 | Image: Note of the second s | Io3 Sample no: U16 Depth (m): : Medium strength reddish brown gravelly silty sandy CLAY (gravel is fmc and sub-round sub-round) Image: Specimen 1 Details Specimen 1 iondition Image: Image | 103 Sample no: U16 Depth (m): 5.0 : Medium strength reddish brown gravelly silty sandy CLAY (gravel is fmc and sub-rounded to Details Specimen 1 Details Specimen 1 iondition Undisturbed 199.0 mm 100.0 content % ity Mg/m³ 2.24 ity Mg/m³ 2.03 sails 0.72 e Thickness mm 0.2 c Correction kPa alure % Bay and the set of the s | Idia Sample no: U16 Depth (m): 5.00 Medium strength reddish brown gravelly silty sandy CLAY (gravel is fmc and sub-rounded to sub-and

| K4 SOILS LABORATORY | Approved Signatories: | K.Phaure(Tech.Mgr) | Checked a | nd Approved | GÍ D | | | | |
|--|--|-------------------------|-----------|-------------|---|--|--|--|--|
| Unit 8, Olds Close, Watford, Herts, WD18 9RU. Tel:01923711288 Fax:01923711311 | J.Phaure(Lab.Mgr) | | Initials: | kp | | | | | |
| E-mail: k4soils@aol.com | Test results relate only to the sam | ple numbers shown above | Date: | 20/12/2013 | Se la companya de la | | | | |
| All samples connected with this report, incl any on 'hold' will be dis | All samples connected with this report, incl any on 'hold' will be disposed off according to Company Policy. A copy of this policy is available on request. MSF-11/R9 Sheet 2/2 UKAS | | | | | | | | |

Report of Undrained Triaxial Compression Test

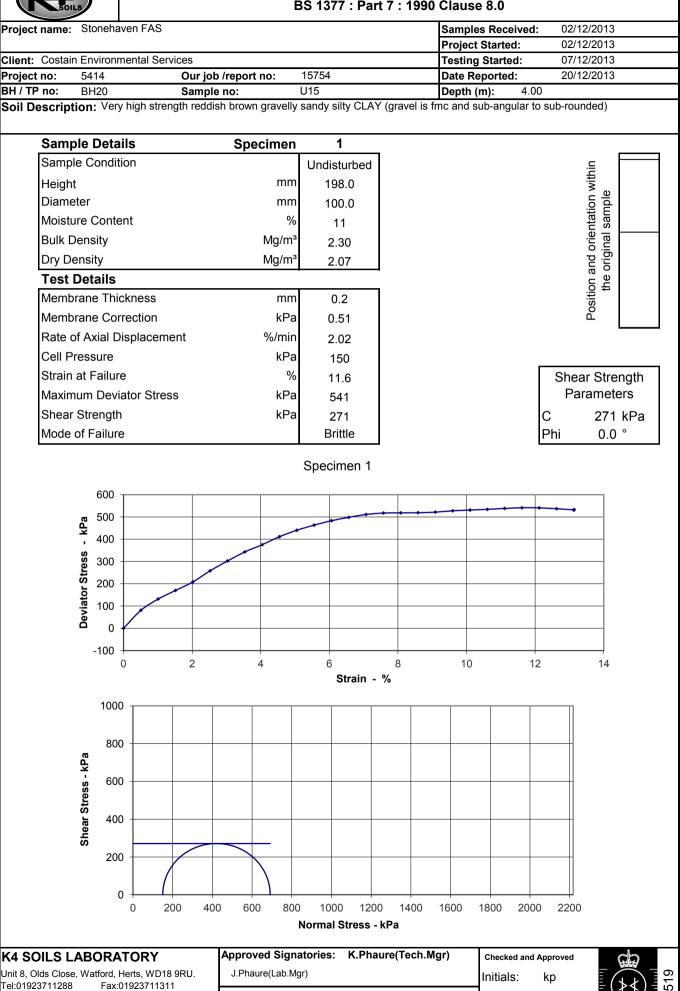
BS 1377 : Part 7 : 1990 Clause 8.0



Il samples connected with this report, incl any on 'hold' will be disposed off according to Company Policy. A copy of this policy is available on request. MSF-11/R9 Sheet 2/2

Report of Undrained Triaxial Compression Test

BS 1377 : Part 7 : 1990 Clause 8.0



-mail: k4soils@aol.com Il samples connected with this report, incl any on 'hold' will be disposed off according to Company Policy. A copy of this policy is available on request. MSF-11/R9 Sheet 2/2

Test results relate only to the sample numbers shown above

20/12/2013

Date:

| K4 SOILS | Report of l | Jndrained Tri | axial Compression | Test |
|---|--|-----------------|---------------------------------------|--|
| | Е | S 1377 : Part 7 | : 1990 Clause 8.0 | |
| Project name: Stonehaven FAS | | | Samples Received: | 02/12/2013 |
| | | | Project Started: | 02/12/2013 |
| Client: Costain Environmental Services | | 45754 | Testing Started: | 07/12/2013 |
| - | 1 • • • • • • • | 15754 U12 | Date Reported: Depth (m): 4.00 | 20/12/2013 |
| Soil Description: Very high strength re | | | / / | |
| | 0,1 | , , , , | Ū, | |
| Sample Details | Specimen | 1 | | |
| Sample Condition | | Undisturbed | | . <u> </u> |
| Height | mm | 198.0 | | , wit |
| Diameter | mm | 100.0 | | ion Iple |
| Moisture Content | % | 9.7 | | Position and orientation within the original sample |
| Bulk Density | Mg/m³ | 2.29 | | Drie |
| Dry Density | Mg/m³ | 2.09 | | nd o prigi |
| Test Details | | | | bn a he c |
| Membrane Thickness | mm | 0.2 | | sitic t |
| Membrane Correction | kPa | 0.65 | | Ъ |
| Rate of Axial Displacement | %/min | 2.02 | | |
| Cell Pressure | kPa | 150 | | |
| Strain at Failure | % | 16.2 | Γ | Shear Strength |
| Maximum Deviator Stress | kPa | 540 | | Parameters |
| Shear Strength | kPa | 270 | | C 270 kPa |
| Mode of Failure | | Brittle | | Phi 0.0 ° |
| | | | L | |
| | | Specimen 1 | | |
| 600 | 1 | 1 | | |
| w 500 | | | • • • • • • • • • • • • • • • • • • • | |
| e l | A REAL PROPERTY AND A REAL | | | |
| 400 | | | | |
| š 300 | | | | |
| ⁵ 200 | | | | |
| 000 Deviator Stress | | | | |
| | | | | |
| | | | | |
| -100 0 | 5 | 10 | 15 20 | 25 |

Strain - % Shear Stress - kPa 0 -1000 1200 1600 1800 2000

Normal Stress - kPa

| K4 SOILS LABORATORY | Approved Signatories: | K.Phaure(Tech.Mgr) | Checked a | nd Approved | â | | | | |
|--|---|-------------------------|-----------|-------------|---|--|--|--|--|
| Unit 8, Olds Close, Watford, Herts, WD18 9RU. Tel:01923711288 Fax:01923711311 | J.Phaure(Lab.Mgr) | | Initials: | kp | | | | | |
| E-mail: k4soils@aol.com | Test results relate only to the sam | ple numbers shown above | Date: | 20/12/2013 | | | | | |
| All samples connected with this report, incl any on 'hold' will be dis | All samples connected with this report, incl any on 'hold' will be disposed off according to Company Policy. A copy of this policy is available on request. MSF-11/R9 Sheet 2/2 | | | | | | | | |

Report of Undrained Triaxial Compression Test

| nt: Costa ject no: / TP no: I Descrip Sam Sam Heigh Diam Moist Bulk Dry D Test Mem Rate Cell F Strair Maxir Shea | in Envir 5414 BH2 ition: I ple De ble Cor nt eter ure Co Density Detai brane Co of Axia Pressu n at Fa mum D r Stren e of Fai 22 24 24 24 24 24 24 24 24 24 | 4 High strength etails ndition ontent y Is Correction al Displacen re ilure eviator Stre igth | Our job Sample reddish bro | own grave | | 15754 U12 sandy CL/ 198 100 9.2 2.4: 2.2: 0.2 0.7 2.0: 150 19.: 213 107 Britt Specim | rbed 0 0 3 2 4 2 5 6 6 6 | I is fmc a | Project S Testing Date Rep Depth (n | Started: ported: n): 4.00 d to sub-ang | Ular) Losition and orientation within Possition and Steer Baram C 10 | trength |
|---|---|--|----------------------------------|--------------------|---|---|---|-------------|--|---|--|-----------------------------|
| iect no: / TP no: I Descrip Sam Sam Heigh Diam Moist Bulk Dry D Test Mem Rate Cell F Strair Maxir Shea | 5414 BH2 btion: I ple Do ole Cornt eter ure Co Density Detai brane Co of Axia Pressu n at Fa mum D r Stren e of Fai | 4 High strength etails ndition ontent y Is Thickness Correction al Displacen re ilure eviator Stre igth lure 50 50 | Our job Sample reddish bro | e no: own grave | cimen mm mm Mg/m³ Mg/m³ Mg/min kPa %/min kPa % | U12 sandy CL/ Undistu 198. 100. 9.2 2.4: 2.2: 0.2 0.7 2.0: 150 19.: 213 107 Britt | rbed 0 0 3 2 4 2 5 6 6 6 | I is fmc a | Testing Date Rep Depth (n | Started: ported: n): 4.00 d to sub-ang | 20/12/20 ular) ular) Shear St Param C 10 | trength neters 07 kPa |
| / TP no: I Descrip Sam Sam Heigh Diam Moist Bulk I Dry D Test MemI Rate Cell F Strair Maxir Shea | BH2 tion: I ple Do ple Cor nt eter ure Co Density Density Density Density Density Density rane Co of Axia Pressu n at Fa mum D r Stren e of Fai 22 24 24 24 24 24 24 24 24 24 | 4 etails ndition ontent y Is Thickness Correction al Displacen re ilure eviator Stre igth lure 50 50 50 | Sample reddish bro | e no: own grave | cimen mm mm Mg/m³ Mg/m³ Mg/min kPa %/min kPa % | U12 sandy CL/ Undistu 198. 100. 9.2 2.4: 2.2: 0.2 0.7 2.0: 150 19.: 213 107 Britt | rbed 0 0 3 2 4 2 5 6 6 6 | I is fmc an | Depth (n | n): 4.00 d to sub-ang | ular) Ular) Dosition and orientation within Position and orientation Bhear St Param C 10 | trength neters 07 kPa |
| I Descrip Sam Sam Heigh Diam Moist Bulk I Dry D Test Mem Rate Cell F Strair Maxir Shea | ple De ple Cor nt eter ure Co Density | High strength etails ndition ontent y Is Correction al Displacen re eviator Stre gth lure 50 50 50 50 | nent | own grave | elly silty : cimen mm mm % Mg/m³ Mg/m³ Mg/m³ Mg/m3 kPa % kPa | 1 Undistu 198. 100. 9.2 2.4: 2.2: 0.2 0.7 2.0: 150 19.1 213 107 Britt | rbed 0 0 3 2 4 2 5 6 6 6 | I is fmc a | | d to sub-ang | Ular) Losition and orientation within Possition and Steep Baram C 10 | trength neters 07 kPa |
| Sam Sam Heigh Diam Moist Bulk Dry D Test Mem Rate Cell F Strair Maxir Shea | ple Do ble Cor nt eter Density Density Density Density Drane of Axia Pressu n at Fa mum D r Stren e of Fai | etails ndition ontent y Is Thickness Correction al Displacen re ilure eviator Stre gth lure 50 50 | nent | Spec | cimen mm % Mg/m³ Mg/m³ Mg/m³ kPa %/min kPa % kPa | 1 Undistu 198 100 9.2 2.4 2.2 2.4 2.2 0.2 0.7 2.0 150 19.3 213 107 Britt | rbed 0 0 3 2 4 2 5 6 6 6 | | | | Position and orientation within By Baram | trength neters 07 kPa |
| Samp Heigh Diam Moist Bulk I Dry D Test Meml Rate Cell F Strair Maxir Shea | Dele Cor nt eter ure Co Density De | ndition ontent y Is Thickness Correction al Displacen re ilure eviator Stre gth lure | | | mm % Mg/m³ Mg/m³ kPa %/min kPa % kPa | Undistu 198. 100. 9.2 2.4: 2.2: 0.2 0.7 2.0: 150 19.: 213 107 Britt | 0 0 3 2 4 2 5 6 8 7 8 7 8 7 8 7 8 | | | | Shear St Param C 10 | trength neters 07 kPa |
| Heigh Diam Moist Bulk Dry D Test Meml Rate Cell F Strair Maxir Shea | nt eter ure Co Density Density Density Density Density Drane of Axia Pressu n at Fa num D r Stren e of Fai | ontent y Is Thickness Correction al Displacen re ilure eviator Stre gth lure 50 50 50 | | | mm Mg/m³ Mg/m³ Mg/m³ kPa %/min kPa % | 198. 100. 9.2 2.4: 2.2: 0.2 0.7 2.0: 150 19.: 213 107 Britt | 0 0 3 2 4 2 5 6 8 7 8 7 8 7 8 7 8 | | | | Shear St Param C 10 | trength neters 07 kPa |
| Diam Moist Bulk I Dry D Test MemI Rate Cell F Strair Maxir Shea | eter ure Co Density Density Detai brane of Axia Pressu n at Fa num D r Stren e of Fai | y Is Thickness Correction al Displacen re eviator Stre gth lure 50 50 50 | | | mm Mg/m³ Mg/m³ Mg/m³ kPa %/min kPa % | 100. 9.2 2.4: 2.2: 0.2 0.7 2.0: 150 19.: 213 107 Britt | 0 3 2 4 2 2 3 4 2 3 4 6 6 | | | | Shear St Param C 10 | trength neters 07 kPa |
| Moist Bulk I Dry D Test Memi Rate Cell F Strair Maxir Shea | Density Densit | y Is Thickness Correction al Displacen re eviator Stre gth lure 50 50 50 | | | % Mg/m³ Mg/m³ kPa %/min kPa % kPa | 9.2 2.4: 2.2: 0.2 0.7 2.0: 150 19.: 213 107 Britt | 3 2 4 2 9 2 8 , e | | | | Shear St Param C 10 | trength neters 07 kPa |
| Bulk I Dry D Test Meml Rate Cell F Strain Maxin Shea | Density Density Detai brane of Axia Pressu n at Fa mum D r Stren e of Fai | y Is Thickness Correction al Displacen re eviator Stre gth lure 50 50 50 | | | Mg/m³ Mg/m³ mm kPa %/min kPa % kPa | 2.4: 2.2: 0.2 0.7 2.0: 150 19.: 213 107 Britt | 3 2 4 2 2 3 4 9 2 3 4 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 | | | | Shear St Param C 10 | trength neters 07 kPa |
| Dry D Test Memi Rate Cell F Strair Maxir Shea | Density Detai brane c of Axia Pressu n at Fa mum D r Stren e of Fai | Is Thickness Correction al Displacent re ilure eviator Stre gth lure 50 50 50 | | | Mg/m ³ mm kPa %/min kPa % kPa | 2.2: 0.2 0.7 2.0: 150 19.: 213 107 Britt | 2 4 2 3 4 4 2 4 4 4 4 4 4 4 4 4 4 4 4 4 | | | | Shear St Param C 10 | trength neters 07 kPa |
| Test Meml Meml Rate Cell F Strair Maxir Shea | Detai brane c of Axia Pressu n at Fa mum D r Stren e of Fai 22 22 24 24 21 | Is Thickness Correction al Displacen re eviator Stre gth lure | | | mm kPa %/min kPa % kPa | 0.2 0.7 2.0 150 19.3 213 107 Britt | 4 2 2 3 4 e | | | | Shear St Param C 10 | trength neters 07 kPa |
| Meml Meml Rate Cell F Strair Maxir Shea | brane brane of Axia Pressu n at Fa mum D r Stren e of Fai 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 | Thickness Correction al Displacen re ilure eviator Stre gth lure | | | kPa %/min kPa % kPa | 0.2 0.7 2.0 150 19.3 213 107 Britt | 4 2 2 3 4 e | | | | Shear St Param C 10 | trength neters 07 kPa |
| Meml Rate Cell F Strair Maxir Shea | brane (of Axia Pressu n at Fa mum D r Stren e of Fai 2: 2: 2: 2: 2: 2: 2: 2: 2: 2: 2: 2: 2: | Correction al Displacen re ilure eviator Stre gth lure | | | kPa %/min kPa % kPa | 0.74 2.02 150 19.2 213 107 Britt | 4 2 2 2 6 6 | | | | Shear St Param C 10 | trength neters 07 kPa |
| Rate Cell F Strair Maxir Shea | of Axia Pressu n at Fa num D r Stren e of Fai 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 | al Displacen re ilure eviator Stre gth lure | | | %/min kPa % kPa | 0.74 2.02 150 19.2 213 107 Britt | 4 2 2 2 6 7 8 | | | | Shear St Param C 10 | neters 07 kPa |
| Rate Cell F Strair Maxir Shea | of Axia Pressu n at Fa num D r Stren e of Fai 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 | al Displacen re ilure eviator Stre gth lure | | | %/min kPa % kPa | 2.0: 150 19.: 213 107 Britt | 2 2 3 6 9 | | | | Param C 10 | neters 07 kPa |
| Cell F Strair Maxir Shea | Pressu n at Fa mum D r Stren e of Fai 2: 2: 2: 2: 2: 2: 2: 2: 2: 2: 2: 2: 2: | re ilure eviator Stre gth lure | | | kPa % kPa | 150 19.3 213 107 Britt |) 2 3 9 9 | | | | Param C 10 | neters 07 kPa |
| Strair Maxir Shea | n at Fa mum D r Stren e of Fai 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 | ilure eviator Stre gth lure | | | % kPa | 19.: 213 107 Britt | 2 6 e | | | | Param C 10 | neters 07 kPa |
| Maxir Shea | num D r Stren e of Fai 2: 2: 2: 2: 2: 2: 2: 2: 2: 1: | eviator Stre | | | kPa | 213 107 Britt | e | | | | Param C 10 | neters 07 kPa |
| Shea | r Stren e of Fai 2 2 e 2 2 2 2 2 2 2 | 100 50 50 50 | | | | 107 Britt | , e | | | | C 10 | 07 kPa |
| | 2: 2: 2: 2: 2: 2: 2: 2: 2: 2: 2: 2: 2: 2 | 50 50 | | | | Britt | e | | | | | |
| NIUUE | 2: ed y - | 50 | | | | | | | | Ľ | |] |
| | Devia | | | 5 | | 10 St | rain - % | 15 | | 20 | | |
| | | 500 | | | | | | | | | | |
| | | 400 | | | | | | | | | | |
| | Ра | | | | | | | | | | | |
| | . K | 300 | | | | | | | | | | |
| | res | | | | | | | | | | | |
| | Shear Stress - kPa | 200 | | | | | | | | | | |
| | She | | | | | | | | | | | |
| | | 100 | | $ \rightarrow $ | | | | | | | | |
| | | | | | | | | | | | | |
| | | 0 | | | | | | | | | | |
| | | 0 | 100 200 | 0 300 | |) 500 Normal S | 600 ress - kP | 700 Pa | 800 | 900 1000 | 0 | |
| SOILS I | | | | Approve | ad Signa | atories: | K Phaura | e(Tech M | ar) I | Chapterd | pproved | |
| SOILS L 8, Olds Clos | | | | | re(Lab.Mg | | naure | o(10011.IVI | ייפ <i>ו</i> | Checked and A | proved | 6.0 |

