



Ground Investigation at

Bacton Low Rise, Gospel Oak, North London.

Factual Report

for Rolton Group Ltd

Engineer : Rolton Group Ltd

Project Number : PC124991

September 2012

Issuing office :

Head Office Coventry Geotechnics Limited The Geotechnical Centre 203 Torrington Avenue Tile Hill Coventry CV4 9AP T: 024 7669 4664 F: 024 7669 4642 mail@geotechnics.co.uk

North West Office Geotechnics Limited The Geotechnical Centre Unit I, Borders Industrial Park River Lane, Saltney Chester CH4 BRJ T: 01244 671 117 F: 01244 671 122 mail@chester.geotechnics.co.uk South West Office Geotechnics Limited The Geotechnical Centre 7 Pinbrook Units Venny Bridge Exeter EX4 8JQ T: 01392 463 110 F:01392 463 111 mail@exeter.geotechnics.co.uk Ground Investigation at

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Ground Investigation

#### at

## BACTON LOW RISE, GOSPEL OAK, NORTH LONDON

Factual Report

Project No : PC124991 September 2012

### **1.0 INTRODUCTION**

A geotechnical and geoenvironmental investigation was undertaken by Geotechnics Ltd at the site of a proposed redevelopment of the Bacton Low Rise housing estate near Gospel Oak, North London. The investigation was carried out to the instructions of, and on behalf of, the Client, Rolton Group Ltd. This report describes the work undertaken and presents the data obtained.

### 2.0 OBJECT AND SCOPE OF THE INVESTIGATION

The object of the investigation was to obtain information on the ground and groundwater conditions relating to the design of the proposed works within the limitations posed by trial hole numbers, locations, depths, methods adopted and the scope of approved in situ and laboratory testing. The Brief for the project is included in Appendix I. The investigation comprised boreholes, in situ and laboratory testing and reporting. A geotechnical or geoenvironmental interpretation and evaluation of the data obtained was not commissioned.

### 3.0 PRESENTATION

A description of the site and a summary of the procedures followed during the investigation process are presented in Sections 4 to 6. The factual data so obtained are presented in Appendices 3 to 8 of this report. In addition, the report is presented in electronic PDF format separately on disc.

Attention is drawn to the General Notes and Investigation Procedures presented in Appendix 9 to aid an understanding of the procedures followed and the context in which the report should be read.

### 4.0 THE SITE

#### 4.1 Location

The site is located approximately 6km east south east of Junction I of the MI motorway and 0.5km south west of Gospel Oak train station in the London Borough of Camden. The approximate Ordnance Survey National Grid Reference for the centre of the site is TQ 28I 853 and an extract from the relevant 1:50,000 Scale O.S. Map (Sheet No. 176) is included as Appendix 2.

### 4.2 Description

The site is irregular in shape, covers an area of about 2. I ha and is predominately flat. It can be divided into two main areas.

The first area lies to the north and west of Wellesley Road and comprises a number of blocks of council flats up to 5 storeys in height and covering an area of approximately 1.75ha. There are several courtyards located amongst the flats and the ground surface is reinforced concrete, tarmac and occasional grassed areas.

The second area lies to the north east on the opposite side of Wellesley Road. It comprises offices and commercial units predominately used by Camden Council and is approximately 0.35ha in area. The ground surface is generally tarmac, with a concrete surface in the courtyard located in the centre of the council offices. The area is bordered by Wellesley Road to the south west and Vicars Road to the south east. To the north are railway tracks in a cutting approximately 7.0m below the site level with a large retaining wall separating the site from the railway which extends approximately 3.0m above ground level.

Photographs of the site taken during the fieldwork are presented in Appendix 3.



### 5.0 **PROCEDURE**

#### 5.1 Commissioning

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

#### 5.2 General

The procedures followed in this site investigation are based on BS 5930:1999 + A2:2010 – Code of Practice for Site Investigations. The soils and rocks encountered have been described in accordance with BS5930:1999 + A2:2010 and BS EN ISO 14688-1:2002 and BS EN ISO 14689-1:2003. The Borehole Records are included in Appendix 4 and their approximate positions are shown on the Exploratory Hole Location Plan in Appendix 4.

The Exploratory Hole locations were specified by the client. The levels shown on the Exploratory Hole Records were estimated from the Survey Drawing (Drawing No. 12-0083 GEO 01 P1, Dated June '12) provided by the Client and the depths quoted are in metres below ground level.

#### 5.3 Boreholes

Nine (9 No.), 150mm diameter boreholes (numbered BHI to BH9) were sunk by Cable Percussion Tool techniques to depths varying between 20.00 and 30.00m below ground level. The work was carried out between the 13<sup>th</sup> and 21<sup>st</sup> August 2012. An inspection pit was excavated at each borehole location using hand tools to a depth of 1.20m below ground level to check for the presence of underground services.

Representative disturbed D and B and driven opentube thin-walled (UT) and thick-walled (U) samples of the soils encountered were obtained at regular intervals. Standard Penetration Tests (SPTs) were undertaken at the depths indicated on the borehole records in accordance with BS EN ISO 22476-3:2005 to obtain a measure of the engineering properties of the proved strata. In addition, environmental samples (E) were recovered at the depths indicated on the Borehole Records.

On encountering groundwater, boring operations were suspended for 20 minutes in order to record any rise in water level. Full details of groundwater observations during site work are included on the Borehole Records.

On completion standpipes were installed in Boreholes BH1, BH2, BH3, BH4, BH5, BH7 and BH9. (see Section 5.4). Boreholes BH6 and BH8 were backfilled with arisings and an upper 2.00m bentonite seal.

# 5.4 Instrumentation and Monitoring

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

| Exploratory<br>Hole | Standpipe<br>Slotted pipe & Filter Zone |
|---------------------|---|
|                     | (m)                                     |
| BHI                 | 2.00 to 8.00                            |
| BH2                 | 2.00 to 8.00                            |
| BH3                 | 2.00 to 5.00                            |
| BH4                 | 2.00 to 5.00                            |
| BH5                 | 2.00 to 5.00                            |
| BH7                 | 2.00 to 5.00                            |
| BH9                 | 2.00 to 5.00                            |

Monitoring of the gas and groundwater levels at the site took place on 13<sup>th</sup> September 2012.

At each position a record of the groundwater level was taken. In addition to the groundwater levels, the following parameters were measured and recorded in each standpipe using a GA2000 Gas Analyser:-

- Concentrations (% Vol) of CH<sub>4</sub>, O<sub>2</sub>, CO<sub>2</sub>, along with (% LEL) CH<sub>4</sub>, H<sub>2</sub>S , CO
- Flow Rate
- Differential Pressure
- Barometric Pressure
- Air Temperature

The results of the monitoring are presented in Appendix 6.

### 6.0 LABORATORY TESTING

#### 6.1 Geotechnical

The laboratory testing schedule was specified by the Client in order to relate to the proposed development. The tests, where appropriate, conform to BS 1377 - Methods of Test for Soils for Civil Engineering Purposes (1990) and were carried out in Geotechnics Limited's UKAS accredited Laboratory (Testing No. 1365). Any descriptions, opinions and



interpretations are outside the scope of UKAS accreditation.

The tests undertaken can be summarised as follows:-

| BS 137   | 7 (1990) |  | Soluble Sulphate                                 |
|----------|----------|--|--|
| Test NL  | · (1770) | Test Description   | Chromium VI                                      |
| i est in | 0.       | Test Description   | Arsenic  |
|          |          |  | Cadmium  |
| Part 2   |          |  | Chromium   |
| 3.2      | 27 No.   | Moisture Content   | Hexavalent Chromium                              |
|          |          | Determination  | Copper   |
|          |          |  | Lead   |
| Part 3   |          |  | Mercury  |
| 53 55    | 31 No    | Sulphato Analysis Wator                                      | Nickel   |
| J.J, J.J | 51140.   | Sulphace Analysis – Water                                    | Selenium   |
|          |          | Extract  | Zinc   |
|          |          |  | TPH (Total)                                      |
| 9.5      | 31 No.   | pH Determination   | Speciated PAH (EPA16)                            |
|          |          |  | Phenols  |
| Part 7   |          |  |  |
| 9        | 27 No.   | Shear Strength Measurement -<br>100mm diameter (Multi-Stage) | The results are presented in Appendix 8.         |
|          |          | Quick Undrained Triaxial<br>Compression Test.                | Signed for and on behalf of Geotechnics Limited. |
|          |          |  |  |

The results of these tests are presented in Appendix 7.

#### 6.2 Contamination

Selected samples of soil were tested in at the laboratories of Derwentside Environmental Testing for a number of determinands in order to check on potential site contamination. The determinands were specified by the Engineer.

#### Soil

Soil samples were tested for the following determinands:-

S J Chapman BSc(Hons),FGS. **Graduate Engineer** 

pН

Boron

Organic matter Cyanide (Total)

T N Hardie BSc,MSc,DIC,CEng,MICE. **Principal Engineer** 



# **APPENDIX I**

The Brief

#### 1.0 INTRODUCTION

Site consists of 2 parcels of land:

First site: Camden Council offices, car park and building materials storage area, small office block and car parking in front.

Second site: Council owned flats in 9 blocks arranged around courtyards and with vehicle access. The sites are fully occupied by workers and residents.

The sites are to be redeveloped with new blocks of flats. Rolton Group is appointed by EC Harris (working for Camden Council) to design and undertake suitable site investigation for geotechnical and geoenvironmental purposes.

#### 2.0 SITE HISTORY

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A school and terraced housing until redeveloped with offices and flats in the 1960s.

#### 3.0 PROBABLE GROUND CONDITIONS

Anticipated 2-3m of made ground overlying London Clay which will be present to in excess of 50m.

The made ground is likely to consist of reworked natural soils plus historic ash, clinker and demolition materials (brick, concrete etc).

Serious contamination presence is unlikely. Metals and Polyaromatic hydrocarbons are likely to be present at slightly elevated concentrations.