Date: 20/12/2013 Test results relate only to the sample numbers shown above E-mail: k4soils@aol.com All samples connected with this report, incl any on 'hold' will be disposed off according to Company Policy. A copy of this policy is available on request. MSF-11/R9 Sheet 2/2

Report of Undrained Triaxial Compression Test BS 1377 : Part 7 : 1990 Clause 8.0 Project name: Stonehaven FAS 02/12/2013 Samples Received: Project Started: 02/12/2013 Client: Costain Environmental Services Testing Started: 07/12/2013 20/12/2013 Project no: 5414 Our job /report no: 15754 Date Reported: BH / TP no: BH25 U11 3.00 Sample no: Depth (m): Soil Description: Medium strength reddish brown gravelly silty sandy CLAY (gravel is fmc and sub-rounded to sub-angular) **Sample Details** 1 Specimen Sample Condition Undisturbed Position and orientation within Height mm 198.0 the original sample Diameter mm 100.0 Moisture Content % 17 Bulk Density Mg/m³ 2.38 Dry Density Mg/m³ 2.02 **Test Details** Membrane Thickness mm 0.2 Membrane Correction kPa 0.76 Rate of Axial Displacement %/min 2.02 Cell Pressure kPa 100 Strain at Failure % Shear Strength 20.2 Maximum Deviator Stress Parameters kPa 89 Shear Strength kPa 44 С 44 kPa Mode of Failure Plastic Phi 0.0° Specimen 1 100 90 Deviator Stress - kPa 80 70 60 50 40 30 20 10 0 -10 0 5 10 20 25 15 Strain - % 250 200 Shear Stress - kPa 150 100 50

> 350 200 250 300 Normal Stress - kPa

400

450

500

0 0

50

100

150

| K4 SOILS LABORATORY | Approved Signatories: | K.Phaure(Tech.Mgr) | Checked a | nd Approved | <u>ci</u> |
|--|--------------------------------------|---|------------|------------------|--------------------|
| Unit 8, Olds Close, Watford, Herts, WD18 9RU. Tel:01923711288 Fax:01923711311 | J.Phaure(Lab.Mgr) | | Initials: | kp | |
| E-mail: k4soils@aol.com | Test results relate only to the same | Date: | 20/12/2013 | S5 | |
| All samples connected with this report, incl any on 'hold' will be dis | posed off according to Company Polic | cy. A copy of this policy is available on req | uest. MSF | -11/R9 Sheet 2/2 | U K A S TESTING |

Diameter

200

Report of Undrained Triaxial Compression Test

BS 1377 : Part 7 : 1990 Clause 8.0

02/12/2013

02/12/2013

07/12/2013 20/12/2013

Position and orientation within

the original sample

Shear Strength Parameters

106 kPa

0.0°

С

Phi

4.00

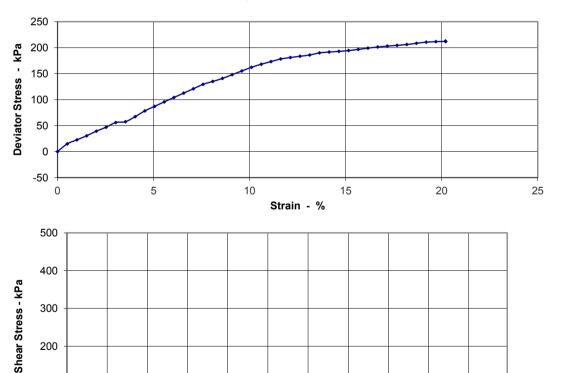
Stonehaven FAS Project name: Samples Received: Project Started: Testing Started: Client: Costain Environmental Services 5414 15754 Date Reported: Project no: Our job /report no: BH / TP no: BH26 U15 Sample no: Depth (m): Soil Description: High strength reddish brown slightly gravelly silty CLAY (gravel is fm and sub-angular) **Sample Details** 1 Specimen Sample Condition Undisturbed Height mm 198.0

mm

100.0

| Moisture Content | % | 27 |
|----------------------------|-------|---------|
| Bulk Density | Mg/m³ | 2.11 |
| Dry Density | Mg/m³ | 1.67 |
| Test Details | | |
| Membrane Thickness | mm | 0.2 |
| Membrane Correction | kPa | 0.76 |
| Rate of Axial Displacement | %/min | 2.02 |
| Cell Pressure | kPa | 150 |
| Strain at Failure | % | 20.2 |
| Maximum Deviator Stress | kPa | 212 |
| Shear Strength | kPa | 106 |
| Mode of Failure | | Brittle |





100 0 0 100 200 300 700 800 900 1000 400 500 600 Normal Stress - kPa Approved Signatories: K.Phaure(Tech.Mgr) **K4 SOILS LABORATORY** Checked and Approved Unit 8, Olds Close, Watford, Herts, WD18 9RU. J.Phaure(Lab.Mgr) 2519 Initials: kp Tel:01923711288 Fax:01923711311 20/12/2013 -mail: k4soils@aol.com Test results relate only to the sample numbers shown above Date: Il samples connected with this report, incl any on 'hold' will be disposed off according to Company Policy. A copy of this policy is available on request. MSF-11/R9 Sheet 2/2

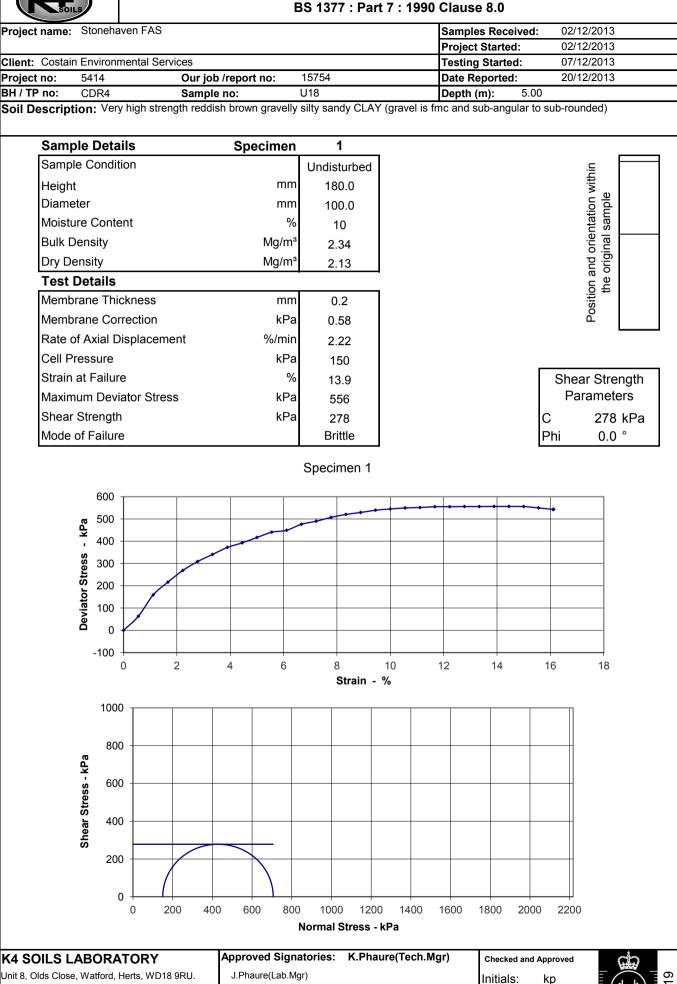
Report of Undrained Triaxial Compression Test

BS 1377 : Part 7 : 1990 Clause 8.0 Stonehaven FAS Project name: Samples Received: 02/12/2013 Project Started: 02/12/2013 Client: Costain Environmental Services 07/12/2013 **Testing Started:** 20/12/2013 5414 15754 Date Reported: Project no: Our job /report no: BH / TP no: U14 4.00 BH27 Sample no: Depth (m): Soil Description: High strength reddish brown gravelly silty sandy CLAY (gravel is fmc and sub-rounded to sub-angular) Sample Details 1 Specimen Sample Condition Undisturbed Position and orientation within Height mm 198.0 the original sample Diameter mm 100.0 Moisture Content % 15 Bulk Density Mg/m³ 2.31 Dry Density Mg/m³ 2.00 **Test Details** Membrane Thickness mm 0.2 Membrane Correction kPa 0.76 Rate of Axial Displacement %/min 2.02 Cell Pressure kPa 150 Strain at Failure Shear Strength % 20.2 Parameters Maximum Deviator Stress kPa 168 Shear Strength kPa С 84 kPa 84 Mode of Failure Brittle Phi 0.0° Specimen 1 180 160 kРа 140 • 120 **Deviator Stress** 100 80 60 40 20 0 -20 5 10 20 25 0 15 Strain - % 500 400 Shear Stress - kPa 300 200 100 0 100 200 300 700 900 1000 0 400 500 600 800 Normal Stress - kPa

Approved Signatories: K.Phaure(Tech.Mgr) **K4 SOILS LABORATORY** Checked and Approved Unit 8, Olds Close, Watford, Herts, WD18 9RU. J.Phaure(Lab.Mgr) Initials: ດ kp Fax:01923711311 Tel:01923711288 20/12/2013 -mail: k4soils@aol.com Test results relate only to the sample numbers shown above Date: Il samples connected with this report, incl any on 'hold' will be disposed off according to Company Policy. A copy of this policy is available on request. MSF-11/R9 Sheet 2/2

Report of Undrained Triaxial Compression Test

BS 1377 : Part 7 : 1990 Clause 8.0



-mail: k4soils@aol.com Il samples connected with this report, incl any on 'hold' will be disposed off according to Company Policy. A copy of this policy is available on request. MSF-11/R9 Sheet 2/2

Test results relate only to the sample numbers shown above

20

20/12/2013

Date:

Fax:01923711311

Tel:01923711288



POINT LOAD

| ISRM SUGGESTED | METHODS ON TESTING METHODS - 1985 | | |
|----------------|-----------------------------------|----------------|-------------|
| Client: | Aberdeenshire Council | Lab Sample No: | S8804 |
| Contract No: | 5414 | Hole ID: | BH12 |
| Contract Name: | Stonehaven FAS | Sample Type: | С |
| Samula | | Sample No: | 24 |
| Sample | Reddish brown SANDSTONE | Depth (m): | 9.65 - 9.80 |
| Description: | | Date Tested: | 25/11/2013 |

| Test Type | W (mm) | D(mm) | P(kN) | De² (mm²) | De (mm) | ls (Mpa) | F | ls50 (Mpa) |
|-----------|--------|-------|-------|-----------|---------|----------|-------|------------|
| DIA | | 73.87 | 0.14 | 5457 | 73.87 | 0.03 | 1.192 | 0.03058 |
| AXIAL | 73.91 | 64.54 | 0.11 | 6071 | 77.92 | 0.02 | 1.221 | 0.02112 |
| AXIAL | 73.74 | 66.37 | 0.16 | 6229 | 78.92 | 0.03 | 1.228 | 0.03154 |
| AXIAL | 73.84 | 43.83 | 0.12 | 4119 | 64.18 | 0.03 | 1.119 | 0.03124 |
| | | | | | | | | |
| | | | | | | | | |

Test results relate only to the sample number shown above.

Remarks:

Checked and Agata K-Approved Roche

Unit 10 Wessex Road Bourne end Buckinghamshire SL8 5DT



| ISRM SUGGESTED | METHODS ON TESTING METHODS - 1985 | | |
|----------------|-----------------------------------|----------------|-------------|
| Client: | Aberdeenshire Council | Lab Sample No: | S8812 |
| Contract No: | 5414 | Hole ID: | BH13 |
| Contract Name: | Stonehaven FAS | Sample Type: | С |
| Samula | | Sample No: | - |
| Sample | Reddish brown SANDSTONE | Depth (m): | 9.00 - 9.53 |
| Description: | | Date Tested: | 25/11/2013 |

| Test Type | W (mm) | D(mm) | P(kN) | De² (mm²) | De (mm) | ls (Mpa) | F | ls50 (Mpa) |
|-----------|--------|-------|-------|-----------|---------|----------|-------|------------|
| DIA | | 69.49 | 11.05 | 4829 | 69.49 | 2.29 | 1.160 | 2.65367 |
| DIA | | 69.14 | 12.80 | 4780 | 69.14 | 2.68 | 1.157 | 3.09808 |
| DIA | | 69.32 | 11.24 | 4805 | 69.32 | 2.34 | 1.158 | 2.70836 |
| DIA | | 69.21 | 12.95 | 4790 | 69.21 | 2.70 | 1.158 | 3.12948 |
| DIA | | 69.19 | 14.70 | 4787 | 69.19 | 3.07 | 1.157 | 3.55397 |
| AXIAL | 69.42 | 65.06 | 3.23 | 5748 | 75.82 | 0.56 | 1.206 | 0.67663 |

Test results relate only to the sample number shown above.

Remarks: Sample broke predominantly longitudinally. Only two Axials possible.

Checked and Agata K-Approved Roche

Unit 10 Wessex Road Bourne end Buckinghamshire SL8 5DT



| POINT LOAD |
|------------|
|------------|

| ISRM SUGGESTED METHODS ON TESTING METHODS - 1985 | | | | | | | | | |
|--|-------------------------|----------------|-------------|--|--|--|--|--|--|
| Client: | Aberdeenshire Council | Lab Sample No: | S8812 | | | | | | |
| Contract No: | 5414 | Hole ID: | BH13 | | | | | | |
| Contract Name: | Stonehaven FAS | Sample Type: | С | | | | | | |
| Samula | | Sample No: | - | | | | | | |
| Sample | Reddish brown SANDSTONE | Depth (m): | 9.00 - 9.53 | | | | | | |
| Description: | | Date Tested: | 25/11/2013 | | | | | | |

| Test Type | W (mm) | D(mm) | P(kN) | De² (mm²) | De (mm) | ls (Mpa) | F | ls50 (Mpa) |
|-----------|--------|-------|-------|-----------|---------|----------|-------|------------|
| AXIAL | 69.48 | 53.59 | 7.20 | 4739 | 68.84 | 1.52 | 1.155 | 1.75447 |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

Test results relate only to the sample number shown above.

Remarks: Sample broke predominantly longitudinally. Only two Axials possible.

Checked and Agata K-Approved Roche

Unit 10 Wessex Road Bourne end Buckinghamshire SL8 5DT

Sheet 1 of 1



| POINT LOAD | |
|------------|--|
| | |

| ISRM SUGGESTED | METHODS ON TESTING METHODS - 1985 | | |
|----------------|-----------------------------------|----------------|-------------|
| Client: | Aberdeenshire Council | Lab Sample No: | S8818 |
| Contract No: | 5414 | Hole ID: | BH14 |
| Contract Name: | Stonehaven FAS | Sample Type: | С |
| Samula | | Sample No: | 16 |
| Sample | Grey SANDSTONE | Depth (m): | 7.00 - 7.50 |
| Description: | - | Date Tested: | 25/11/2013 |

| Test Type | W (mm) | D(mm) | P(kN) | De² (mm²) | De (mm) | ls (Mpa) | F | ls50 (Mpa) |
|-----------|--------|-------|-------|-----------|---------|----------|-------|------------|
| DIA | | 83.17 | 11.55 | 6917 | 83.17 | 1.67 | 1.257 | 2.09850 |
| DIA | | 83.18 | 12.74 | 6919 | 83.18 | 1.84 | 1.257 | 2.31437 |
| DIA | | 83.48 | 16.88 | 6969 | 83.48 | 2.42 | 1.259 | 3.04968 |
| DIA | | 83.45 | 14.70 | 6964 | 83.45 | 2.11 | 1.259 | 2.65719 |
| DIA | | 83.9 | 14.61 | 7039 | 83.90 | 2.08 | 1.262 | 2.61989 |
| AXIAL | 83.84 | 81.2 | 9.35 | 8664 | 93.08 | 1.08 | 1.323 | 1.42657 |

Test results relate only to the sample number shown above.

Remarks:

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Unit 10 Wessex Road Bourne end Buckinghamshire SL8 5DT



| POINT LOAD | |
|---|----------|
| ISRM SUGGESTED METHODS ON TESTING METHODS | 5 - 1985 |

| ISRM SUGGESTED | METHODS ON TESTING METHODS - 1985 | | | | |
|----------------|-----------------------------------|----------------|------|-------|------|
| Client: | Aberdeenshire Council | Lab Sample No: | S | 8818 | |
| Contract No: | 5414 | Hole ID: | В | H14 | |
| Contract Name: | Stonehaven FAS | Sample Type: | | С | |
| Sample | | Sample No: | | 16 | |
| Description: | Grey SANDSTONE | Depth (m): | 7.00 | - | 7.50 |
| Description: | | Date Tested: | 25/1 | 1/201 | 13 |

| Test Type | W (mm) | D(mm) | P(kN) | De² (mm²) | De (mm) | ls (Mpa) | F | ls50 (Mpa) |
|-----------|--------|-------|-------|-----------|---------|----------|-------|------------|
| AXIAL | 83.45 | 75.85 | 14.36 | 8056 | 89.75 | 1.78 | 1.301 | 2.31941 |
| AXIAL | 83.35 | 67.42 | 6.50 | 7152 | 84.57 | 0.91 | 1.267 | 1.15043 |
| AXIAL | 83.24 | 57.21 | 11.00 | 6061 | 77.85 | 1.81 | 1.220 | 2.21507 |
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Test results relate only to the sample number shown above.

Remarks:

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Unit 10 Wessex Road Bourne end Buckinghamshire SL8 5DT



POINT LOAD

| ISRM SUGGESTED METHODS ON TESTING METHODS - 1985 | | | | | | | | |
|--|-------------------------|----------------|---------------|--|--|--|--|--|
| Client: | Aberdeenshire Council | Lab Sample No: | S8821 | | | | | |
| Contract No: | 5414 | Hole ID: | BH15 | | | | | |
| Contract Name: | Stonehaven FAS | Sample Type: | С | | | | | |
| Samala | | Sample No: | - | | | | | |
| Sample | Reddish brown SANDSTONE | Depth (m): | 12.15 - 12.40 | | | | | |
| Description: | | Date Tested: | 25/11/2013 | | | | | |

| Test Type | W (mm) | D(mm) | P(kN) | De² (mm²) | De (mm) | ls (Mpa) | F | ls50 (Mpa) |
|-----------|--------|-------|-------|-----------|---------|----------|-------|------------|
| DIA | | 72.54 | 4.49 | 5262 | 72.54 | 0.85 | 1.182 | 1.00882 |
| DIA | | 72.47 | 5.77 | 5252 | 72.47 | 1.10 | 1.182 | 1.29723 |
| DIA | | 72.69 | 0.90 | 5284 | 72.69 | 0.17 | 1.183 | 0.20157 |
| AXIAL | 72.62 | 64.6 | 2.00 | 5971 | 77.27 | 0.33 | 1.216 | 0.40643 |
| AXIAL | 72.54 | 61.07 | 1.44 | 5638 | 75.09 | 0.26 | 1.201 | 0.30668 |
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Test results relate only to the sample number shown above.

Remarks:

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Unit 10 Wessex Road Bourne end Buckinghamshire SL8 5DT



POINT LOAD

| ISRM SUGGESTED | METHODS ON TESTING METHODS - 1985 | | | | |
|----------------|-----------------------------------|----------------|-------------|--|--|
| Client: | Aberdeenshire Council | Lab Sample No: | S8851 | | |
| Contract No: | 5414 | Hole ID: | BH20 | | |
| Contract Name: | Stonehaven FAS | Sample Type: | С | | |
| Samula | | Sample No: | 27 | | |
| Sample | Reddish brown SANDSTONE | Depth (m): | 7.76 - 7.93 | | |
| Description: | | Date Tested: | 25/11/2013 | | |

| Test Type | W (mm) | D(mm) | P(kN) | De² (mm²) | De (mm) | ls (Mpa) | F | ls50 (Mpa) |
|-----------|--------|-------|-------|-----------|---------|----------|-------|------------|
| DIA | | 72.21 | 1.20 | 5214 | 72.21 | 0.23 | 1.180 | 0.27040 |
| DIA | | 72.35 | 2.26 | 5235 | 72.35 | 0.43 | 1.181 | 0.50872 |
| DIA | | 72.41 | 0.55 | 5243 | 72.41 | 0.10 | 1.181 | 0.12279 |
| AXIAL | 72.25 | 54.75 | 0.96 | 5035 | 70.95 | 0.19 | 1.171 | 0.22205 |
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Test results relate only to the sample number shown above.

Remarks: Sample broke predominantly longitudinally. Only one Axial possible.

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Unit 10 Wessex Road Bourne end Buckinghamshire SL8 5DT



| POINT LOAD | | | | | |
|----------------|---|----------------|-------------|--|--|
| ISRM SUGGESTED | METHODS ON TESTING METHODS - 1985 | | | | |
| Client: | Aberdeenshire Council | Lab Sample No: | S8852 | | |
| Contract No: | 5414 | Hole ID: | BH20 | | |
| Contract Name: | Stonehaven FAS | Sample Type: | С | | |
| Samala | | Sample No: | 29 | | |
| Sample | Reddish brown and greyish brown SANDSTONE | Depth (m): | 9.14 - 9.55 | | |
| Description: | | Date Tested: | 25/11/2013 | | |

| Test Type | W (mm) | D(mm) | P(kN) | De² (mm²) | De (mm) | ls (Mpa) | F | ls50 (Mpa) |
|-----------|--------|-------|-------|-----------|---------|----------|-------|------------|
| DIA | | 72.58 | 2.99 | 5268 | 72.58 | 0.57 | 1.183 | 0.67010 |
| DIA | | 72.67 | 3.20 | 5281 | 72.67 | 0.61 | 1.183 | 0.71699 |
| DIA | | 72.74 | 2.98 | 5291 | 72.74 | 0.56 | 1.184 | 0.66670 |
| DIA | | 72.55 | 5.75 | 5264 | 72.55 | 1.09 | 1.182 | 1.29052 |
| DIA | | 72.82 | 2.03 | 5303 | 72.82 | 0.38 | 1.184 | 0.45339 |
| AXIAL | 72.49 | 71.85 | 3.32 | 6629 | 81.42 | 0.50 | 1.245 | 0.62277 |

Test results relate only to the sample number shown above.

Remarks: Sample broke predominantly longitudinally. Only one Axial possible.

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Unit 10 Wessex Road Bourne end Buckinghamshire SL8 5DT

Sheet 1 of 1



POINT LOAD

| ISRM SUGGESTED | METHODS ON TESTING METHODS - 1985 | | |
|----------------|-----------------------------------|----------------|-------------|
| Client: | Aberdeenshire Council | Lab Sample No: | S8906 |
| Contract No: | 5414 | Hole ID: | BH26 |
| Contract Name: | Stonehaven FAS | Sample Type: | С |
| Sample | | Sample No: | - |
| | Greyish brown SANDSTONE | Depth (m): | 7.50 - 7.92 |
| Description: | | Date Tested: | 25/11/2013 |

| Test Type | W (mm) | D(mm) | P(kN) | De² (mm²) | De (mm) | ls (Mpa) | F | ls50 (Mpa) |
|-----------|--------|-------|-------|-----------|---------|----------|-------|------------|
| DIA | | 72.77 | 17.18 | 5295 | 72.77 | 3.24 | 1.184 | 3.84003 |
| DIA | | 72.62 | 20.90 | 5274 | 72.62 | 3.96 | 1.183 | 4.68672 |
| DIA | | 72.49 | 23.01 | 5255 | 72.49 | 4.38 | 1.182 | 5.17434 |
| DIA | | 72.73 | 19.74 | 5290 | 72.73 | 3.73 | 1.184 | 4.41728 |
| DIA | | 72.95 | 23.72 | 5322 | 72.95 | 4.46 | 1.185 | 5.28199 |
| DIA | | 72.84 | 23.39 | 5306 | 72.84 | 4.41 | 1.184 | 5.22180 |

Test results relate only to the sample number shown above.