Groundwater is unlikely to be seriously impacted. Seepages are unlikely to be strong in upper strata.

Landfill gas or other hazardous gases are unlikely to be present at significant concentrations.

Existing ground conditions are as described below. Exploratory holes are to be fully reinstated, with flush stop-cock covers to boreholes with installations.

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ENGINEERING THE FUTURE

#### 4.0 BURIED SERVICES

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The sites are served by a large number of live services – see separate plans. Hand-dug starter holes will be essential.

No London Underground lines in the vicinity.

#### 5.0 PROPOSED DRILLING WORKS

See separate plans for site layout and borehole locations. Drilling is to be by percussion techniques (shell and auger).

| Borehole | Depth | Existing Ground  | Installation                | Sampling and Testing                 |
|----------|-------|------------------|-----------------------------|--------------------------------------|
| Ref      |       | Surface          | All to have gas taps and    |                                      |
|          |       |                  | stop-cock covers cemented   |                                      |
|          |       |                  | flush with ground surface   |                                      |
| 1        | 30m   | Tarmac parking   | 10m (2m grouted; 8m         |                                      |
|          |       | area             | slotted)                    | All boreholes:                       |
| 2        | 20m   | Tarmac parking   | 10m (2m grouted; 8m         | Environmental samples at around      |
|          |       | area             | slotted)                    | 300mm, 1m and 2m depth and           |
| 3        | 30m   | Cycle store area | 5m (2m grouted; 3m slotted) | metre intervals in made ground and   |
| 4        | 20m   | Tarmac car park  | 5m (2m grouted; 3m slotted) | at any change in strata.             |
| 5        | 30m   | Driveway access  | 5m (2m grouted; 3m slotted) | Generally alternate SPTs and U100s   |
|          |       | to garages       |                             | at 1.5m intervals in clay; SPTs at   |
| 6        | 20m   | Grass covered    | NA                          | 1.5m intervals in granular deposits. |
|          |       | POS              |                             | Groundwater samples as               |
| 7        | 20m   | Tarmac car       | 5m (2m grouted; 3m slotted) | encountered and bulk samples at      |
|          |       | parking          |                             | any change in strata.                |
| 8        | 20m   | Tarmac car       | NA                          |                                      |
|          |       | parking          |                             | · · · ·                              |
| 9        | 30m   | Tarmac car       | 5m (2m grouted; 3m slotted) |                                      |
|          |       | parking          |                             |                                      |

# **APPENDIX 2**

## Site Location Plan



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Ground Investigation at Bacton Low Rise, Gospel Oak, North London. for Rolton Group Ltd



# **APPENDIX 3**

Site Photographs

Project Number : PC124991

Project : Bacton Low Rise, Gospel Oak, North London



North East Area, BH1, looking east



North East Area, BH2, looking west



Project Number : PC124991

## Project : Bacton Low Rise, Gospel Oak, North London



North East Area, BH3, looking north



North East Area, BH4, looking west



Project Number : PC124991

## Project : Bacton Low Rise, Gospel Oak, North London



South West Area, BH5, looking north east



South West Area, BH6, looking north



Project Number : PC124991

Project : Bacton Low Rise, Gospel Oak, North London



South West Area, BH7, looking south east



South West area, BH8, looking west



Project Number : PC124991

## Project : Bacton Low Rise, Gospel Oak, North London



South West Area, BH9, looking south



# **APPENDIX** 4

**Borehole Records** 

## DATA SHEET - Symbols and Abbreviations used on Records

| Sample       | e Types   | Groundwater                |             | Strata, Continued  |  |
|--------------|---|----------------------------|-------------|--|--|
| В            | Bulk disturbed sample   | Water Strike               | $\nabla$    | Mudstone   |  |
| BLK          | Block sample  | Dopth Water Rose To        | V           |  |  |
| С            | Core sample   |                            |             |  | 00000  |
| D            | Small disturbed sample<br>(tub/jar)   | Instrumentation            |             | Siltstone  | x x x x x x x x x x x x x x x x x x x                  |
| E            | Environmental test sample   |                            | 22          | Metamorphic Rock   | x x x x x  |
| ES           | Environmental soil sample   | Seal                       | 11          | Fine Grained   | ******   |
| EW           | Environmental water sample  |                            | -           | Madium Crained   | ~~~~   |
| G            | Gas sample  |                            | 11          | Medium Grained   | $\sim$   |
| L            | Liner sample  | Filter                     | -<br>-      | Coorse Grained   | $\sim$   |
| LB           | Large bulk disturbed sample   |                            | 1           | Coal se Grained  | $\sim\sim$   |
| Р            | Piston sample (PF - failed P sample)  |                            | -<br>-<br>- | Igneous Rock   | ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~                 |
| TW           | Thin walled push in sample  |                            | 22          | Fine Grained   |  |
| U            | Open Tube - 102mm<br>diameter with blows to<br>take sample. (UF - failed U<br>sample) | Seal                       |             | Medium Grained   | + + + + +<br>+ + + + + +<br>+ + + + + +<br>+ + + + + + |
| UT           | Thin wall open drive tube   | Strata                     |             | Coarse Grained   |  |
|              | with blows to take sample.<br>(UTF - failed UT sample)                                | Made Ground Type I         |             | Backfill Materials   |  |
| V            | Vial sample   |                            |             |  | ×  |
| W            | Water sample  | Type 2                     |             | Arisings   | 8  |
| #            | Sample Not Recovered  | 1/20 -                     |             |  | X  |
| Insitu T     | Festing / Properties  | Topsoil                    |             | Bentonite Seal   |  |
| CBRP         | CBR using TRL probe   |                            |             |  |  |
| CHP          | Constant Head<br>Permeability Test  | Cobbles and Boulders       | ,0,<br>,0,0 | Concrete   | ф.<br>•<br>•   |
| COND         | Electrical conductivity   |                            |             |  | <u>~</u>   |
| HV           | Strength from Hand Vane   | Gravel                     | · · ·       |  |  |
| ICBR         | CBR Test  |                            | · · · · ·   | Fine Gravel Filter   |  |
| IDEN         | Density Test  | Sand                       |             |  |  |
| IRES         | Resistivity Test  | Saliu                      |             | General Fill   |  |
| MEX          | CBR using Mexecone<br>Probe Test  | Sile                       | × × ×       |  |  |
| PKR          | Packer Permeability Test  | SIIL                       | × × ×       | Gravel Filter  |  |
| PLT          | Plate Load Test   |                            | × × ,       |  | _  |
| PP           | Strength from Pocket<br>Penetrometer  | Clay                       |             | Grout  |  |
| Temp         | Temperature   |                            |             |  | 4  |
| VHP          | Variable Head Permeability<br>Test  | Peat                       | NK.<br>NK   | Sand Filter  |  |
| VN           | Strength from Insitu Vane   |                            | sMz         |  | 0<br>9-9   |
| w%           | Water content   | Note: Composite soil types | shown       |  |  |
| (All oth     | er strengths from<br>ed triaxial testing)   | by combined symbols        |             | Tarmacadam   |  |
|              |   | Chalk                      |             |  |  |
| S            | Standard Penetration Test   |                            |             | Rotary Core  |  |
| -            | (SPT)   | 1:                         |             | RQD Rock Quality De  | signation  |
| С            | SPT with cone   | Limestone                  |             | (% of intact core<br>FRACTURE INDEX  | :>100mm)   |
| N            | SP F Result   |                            |             | Fractures/metre  |  |
| -/-          | Blows/penetration (mm)<br>after seating drive   | Sandstone                  |             | SPACING (mm) Minimum<br>NI Non-intact (                                    | core   |
| -*/-<br>(mm) | I otal blows/penetration  |                            |             | NR No core rec<br>AZCL Assumed zo  | overy  |
| ( )          | Extrapolated value  | Coal                       |             | loss<br>(where core recovery is unknow<br>assumed to be at the base of the | wn it is<br>e run)                                     |