Remarks: Sample broke predominantly longitudinally. Only three Axials possible.

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Unit 10 Wessex Road Bourne end Buckinghamshire SL8 5DT

Date: 09/12/2013



| POINT LOAD |
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| ISRM SUGGESTED | METHODS ON TESTING METHODS - 1985 | | |
|----------------|-----------------------------------|----------------|-------------|
| Client: | Aberdeenshire Council | Lab Sample No: | S8906 |
| Contract No: | 5414 | Hole ID: | BH26 |
| Contract Name: | Stonehaven FAS | Sample Type: | С |
| Samula | | Sample No: | - |
| Sample | Greyish brown SANDSTONE | Depth (m): | 7.50 - 7.92 |
| Description: | - | Date Tested: | 25/11/2013 |

| Test Type | W (mm) | D(mm) | P(kN) | De² (mm²) | De (mm) | ls (Mpa) | F | ls50 (Mpa) |
|-----------|--------|-------|-------|-----------|---------|----------|-------|------------|
| AXIAL | 72.01 | 58.07 | 11.70 | 5322 | 72.95 | 2.20 | 1.185 | 2.60466 |
| AXIAL | 72.61 | 57.71 | 12.53 | 5333 | 73.03 | 2.35 | 1.186 | 2.78614 |
| AXIAL | 72.5 | 46.8 | 10.17 | 4318 | 65.71 | 2.36 | 1.131 | 2.66325 |
| | | | | | | | | |
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Test results relate only to the sample number shown above.

Remarks: Sample broke predominantly longitudinally. Only three Axials possible.

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Unit 10 Wessex Road Bourne end Buckinghamshire SL8 5DT

Date: 09/12/2013



POINT LOAD

| Client: | Aberdeenshire Council | Lab Sample No: | S8898 |
|----------------|-----------------------|----------------|---------------|
| | 5414 | Hole ID: | BH26 |
| Contract Name: | Stonehaven FAS | Sample Type: | С |
| Sample | | Sample No: | - |
| | Brown SANDSTONE | Depth (m): | 11.16 - 11.50 |
| Description: | | Date Tested: | 25/11/2013 |

| Test Type | W (mm) | D(mm) | P(kN) | De² (mm²) | De (mm) | ls (Mpa) | F | ls50 (Mpa) |
|-----------|--------|-------|-------|-----------|---------|----------|-------|------------|
| DIA | | 73 | 24.45 | 5329 | 73.00 | 4.59 | 1.186 | 5.43880 |
| DIA | | 73.05 | 27.13 | 5336 | 73.05 | 5.08 | 1.186 | 6.02979 |
| DIA | | 72.69 | 19.74 | 5284 | 72.69 | 3.74 | 1.183 | 4.42104 |
| DIA | | 72.94 | 22.07 | 5320 | 72.94 | 4.15 | 1.185 | 4.91553 |
| AXIAL | 72.47 | 52.14 | 18.15 | 4809 | 69.35 | 3.77 | 1.159 | 4.37140 |
| AXIAL | 72.72 | 63.44 | 19.18 | 5872 | 76.63 | 3.27 | 1.212 | 3.95745 |

Test results relate only to the sample number shown above.

Remarks: Sample broke predominantly longitudinally. Only two Axials possible.

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POINT LOAD

| ISRM SUGGESTED | METHODS ON TESTING METHODS - 1985 | | |
|----------------|-----------------------------------|----------------|---------------|
| Client: | Aberdeenshire Council | Lab Sample No: | S8909 |
| Contract No: | 5414 | Hole ID: | BH27 |
| Contract Name: | Stonehaven FAS | Sample Type: | С |
| Sample | | Sample No: | - |
| | Reddish brown SANDSTONE | Depth (m): | 10.28 - 10.38 |
| Description: | | Date Tested: | 25/11/2013 |

| Test Type | W (mm) | D(mm) | P(kN) | De² (mm²) | De (mm) | ls (Mpa) | F | ls50 (Mpa) |
|-----------|--------|-------|-------|-----------|---------|----------|-------|------------|
| DIA | | 71.86 | 4.97 | 5164 | 71.86 | 0.96 | 1.177 | 1.13309 |
| AXIAL | 71.39 | 45.9 | 1.32 | 4170 | 64.58 | 0.32 | 1.122 | 0.35514 |
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Test results relate only to the sample number shown above.

Remarks:

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| Approved | Roche |



POINT LOAD

| ISRM SUGGESTED | METHODS ON TESTING METHODS - 1985 | | |
|----------------|-----------------------------------|----------------|---------------|
| Client: | Aberdeenshire Council | Lab Sample No: | S8910 |
| Contract No: | 5414 | Hole ID: | BH27 |
| Contract Name: | Stonehaven FAS | Sample Type: | С |
| Sample | | Sample No: | - |
| | Reddish brown SANDSTONE | Depth (m): | 11.30 - 11.50 |
| Description: | | Date Tested: | 25/11/2013 |

| Test Type | W (mm) | D(mm) | P(kN) | De² (mm²) | De (mm) | ls (Mpa) | F | ls50 (Mpa) |
|-----------|--------|-------|-------|-----------|---------|----------|-------|------------|
| DIA | | 72.28 | 9.00 | 5224 | 72.28 | 1.72 | 1.180 | 2.03229 |
| DIA | | 72.35 | 15.59 | 5235 | 72.35 | 2.98 | 1.181 | 3.51706 |
| DIA | | 72.55 | 17.03 | 5264 | 72.55 | 3.23 | 1.182 | 3.82439 |
| AXIAL | 72.09 | 54.64 | 6.15 | 5013 | 70.80 | 1.23 | 1.169 | 1.43465 |
| AXIAL | 72.19 | 53.28 | 10.91 | 4895 | 69.97 | 2.23 | 1.163 | 2.59246 |
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Test results relate only to the sample number shown above.

Remarks: Sample broke predominantly longitudinally. Only two Axials possible.

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Unit 10 Wessex Road Bourne end Buckinghamshire SL8 5DT

Sheet 1 of 1

Date: 09/12/2013



POINT LOAD

| ISRM SUGGESTED | METHODS ON TESTING METHODS - 1985 | | |
|----------------|-----------------------------------|----------------|---------------|
| Client: | Aberdeenshire Council | Lab Sample No: | S8750 |
| Contract No: | 5414 | Hole ID: | BH5 |
| Contract Name: | Stonehaven FAS | Sample Type: | С |
| Sample | | Sample No: | - |
| | Greyish brown SANDSTONE | Depth (m): | 13.08 - 13.30 |
| Description: | | Date Tested: | 25/11/2013 |

| Test Type | W (mm) | D(mm) | P(kN) | De² (mm²) | De (mm) | ls (Mpa) | F | ls50 (Mpa) |
|-----------|--------|-------|-------|-----------|---------|----------|-------|------------|
| DIA | | 73.63 | 0.36 | 5421 | 73.63 | 0.07 | 1.190 | 0.07904 |
| DIA | | 73.82 | 0.31 | 5449 | 73.82 | 0.06 | 1.192 | 0.06779 |
| DIA | | 73.71 | 0.37 | 5433 | 73.71 | 0.07 | 1.191 | 0.08110 |
| AXIAL | 73.61 | 64.69 | 0.30 | 6061 | 77.85 | 0.05 | 1.220 | 0.05941 |
| AXIAL | 73.84 | 48.27 | 0.12 | 4536 | 67.35 | 0.03 | 1.143 | 0.03025 |
| AXIAL | 73.67 | 52.98 | 0.17 | 4968 | 70.48 | 0.03 | 1.167 | 0.03994 |

Test results relate only to the sample number shown above.

Remarks:

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| POINT LOAD |
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| ISRM SUGGESTED | METHODS ON TESTING METHODS - 1985 | | |
|----------------|-----------------------------------|----------------|-------------|
| Client: | Aberdeenshire Council | Lab Sample No: | S8767 |
| Contract No: | 5414 | Hole ID: | BH6 |
| Contract Name: | Stonehaven FAS | Sample Type: | С |
| Samula | | Sample No: | - |
| Sample | Greyish brown SANDSTONE | Depth (m): | 9.39 - 9.67 |
| Description: | - | Date Tested: | 25/11/2013 |

| Test Type | W (mm) | D(mm) | P(kN) | De² (mm²) | De (mm) | ls (Mpa) | F | ls50 (Mpa) |
|-----------|--------|-------|-------|-----------|---------|----------|-------|------------|
| DIA | | 73.19 | 0.12 | 5357 | 73.19 | 0.02 | 1.187 | 0.02659 |
| AXIAL | 73.09 | 62.8 | 0.07 | 5842 | 76.43 | 0.01 | 1.210 | 0.01347 |
| AXIAL | 73.21 | 63.1 | 0.11 | 5879 | 76.68 | 0.02 | 1.212 | 0.02165 |
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Test results relate only to the sample number shown above.

Remarks:

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| POINT LOAD | | | |
|----------------|--|----------------|-------------|
| ISRM SUGGESTED | METHODS ON TESTING METHODS - 1985 | | |
| Client: | Aberdeenshire Council | Lab Sample No: | S8773 |
| Contract No: | 5414 | Hole ID: | BH7 |
| Contract Name: | Stonehaven FAS | Sample Type: | С |
| Somalo | | Sample No: | - |
| Sample | Dark brown and yellowish brown SANDSTONE | Depth (m): | 7.75 - 8.00 |
| Description: | | Date Tested: | 25/11/2013 |

| Test Type | W (mm) | D(mm) | P(kN) | De² (mm²) | De (mm) | ls (Mpa) | F | ls50 (Mpa) |
|-----------|--------|-------|-------|-----------|---------|----------|-------|------------|
| DIA | | 72.23 | 1.12 | 5217 | 72.23 | 0.21 | 1.180 | 0.25332 |
| DIA | | 72.24 | 1.91 | 5219 | 72.24 | 0.37 | 1.180 | 0.43078 |
| DIA | | 72.48 | 1.68 | 5253 | 72.48 | 0.32 | 1.182 | 0.37795 |
| DIA | | 72.39 | 1.40 | 5240 | 72.39 | 0.27 | 1.181 | 0.31444 |
| AXIAL | 72.36 | 54.82 | 1.05 | 5049 | 71.05 | 0.21 | 1.171 | 0.24245 |
| AXIAL | 72.14 | 55.44 | 1.16 | 5090 | 71.35 | 0.23 | 1.173 | 0.26743 |

Test results relate only to the sample number shown above.

Remarks:

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| POINT LOAD | | | |
|----------------|--|----------------|-------------|
| ISRM SUGGESTED | METHODS ON TESTING METHODS - 1985 | | |
| Client: | Aberdeenshire Council | Lab Sample No: | S8773 |
| Contract No: | 5414 | Hole ID: | BH7 |
| Contract Name: | Stonehaven FAS | Sample Type: | С |
| Somula | | Sample No: | - |
| Sample | Dark brown and yellowish brown SANDSTONE | Depth (m): | 7.75 - 8.00 |
| Description: | - | Date Tested: | 25/11/2013 |

| Test Type | W (mm) | D(mm) | P(kN) | De² (mm²) | De (mm) | ls (Mpa) | F | ls50 (Mpa) |
|-----------|--------|-------|-------|-----------|---------|----------|-------|------------|
| AXIAL | 71.75 | 56.55 | 0.96 | 5164 | 71.86 | 0.19 | 1.177 | 0.21886 |
| AXIAL | 72.51 | 44.62 | 0.96 | 4118 | 64.17 | 0.23 | 1.119 | 0.26084 |
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Test results relate only to the sample number shown above.

Remarks:

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POINT LOAD

| ISRM SUGGESTED | METHODS ON TESTING METHODS - 1985 | | |
|----------------|-----------------------------------|----------------|-------------|
| Client: | Aberdeenshire Council | Lab Sample No: | S8780 |
| Contract No: | 5414 | Hole ID: | Bh8 |
| Contract Name: | Stonehaven FAS | Sample Type: | С |
| Sample | | Sample No: | - |
| | Reddish brown SANDSTONE | Depth (m): | 5.86 - 6.00 |
| Description: | | Date Tested: | 25/11/2013 |

| Test Type | W (mm) | D(mm) | P(kN) | De² (mm²) | De (mm) | ls (Mpa) | F | ls50 (Mpa) |
|-----------|--------|-------|-------|-----------|---------|----------|-------|------------|
| DIA | | 71.64 | 7.30 | 5132 | 71.64 | 1.42 | 1.176 | 1.67108 |
| AXIAL | 71.59 | 58.08 | 6.79 | 5292 | 72.75 | 1.28 | 1.184 | 1.51891 |
| AXIAL | 71.5 | 67.9 | 7.50 | 6179 | 78.61 | 1.21 | 1.226 | 1.48689 |
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Test results relate only to the sample number shown above.

Remarks:

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| POINT LOAD |
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| ISRM SUGGESTED | METHODS ON TESTING METHODS - 1985 | | |
|------------------------|-----------------------------------|----------------|-------------|
| Client: | Aberdeenshire Council | Lab Sample No: | S8781 |
| Contract No: | 5414 | Hole ID: | Bh8 |
| Contract Name: | Stonehaven FAS | Sample Type: | С |
| Sampla | | Sample No: | - |
| Sample Description: | Grey SANDSTONE | Depth (m): | 8.19 - 8.65 |
| Description: | | Date Tested: | 25/11/2013 |

| Test Type | W (mm) | D(mm) | P(kN) | De² (mm²) | De (mm) | ls (Mpa) | F | ls50 (Mpa) |
|-----------|--------|-------|-------|-----------|---------|----------|-------|------------|
| DIA | | 72.77 | 11.34 | 5295 | 72.77 | 2.14 | 1.184 | 2.53542 |
| DIA | | 72.63 | 11.67 | 5275 | 72.63 | 2.21 | 1.183 | 2.61700 |
| DIA | | 72.85 | 15.86 | 5307 | 72.85 | 2.99 | 1.185 | 3.53953 |
| DIA | | 72.74 | 21.38 | 5291 | 72.74 | 4.04 | 1.184 | 4.78324 |
| DIA | | 72.81 | 17.06 | 5301 | 72.81 | 3.22 | 1.184 | 3.80995 |
| DIA | | 72.67 | 10.83 | 5281 | 72.67 | 2.05 | 1.183 | 2.42544 |

Test results relate only to the sample number shown above.

Remarks: Sample broke predominantly longitudinally. Only two Axials possible.

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Unit 10 Wessex Road Bourne end Buckinghamshire SL8 5DT

Sheet 1 of 1

Date: 09/12/2013



| POINT LOAD |
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| ISRM SUGGESTED | METHODS ON TESTING METHODS - 1985 | | |
|------------------------|-----------------------------------|----------------|-------------|
| Client: | Aberdeenshire Council | Lab Sample No: | S8781 |
| Contract No: | 5414 | Hole ID: | Bh8 |
| Contract Name: | Stonehaven FAS | Sample Type: | С |
| Sampla | | Sample No: | - |
| Sample Description: | Grey SANDSTONE | Depth (m): | 8.19 - 8.65 |
| Description. | | Date Tested: | 25/11/2013 |

| Test Type | W (mm) | D(mm) | P(kN) | De² (mm²) | De (mm) | ls (Mpa) | F | ls50 (Mpa) |
|-----------|--------|-------|-------|-----------|---------|----------|-------|------------|
| AXIAL | 72.69 | 56.6 | 9.37 | 5236 | 72.36 | 1.79 | 1.181 | 2.11215 |
| AXIAL | 72.74 | 68.48 | 12.56 | 6340 | 79.62 | 1.98 | 1.233 | 2.44160 |
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Test results relate only to the sample number shown above.

Remarks: Sample broke predominantly longitudinally. Only two Axials possible.

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Unit 10 Wessex Road Bourne end Buckinghamshire SL8 5DT

Date: 09/12/2013



SAMPLE RESTRICTION

| то: | Andy Paice & Mike Bridgman | FROM: | Nick Worthington-Williams | | | | | | | | | |
|------------------|--|--|---------------------------|--|--|--|--|--|--|--|--|--|
| CONTRACT NAME: | STONEHAVEN RIVER CARRON AND BURN OF GL | TONEHAVEN RIVER CARRON AND BURN OF GLASLAW FLOOD PROTECTION SCHEME | | | | | | | | | | |
| CONTRACT NUMBER: | 5414 | DATE: | 29/11/2013 | | | | | | | | | |

Your samples and work order have been received and testing will commence in accordance with your test schedule or in the absence of clear instructions, in accordance with Costain Laboratory's standard testing conditions and procedures with particular reference to load cell pressures.

The following samples are unsuitable for testing as detailed below. Could you please complete what "Required Action" you wish us to take in the box below. ALTERNATIVE FORMS OF NOTIFICATION OF REQUIREMENTS WILL NOT BE ACCEPTED BY THE LABORATORY

| Hole Id | Sample No | | Sample | | TEST CODE | Reason for Restriction 1= Samples not Received, 2= Schedule unreadable, 3=Logs not provided,4=Insufficient Sample,5=Others- | Required Action (Client / Engineer) |
|---------|-----------|------|--------|------|--------------|---|-------------------------------------|
| | | Dept | h (m) | Туре | CODE | please specify | |
| CDR1 | S8689 | 1.20 | 2.00 | B5 | OMC | 4 - Insufficient for OMC - whole sample used for PSD | Cancel Test |
| CDR3 | S8702 | 4.00 | 4.50 | B14 | OMC | 4 - Insufficient for OMC even when combined with D13 & D15 | Cancel Test |
| BH1A | S8714 | 2.00 | 2.45 | D6 | PSD/N MC | 4 - 1 piece of gravel, unsuitable for both tests | Cancel Test |
| BH9 | S8784 | 2.00 | 2.40 | B7 | OMC | 4 - Sandy GRAVEL - insufficient for test and whole of B5 used for other testing | Cancel Test |
| BH12 | S8797 | 1.50 | 1.80 | B7 | OMC / NMC | 4 - Insufficient for OMC. B4 all used for PSD. If NMC required it is possible, please advise. | Cancel Test |
| BH15 | S8822 | 2.00 | 2.45 | D6 | NMC | 4- Insufficient for both tests, sample sent for chemical analysis. NMC on B5 possible if required. | Cancel Test |
| BH19 | S8838 | 2 | 2.8 | B8 | OMC | 4 - Sandy GRAVEL - insufficient for test and whole of B5 used for other testing | Cancel Test |
| BH21B | S8856 | 3 | 3.3 | B10 | OMC | 4 - Insufficient for test and B8 all used for other testing. | Cancel Test |
| BH29 | S8927 | 2 | 2.5 | B7 | OMC | 4 - Insufficient for test and B5 all used for other testing. | Cancel Test |
| | | | - | | _ | | |
| CDR1 | S8690 | 2 | 3 | B7 | Perm | 4 - Whole sample used for PSD | Cancel Test |
| CDR3 | S8701 | 3 | 3.5 | B12 | Perm | 4 - Whole sample used for PSD | Cancel Test |
| CDR4 | S8712 | 3 | 3.5 | B14 | Perm | 4 - Whole sample used for PSD | Cancel Test |
| BH2 | S8725 | 3 | 4 | B12 | Perm | 4 - Whole sample used for PSD | Cancel Test |
| BH3 | S8733 | 4 | 4.7 | B13 | Perm | 4 - Whole sample used for PSD | Cancel Test |
| BH4 | S8740 | 1.9 | 3 | B6 | Perm | 4 - Whole sample used for OMC | Cancel Test |
| BH4 | S8742 | 3.2 | 5 | B9 | Perm | 4 - Whole sample used for PSD | Cancel Test |
| BH5 | S8755 | 5 | 5.5 | B12 | Perm | 4 - Whole sample used for PSD | Cancel Test |
| BH9 | S8782 | 1.2 | 2 | B5 | Perm | 4 - Whole sample used for PSD | Cancel Test |
| | | | | | | | |
| | | | | | | | |
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i2 Analytical Ltd. 7 Woodshots Meadow, Croxley Green Business Park, Watford, Herts, WD18 8YS

t: 01923 225404 f: 01923 237404 e: reception@i2analytical.com

Analytical Report Number : 13-48637

| Project / Site name: | Stonehaven FAS | Samples received on: | 28/11/2013 |
|----------------------|-----------------|------------------------|------------|
| Your job number: | 5414 | Samples instructed on: | 28/11/2013 |
| Your order number: | T2347A | Analysis completed by: | 04/12/2013 |
| Report Issue Number: | 1 | Report issued on: | 04/12/2013 |
| Samples Analysed: | 35 soil samples | | |

Signed:

Dr Claire Stone Quality Manager For & on behalf of i2 Analytical Ltd.

Other office located at: ul. Pionierów 39, 41 -711 Ruda Śląska, Poland

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

Excel copies of reports are only valid when accompanied by this PDF certificate.

Signed:

Rexona Rahman Customer Services Manager For & on behalf of i2 Analytical Ltd.

| soils | - 4 weeks from reporting |
|-----------|---------------------------|
| leachates | - 2 weeks from reporting |
| waters | - 2 weeks from reporting |
| asbestos | - 6 months from reporting |





| Lab Sample Number | | | | 300848 | 300849 | 300850 | 300851 | 300852 |
|---|-----------|-----------------------|-------------------------|---------------|---------------|---------------|---------------|---------------|
| Sample Reference | | | | CDR1 | CDR1 | CDR2 | CDR3 | CDR3 |
| Sample Number | | | | D6 | B9 | B6 | D5 | D8 |
| Depth (m) | 2.00-2.45 | 3.00-4.00 | 1.00-1.50 | 1.20-1.65 | 2.00-2.45 | | | |
| Date Sampled | | | | 23/10/2013 | 23/10/2013 | 04/11/2013 | 31/10/2013 | 31/10/2013 |
| Time Taken | | | | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| Analytical Parameter (Soil Analysis) | Units | Limit of detection | Accreditation Status | | | | | |
| Stone Content | % | 0.1 | NONE | < 0.1 | < 0.1 | < 0.1 | < 0.1 | < 0.1 |
| Moisture Content | % | N/A | NONE | 16 | 43 | 8.3 | 28 | 52 |
| Total mass of sample received | kg | 0.001 | NONE | 0.30 | 0.36 | 0.55 | 0.57 | 0.54 |

| pН | pH Units | N/A | MCERTS | - | - | 8.3 | 6.0 | - |
|--|----------|---------|--------|-------|-----|-----|-----|-----|
| Water Soluble Sulphate (Soil Equivalent) | g/l | 0.0025 | MCERTS | 0.10 | - | - | - | - |
| Water Soluble Sulphate as SO ₄ (2:1) | mg/kg | 2.5 | MCERTS | 100 | - | - | - | - |
| Water Soluble Sulphate (2:1 Leachate Equivalent) | g/l | 0.00125 | MCERTS | 0.050 | - | - | - | - |
| Organic Matter | % | 0.1 | MCERTS | - | 7.9 | - | - | 8.9 |





| Lab Sample Number | | | | 300853 | 300854 | 300855 | 300856 | 300857 |
|---|-------|-----------------------|-------------------------|---------------|---------------|---------------|---------------|---------------|
| Sample Reference | | | | CDR3 | CDR3 | CDR3 | CDR4 | CDR4 |
| Sample Number | | | | B12 | D15 | D19 | D3 | B4 |
| Depth (m) | | | | 3.00-3.50 | 5.00-5.45 | 6.50-6.80 | 0.60 | 0.60-0.80 |
| Date Sampled | | | | 31/10/2013 | 31/10/2013 | 31/10/2013 | 29/10/2013 | 29/10/2013 |
| Time Taken | | | | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| Analytical Parameter (Soil Analysis) | Units | Limit of detection | Accreditation Status | | | | | |
| Stone Content | % | 0.1 | NONE | < 0.1 | < 0.1 | < 0.1 | < 0.1 | < 0.1 |
| Moisture Content | % | N/A | NONE | 40 | 12 | 11 | 16 | 17 |
| Total mass of sample received | kg | 0.001 | NONE | 0.45 | 0.56 | 0.64 | 1.9 | 0.48 |

| pН | pH Units | N/A | MCERTS | - | 7.0 | - | 7.2 | - |
|--|----------|---------|--------|-----|-----|-------|-----|-------|
| Water Soluble Sulphate (Soil Equivalent) | g/l | 0.0025 | MCERTS | - | - | 0.027 | - | 0.034 |
| Water Soluble Sulphate as SO ₄ (2:1) | mg/kg | 2.5 | MCERTS | - | - | 27 | - | 34 |
| Water Soluble Sulphate (2:1 Leachate Equivalent) | g/l | 0.00125 | MCERTS | - | - | 0.014 | - | 0.017 |
| Organic Matter | % | 0.1 | MCERTS | 5.5 | - | - | - | - |





| Lab Sample Number | | | | 300858 | 300859 | 300860 | 300861 | 300862 |
|---|-------|-----------------------|-------------------------|---------------|---------------|---------------|------------|------------|
| Sample Reference | | | | CDR4 | BH1A | BH1A | BH1A | BH2 |
| Sample Number | | | | D7 | B5 | D11 | B17 | B6 |
| Depth (m) | | | | 1.20-1.65 | 1.20-2.00 | 3.30 | 5.10-5.60 | 0.80-1.00 |
| Date Sampled | | | | 29/10/2013 | 06/11/2013 | 06/11/2013 | 06/11/2013 | 26/10/2013 |
| Time Taken | | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied | | |
| Analytical Parameter (Soil Analysis) | Units | Limit of detection | Accreditation Status | | | | | |
| Stone Content | % | 0.1 | NONE | < 0.1 | < 0.1 | < 0.1 | < 0.1 | < 0.1 |
| Moisture Content | % | N/A | NONE | 11 | 9.7 | 46 | 44 | 10 |
| Total mass of sample received | kg | 0.001 | NONE | 0.35 | 0.49 | 0.52 | 0.40 | 0.82 |

| рН | pH Units | N/A | MCERTS | - | 7.0 | - | - | 7.4 |
|--|----------|---------|--------|-------|-----|----|-----|-------|
| Water Soluble Sulphate (Soil Equivalent) | g/l | 0.0025 | MCERTS | 0.043 | - | - | - | 0.076 |
| Water Soluble Sulphate as SO ₄ (2:1) | mg/kg | 2.5 | MCERTS | 43 | - | - | - | 76 |
| Water Soluble Sulphate (2:1 Leachate Equivalent) | g/l | 0.00125 | MCERTS | 0.022 | - | - | - | 0.038 |
| Organic Matter | % | 0.1 | MCERTS | - | - | 15 | 6.7 | - |





| Lab Sample Number | | | | 300863 | 300864 | 300865 | 300866 | 300867 |
|---|-------|-----------------------|-------------------------|---------------|---------------|---------------|------------|------------|
| Sample Reference | | | | BH3 | BH4 | BH4 | BH5 | BH6 |
| Sample Number | | | | D9 | D5 | D8 | D7 | D4 |
| Depth (m) | | | | 2.70 | 2.00-2.45 | 3.00-3.20 | 3.30-3.45 | 1.20-1.65 |
| Date Sampled | | | | 01/11/2013 | 22/10/2013 | 22/10/2013 | 07/11/2013 | 05/11/2013 |
| Time Taken | | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied | | |
| Analytical Parameter (Soil Analysis) | Units | Limit of detection | Accreditation Status | | | | | |
| Stone Content | % | 0.1 | NONE | < 0.1 | < 0.1 | < 0.1 | < 0.1 | < 0.1 |
| Moisture Content | % | N/A | NONE | 57 | 16 | 55 | 39 | 4.5 |
| Total mass of sample received | kg | 0.001 | NONE | 0.95 | 0.44 | 0.41 | 0.86 | 0.53 |

| pН | pH Units | N/A | MCERTS | - | 3.9 | - | - | 6.3 |
|--|----------|---------|--------|----|------|----|-----|-------|
| Water Soluble Sulphate (Soil Equivalent) | g/l | 0.0025 | MCERTS | - | 2.2 | - | - | 0.024 |
| Water Soluble Sulphate as SO ₄ (2:1) | mg/kg | 2.5 | MCERTS | - | 2200 | - | - | 24 |
| Water Soluble Sulphate (2:1 Leachate Equivalent) | g/l | 0.00125 | MCERTS | - | 1.1 | - | - | 0.012 |
| Organic Matter | % | 0.1 | MCERTS | 12 | - | 17 | 8.1 | - |