Project BACTON LOW RISE, GOSPEL OAK, NORTH LONDON

ROLTON GROUP

Engineer

Borehole Project No

Ground Level 42.45

BH1 PC124991

m OD

Client ROLTON GROUP Sampling

| Sampling  |                                  | Proper                               | ties                       | es Strata                       |   |   |   |   |   | Scale 1:50                                |                          |              |                 |                         |
|---|----------------------------------|--------------------------------------|----------------------------|---------------------------------|---|---|---|---|---|---|--------------------------|--------------|-----------------|-------------------------|
| Depth Sample Ca<br>Type (to   | Depth<br>ased &<br>Water)        | Strength<br>kPa                      | w<br>%                     | SPT N                           | Description   |   |   |   |   |   |                          | Depth        | Legend          | Level<br>m OD           |
| 0.30 D  |                                  |                                      |                            |                                 | Tarmac. **  | īD]   |   |   |   |   | /                        | G.L.         |                 | 42.45<br>42.35<br>42.15 |
| 0.30 E<br>0.50- 0.70 B  |                                  |                                      |                            |                                 | Concrete. *<br>[MADE GROUN  | *<br>ID]  |   |   |   |   | 1                        | 0.50         |                 | 41.95                   |
| 0.50 D<br>0.70- 1.00 B<br>0.70 D<br>1.00 D<br>1.00 E<br>1.20- 1.65 D                  | 1.20                             |                                      |                            | S7                              | Orangish br<br>clayey very<br>subangular<br>brick.<br>[MADE GROUN   | cown mottl<br>gravelly<br>fine to c<br>D]   | ed gre<br>sand.<br>oarse  | y and bla<br>Gravel<br>quartzite                            | ack sl<br>is an<br>e, fli                   | ightly<br>gular<br>nt and                 | to                       | 0.70         |                 | 41.75                   |
| 1.70- 1.90 B<br>1.70 D<br>2.00 D<br>2.00 E<br>2.20 C E                                | DRY)                             | 54                                   | 22                         |                                 | Soft greyis<br>clay. Grav<br>quartzite,<br>hydrocarbor<br>[MADE GROUN   | sh brown m<br>rel is ang<br>flint and<br>n odour.<br>ID]  | ottled<br>ular t<br>brick   | black sa<br>o rounded<br>. With a                           | andy g<br>1 fine<br>a slig                  | ravell;<br>to co<br>ht                    | y<br>arse                | 1.70<br>2.00 |                 | 40.75<br>40.45          |
| 2.65 D<br>2.70- 3.10 B  | DRY)                             | T                                    | 23                         |                                 | Very soft of<br>slightly sa<br>clay. Grav<br>coarse flir<br>slight hydr<br>[MADE GROUN<br>At 1.00m, m<br>Below 1.20m<br>grey. | lark grey<br>indy sligh<br>rel is ang<br>nt, quartz<br>cocarbon o<br>D]<br>nottling a<br>n, becomin | mottle<br>tly gr<br>ular t<br>ite, b<br>dour.<br>bsent.<br>g gree | d bluish<br>avelly sl<br>o subrour<br>rick and<br>nish grey | grey<br>lightl<br>nded f<br>slag.<br>y mott | and or<br>y organine to<br>With<br>led bl | ange<br>nic<br>a<br>uish | 2.65         |                 | 39.80                   |
| 3.90- 4.35 D  | 1.50                             |                                      |                            | s23                             | Soft orangi<br>clay. Grav<br>coarse flir<br>[MADE GROUN   | sh brown<br>rel is ang<br>nt, quartz<br>ID]   | mottle<br>ular t<br>ite an  | d black s<br>o subrour<br>d brick.                          | sandy<br>nded f                             | gravel<br>ine to                          | ly                       |              |                 |                         |
|   | DRY)                             |                                      |                            |                                 | Stiff brown<br>CLAY. Grav<br>At 2.20m, m  | n mottled<br>vel is sub<br>medium str   | bluish<br>rounde<br>ength   | grey sli<br>d fine to                                       | ightly<br>5 medi                            | grave<br>um fli                           | lly<br>nt.               |              |                 |                         |
|   |                                  |                                      |                            |                                 | Stiff fissu<br>are extreme<br>and stained<br>At 2.65m, w  | ared brown<br>ely closel<br>d bluish g<br>with rare   | mottl<br>y spac<br>rey.<br>subang                                 | ed grey (<br>ed, randc<br>ular medi                         | CLAY.<br>omly o<br>ium cl                   | Fissur<br>rienta<br>ayston                | es<br>ted                |              |                 |                         |
| 5.40- 5.85 U55  | 1.50<br>DRY)                     |                                      |                            |                                 | gravel<br>Below 3.90m<br>At 4.10m, d<br>layer.<br>Below 5 95m   | n, becomin<br>Ariller no  | g lami<br>tes pr  | nated in<br>esence of                                       | parts<br>E clay                             | stone                                     | mina                     |              |                 |                         |
| 5.85 D  |                                  |                                      |                            |                                 | extremely c<br>dull and oc  | casionall   | y stai  | closely a<br>ned orang                                      | spaced                                      | smoot                                     | h,                       |              |                 |                         |
| 7.00- 7.45 D  | 1.50<br>DRY)                     |                                      |                            | s15                             |   |   |   |   |   |   |                          |              |                 |                         |
| 8.00 D<br>8.20- 8.65 UT70   | 1.50<br>DRY)                     | 115                                  | 30                         |                                 | Below 8.00m<br>occasional<br>pockets. Fi<br>subvertical<br>At 8.20m, h  | n, becomin<br>fine to m<br>ssures ge<br>, dull, s<br>high stren                                     | g dark<br>edium<br>nerall;<br>ome po<br>gth                       | brownish<br>gravel si<br>y subhori<br>lished.               | n grey<br>ized s<br>izonta                  | with<br>ilt<br>l to                       |                          |              |                 |                         |
| 8.65 D  |                                  |                                      |                            |                                 |   |   |   |   |   |   |                          |              |                 |                         |
| 9.80-10.25 D  | 1.50<br>DRY)                     |                                      |                            | S20                             | Below 9.80m   | n, becomin  | g very  | stiff.  |   |   |                          |              |                 |                         |
| Boring  |                                  |                                      |                            | Progre                          | SS  |   |   | Ground  | water                                       |   | in                       | Denti-       | De              | (c. 07                  |
| Depth Dia Tec   | chnique                          | •                                    | Crew                       | of Hole                         | Cased Water   | Date  | Time  | Struck C  | Cased                                       | Rose to                                   | Mins                     | Sealed       | Ground          | ks on<br>Iwater         |
| 30.00 0.15 Cable Per  | n Pit<br>cussi                   | on                                   | DC<br>DC                   | G.L.<br>14.80<br>14.80<br>30.00 | 1.50 DRY<br>1.50 DRY<br>1.50 DRY  | 16/08/12<br>16/08/12<br>17/08/12<br>17/08/12  | 08:00<br>18:00<br>08:00<br>18:00                                  |   |   |   |                          |              | None enco       | ountered oring.         |
| Remarks Inspectio<br>ASS ** Drille<br>Symbols and A 50mm st                           | n pit<br>rs de<br>= 1 x<br>andpi | hand e<br>scripti<br>vial,<br>pe was | on.<br>1 x p<br>insta      | ted to i<br>lastic<br>lled to   | 1.20m depth.<br>jar and 1 amk<br>10.00m with  | er jar<br>a slotted   | secti   | on from 2   | 2.00m                                       | to 10.                                    | 00m wi                   | Logg<br>Logg | jedby s<br>re 1 | C / CO                  |
| aboreviations are<br>explained on the<br>accompanying<br>key sheet.<br>All dimensions | kable<br>ravel<br>g: 15          | protec<br>filter<br>.90-16.          | tive of<br>up to<br>30m fo | cover. 1<br>o 2.00m<br>or 60 m  | Backfill deta<br>, bentonite s<br>inutes.   | ils from<br>seal up to  | base o<br>0.30m   | f hole: h<br>, concret                                      | benton<br>te up                             | ite se<br>to gro                          | al up<br>und le          | vel.         |                 | 0/09/2012               |
| are in metres. Logged in acc  | ordance                          | with BS59                            | 30:1999 +                  | - A2:2010                       |   |   |   |   |   |   |                          |              |                 |                         |

# Project BACTON LOW RISE, GOSPEL OAK, NORTH Engineer ROLTON GROUP Borehole Project No BC124991

| Client ROLTO                  | N GROUI   | ?                     | Dropo     | rtioc     |             | Ctrate         |                             |                        |                  |                  |                   |                 | Ground | Level 4              | 2.45   | m OD       |
|-------------------------------|-----------|-----------------------|-----------|-----------|-------------|----------------|-----------------------------|------------------------|------------------|------------------|-------------------|-----------------|--------|----------------------|--------|------------|
| Samping                       | Sample    | Depth                 | Strenath  | w         | SDT N       | Strata         | 1                           |                        |                  |                  |                   |                 |        |                      | Scale  | :50        |
| Depth                         | Туре      | Cased &<br>(to Water) | kPa       | %         | SPIN        | Descrip        | otion                       |                        |                  |                  |                   |                 |        | Depth                | Legend | m OD       |
|                               | <u> </u>  |                       |           |           |             |                |                             |                        |                  |                  |                   |                 |        | Ē                    |        |            |
| 10.30-10.70                   | в         |                       |           |           |             |                |                             |                        |                  |                  |                   |                 |        | Ę                    |        |            |
|                               | -         |                       |           |           |             |                |                             |                        |                  |                  |                   |                 |        | -                    |        |            |
|                               | E         |                       |           |           |             |                |                             |                        |                  |                  |                   |                 |        | Ę                    |        |            |
|                               | -         |                       |           |           |             |                |                             |                        |                  |                  |                   |                 |        | -                    |        |            |
| 11.30-11.75                   | U80       | 1.50                  | 157       | 28        |             | At 11          | L.30m, v                    | very high              | stren            | gth              |                   |                 |        | Ę                    |        |            |
|                               | -         | (DRY)                 |           |           |             |                |                             |                        |                  |                  |                   |                 |        |                      |        |            |
| 11.75                         | D         |                       |           |           |             |                |                             |                        |                  |                  |                   |                 |        | Ę                    |        |            |
|                               | -         |                       |           |           |             |                |                             |                        |                  |                  |                   |                 |        |                      |        |            |
|                               | E         |                       |           |           |             |                |                             |                        |                  |                  |                   |                 |        | Ę                    |        |            |
|                               | -         |                       |           |           |             |                |                             |                        |                  |                  |                   |                 |        |                      |        |            |
| 12.80-13.25                   | D         | 1.50                  |           |           | S27         |                |                             |                        |                  |                  |                   |                 |        | Ę                    |        |            |
|                               | -         | (DRY)                 |           |           |             |                |                             |                        |                  |                  |                   |                 |        |                      |        |            |
|                               | Ę         |                       |           |           |             |                |                             |                        |                  |                  |                   |                 |        | Ę                    |        |            |
|                               | -         |                       |           |           |             |                |                             |                        |                  |                  |                   |                 |        |                      |        |            |
|                               | Ę         |                       |           |           |             |                |                             |                        |                  |                  |                   |                 |        | Ę                    |        |            |
|                               | -         |                       |           |           |             |                |                             |                        |                  |                  |                   |                 |        |                      |        |            |
| 14.30-14.75                   | U120      | 1.50                  | 115       | 26        |             | At 14          | 4.30m, ł                    | nigh stre              | ngth             |                  |                   |                 |        | Ę                    |        |            |
| 14 85                         | -         | (DRY)                 |           |           |             |                |                             |                        | e :              |                  |                   |                 |        | E                    |        |            |
| 14.75                         |           |                       |           |           |             | fragi          | ments of                    | claystc                | one.             | to coa           | rse gra           | vei siz         | ea     | F                    |        |            |
|                               | E         |                       |           |           |             |                |                             |                        |                  |                  |                   |                 |        | -                    |        |            |
|                               | -         |                       |           |           |             |                |                             |                        |                  |                  |                   |                 |        | -                    |        |            |
|                               | E         |                       |           |           |             |                |                             |                        |                  |                  |                   |                 |        | Ē                    |        |            |
| 15.90-16.70                   | D         |                       |           |           |             | At 15<br>grey  | 5.90m, c<br>fine to         | claystone<br>coarse    | bould<br>clayst  | er.**<br>one gra | Recove<br>avel.   | red as          | dark   | E_                   |        |            |
|                               | F         |                       |           |           |             |                |                             |                        | -                | -                |                   |                 |        | F                    |        |            |
|                               | E         |                       |           |           |             |                |                             |                        |                  |                  |                   |                 |        |                      |        |            |
| 16.70-17.15                   | - D       | 1.50                  |           |           | S29         | At 16<br>sized | 5.70m, v<br>1 silt <u>p</u> | vith occa<br>pockets o | sional<br>f rare | fine<br>shell    | to medi<br>fragme | um grav<br>nts. | el     | -                    |        |            |
|                               | <u> </u>  | (DRY)                 |           |           |             |                |                             |                        |                  |                  |                   |                 |        | E                    |        |            |
|                               | E         |                       |           |           |             |                |                             |                        |                  |                  |                   |                 |        | È                    |        |            |
|                               | E         |                       |           |           |             |                |                             |                        |                  |                  |                   |                 |        | Ę                    |        |            |
|                               | F         |                       |           |           |             |                |                             |                        |                  |                  |                   |                 |        | F                    |        |            |
|                               | <u> </u>  |                       |           |           |             |                |                             |                        |                  |                  |                   |                 |        | -                    |        |            |
| 18.20-18.50                   | UT130     | 1.50                  |           |           |             |                |                             |                        |                  |                  |                   |                 |        | -                    |        |            |
| 18.50                         | _ D       | (DRI)                 |           |           |             | Below          | w 18.50m                    | n, silt p              | ockets           | absen            | t.                |                 |        | -                    |        |            |
|                               | E         |                       |           |           |             |                |                             |                        |                  |                  |                   |                 |        | Ē                    |        |            |
|                               | -         |                       |           |           |             |                |                             |                        |                  |                  |                   |                 |        | -                    |        |            |
|                               | F         |                       |           |           |             |                |                             |                        |                  |                  |                   |                 |        | ŧ                    |        |            |
|                               | E         |                       |           |           |             |                |                             |                        |                  |                  |                   |                 |        | F                    |        |            |
| 19.70-20.15                   | D         | 1.50<br>(DRY)         |           |           | s33         |                |                             |                        |                  |                  |                   |                 |        | +<br>+               |        |            |
|                               | <u> </u>  |                       |           |           |             |                |                             |                        |                  |                  |                   |                 |        | E                    |        |            |
| Boring                        |           |                       | •         |           | Progre      | ess<br>Depth   | Depth to                    | _                      |                  | Grou             | ndwate            | r               | in     | Denth                | Rema   | rks on     |
| Depth Dia                     |           | Techniqu              | e         | Crew      | of Hole     | Cased          | Water                       | Date                   | Time             | Struck           | Cased             | Rose to         | Mins   | Sealed               | Groun  | dwater     |
|                               |           |                       |           |           |             |                |                             |                        |                  |                  |                   |                 |        |                      |        |            |
|                               |           |                       |           |           |             |                |                             |                        |                  |                  |                   |                 |        |                      |        |            |
| Remarks 🔜                     | Driller   | notes                 | clayst    | one bou   | l<br>lder p | ushed a        | ahead of                    | borehol                | e from           | 15.9             | to 16.7           | m, push         | ed asi | de at <sub>Log</sub> | ged by | sc / co    |
| Symbols and                   | _~• / m•  |                       |           |           |             |                |                             |                        |                  |                  |                   |                 |        | Figu                 | ıre    | 2 of 3     |
| explained on the              |           |                       |           |           |             |                |                             |                        |                  |                  |                   |                 |        |                      |        | 20/09/2012 |
| key sheet.                    |           |                       |           |           |             |                |                             |                        |                  |                  |                   |                 |        | <u>و</u>             | ææ     | miss       |
| All dimensions are in metres. | Logged in | accordance            | with BS59 | 30:1999 + | A2:2010     |                |                             |                        |                  |                  |                   |                 |        |                      | ~      |            |

| Project | BACTON LOW RISE, GOSPEL OAK, NORTH<br>LONDON | Engineer | ROLTON GROUP | Borehole<br>Project No | BH1<br>PC124991 |
|---------|--|----------|--------------|------------------------|-----------------|
|         |  |          |              |                        |                 |

| Client ROLTO                  | N GROUP        |                       |           |           |                  |                |                      |                       |                  |                   |                    |                    | Ground     | Level 42        | 2.45    | m OD             |
|-------------------------------|----------------|-----------------------|-----------|-----------|------------------|----------------|----------------------|-----------------------|------------------|-------------------|--------------------|--------------------|------------|-----------------|---------|------------------|
| Sampling                      |                | Depth                 | Prope     | ties      |                  | Strata         |                      |                       |                  |                   |                    |                    |            | 1               | Scale 1 | :50              |
| Depth                         | Sample<br>Type | Cased &<br>(to Water) | kPa       | w<br>%    | SPT N            | Descrip        | tion                 |                       |                  |                   |                    |                    |            | Depth           | Legend  | Level<br>m OD    |
|                               | -              |                       |           |           |                  |                |                      |                       |                  |                   |                    |                    |            | -               |         | 771              |
|                               | Ľ              |                       |           |           |                  |                |                      |                       |                  |                   |                    |                    |            | t.              |         |                  |
|                               | -              |                       |           |           |                  |                |                      |                       |                  |                   |                    |                    |            | +               |         |                  |
|                               | Ē              |                       |           |           |                  |                |                      |                       |                  |                   |                    |                    |            | Ę               |         |                  |
|                               | _              |                       |           |           |                  |                |                      |                       |                  |                   |                    |                    |            | <u> </u>        |         |                  |
| 21.20-21.65                   | U120           | 1.50<br>(DRY)         | 125       | 28        |                  | At 21          | .20m, ł              | nigh stre             | ength            |                   |                    |                    |            | F               |         |                  |
| 21 65                         | -              |                       |           |           |                  |                |                      |                       |                  |                   |                    |                    |            | Ē               |         |                  |
| 21.05                         | - 5            |                       |           |           |                  |                |                      |                       |                  |                   |                    |                    |            | +               |         |                  |
|                               | F              |                       |           |           |                  |                |                      |                       |                  |                   |                    |                    |            | F               |         |                  |
|                               | E              |                       |           |           |                  |                |                      |                       |                  |                   |                    |                    |            | É.              |         |                  |
| 22.70-23.15                   | D              | 1.50                  |           |           | S32              |                |                      |                       |                  |                   |                    |                    |            | +               |         |                  |
|                               | Ē_             | (DRY)                 |           |           |                  |                |                      |                       |                  |                   |                    |                    |            | E               |         |                  |
|                               | Ľ              |                       |           |           |                  |                |                      |                       |                  |                   |                    |                    |            | t<br>L          |         |                  |
|                               | -              |                       |           |           |                  |                |                      |                       |                  |                   |                    |                    |            | +               |         |                  |
|                               | E              |                       |           |           |                  |                |                      |                       |                  |                   |                    |                    |            | F<br>F          |         |                  |
|                               | <u> </u>       |                       |           |           |                  |                |                      |                       |                  |                   |                    |                    |            | <u>+</u>        |         |                  |
| 24.20-24.50                   | U130           | 1.50<br>(DRY)         |           |           |                  |                |                      |                       |                  |                   |                    |                    |            | +<br>+          |         |                  |
| 24.50                         | D              |                       |           |           |                  |                |                      |                       |                  |                   |                    |                    |            | F I             |         |                  |
|                               | Ľ              |                       |           |           |                  | Below<br>close | 7 24.851<br>ly space | n, fissur<br>ed polis | es sub<br>hed wi | horizo<br>th an ( | ntal an<br>occasio | d extre<br>nal sil | mely<br>t  | t<br>L          |         |                  |
|                               | -              |                       |           |           |                  | dusti          | .ng.                 |                       |                  |                   |                    |                    |            | -               |         |                  |
|                               | Ę              |                       |           |           |                  |                |                      |                       |                  |                   |                    |                    |            | F<br>F          |         |                  |
| 25 70-26 15                   | -              | 1 50                  |           |           | g 3 0            |                |                      |                       |                  |                   |                    |                    |            | F<br>F          |         |                  |
| 25.70-20.15                   | - 5            | (DRY)                 |           |           | 530              |                |                      |                       |                  |                   |                    |                    |            | ÷               |         |                  |
|                               | F              |                       |           |           |                  |                |                      |                       |                  |                   |                    |                    |            | F               |         |                  |
|                               | L              |                       |           |           |                  |                |                      |                       |                  |                   |                    |                    |            | t<br>L          |         |                  |
|                               | F              |                       |           |           |                  |                |                      |                       |                  |                   |                    |                    |            | +               |         |                  |
|                               | E              |                       |           |           |                  | Below          | 7 27.00m             | n, fissur             | e spac           | ing in            | creasin            | g becom            | ing        | Ę               |         |                  |
|                               | F              |                       |           |           |                  | rando          | anty or              | lentated,             | SMOOT            | n, dui.           | I and c            | lean.              |            | Ę               |         |                  |
| 27.40-27.85                   | _UT110         | 1.50<br>(DRY)         | 165       | 26        |                  | AL 27          | .4011, \             | ery mign              | i stren          | gun               |                    |                    |            | E               |         |                  |
| 27.85                         | Б              | (2.11)                |           |           |                  |                |                      |                       |                  |                   |                    |                    |            | F               |         |                  |
|                               |                |                       |           |           |                  |                |                      |                       |                  |                   |                    |                    |            | È.              |         |                  |
|                               | F              |                       |           |           |                  |                |                      |                       |                  |                   |                    |                    |            | +               |         |                  |
|                               | F              |                       |           |           |                  |                |                      |                       |                  |                   |                    |                    |            | F               |         |                  |
|                               |                |                       |           |           |                  |                |                      |                       |                  |                   |                    |                    |            | t<br>L          |         |                  |
| 29.00-29.45                   | - 0            | (DRY)                 |           |           | 533              |                |                      |                       |                  |                   |                    |                    |            | +               |         |                  |
|                               | Ę              |                       |           |           |                  |                |                      |                       |                  |                   |                    |                    |            | F               |         |                  |
|                               | Ē              |                       |           |           |                  |                |                      |                       |                  |                   |                    |                    |            | Ē               |         |                  |
| 30.00                         | D              |                       |           |           |                  |                |                      |                       |                  |                   |                    |                    |            | 30.00           |         | 12.45            |
| Boring                        |                |                       |           |           | Progre           | ess            |                      | Er                    | nd of B          | orehol<br>Groun   | a<br>ndwate        | r                  |            |                 |         | ]                |
| Depth Dia                     |                | Technique             | е         | Crew      | Depth<br>of Hole | Depth<br>Cased | Depth to<br>Water    | Date                  | Time             | Depth<br>Struck   | Depth<br>Cased     | Rose to            | in<br>Mins | Depth<br>Sealed | Rema    | rks on<br>dwater |
|                               |                |                       |           |           |                  | - 2000         |                      |                       |                  | 2.1.001           | - 4000             |                    |            |                 | 0.001   |                  |
|                               |                |                       |           |           |                  |                |                      |                       |                  |                   |                    |                    |            |                 |         |                  |
|                               |                |                       |           |           |                  |                |                      |                       |                  |                   |                    |                    |            |                 |         |                  |
| Remarks Res                   |                |                       |           |           |                  |                |                      |                       |                  |                   |                    |                    |            | Logg            | jed by  | sc / co          |
| Symbols and abbreviations are |                |                       |           |           |                  |                |                      |                       |                  |                   |                    |                    |            | Figur           | re      | 3 of 3           |
| explained on the accompanying |                |                       |           |           |                  |                |                      |                       |                  |                   |                    |                    |            | _               |         | _0               |
| key sheet.<br>All dimensions  |                |                       |           |           |                  |                |                      |                       |                  |                   |                    |                    |            | e               | DEG     | MES              |
| are in metres.                | Logged in      | accordance            | with BS59 | 30:1999 + | A2:2010          |                |                      |                       |                  |                   |                    |                    |            |                 |         |                  |