| Lab Sample Number | | | | 300868 | 300869 | 300870 | 300871 | 300872 |
|---|---------------|-----------------------|-------------------------|---------------|---------------|------------|------------|------------|
| Sample Reference | | | | BH8 | BH9 | BH10 | BH11A | BH13 |
| Sample Number | | | | D8 | D6 | B5 | D5 | D4 |
| Depth (m) | | | | 2.00-2.45 | 2.00-2.45 | 2.00-2.50 | 1.20-1.65 | 2.00-2.45 |
| Date Sampled | | | | | | 28/10/2013 | 22/10/2013 | 18/10/2013 |
| Time Taken | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied | | | |
| Analytical Parameter (Soil Analysis) | Units | Limit of detection | Accreditation Status | | | | | |
| Stone Content | % | 0.1 | NONE | < 0.1 | < 0.1 | < 0.1 | < 0.1 | < 0.1 |
| Moisture Content | % | N/A | NONE | 5.5 | 8.0 | 9.6 | 16 | 6.2 |
| Total mass of sample received | kg | 0.001 | NONE | 0.52 | 0.56 | 0.86 | 0.42 | 0.40 |

| pH | pH Units | N/A | MCERTS | 6.5 | - | 6.4 | 6.5 | 6.9 |
|--|----------|---------|--------|--------|--------|-------|-------|-------|
| Water Soluble Sulphate (Soil Equivalent) | g/l | 0.0025 | MCERTS | 0.016 | 0.016 | 0.037 | 0.028 | 0.076 |
| Water Soluble Sulphate as SO_4 (2:1) | mg/kg | 2.5 | MCERTS | 16 | 16 | 37 | 28 | 76 |
| Water Soluble Sulphate (2:1 Leachate Equivalent) | g/l | 0.00125 | MCERTS | 0.0078 | 0.0081 | 0.018 | 0.014 | 0.038 |
| Organic Matter | % | 0.1 | MCERTS | - | - | - | - | - |





| Lab Sample Number | | | | 300873 | 300874 | 300875 | 300876 | 300877 |
|---|---------------|-----------------------|-------------------------|---------------|---------------|------------|------------|------------|
| Sample Reference | | | | BH14 | BH15 | BH18 | BH18 | BH19 |
| Sample Number | | | | B3 | D6 | D6 | B5 | D9 |
| Depth (m) | | | | 1.20-2.30 | 2.00-2.45 | 2.00-2.45 | 1.20-2.00 | 2.80-3.00 |
| Date Sampled | | | | 21/10/2013 | 24/10/2013 | 21/10/2013 | 21/10/2013 | 31/10/2013 |
| Time Taken | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied | | | |
| Analytical Parameter (Soil Analysis) | Units | Limit of detection | Accreditation Status | | | | | |
| Stone Content | % | 0.1 | NONE | < 0.1 | < 0.1 | < 0.1 | < 0.1 | < 0.1 |
| Moisture Content | % | N/A | NONE | 11 | 14 | 43 | 7.4 | 58 |
| Total mass of sample received | kg | 0.001 | NONE | 0.66 | 0.41 | 0.65 | 0.54 | 0.43 |

| pH | pH Units | N/A | MCERTS | 7.3 | 7.5 | - | - | - |
|--|----------|---------|--------|-------|-------|-----|-------|----|
| Water Soluble Sulphate (Soil Equivalent) | g/l | 0.0025 | MCERTS | 0.10 | 0.10 | - | 0.099 | - |
| Water Soluble Sulphate as SO_4 (2:1) | mg/kg | 2.5 | MCERTS | 100 | 100 | - | 99 | - |
| Water Soluble Sulphate (2:1 Leachate Equivalent) | g/l | 0.00125 | MCERTS | 0.051 | 0.050 | - | 0.049 | - |
| Organic Matter | % | 0.1 | MCERTS | - | - | 8.9 | - | 13 |





| Lab Sample Number | | | | 300878 | 300879 | 300880 | 300881 | 300882 |
|---|-------|-----------------------|-------------------------|---------------|---------------|---------------|------------|------------|
| Sample Reference | | | | BH20 | BH22 | BH23 | BH26 | BH28 |
| Sample Number | | | | D11 | D5 | D4 | D10 | D9 |
| Depth (m) | | | | 3.00-3.45 | 2.00-2.45 | 1.20-1.65 | 2.40 | 2.20 |
| Date Sampled | | | | 23/10/2013 | 31/10/2013 | 21/10/2013 | 07/11/2013 | 01/11/2013 |
| Time Taken | | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied | | |
| Analytical Parameter (Soil Analysis) | Units | Limit of detection | Accreditation Status | | | | | |
| Stone Content | % | 0.1 | NONE | < 0.1 | < 0.1 | < 0.1 | < 0.1 | < 0.1 |
| Moisture Content | % | N/A | NONE | 9.8 | 11 | 8.5 | 14 | 34 |
| Total mass of sample received | kg | 0.001 | NONE | 0.50 | 0.43 | 0.36 | 0.54 | 0.75 |

| pH | pH Units | N/A | MCERTS | 7.6 | - | - | 7.3 | - |
|--|----------|---------|--------|-------|--------|-------|-----|-----|
| Water Soluble Sulphate (Soil Equivalent) | g/l | 0.0025 | MCERTS | 0.023 | 0.017 | 0.038 | - | - |
| Water Soluble Sulphate as SO_4 (2:1) | mg/kg | 2.5 | MCERTS | 23 | 17 | 38 | - | - |
| Water Soluble Sulphate (2:1 Leachate Equivalent) | g/l | 0.00125 | MCERTS | 0.011 | 0.0083 | 0.019 | - | - |
| Organic Matter | % | 0.1 | MCERTS | - | - | - | - | 5.9 |





Project / Site name: Stonehaven FAS

* These descriptions are only intended to act as a cross check if sample identities are questioned. The major constituent of the sample is intended to act with respect to MCERTS validation. The laboratory is accredited for sand, clay and topsoil/loam soil types. Data for unaccredited types of solid should be interpreted with care. Stone content

of a sample is calculated as the % weight of the stones not passing a 2 mm sieve. Results are not corrected for stone content.

Sample Number Lab Sample Sample Sample Description * Depth (m) Number Reference 300848 CDR1 D6 2.00-2.45 Light brown sandy topsoil. 300849 CDR1 B9 3.00-4.00 Black topsoil with peat. 300850 CDR2 B6 1.00-1.50 Light brown sandy topsoil with gravel. 300851 CDR3 D5 1.20-1.65 Brown sandy topsoil with peat and grave 300852 CDR3 D8 2.00-2.45 Black clay and topsoil with peat 300853 CDR3 B12 3.00-3.50 Black topsoil and sand with gravel. 300854 D15 5.00-5.45 CDR3 Light brown clay and sand. 300855 CDR3 D19 6.50-6.80 Light brown sandy clay with gravel 300856 CDR4 D3 0.60 Brown sandy topsoil with gravel 0.60-0.80 300857 CDR4 B4 Brown sandy topsoil with gravel 300858 CDR4 D7 1.20-1.65 Light brown gravelly sand 300859 BH1A B5 1.20-2.00 Light brown gravelly sand 300860 BH1A D11 3.30 Black clay and topsoil with peat. 300861 BH1A B17 5.10-5.60 Black topsoil with peat 300862 BH2 B6 0.80-1.00 Light brown gravelly sand 300863 BH3 D9 2.70 Black topsoil with peat. 300864 BH4 D5 2.00-2.45 Green sandy clay. 300865 BH4 D8 3.00-3.20 Black clay and topsoil with peat. 300866 BH5 D7 3.30-3.45 Black topsoil with peat. 300867 BH6 D4 1.20-1.65 Light brown gravelly sand with rubble. 300868 BH8 D8 2.00-2.45 ight brown gravelly sand with rubble 300869 BH9 D6 2.00-2.45 Light brown gravelly sand. 300870 BH10 B5 2.00-2.50 Light brown gravelly sand. 300871 BH11A D5 1.20-1.65 Light brown clay and sand with gravel. 300872 BH13 D4 2.00-2.45 Light brown clay and sand with gravel. 300873 BH14 B3 1.20-2.30 Light brown gravelly sand. 300874 BH15 D6 2.00-2.45 Light brown gravelly sand BH18 300875 D6 2.00-2.45 Grey topsoil with peat. 300876 BH18 1.20-2.00 B5 Light brown gravelly sand 300877 D9 2.80-3.00 BH19 Black clay and topsoil with peat. D11 300878 BH20 3.00-3.45 Light brown gravelly sand 300879 BH22 D5 2.00-2.45 Light brown gravelly sand 300880 BH23 D4 1.20-1.65 Light brown gravelly sand 300881 BH26 D10 2.40 Light brown clay. Black clay and topsoil with peat. 300882 BH28 D9 2.20





Project / Site name: Stonehaven FAS

Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW)

| Analytical Test Name | Analytical Method Description | Analytical Method Reference | Method number | Wet / Dry Analysis | Accreditation Status |
|----------------------------------|--|---|------------------|-----------------------|-------------------------|
| Moisture Content | Moisture content, determined gravimetrically. | In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests | L019-UK/PL | W | NONE |
| Organic matter in soil | Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate. | BS1377 Part 3, 1990, Chemical and Electrochemical Tests | L023-PL | D | MCERTS |
| pH in soil | Determination of pH in soil by addition of water followed by electrometric measurement. | In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests | L005-PL | W | MCERTS |
| Stones content of soil | Standard preparation for all samples unless otherwise detailed. Stones not passing through a 10 mm sieve is determined gravimetrically and reported as a percentage of the dry weight. Sample | In-house method based on British Standard Methods and MCERTS requirements. | L019-UK/PL | D | NONE |
| Sulphate, water soluble, in soil | Determination of water soluble sulphate by extraction with water followed by ICP-OES. Results reported corrected for extraction ratio (soil equivalent) as g/l and mg/kg; and upon the 2:1 | In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests | L038-PL | D | MCERTS |

For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom. For method numbers ending in 'PL' analysis have been carried out in our laboratory in Poland. Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.



Appendix 9

Appendix 9 - Geoenvironmental Test Results

| I2 Analytical Ltd |
|-------------------|
| UKAS No.4041 |
| Report Numbers |
| 48032 |
| 48469 |
| 48470 |
| 48474 |
| 48475 |
| 48476 |
| 48637 |
| |
| |
| |
| |



Michael Bridgman Costain Group PLC Unit 1 Allerton Bywater Network Centre Letchmire Road Allerton Bywater WF10 2DB



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t: 01923 225404 f: 01923 237404 e: reception@i2analytical.com

e: michael.bridgman@costain.com

Analytical Report Number : 13-48032

Replaces Analytical Report Number : 13-48032, issue no. 1

| Project / Site name: | Stonehaven F.A.S. | Samples received on: | 12/11/2013 |
|----------------------|-------------------|------------------------|------------|
| Your job number: | 5414 | Samples instructed on: | 12/11/2013 |
| Your order number: | | Analysis completed by: | 25/11/2013 |
| Report Issue Number: | 2 | Report issued on: | 25/11/2013 |
| Samples Analysed: | 6 water samples | | |

Signed:

Dr Claire Stone Quality Manager For & on behalf of i2 Analytical Ltd.

Other office located at: ul. Pionierów 39, 41 -711 Ruda Śląska, Poland

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

Excel copies of reports are only valid when accompanied by this PDF certificate.



Rexona Rahman Customer Services Manager For & on behalf of i2 Analytical Ltd.

| soils | - 4 weeks from reporting |
|-----------|--|
| leachates | - 2 weeks from reporting |
| waters | 2 weeks from reporting |
| asbestos | - 6 months from reporting |





Project / Site name: Stonehaven F.A.S.

| Lab Sample Number | | | | 297359 | 297360 | 297361 | 297362 | 297363 |
|---|-------------------|--------------------|-------------------------|---------------|---------------|---------------|---------------|---------------|
| Sample Reference | | | | BH6 | BH8 | BH13 | BH15 | BH18 |
| Sample Number | | | | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| Depth (m) | | | | 1.59 | 2.79 | 3.04 | 1.50 | 1.85 |
| Date Sampled | | | | 07/11/2013 | 07/11/2013 | 07/11/2013 | 07/11/2013 | 07/11/2013 |
| Time Taken | | | _ | 1200 | 1215 | 1242 | 1230 | 1300 |
| | | • | A | | | | | |
| Analytical Parameter | ç | Lin | St | | | | | |
| (Water Analysis) | Units | Limit of detection | atu | | | | | |
| (| - | on | Accreditation Status | | | | | |
| Concept Incompanies | | | | | | | | |
| General Inorganics oH | pH Units | N/A | ISO 17025 | 7.9 | 7.9 | 7.5 | 7.3 | 7.4 |
| Total Cyanide | pH Offics µg/l | 10 | ISO 17025 ISO 17025 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Sulphate as SO ₄ | ug/l | 45 | ISO 17025 ISO 17025 | 4160 | 38600 | 26500 | 24000 | 44200 |
| | -3/- | | | | | | | |
| Total Phenols | | | | | | | | |
| Total Phenols (monohydric) | µg/l | 10 | ISO 17025 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Speciated PAHs | | | | | | | | |
| Naphthalene | µq/l | 0.01 | ISO 17025 | < 0.01 | < 0.01 | < 0.01 | < 0.01 | < 0.01 |
| Acenaphthylene | μg/l | 0.01 | ISO 17025 | < 0.01 | < 0.01 | < 0.01 | < 0.01 | < 0.01 |
| Acenaphthene | μg/l | 0.01 | ISO 17025 | < 0.01 | < 0.01 | < 0.01 | < 0.01 | < 0.01 |
| Fluorene | μg/l | 0.01 | ISO 17025 | < 0.01 | < 0.01 | < 0.01 | < 0.01 | < 0.01 |
| Phenanthrene | μg/l | 0.01 | ISO 17025 | < 0.01 | < 0.01 | < 0.01 | < 0.01 | < 0.01 |
| Anthracene | µg/l | 0.01 | ISO 17025 | < 0.01 | < 0.01 | < 0.01 | < 0.01 | < 0.01 |
| Fluoranthene | ug/l | 0.01 | ISO 17025 | < 0.01 | < 0.01 | < 0.01 | < 0.01 | < 0.01 |
| Pyrene | µg/l | 0.01 | ISO 17025 | < 0.01 | < 0.01 | < 0.01 | < 0.01 | < 0.01 |
| Benzo(a)anthracene | µg/l | 0.01 | ISO 17025 | < 0.01 | < 0.01 | < 0.01 | < 0.01 | < 0.01 |
| Chrysene | µg/l | 0.01 | ISO 17025 | < 0.01 | < 0.01 | < 0.01 | < 0.01 | < 0.01 |
| Benzo(b)fluoranthene | µg/l | 0.01 | ISO 17025 | < 0.01 | < 0.01 | < 0.01 | < 0.01 | < 0.01 |
| Benzo(k)fluoranthene | µg/l | 0.01 | ISO 17025 | < 0.01 | < 0.01 | < 0.01 | < 0.01 | < 0.01 |
| Benzo(a)pyrene | µg/l | 0.01 | ISO 17025 | < 0.01 | < 0.01 | < 0.01 | < 0.01 | < 0.01 |
| Indeno(1,2,3-cd)pyrene | µg/l | 0.01 | ISO 17025 | < 0.01 | < 0.01 | < 0.01 | < 0.01 | < 0.01 |
| Dibenz(a,h)anthracene | µg/l | 0.01 | ISO 17025 | < 0.01 | < 0.01 | < 0.01 | < 0.01 | < 0.01 |
| Benzo(ghi)perylene | µg/l | 0.01 | ISO 17025 | < 0.01 | < 0.01 | < 0.01 | < 0.01 | < 0.01 |
| Total PAH | | | | | | | | |
| Total EPA-16 PAHs | µg/l | 0.2 | ISO 17025 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 |
| · • • • • • • • • • • • • • • • • • • • | | | 1 | | | | | |
| Heavy Metals / Metalloids | | | | | | | | 1 |
| Arsenic (dissolved) | µg/l | 1 | ISO 17025 | 3.1 | 1.6 | 2.5 | 2.3 | 3.6 |
| Boron (dissolved) | µg/l | 10 | ISO 17025 | 100 | 32 | 12 | 26 | 21 |
| Cadmium (dissolved) | µg/l | 0.08 | ISO 17025 | < 0.08 | < 0.08 | < 0.08 | < 0.08 | < 0.08 |
| Chromium (dissolved) | µg/l | 0.4 | ISO 17025 | 1.7 | 6.7 | 7.8 | 6.4 | 6.6 |
| Copper (dissolved) | µg/l | 0.7 | ISO 17025 | 2.4 | 3.1 | 21 | 2.9 | 4.4 |
| Lead (dissolved) | µg/l | 1 0.5 | ISO 17025 | 1.1 | 3.3 | 3.2 | 3.5 < 0.5 | 4.4 |
| Mercury (dissolved) Nickel (dissolved) | µg/l | 0.5 | ISO 17025 | < 0.5 1.3 | < 0.5 5.8 | < 0.5 5.0 | 2.7 | < 0.5 3.9 |
| · · · · · | µg/l | | ISO 17025 | 5.7 | | | | |
| Zinc (dissolved) | µg/l | 0.4 | ISO 17025 | 5./ | 3.2 | 3.6 | 3.2 | 4.8 |