Project BACTON LOW RISE, GOSPEL OAK, NORTH LONDON

Project No PC124991

Client ROLTON GROUP

| Hole Depth Level Type SWP                    |                                    |                                    |                             |              |                     |                         |                                      | Test                                     | SPT 'N'                                     |                        | Un       | correct   | ed SP1 | ſ            |           |          |
|--|------------------------------------|------------------------------------|-----------------------------|--------------|---------------------|-------------------------|--------------------------------------|--|---|------------------------|----------|-----------|--------|--------------|-----------|----------|
| noie   | m bgl                              | m OD                               | Type                        | (mm)         | <b>0-75</b><br>(mm) | <b>75-150</b><br>(mm)   | <b>0-75</b><br>(mm)                  | <b>75-150</b> (mm)                       | 150-225<br>(mm)                             | <b>225-300</b><br>(mm) | Value    | 1(        | ) 2    | 'N'<br>20 30 | 40        | 50       |
| BH1  | 1.20                               | 41.25                              | s                           | -            | 1                   | 1                       | 1                                    | 2  | 2   | 2                      | 7        | *         |        |              |           |          |
| BH1  | 3.90                               | 38.55                              | S                           | -            | 1                   | 1                       | 2                                    | 10                                       | 6   | 5                      | 23       | 1         |        | *            | 1         |          |
| BH1  | 7.00                               | 35.45                              | S                           | -            | 2                   | 3                       | 3                                    | 3  | 4   | 5                      | 15       | 1         | *      |              |           |          |
| BH1  | 9.80                               | 32.65                              | S                           | -            | 3                   | 3                       | 4                                    | 5  | 5   | 6                      | 20       |           |        | * :          | 1         |          |
| BH1  | 12.80                              | 29.65                              | S                           | -            | 3                   | 3                       | 5                                    | 5  | 8   | 9                      | 27       | <br> <br> |        | · * ·        |           |          |
| BH1  | 16.70                              | 25.75                              | S                           | -            | 5                   | 6                       | 6                                    | 9  | 6   | 8                      | 29       | <br> <br> |        | · *          | <br> <br> |          |
| BH1  | 19.70                              | 22.75                              | S                           | -            | 5                   | 5                       | 7                                    | 8  | 9   | 9                      | 33       | <br> <br> |        | <b> </b>     | •  <br>   | 1        |
| BH1  | 22.70                              | 19.75                              | S                           | -            | 5                   | 6                       | 7                                    | 8  | 8   | 9                      | 32       | 1         |        |              |           |          |
| BH1  | 25.70                              | 16.75                              | S                           | -            | 6                   | 6                       | 6                                    | 7  | 8   | 9                      | 30       | I<br>I    |        | *            | 1         |          |
| BH1  | 29.00                              | 13.45                              | S                           | -            | 7                   | 7                       | 8                                    | 8  | 8   | 9                      | 33       | 1         |        |              | •         |          |
|  |                                    |                                    |                             |              |                     |                         | <b>Remar</b><br>In acco              | ks<br>rdance wi                          | ith BS EN                                   | I ISO2247              | 6-3:2005 |           |        |              |           |          |
|  |                                    |                                    |                             |              |                     |                         |                                      |  |   |                        |          |           |        |              |           |          |
| -/- Blows/p<br>-*/- Total blo<br>SWP Penetra | enetratio<br>ows/pene<br>tion unde | n (mm) a<br>etration (<br>er own w | after se<br>mm)<br>eight (n | ating<br>nm) |                     | S - S<br>C - S<br>L - S | tandard F<br>PT with c<br>plit Spoor | Penetratio<br>cone<br>n with line<br>Pri | on Test (S<br>er used<br><i>nted: 20/09</i> | PT)<br>9/2012 Page     |          | 30        |        |              | آلآل      | 33<br>33 |

Borehole Project No Project BACTON LOW RISE, GOSPEL OAK, NORTH LONDON Engineer ROLTON GROUP

BH2 PC124991

Client ROLTON GROUP

| Sampling                     |                  |                       | Prope            | erties                 |                  | Strata Scale 1:50 |                              |                        |                  |                   |                               |                    |            |              |  |                  |
|------------------------------|------------------|-----------------------|------------------|------------------------|------------------|-------------------|------------------------------|------------------------|------------------|-------------------|-------------------------------|--------------------|------------|--------------|--|------------------|
| Depth                        | Sample<br>Type   | Cased &<br>(to Water) | Strength<br>kPa  | n w<br>%               | SPT N            | Descrip           | otion                        |                        |                  | Depth             | Legend                        | Leve<br>m O        |            |              |  |                  |
|                              |                  |                       |                  |                        |                  | Tarma             | ac. **                       |                        |                  |                   |                               |                    |            | G.L.<br>0.08 |  | 43.<br>43.       |
| 0.30- 0.50<br>0.30           | В<br>D           |                       |                  |                        |                  | Conci             | ete. *                       | *                      |                  |                   |                               |                    | /          | 0.30         |  | 43.<br>42.       |
| 0.30<br>0.50- 1.00           | E<br>B           |                       |                  |                        |                  | [MADI             | GROUNI                       | 0]                     |                  |                   |                               |                    |            | F            |  |                  |
| 0.50<br>1.00                 | D                |                       |                  |                        |                  | Light<br>sligh    | t brown                      | mottled<br>ayey very   | grey b<br>grave  | olack,<br>elly sa | orange<br>nd. Gi              | and yel<br>avel is | llow       | 1.00         |  | 42               |
| 1.00<br>1.10<br>1 20- 1 65   | - E<br>- D       | 1 20                  |                  |                        | 56               | angu.<br>conci    | cete and                     | subangula<br>i clinker | r fine<br>•      | e to co           | arse bi                       | ick,               |            | 1.20         |  | 42               |
| 1.20- 1.05                   | -                | (DRY)                 |                  |                        | 50               | Very              | soft bi                      | rown mott              | led bl           | lack, o           | range a                       | and yell           | Low        | F            |  |                  |
|                              |                  |                       |                  |                        |                  | sandy<br>fine     | y gravel<br>to coar          | lly clay.<br>cse clink | Grav<br>er, br   | vel is<br>ick an  | angulan<br>d conci            | to rou<br>rete.    | inded      | l <b>E</b>   |  |                  |
| 2.00<br>2.00                 | D<br>E           |                       |                  |                        |                  | [MADI             | E GROUNI                     | )]<br>                 |                  | hlash             |                               |                    |            | 2.00         | ······                                 | 41               |
|                              | -                |                       |                  |                        |                  | sandy             | greyisi<br>gravel<br>ar to s | lly sligh              | tly or           | ganic             | , orang<br>clay. (<br>arse fl | ravel i            | s          | E            | · · · · · ·                            |                  |
| 2.70- 3.15                   | -<br>U50         | 1.50                  | 55               | 33                     |                  | quart<br>[MADI    | zite, l<br>GROUNI            | orick and              | clink            | ker.              |                               | ,                  |            | F            | ······································ | •                |
|                              | -                | (DRY)                 |                  |                        |                  | At 1              | .10m, be                     | ecoming s              | light            | ly grav           | elly.                         |                    |            |              | 0 0 0<br>0 0 0                         |                  |
| 3.15                         |                  |                       |                  |                        |                  | sligh             | greyis<br>ntly sau           | ndy sligh              | ottled<br>tly gr | avelly            | n grey<br>CLAY.<br>arse f     | and ora<br>Gravel  | is<br>is   | - 3.15       | ······                                 | 40               |
| 5.20- 5.00                   | Ę                |                       |                  |                        |                  | quart<br>[POSS    | IZ.<br>SIBLE MA              | ADE GROUN              | D]               | 2 00 00           | arse r.                       | int and            | •          | F            |  |                  |
|                              |                  |                       |                  |                        |                  | Firm              | brown r                      | nottled k              | luish            | grey s            | lightly                       | sandy              | CLAY.      | l <u>t</u>   |  |                  |
| 4 20- 4 65                   |                  | 1 50                  |                  |                        | <b>q13</b>       | At 2              | figgure                      | edium str              | mottle           | d blui            | sh ares                       | CT.AV N            | vith       | Ē            |  |                  |
| 1120 1103                    |                  | (DRY)                 |                  |                        | 515              | some<br>Fissu     | sand an<br>ires are          | nd fine g              | ravel<br>ly to   | sized<br>very c   | gypsum<br>losely              | crystal<br>spaced  | ls.        | E            |  |                  |
|                              |                  |                       |                  |                        |                  | rando<br>stair    | mly or:<br>ned oran          | lentated,              | smoot            | h, dul            | 1 and o                       | occasior           | nally      | -            |  | •                |
|                              | -                |                       |                  |                        |                  | Below             | v 4.20m                      | , thinly               | lamina           | ited in           | parts                         |                    |            | F            |  |                  |
|                              | Ę                |                       |                  |                        |                  |                   |                              |                        |                  |                   |                               |                    |            | Ę            |  |                  |
|                              |                  |                       |                  |                        |                  | At 5              | .70m, f:                     | issures s              | lightl           | ly poli           | shed w                        | th ligh            | nt         | Ę            |  | •                |
| 5.70- 6.15                   | U70              | 1.50<br>(DRY)         | 96               | 31                     |                  | blue<br>At 5      | grey st<br>70m, h            | caining.<br>igh strer  | lgth             |                   |                               |                    |            | ŧ            |  | •                |
| 6.15                         | -<br>- п         |                       |                  |                        |                  |                   |                              |                        |                  |                   |                               |                    |            | Ē            |  |                  |
|                              |                  |                       |                  |                        |                  |                   |                              |                        |                  |                   |                               |                    |            | E            |  |                  |
|                              | E                |                       |                  |                        |                  |                   |                              |                        |                  |                   |                               |                    |            | ł            |  |                  |
|                              | -                |                       |                  |                        |                  | Below             | v 7.00m                      | , becomir              | g stif           | f.                |                               |                    |            | F            |  | •                |
| 7.20- 7.65                   | D                | 1.50<br>(DRY)         |                  |                        | S17              |                   |                              |                        |                  |                   |                               |                    |            | F            |  |                  |
|                              | -                |                       |                  |                        |                  |                   |                              |                        |                  |                   |                               |                    |            | F            |  |                  |
|                              |                  |                       |                  |                        |                  |                   |                              |                        |                  |                   |                               |                    |            | Ę            |  |                  |
|                              | -                |                       |                  |                        |                  |                   |                              |                        |                  |                   |                               |                    |            | E            |  | •                |
|                              | -                |                       |                  |                        |                  |                   |                              |                        |                  |                   |                               |                    |            | £            |  |                  |
| 8.70- 9.00                   | -<br>UT100       | 1.50                  |                  |                        |                  |                   |                              |                        |                  |                   |                               |                    |            | ŧ            |  |                  |
| 9.00                         | D                | (DRY)                 |                  |                        |                  | Below             | v 9.00m                      | , becomir              | lg very          | / stiff           | and da                        | ark grey           | vish       | Ę.           |  |                  |
| 9.20- 9.50                   | в                |                       |                  |                        |                  | At 9              | .00m, re                     | ecovered               | with a<br>ed fra | ngular            | to sub<br>of cla              | orounded           | l fine     | Ę            |  | •                |
|                              | -                |                       |                  |                        |                  |                   | -                            |                        |                  | -                 |                               | -                  |            | F.           |  |                  |
|                              |                  |                       |                  |                        |                  |                   |                              |                        |                  |                   |                               |                    |            | ŧ            |  |                  |
| oring                        |                  |                       |                  |                        | Progre           | SS                |                              |                        |                  | Grou              | ndwate                        | <u>er</u>          |            | <u> </u>     |  |                  |
| epth Hole                    |                  | Technique             | Э                | Crew                   | Depth<br>of Hole | Depth<br>Cased    | Depth to<br>Water            | Date                   | Time             | Depth             | Depth                         | Rose to            | in<br>Mins | Depth        | Rema                                   | rks on<br>dwater |
| 1.20                         | Inspec           | tion Pit              |                  | DC                     | G.L.             | 1 50              | DDV                          | 20/08/12               | 08:00            |                   | Cubbu                         |                    | Willio     |              | None enc                               | ounte            |
| 0.15                         | CaDIe            | rercussi              | .011             | DG                     | 20.00            | 1.50              | DRY                          | 20/08/12               | T8:00            | ,                 |                               |                    |            |              | during b                               | oring            |
|                              |                  |                       |                  |                        |                  |                   |                              |                        |                  |                   |                               |                    |            |              |  |                  |
| emarks                       | Inspec<br>** Dri | tion pit<br>llers de  | hand<br>script   | excavation.            | ted to           | 1.20m d           | lepth, (                     | .5 hours               | break            | ing ou            | t conci                       | rete.              |            | Logg         | jed by                                 | 20               |
| mbols and<br>previations are | At 8.7           | ue = 1 X<br>Om, UT s  | hoe da           | ⊥xp.<br>maged<br>insta | Lastic           | Jar and           | ı ı ambe                     | a deormon              | ned al           | otted             | section                       | from               | 2.00m +    | Figu         | re :                                   | <b>1 of</b>      |
| plained on the<br>companying | 10.00m           | with fl               | ush lo<br>tonite | ckable                 | protec           | tive co           | over. Ba                     | ackfill d              | letails          | from              | base of                       | hole:              | arisin     | gs up        |  | <u></u>          |
| srieet.<br>dimensions        | 0.30m,           | concret               | e up t           | o grou                 | nd leve          | 1.                |                              |                        |                  |                   |                               |                    |            | E            | ਸ਼ਗਤਰਾਂ                                | ມແຊ              |