Petroleum Hydrocarbons

| TPH1 (C10 - C40) | µg/l | 10 | NONE | < 10 | < 10 | < 10 | < 10 | < 10 |
|------------------|------|----|------|------|------|------|------|------|
| | 1.0, | | | | | | | |

U/S = Unsuitable Sample I/S = Insufficient Sample





Project / Site name: Stonehaven F.A.S.

| Lab Sample Number | 297364 | | | | | | |
|-----------------------------|--------------|--------------------|-------------------------|------------------|---|--|----------|
| Sample Reference | BH21B | | | | | | |
| Sample Number | | | None Supplied | | | | |
| Depth (m) | 1.92 | | | | | | |
| Date Sampled | | | | 07/11/2013 | | | |
| Time Taken | | | | 1315 | | | |
| | | | A | | | | |
| Applytical Developmentary | | Limit of detection | Accreditation Status | | | | |
| Analytical Parameter | Units | bect | tati | | | | |
| (Water Analysis) | 60 | ig e, | us | | | | |
| | | | on | | | | |
| | | | | | | | |
| General Inorganics | | | | | | | |
| pH | pH Units | N/A | ISO 17025 | 7.3 | | | |
| Total Cyanide | µg/l | 10 | ISO 17025 | < 10 | | | |
| Sulphate as SO ₄ | ug/l | 45 | ISO 17025 | 15300 | | | |
| | | | | | | | |
| Total Phenols | | | 1 | | | | |
| Total Phenols (monohydric) | µg/l | 10 | ISO 17025 | < 10 | | | |
| Creatisted DAlls | | | | | | | |
| Speciated PAHs | | 0.01 | 100.000 | | | | 1 |
| Naphthalene | µg/l | 0.01 | ISO 17025 | < 0.01 | | | |
| Acenaphthylene | µg/l | 0.01 | ISO 17025 | < 0.01 | | | |
| Acenaphthene | µg/l | 0.01 | ISO 17025 | < 0.01 | | | |
| Fluorene Phenanthrene | µg/l | 0.01 | ISO 17025 ISO 17025 | < 0.01 < 0.01 | | | |
| Anthracene | μg/l μg/l | 0.01 | ISO 17025 ISO 17025 | < 0.01 | | | |
| Fluoranthene | μg/i μg/l | 0.01 | ISO 17025 | < 0.01 | | | |
| Pyrene | μg/I μg/I | 0.01 | ISO 17025 | < 0.01 | | | |
| Benzo(a)anthracene | μg/i μg/l | 0.01 | ISO 17025 | < 0.01 | | | |
| Chrysene | μg/l | 0.01 | ISO 17025 | < 0.01 | | | |
| Benzo(b)fluoranthene | μg/l | 0.01 | ISO 17025 | < 0.01 | | | |
| Benzo(k)fluoranthene | μg/l | 0.01 | ISO 17025 | < 0.01 | | | |
| Benzo(a)pyrene | μg/l | 0.01 | ISO 17025 | < 0.01 | | | |
| Indeno(1,2,3-cd)pyrene | μg/l | 0.01 | ISO 17025 | < 0.01 | | | |
| Dibenz(a,h)anthracene | µg/l | 0.01 | ISO 17025 | < 0.01 | | | |
| Benzo(ghi)perylene | µg/l | 0.01 | ISO 17025 | < 0.01 | | | |
| | | | | | | | |
| Total PAH | | | | | | | |
| Total EPA-16 PAHs | µg/l | 0.2 | ISO 17025 | < 0.20 | | | |
| | | | | | | | |
| Heavy Metals / Metalloids | | | 1 | | ī | | T |
| Arsenic (dissolved) | µg/l | 1 | ISO 17025 | < 1.0 | | | ļ |
| Boron (dissolved) | µg/l | 10 | ISO 17025 | 21 | | | |
| Cadmium (dissolved) | µg/l | 0.08 | ISO 17025 | < 0.08 | | | ļ |
| Chromium (dissolved) | µg/l | 0.4 | ISO 17025 | 6.6 | | | |
| Copper (dissolved) | µg/l | 0.7 | ISO 17025 | 10 | | | |
| Lead (dissolved) | µg/l | 1 | ISO 17025 | 4.1 | ├ | | } |
| Mercury (dissolved) | µg/l | 0.5 | ISO 17025 | < 0.5 | | | |
| Nickel (dissolved) | µg/l | 0.3 | ISO 17025 | 4.8 | ├ | | } |
| Zinc (dissolved) | µg/l | 0.4 | ISO 17025 | 5.7 | | | 1 |

Petroleum Hydrocarbons

| TPH1 (C10 - C40) | | | | | | | |
|------------------|------------------|------|----|------|------|--|--|
| | TPH1 (C10 - C40) | µg/l | 10 | NONE | < 10 | | |

U/S = Unsuitable Sample I/S = Insufficient Sample





Project / Site name: Stonehaven F.A.S.

Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW)

| Analytical Test Name | Analytical Method Description | Analytical Method Reference | Method number | Wet / Dry Analysis | Accreditation Status |
|---|---|---|------------------|-----------------------|-------------------------|
| Boron in water | Determination of boron by acidification followed by ICP-OES. Accredited matrices: SW PW GW | In-house method based on MEWAM | L039-PL | W | ISO 17025 |
| Metals in water by ICP-OES (dissolved) | Determination of metals in water by acidification followed by ICP-OES. Accredited Matrices SW, GW, PW. | In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil. | L039-PL | W | ISO 17025 |
| Monohydric phenols in water | Determination of phenols in water by continuous flow analyser. Accredited matrices: SW PW GW | In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar) | L080-PL | W | ISO 17025 |
| pH in water | Determination of pH in water by electrometric measurement. Accredited matrices: SW PW GW | In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests | L005-PL | W | ISO 17025 |
| Speciated EPA-16 PAHs in water | Determination of PAH compounds in water by extraction in dichloromethane followed by GC-MS with the use of surrogate and internal standards. Accredited matrices: SW PW GW | In-house method based on USEPA 8270 | L070-UK | W | ISO 17025 |
| Sulphate in water | Determination of sulphate in water by acidification followed by ICP-OES. Accredited matrices: SW PW GW | In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil. | L039-PL | W | ISO 17025 |
| Total cyanide in water | Determination of total cyanide by distillation followed by colorimetry. Accredited matrices: SW PW GW | In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar) | L080-PL | w | ISO 17025 |
| TPH1 (Waters) | Determination of dichloromethane extractable hydrocarbons in water by GC-MS. | In-house method | L070-UK | W | NONE |

For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom.

For method numbers ending in 'PL' analysis have been carried out in our laboratory in Poland. Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.



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e: andy.paice@costain.com

Analytical Report Number : 13-48469

| Project / Site name: | Stonehaven FAS | Samples received on: | 22/11/2013 |
|----------------------|----------------|------------------------|------------|
| Your job number: | 5414 | Samples instructed on: | 25/11/2013 |
| Your order number: | | Analysis completed by: | 29/11/2013 |
| Report Issue Number: | 1 | Report issued on: | 29/11/2013 |
| Samples Analysed: | 2 soil samples | | |

tite Signed:

Dr Claire Stone Quality Manager For & on behalf of i2 Analytical Ltd.

Other office located at: ul. Pionierów 39, 41 -711 Ruda Śląska, Poland

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

| Evcel conjec of reports a | re only valid when accomm | panied by this PDF certificate. |
|---------------------------|------------------------------|---------------------------------|
| LACEI CUDIES UL LEDULS a | TE UTILY VAILU WHELT ACCUTIL | |

Signed:

Rexona Rahman Customer Services Manager For & on behalf of i2 Analytical Ltd.

| soils | - 4 weeks from reporting |
|-----------|---------------------------|
| leachates | - 2 weeks from reporting |
| waters | - 2 weeks from reporting |
| asbestos | - 6 months from reporting |





Project / Site name: Stonehaven FAS

| Lab Sample Number | | | | 299926 | 200022 | | 1 |
|--|-------------|-----------------------|-------------------------|---------------|---------------|----------|----------|
| Lab Sample Number Sample Reference | | 299927 | | | | | |
| Sample Kererence Sample Number | BH1A ES8 | BH2 ES9 | | | | | |
| Depth (m) | | | | 2.60 | 1.20-2.00 | | |
| | | | 06/11/2013 | 06/11/2013 | | | |
| Date Sampled Time Taken | | | | | | | |
| | 1 | 1 | | None Supplied | None Supplied | | |
| Analytical Parameter (Soil Analysis) | Units | Limit of detection | Accreditation Status | | | | |
| Stone Content | % | 0.1 | NONE | < 0.1 | < 0.1 | | |
| Moisture Content | % | N/A | NONE | 45 | 16 | | |
| Total mass of sample received | kg | 0.001 | NONE | 1.6 | 2.0 | | |
| Asbestos in Soil | Туре | N/A | ISO 17025 | Not-detected | Not-detected | | |
| General Inorganics | | | | | | | |
| pH | pH Units | N/A | MCERTS | 7.7 | 8.2 | | |
| Total Cyanide | mg/kg | 1 | MCERTS | < 1 | < 1 | | |
| Water Soluble Sulphate (Soil Equivalent) | g/l | 0.0025 | MCERTS | 1.6 | 0.048 | | |
| Water Soluble Sulphate as SO ₄ (2:1) | mg/kg | 2.5 | MCERTS | 1600 | 48 | I | ļ |
| Water Soluble Sulphate (2:1 Leachate Equivalent) | g/l | 0.00125 | MCERTS | 0.81 | 0.024 | | |
| Organic Matter | % | 0.1 | MCERTS | 6.4 | < 0.1 | <u> </u> | <u> </u> |
| Total Phenols | | | | | | | |
| Total Phenols (monohydric) | mg/kg | 2 | MCERTS | < 2.0 | < 2.0 | | |
| Speciated PAHs | | | | | | | |
| Naphthalene | mg/kg | 0.05 | MCERTS | < 0.05 | < 0.05 | | |
| Acenaphthylene | mg/kg | 0.2 | MCERTS | < 0.20 | < 0.20 | | |
| Acenaphthene | mg/kg | 0.1 | MCERTS | < 0.10 | < 0.10 | | |
| Fluorene | mg/kg | 0.2 | MCERTS | < 0.20 | < 0.20 | | |
| Phenanthrene | mg/kg | 0.2 | MCERTS | < 0.20 | 0.78 | | |
| Anthracene | mg/kg | 0.1 | MCERTS | < 0.10 | 0.20 | | |
| Fluoranthene | mg/kg | 0.2 | MCERTS | < 0.20 | 1.3 | | |
| Pyrene | mg/kg | 0.2 | MCERTS | < 0.20 | 0.74 | | |
| Benzo(a)anthracene | mg/kg | 0.2 | MCERTS | < 0.20 | < 0.20 | | |
| Chrysene | mg/kg | 0.05 | MCERTS | < 0.05 | < 0.05 | | |
| Benzo(b)fluoranthene | mg/kg | 0.1 | MCERTS | < 0.10 | < 0.10 | | |
| Benzo(k)fluoranthene | mg/kg | 0.2 | MCERTS | < 0.20 | < 0.20 | | |
| Benzo(a)pyrene | mg/kg | 0.1 | MCERTS | < 0.10 | < 0.10 | 1 | ļ |
| Indeno(1,2,3-cd)pyrene | mg/kg | 0.2 | MCERTS | < 0.20 | < 0.20 | | ļ |
| Dibenz(a,h)anthracene | mg/kg | 0.2 | MCERTS | < 0.20 | < 0.20 | | |
| Benzo(ghi)perylene | mg/kg | 0.05 | MCERTS | < 0.05 | < 0.05 | | |
| | | | | | | | |
| Total PAH | | | r | | - | 1 | |
| Speciated Total EPA-16 PAHs | mg/kg | 1.6 | MCERTS | < 1.6 | 3.0 | | |
| Heavy Metals / Metalloids | | | | | <u> </u> | 1 | 1 |
| Arsenic (aqua regia extractable) | mg/kg | 1 | MCERTS | 5.2 | 8.4 | | |
| Boron (water soluble) | mg/kg | 0.2 | MCERTS | 19 | < 0.2 | | |
| Cadmium (aqua regia extractable) | mg/kg | 0.2 | MCERTS | 1.0 | < 0.2 | | |
| Chromium (aqua regia extractable) | mg/kg | 1 | MCERTS | 42 | 24 | | |
| Copper (aqua regia extractable) | mg/kg | 1 | MCERTS | 56 | 12 | | |
| Lead (aqua regia extractable) | mg/kg | 2 | MCERTS | 420 | 9.9 | | |
| Mercury (aqua regia extractable) | mg/kg | 0.3 | MCERTS | < 0.3 | < 0.3 | | |
| Nickel (aqua regia extractable) | mg/kg | 2 | MCERTS | 25 | 23 | | |
| Zinc (aqua regia extractable) | mg/kg | 2 | MCERTS | 250 | 39 | | |
| Petroleum Hydrocarbons | | | | | | | |

| ⁻ PH1 (C10 - C40) | mg/kg | 10 | MCERTS | 610 | 50 | | |
|------------------------------|-------|----|--------|-----|----|--|--|