# Project BACTON LOW RISE, GOSPEL OAK, NORTH Engineer ROLTON GROUP Borehole Project No BC124991

Ground Level 43.45

m OD

Client ROLTON GROUP

| Sampling                              |                |                       | Prope           | ties      |                  | Strata         | a                    |                        |                   |                   |                    |                   |            |                 | Scale 1       | :50              |
|---------------------------------------|----------------|-----------------------|-----------------|-----------|------------------|----------------|----------------------|------------------------|-------------------|-------------------|--------------------|-------------------|------------|-----------------|---------------|------------------|
| Depth                                 | Sample<br>Type | Cased &<br>(to Water) | Strength<br>kPa | w<br>%    | SPT N            | Descrip        | otion                |                        |                   |                   |                    |                   |            | Depth           | Legend        | Level<br>m OD    |
| 10.20-10.65                           |                | 1.50                  |                 |           | 524              | Below          | v 10.20m             | n, light               | bluish            | grey 1            | nottlin            | ıg absen          | ıt.        | -               |               | 777              |
|                                       |                | (DRY)                 |                 |           |                  |                |                      |                        |                   |                   |                    |                   |            | -               |               |                  |
|                                       | -              |                       |                 |           |                  |                |                      |                        |                   |                   |                    |                   |            |                 |               |                  |
|                                       | E              |                       |                 |           |                  |                |                      |                        |                   |                   |                    |                   |            | Ę               |               |                  |
|                                       |                |                       |                 |           |                  |                |                      |                        |                   |                   |                    |                   |            | -               |               |                  |
| 11 60                                 |                |                       |                 |           |                  | At 11          | L.60m, 1             | ecovered               | l as an           | gular             | to subr            | ounded            | fine       | E               |               |                  |
| 11.80-12.25                           | 1190           | 1.50                  |                 |           |                  | clays          | stone.               | avei siz               | eu IIa            | gmencs            | OL IIG             | nic grey          |            | Ę               |               |                  |
|                                       |                | (DRY)                 |                 |           |                  |                |                      |                        |                   |                   |                    |                   |            | F               |               |                  |
| 12.25                                 | D              |                       |                 |           |                  | Below<br>space | v 12.25m<br>ed, rand | n, fissur<br>Nomly ori | es bec<br>entate  | oming d, smo      | very cl<br>oth, du | osely<br>11 and   | with       | È               |               |                  |
|                                       | -              |                       |                 |           |                  | a sli          | lght sil             | lt dustin              | ıg.               |                   |                    |                   |            | -               |               |                  |
|                                       | F              |                       |                 |           |                  |                |                      |                        |                   |                   |                    |                   |            | -               |               |                  |
|                                       | <br>           |                       |                 |           |                  |                |                      |                        |                   |                   |                    |                   |            |                 |               |                  |
| 13.30-13.75                           | D              | 1.50<br>(DRY)         |                 |           | S31              |                |                      |                        |                   |                   |                    |                   |            | E               |               | 8                |
|                                       | F              | ()                    |                 |           |                  |                |                      |                        |                   |                   |                    |                   |            | F               |               | 8                |
|                                       |                |                       |                 |           |                  |                |                      |                        |                   |                   |                    |                   |            | E_              |               | 8                |
|                                       |                |                       |                 |           |                  |                |                      |                        |                   |                   |                    |                   |            | -               |               |                  |
|                                       | -              |                       |                 |           |                  |                |                      |                        |                   |                   |                    |                   |            | -               |               |                  |
| 14.80-15.25                           | 1195           | 1.50                  |                 |           |                  |                |                      |                        |                   |                   |                    |                   |            | Ę               |               |                  |
|                                       |                | (DRY)                 |                 |           |                  |                |                      |                        |                   |                   |                    |                   |            | <u>-</u>        |               |                  |
| 15.25                                 | D              |                       |                 |           |                  | Below<br>shell | v 15.25m<br>fragme   | n, with r<br>ents, fis | are fi<br>sure s  | ne to m<br>pacing | medium<br>increa   | gravel<br>sing an | sized<br>d | È               |               |                  |
|                                       | -              |                       |                 |           |                  | silt           | dusting              | g absent.              |                   |                   |                    |                   |            | F               |               | X                |
|                                       | F              |                       |                 |           |                  |                |                      |                        |                   |                   |                    |                   |            | Ę               |               | X                |
|                                       | <br>           |                       |                 |           |                  |                |                      |                        |                   |                   |                    |                   |            | Ē               |               | X                |
| 16.30-16.75                           | D              | 1.50<br>(DRY)         |                 |           | S29              |                |                      |                        |                   |                   |                    |                   |            | ÷               |               |                  |
|                                       | F              | ()                    |                 |           |                  |                |                      |                        |                   |                   |                    |                   |            | Ę               |               |                  |
|                                       | <u> </u>       |                       |                 |           |                  |                |                      |                        |                   |                   |                    |                   |            | Ē_              |               | 3                |
|                                       | -              |                       |                 |           |                  |                |                      |                        |                   |                   |                    |                   |            | È               |               | 3                |
|                                       | -              |                       |                 |           |                  |                |                      |                        |                   |                   |                    |                   |            | +               |               | 3                |
| 17.80                                 | -<br>- D       |                       |                 |           |                  | At 17          | .80m, 1              | ecovered               | l as an<br>ed fra | gular<br>gments   | to subr            | ounded            | fine       | Ę               |               | 8                |
| 18.00-18.45                           | UT125          | 1.50<br>(DRY)         |                 |           |                  | clays          | stone.               |                        |                   | 5                 | · j                | <u>9</u> 1.07     |            | -               |               |                  |
|                                       | -              |                       |                 |           |                  |                |                      |                        |                   |                   |                    |                   |            |                 |               |                  |
| 18.45                                 | D              |                       |                 |           |                  | At 18          | 3.70m, 1             | ecovered               | l as an           | gular             | to subr            | ounded            | fine       | F               |               |                  |
| 18.70                                 | - D            |                       |                 |           |                  | to co<br>clays | stone.               | avel siz               | ed fra            | gments            | of lig             | ht grey           | •          | Ę               |               |                  |
|                                       | <br> _         |                       |                 |           |                  |                |                      |                        |                   |                   |                    |                   |            | E               |               | X                |
| 19.50-19.95                           | -<br>_ D       | 1.50                  |                 |           | S36              |                |                      |                        |                   |                   |                    |                   |            | ŧ               |               | X                |
|                                       | <br>-          | (DRY)                 |                 |           |                  |                |                      |                        |                   |                   |                    |                   |            | Ē               |               |                  |
|                                       | -              |                       |                 |           |                  |                |                      |                        |                   |                   |                    |                   |            | 20.00           |               | 23.45            |
| Boring                                |                |                       |                 |           | Progre           | ess            |                      | En                     | d of B            | Grour             | ∍<br>ndwate        | r                 |            |                 |               |                  |
| Depth Hole<br>Dia                     |                | Techniqu              | е               | Crew      | Depth<br>of Hole | Depth<br>Cased | Depth to<br>Water    | Date                   | Time              | Depth<br>Struck   | Depth<br>Cased     | Rose to           | in<br>Mins | Depth<br>Sealed | Rema<br>Groun | rks on<br>dwater |
|                                       |                |                       |                 |           |                  |                |                      |                        |                   |                   |                    |                   |            |                 |               |                  |
|                                       |                |                       |                 |           |                  |                |                      |                        |                   |                   |                    |                   |            |                 |               |                  |
| Remarks                               |                |                       |                 |           | 1                |                |                      |                        |                   |                   |                    | ļ                 |            | Log             | ned by        | co               |
| Symbols and                           |                |                       |                 |           |                  |                |                      |                        |                   |                   |                    |                   |            | Fiau            | re            | 2 of 2           |
| abbreviations are<br>explained on the |                |                       |                 |           |                  |                |                      |                        |                   |                   |                    |                   |            | gu              |               | 20/09/2012       |
| accompanying<br>key sheet.            |                |                       |                 |           |                  |                |                      |                        |                   |                   |                    |                   |            | ē               | न्त्र         | miss             |
| All dimensions<br>are in metres.      | Logged in      | accordance            | with BS59       | 30:1999 + | + A2:2010        |                |                      |                        |                   |                   |                    |                   |            | 6               |               |                  |

Project BACTON LOW RISE, GOSPEL OAK, NORTH LONDON

Project No PC124991

Client ROLTON GROUP

| Hole   | Denth | Level<br>m OD | Type                                    | SWP<br>(mm) | Seating Drive       |                       |                     | Test               | SPT 'N'                |                        | Une           | Uncorrected SPT |             |            |           |           |     |
|--|-------|---------------|---|-------------|---------------------|-----------------------|---------------------|--------------------|------------------------|------------------------|---------------|-----------------|-------------|------------|-----------|-----------|-----|
| noic   | m bgl |               | .,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,, |             | <b>0-75</b><br>(mm) | <b>75-150</b><br>(mm) | <b>0-75</b><br>(mm) | <b>75-150</b> (mm) | <b>150-225</b><br>(mm) | <b>225-300</b><br>(mm) | Value         | 1               | 0 2         | 0 3        | N'<br>30  | 40        | 50  |
| BH2  | 1.20  | 42.25         | s                                       | -           | 1                   | 1                     | 2                   | 1                  | 2                      | 1                      | 6             | *               | <br> <br>   |            | <br> <br> | <br> <br> |     |
| BH2  | 4.20  | 39.25         | S                                       | -           | 1                   | 2                     | 3                   | 3                  | 3                      | 4                      | 13            |                 | *           |            |           | 1         |     |
| BH2  | 7.20  | 36.25         | s                                       | -           | 2                   | 3                     | 4                   | 4                  | 4                      | 5                      | 17            |                 | · *         |            | <br> <br> | <br> <br> |     |
| BH2  | 10.20 | 33.25         | S                                       | -           | 3                   | 4                     | 4                   | 7                  | 7                      | 6                      | 24            |                 | I<br>I<br>I | *          | <br> <br> | <br> <br> |     |
| BH2  | 13.30 | 30.15         | S                                       | -           | 3                   | 5                     | 8                   | 8                  | 6                      | 9                      | 31            |                 | <br> <br>   | , y        | <br>      | <br>      |     |
| BH2  | 16.30 | 27.15         | S                                       | -           | 2                   | 5                     | 5                   | 7                  | 8                      | 9                      | 29            |                 | <br> <br>   | , <b>,</b> | <br>      | <br> <br> |     |
| BH2  | 19.50 | 23.95         | S                                       | -           | 4                   | 7                     | 7                   | 8                  | 9                      | 12                     | 36            |                 | <br> <br>   |            | *         | 1         |     |
| Driller  |       |               | David                                   | Cowling     |                     |                       | Bemari              | (5                 |                        |                        |               |                 |             |            |           |           |     |
|  |       |               |   |             | 1                   |                       | Equipm              | ent check          | ked and c              | alibration             | carried out i | n acco          | ordan       | ce wit     | th BS     | EN        | ISO |
| Hammer No. EQU436  |       |               |   |             | 22476-3             | 3: 2005               |                     |                    |                        |                        |               |                 |             |            |           |           |     |
| Calibration Date 23/03/2012  |       |               |   |             |                     |                       |                     |                    |                        |                        |               |                 |             |            |           |           |     |
| ./- Blows/penetration (mm) after seating S - Standard Penetration Test (SPT)   .*/- Total blows/penetration (mm) C - SPT with cone   SWP Penetration under own weight (mm) L - Split Spoon with liner used |       |               |   |             |                     |                       |                     |                    |                        |                        |               |                 |             |            |           |           |     |

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Properties

Client

Sampling

ROLTON GROUP

| Project | BACTON LOW RISE, GOSI<br>LONDON | pel oak, north | Engineer | ROLTON GROUP | Borehole<br>Project No | BH3<br>PC124991 |
|---------|---------------------------------|----------------|----------|--------------|------------------------|-----------------|
|         |                                 |                |          |              |                        |                 |

Strata

Ground Level 43.78

m OD

1:50

Scale

Depth Cased & Sample Strength w SPT N Level Description Depth Depth Leaend Туре (to Water) kPa % m OD 43.78 G.L. 0.07 43.71 Asphalt. °. △ [MADE GROUND] 0.30 D 0.40 43.38 0.50 D Concrete. \*\* [MADE GROUND] Firm orange brown mottled red and blue sandy 1.00 Е gravelly clay. Gravel is angular to subrounded fine to coarse brick, concrete, slate and flint. 1.20- 1.65 D NIL **S10** [MADE GROUND] (DRY) 1.30 42.48 Firm orange brown slightly sandy slightly gravelly CLAY. Gravel is angular to subrounded fine to coarse flint and quartz. 2.00 Е × 2.50 41.28 Firm to stiff fissured brown mottled bluish grey CLAY. Fissures are extremely to very closely spaced, randomly orientated, smooth and dull with a slight silt dusting and occasional orange staining. 2.70- 3.15 ┢ **U**30 NIL 72 31 (DRY) At 2.70m, medium strength 3.20 D Below 4.20m, becoming thinly laminated in places. 4.20- 4.65 s15 D 2.50 (DRY) 5.70- 6.15 U40 2.50 (DRY) At 6.20m, becoming slightly micaceous and with 6.20 D occasional orange staining on fissure surfaces. 7.20- 7.65 D 2.50 S21 (DRY) 8.70- 9.15 **U7**0 2.50 (DRY) Below 9.20m, becoming very stiff and greyish brown 9.20 D in colour. Orange staining on fissure surfaces absent. Boring Progress Groundwater Denth Depth Penth to Denth Depth Denth Remarks on Depth Crew Date Time Rose to Technique Water Cased Mins Sealed Groundwater Dia of Hole Cased Struck Inspection Pit 16/08/12 08:00 None encountered 1.20 CR/PJ G.L 16/08/12 18:00 17/08/12 08:00 17/08/12 18:00 7.20 30.20 0.15 Cable Percussion CR/PJ 2.50 DRY during boring. 2.50 DRY 30.20 2.50 DRY Remarks Inspection pit hand excavated to 1.20m depth. \*\* Drillers description. Symbols and abbreviations are explained on the accompanying key sheet. Inspection pit hand excavated to 1.20m depth. E sample = 1 x vial, 1 x plastic jar and 1 amber jar A 50mm standpipe was installed to 5.00m with a geowrapped slotted section from 1.00m to 5.00m with flush lockable protective cover. Backfill details from base of hole: arisings up to 7.00m, bentonite seal up to 5.00m, gravel filter up to 1.00m, bentonite seal up to 0.30m, concrete up to ground level. Logged by SC/CO Figure 1 of 4 20/09/2012 ezimbeloeg key sheet. All dimensions Logged in accordance with BS5930:1999 + A2:2010 are in metres.