Project / Site name: Stonehaven FAS

* These descriptions are only intended to act as a cross check if sample identities are questioned. The major constituent of the sample is intended to act with respect to MCERTS validation. The laboratory is accredited for sand, clay and topsoil/loam soil types. Data for unaccredited types of solid should be interpreted with care. Stone content

of a sample is calculated as the % weight of the stones not passing a 2 mm sieve. Results are not corrected for stone content.

| Lab Sample Number | Sample Reference | Sample Number | Depth (m) | Sample Description * |
|----------------------|---------------------|------------------|-----------|--------------------------------|
| 299926 | BH1A | ES8 | 2.60 | Black topsoil with vegetation. |
| 299927 | BH2 | ES9 | 1.20-2.00 | Brown gravelly sand. |





Project / Site name: Stonehaven FAS

Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW)

| Analytical Test Name | Analytical Method Description | Analytical Method Reference | Method number | Wet / Dry Analysis | Accreditation Status |
|----------------------------------|---|---|------------------|-----------------------|-------------------------|
| Asbestos identification in soil | Asbestos Identification with the use of polarised light microscopy in conjunction with disperion staining techniques. | In house method based on HSG 248 | A001-PL | D | ISO 17025 |
| Boron, water soluble, in soil | Determination of water soluble boron in soil by hot water extract followed by ICP-OES. | In-house method based on Second Site Properties version 3 | L038-PL | D | MCERTS |
| Metals in soil by ICP-OES | Determination of metals in soil by aqua-regia digestion followed by ICP-OES. | In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil. | L038-PL | D | MCERTS |
| Moisture Content | Moisture content, determined gravimetrically. | In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests | L019-UK/PL | w | NONE |
| Monohydric phenols in soil | Determination of phenols in soil by extraction with sodium hydroxide followed by distillation followed by colorimetry. | In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar) | L080-PL | W | MCERTS |
| Organic matter in soil | Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate. | BS1377 Part 3, 1990, Chemical and Electrochemical Tests | L023-PL | D | MCERTS |
| pH in soil | Determination of pH in soil by addition of water followed by electrometric measurement. | In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests | L005-PL | w | MCERTS |
| Speciated EPA-16 PAHs in soil | Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards. | In-house method based on USEPA 8270 | L064-PL | D | MCERTS |
| Stones content of soil | | | L019-UK/PL | D | NONE |
| Sulphate, water soluble, in soil | Determination of water soluble sulphate by extraction with water followed by ICP-OES. Results reported corrected for extraction ratio (soil equivalent) as g/l and mg/kg; and upon the 2:1 | In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests | L038-PL | D | MCERTS |
| Total cyanide in soil | Determination of total cyanide by distillation followed by colorimetry. | In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar) | L080-PL | w | MCERTS |
| TPH1 (Soil) | Determination of dichloromethane/hexane extractable hydrocarbons in soil by GC-MS. | In-house method | L064-PL | D | MCERTS |

For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom.

For method numbers ending in 'PL' analysis have been carried out in our laboratory in Poland.

Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.



Andy Paice Costain Group PLC Unit 1 Allerton Bywater Network Centre Letchmire Road Allerton Bywater WF10 2DB



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e: andy.paice@costain.com

Analytical Report Number : 13-48470

| Project / Site name: | Stonehaven FAS | Samples received on: | 22/11/2013 |
|----------------------|----------------|------------------------|------------|
| Your job number: | 5414 | Samples instructed on: | 22/11/2013 |
| Your order number: | | Analysis completed by: | 28/11/2013 |
| Report Issue Number: | 1 | Report issued on: | 28/11/2013 |
| | | | |

Samples Analysed:

Signed:

Dr Claire Stone

Quality Manager

For & on behalf of i2 Analytical Ltd.

1 water sample

| 6 | |
|----|--|
| NN | |
| KX | |

Signed:

Rexona Rahman Customer Services Manager For & on behalf of i2 Analytical Ltd.

soils- 4 weeks from reportingleachates- 2 weeks from reportingwaters- 2 weeks from reportingasbestos- 6 months from reporting

Other office located at: ul. Pionierów 39, 41 -711 Ruda Śląska, Poland

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Sampling date indicates that recommended time for holding samples prior to analysis for sulphate has been exceeded. The results for these parameters may be invalid and should be interpreted with care.

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Project / Site name: Stonehaven FAS

| Lab Sample Number | | | | 299928 | | | | |
|--|-------|-----------------------|-------------------------|---------------|--|--|--|--|
| Sample Reference | | | | CDR3 | | | | |
| Sample Number | | | | W9 | | | | |
| Depth (m) | | | 2.00 | | | | | |
| Date Sampled | | | 31/10/2013 | | | | | |
| Time Taken | | | | None Supplied | | | | |
| Analytical Parameter (Water Analysis) | Units | Limit of detection | Accreditation Status | | | | | |
| General Inorganics | | | | | | | | |
| Sulphate as SO₄ | ug/l | 45 | ISO 17025 | 17900 | | | | |

U/S = Unsuitable Sample I/S = Insufficient Sample





Project / Site name: Stonehaven FAS

Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW)

| Analytical Test Name | Analytical Method Description | Analytical Method Reference | Method number | Wet / Dry Analysis | Accreditation Status |
|----------------------|--|--|------------------|-----------------------|-------------------------|
| Sulphate in water | Determination of sulphate in water by acidification followed by ICP-OES. Accredited matrices: SW PW GW | In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil. | L039-PL | W | ISO 17025 |

For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom.

For method numbers ending in 'PL' analysis have been carried out in our laboratory in Poland.

Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.



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e: andy.paice@costain.com

Analytical Report Number : 13-48474

| Project / Site name: | Stonehaven FAS | Samples received on: | 22/11/2013 |
|----------------------|----------------|------------------------|------------|
| Your job number: | 5414 | Samples instructed on: | 22/11/2013 |
| Your order number: | | Analysis completed by: | 28/11/2013 |
| Report Issue Number: | 1 | Report issued on: | 28/11/2013 |
| Samples Analysed: | 1 water sample | | |

Signed:

Dr Claire Stone Quality Manager For & on behalf of i2 Analytical Ltd.

Other office located at: ul. Pionierów 39, 41 -711 Ruda Śląska, Poland

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|-----------------------------------|---|
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| Exect copies of reports are on | y valid which accompanied by this i bi certificate. |

Sampling date indicates that recommended time for holding samples prior to analysis for pH and sulphate has been exceeded. The results for these parameters may be invalid and should be interpreted with care.

Signed:

Rexona Rahman Customer Services Manager For & on behalf of i2 Analytical Ltd.

| soils | - 4 weeks from reporting |
|-----------|---------------------------|
| leachates | - 2 weeks from reporting |
| waters | - 2 weeks from reporting |
| asbestos | - 6 months from reporting |

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Project / Site name: Stonehaven FAS

| Sample Reference Sample Number | BH5 W22 | |
|---|---------------|--|
| | W/22 | |
| | VVZZ | |
| Depth (m) | 3.10 | |
| Date Sampled | 01/11/2013 | |
| Time Taken | None Supplied | |
| Accreditation Status Limit of (Water Analysis) | | |

| General morganics | | | | | | |
|-------------------|----------|-----|-----------|-------|--|--|
| pH | pH Units | N/A | ISO 17025 | 8.5 | | |
| Sulphate as SO₄ | ug/l | 45 | ISO 17025 | 23200 | | |
| | | | | | | |

U/S = Unsuitable Sample I/S = Insufficient Sample





Project / Site name: Stonehaven FAS

Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW)

| Analytical Test Name | Analytical Method Description | Analytical Method Reference | Method number | Wet / Dry Analysis | Accreditation Status |
|----------------------|--|--|------------------|-----------------------|-------------------------|
| pH in water | Determination of pH in water by electrometric measurement. Accredited matrices: SW PW GW | In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests | L005-PL | W | ISO 17025 |
| Sulphate in water | Determination of sulphate in water by acidification followed by ICP-OES. Accredited matrices: SW PW GW | In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil. | L039-PL | W | ISO 17025 |

For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom.

For method numbers ending in 'PL' analysis have been carried out in our laboratory in Poland.

Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.



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Analytical Report Number : 13-48475

| Project / Site name: | Stonehaven FAS | Samples received on: | 22/11/2013 |
|----------------------|----------------|------------------------|------------|
| Your job number: | 5414 | Samples instructed on: | 22/11/2013 |
| Your order number: | | Analysis completed by: | 28/11/2013 |
| Report Issue Number: | 1 | Report issued on: | 28/11/2013 |
| Samples Analysed: | 1 water sample | | |

Signed:

Dr Claire Stone Quality Manager For & on behalf of i2 Analytical Ltd.

Other office located at: ul. Pionierów 39, 41 -711 Ruda Śląska, Poland

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

| Freed control of non-order one on | ly valid when accompanied by this PDF certificate. |
|-----------------------------------|---|
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Sampling date indicates that recommended time for holding samples prior to analysis for pH and sulphate has been exceeded. The results for these parameters may be invalid and should be interpreted with care.

| Samples instructed on: | 22/11/2013 |
|------------------------|------------|
| Analysis completed by: | 28/11/2013 |
| Report issued on: | 28/11/2013 |
| | |

Signed:

Rexona Rahman Customer Services Manager For & on behalf of i2 Analytical Ltd.

| soils | - 4 weeks from reporting |
|-----------|---------------------------|
| leachates | - 2 weeks from reporting |
| waters | - 2 weeks from reporting |
| asbestos | - 6 months from reporting |





Project / Site name: Stonehaven FAS

| ab Sample Number | 299949 | | | | | |
|--|--------|-----------------------|-------------------------|---------------|--|--|
| Sample Reference | | | | BH19 | | |
| Sample Number | | | W15 | | | |
| Depth (m) | | | 1.90 | | | |
| Date Sampled | | | | 01/11/2013 | | |
| me Taken | | | | None Supplied | | |
| nalytical Parameter S Nater Analysis) | Units | Limit of detection | Accreditation Status | | | |

| _ | Selicital Inorganics | | | | | | |
|---|----------------------|----------|-----|-----------|-------|--|--|
| | Н | pH Units | N/A | ISO 17025 | 8.1 | | |
| | Sulphate as SO₄ | ug/l | 45 | ISO 17025 | 24500 | | |
| | | | | | | | |

U/S = Unsuitable Sample I/S = Insufficient Sample





Project / Site name: Stonehaven FAS

Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW)

| Analytical Test Name | Analytical Method Description | Analytical Method Reference | Method number | Wet / Dry Analysis | Accreditation Status |
|----------------------|--|--|------------------|-----------------------|-------------------------|
| pH in water | Determination of pH in water by electrometric measurement. Accredited matrices: SW PW GW | In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests | L005-PL | W | ISO 17025 |
| Sulphate in water | Determination of sulphate in water by acidification followed by ICP-OES. Accredited matrices: SW PW GW | In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil. | L039-PL | W | ISO 17025 |

For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom.

For method numbers ending in 'PL' analysis have been carried out in our laboratory in Poland.

Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.



Andy Paice Costain Group PLC Unit 1 Allerton Bywater Network Centre Letchmire Road Allerton Bywater WF10 2DB



i2 Analytical Ltd. 7 Woodshots Meadow, Croxley Green Business Park, Watford, Herts, WD18 8YS

t: 01923 225404 f: 01923 237404 e: reception@i2analytical.com

e: andy.paice@costain.com

Analytical Report Number : 13-48476

| Project / Site name: | Stonehaven FAS | Samples received on: | 22/11/2013 |
|----------------------|----------------|------------------------|------------|
| Your job number: | 5414 | Samples instructed on: | 22/11/2013 |
| Your order number: | | Analysis completed by: | 28/11/2013 |
| Report Issue Number: | 1 | Report issued on: | 28/11/2013 |
| | | | |

Samples Analysed:

1 water sample

| | Ø |
|---------|---------|
| Signady | Atchins |
| Signed: | |

Rexona Rahman Customer Services Manager For & on behalf of i2 Analytical Ltd.

soils- 4 weeks from reportingleachates- 2 weeks from reportingwaters- 2 weeks from reportingasbestos- 6 months from reporting

Signed:

Dr Claire Stone Quality Manager For & on behalf of i2 Analytical Ltd.

Other office located at: ul. Pionierów 39, 41 -711 Ruda Śląska, Poland

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Excel copies of reports are only valid when accompanied by this PDF certificate.

Samples were received with no indication of date sampled. The recommended holding time prior to analysis may have been exceeded. Results may not be valid should be interpreted with care.

This certificate should not be reproduced, except in full, without the express permission of the laboratory. The results included within the report are representative of the samples submitted for analysis.





Project / Site name: Stonehaven FAS

| Lab Sample Number | | | | 299950 | | |
|--|-------|-----------------------|-------------------------|---------------|--|--|
| Sample Reference | | | | BH3 | | |
| Sample Number | | | | W8 | | |
| Depth (m) | | | 2.00 | | | |
| Date Sampled | | | Deviating | | | |
| Time Taken | | | | None Supplied | | |
| Analytical Parameter (Water Analysis) | Units | Limit of detection | Accreditation Status | | | |

| General Thorganies | | | | | | |
|--------------------|----------|-----|-----------|-------|--|--|
| pH | pH Units | N/A | ISO 17025 | 7.9 | | |
| Sulphate as SO₄ | ug/l | 45 | ISO 17025 | 27700 | | |
| | | | | | | |

U/S = Unsuitable Sample I/S = Insufficient Sample





Project / Site name: Stonehaven FAS

Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW)

| Analytical Test Name | Analytical Method Description | Analytical Method Reference | Method number | Wet / Dry Analysis | Accreditation Status |
|----------------------|--|--|------------------|-----------------------|-------------------------|
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