#### Project BACTON LOW RISE, GOSPEL OAK, NORTH LONDON Engineer ROLTON GROUP

Borehole Project No BH3 PC124991

Client ROLTON GROUP

| Client ROLTO  | N GROUE   | p                   |           |           |           | Groun                   |  |                                    |                            |                              |                           |                   |            |              | Level 43.78 m OD |                              |  |  |
|---|---|---------------------|-----------|-----------|-----------|-------------------------|--|------------------------------------|----------------------------|------------------------------|---------------------------|-------------------|------------|--------------|------------------|------------------------------|--|--|
| Sampling  | Sample  | Depth               | Prope     | ties      |           | Strata                  | à  |                                    |                            | Scale 1:50                   |                           |                   |            |              |                  |                              |  |  |
| Depth   | Туре  | Cased & (to Water)  | kPa       | w<br>%    | SPIN      | Descrip                 | otion  |                                    |                            |                              |                           |                   |            | Depth        | Legend           | Level<br>m OD                |  |  |
| 10.20-10.65   | D   | 2.50<br>(DRY)       |           |           | S41       | Betwe<br>mediu<br>At 10 | en 10.2<br>m to co<br>).30m, c   | 0-10.65m<br>barse cla<br>kriller n | , reco<br>ystone<br>otes t | vered v<br>gravel<br>hin muc | vith su<br>L.<br>Istone 3 | bangula:<br>band. | r          |              |                  |                              |  |  |
| 11.70-12.15   | -<br>-<br>-<br>-<br>-<br>-<br>-   | 2.50                |           |           |           |                         |  |                                    |                            |                              |                           |                   |            |              |                  |                              |  |  |
| 12.20   | -<br>-<br>-<br>-<br>-   | (DRI)               |           |           |           |                         |  |                                    |                            |                              |                           |                   |            |              |                  |                              |  |  |
| 13.20-13.65   | -<br>-<br>-<br>-<br>-<br>-<br>-<br>-<br>-<br>-<br>-<br>-<br>-<br>-<br>-<br>-<br>-<br>-<br>- | 2.50<br>(DRY)       |           |           | s29       | Below<br>occas          | elow 13.20m, becoming dark grey in colour and ccasional silt partings. |                                    |                            |                              |                           |                   |            |              |                  |                              |  |  |
| 14.70-15.15   | - U80   | 2.50<br>(DRY)       |           |           |           |                         |  |                                    |                            |                              |                           |                   |            |              |                  |                              |  |  |
| 15.20   | D   |                     |           |           |           |                         |  |                                    |                            |                              |                           |                   |            | ŧ            |                  |                              |  |  |
| 15.50   | D<br><br>   |                     |           |           |           |                         |  |                                    |                            |                              |                           |                   |            |              |                  |                              |  |  |
| 16.20-16.65   | - D<br>   | 2.50<br>(DRY)       |           |           | S27       | At 17                   | / 50m /  | riller r                           | otos t                     | hin mu                       | latono i                  | hand              |            |              |                  |                              |  |  |
| 17.70-18.15   | - U80   | 2.50<br>(DRY)       |           |           |           | AC 17                   |  | uiiiei n                           |                            |                              |                           | band.             |            |              |                  |                              |  |  |
| 18.20   |   |                     |           |           |           |                         |  |                                    |                            |                              |                           |                   |            |              |                  |                              |  |  |
| 19.20-19.65   | - D   | 2.50<br>(DRY)       |           |           | s38       |                         |  |                                    |                            |                              |                           |                   |            |              |                  |                              |  |  |
|   | -   |                     |           |           |           |                         |  |                                    |                            |                              |                           |                   |            | +            |                  |                              |  |  |
| Boring  | Progre  | rogress Groundwater |           |           |           |                         |  |                                    |                            |                              | Dom                       | ks on             |            |              |                  |                              |  |  |
| Depth Dia   |   | Technique           | <b>;</b>  | Crew      | of Hole   | Cased                   | Water  | Date                               | Time                       | Struck                       | Cased                     | Rose to           | in<br>Mins | Sealed       | Ground           | dwater                       |  |  |
|   |   |                     |           |           |           |                         |  |                                    |                            |                              |                           |                   |            |              |                  |                              |  |  |
| Remarks<br>Symbols and<br>abbreviations are<br>explained on the<br>accompanying<br>key sheet.<br>All dimensions<br>are in metres. | Logged in   | accordance          | with BS59 | 30:1999 + | · A2:2010 |                         |  |                                    |                            |                              |                           |                   |            | Logg<br>Figu |                  | sc/co<br>2 of 4<br>0/09/2012 |  |  |

# Project BACTON LOW RISE, GOSPEL OAK, NORTH Engineer ROLTON GROUP Borehole Project No Project No PC124991

| Client ROLTO  | ON GROUE  | ?                  | _         |           |                  | Ground Level 43.78 m OD                             |                                  |                                  |                           |                              |                               |                              |                    |                   |        |                            |
|---|---|--------------------|-----------|-----------|------------------|---|----------------------------------|----------------------------------|---------------------------|------------------------------|-------------------------------|------------------------------|--------------------|-------------------|--------|----------------------------|
| Sampling  | Sample  | Depth              | Prope     | rties     |                  | Strata  | a                                |                                  |                           | Scale 1:                     | 50                            |                              |                    |                   |        |                            |
| Depth   | Туре  | Cased & (to Water) | kPa       | %         | SPIN             | Descrip   | otion                            |                                  |                           |                              |                               |                              |                    | Depth             | Legend | m OD                       |
| 20.70-21.15<br>21.20  | - U80   | 2.50<br>(DRY)      |           |           |                  |   |                                  |                                  |                           |                              |                               |                              |                    |                   |        |                            |
| 22.20-22.65   |   | 2.50<br>(DRY)      |           |           | 43               |   |                                  |                                  |                           |                              |                               |                              |                    |                   |        |                            |
| 23.70-24.15   | <br>  | 2.50<br>(DRY)      |           |           |                  |   |                                  |                                  |                           |                              |                               |                              |                    | +-<br>-<br>-<br>- |        |                            |
| 24.20   | <br>- D<br>- D<br><br>  |                    |           |           |                  | Belov<br>occas<br>smoot                             | v 24.20m<br>sionally<br>ch, occa | n, fissur<br>subhori<br>sionally | es bec<br>zontal<br>polis | oming 1<br>very o<br>hed wit | randoml<br>closely<br>ch blac | y orien<br>spaced<br>k mottl | tated<br>,<br>ing. |                   |        |                            |
| 25.20-25.65   |   | 2.50<br>(DRY)      |           |           | \$50/<br>295     |   |                                  |                                  |                           |                              |                               |                              |                    |                   |        |                            |
| 26.70-27.15<br>27.20  | -<br>-<br>-<br>-<br>-<br>-<br>-<br>-<br>-<br>-<br>-<br>-<br>-<br>-<br>-<br>-<br>- | 2.50<br>(DRY)      |           |           |                  |   |                                  |                                  |                           |                              |                               |                              |                    |                   |        |                            |
| 28.20-28.63   | -<br>-<br>-<br>-<br>-<br>-<br>-<br>-<br>-<br>-<br>-<br>-                          | 2.50<br>(DRY)      |           |           | \$50/<br>280     |   |                                  |                                  |                           |                              |                               |                              |                    |                   |        |                            |
| 29.70-30.15<br>Boring   | -<br>-<br>-<br>-<br>-<br>-<br>-<br>-<br>-   | 2.50<br>(DRY)      |           |           | Progre           | 255   |                                  |                                  |                           | Grour                        | odwate                        | r                            |                    |                   |        |                            |
| Depth Hole  |   | Technique          | Э         | Crew      | Depth<br>of Hole | Jepth Depth Depth to Depth Depth Depth Rose to Mine |                                  |                                  |                           |                              |                               |                              |                    | Depth<br>Sealed   | Remar  | ks on<br>water             |
| Dia   |   | qu                 |           |           | or Hole          | Cased   | vvater                           | 200                              |                           | Struck                       | Cased                         |                              | WINS               | Sealed            | Ground | uw at er                   |
| Remarks   |   |                    |           |           |                  |   |                                  |                                  |                           |                              |                               |                              |                    | Logo              | ged by | SC/CO                      |
| Symbols and<br>abbreviations are<br>explained on the<br>accompanying<br>key sheet.<br>All dimensions<br>are in metres | Logged in   | accordance         | with BS59 | 30:1999 + | - A2:2010        |   |                                  |                                  |                           |                              |                               |                              |                    | Figu              |        | <b>3 of 4</b><br>0/09/2012 |