ANNEX B
FACTUAL REPORT BY GEOTECHNICS

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 1, Borders Industrial Park
River Lane, Saltney
Chester
CH4 8RJ
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

Factual Report

Bacton Low Rise, Gospel Oak, North London

for
Rolton Group Ltd

Engineer :
Rolton Group Ltd

Project No:
PC124991
September 2012

CONTENTS

LIST OF CONTENTS

APPENDICES

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 1. 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 1 of the M1 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 281 853 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 2.1ha 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 BH1 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 13th and 21st 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 open-tube 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 Hole	Standpipe Slotted pipe & Filter Zone (m)
BH1	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 13th 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_4, O_2, CO_2, along with (% LEL) CH_4, H_2S , 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 1377 (1990) Test No.		**Test Description**
Part 2		
3.2	27 No.	Moisture Content Determination
Part 3		
5.3, 5.5	31 No.	Sulphate Analysis – Water Extract
9.5	31 No.	pH Determination
Part 7		
9	27 No.	Shear Strength Measurement - 100mm diameter (Multi-Stage) Quick Undrained Triaxial Compression Test.

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:-

pH
Organic matter
Cyanide (Total)
Boron
Soluble Sulphate
Chromium VI
Arsenic
Cadmium
Chromium
Hexavalent Chromium
Copper
Lead
Mercury
Nickel
Selenium
Zinc
TPH (Total)
Speciated PAH (EPA16)
Phenols

The results are presented in Appendix 8.

Signed for and on behalf of Geotechnics Limited.

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

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 geo-environmental purposes.

2.0 SITE HISTORY

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.

4.0 BURIED SERVICES

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

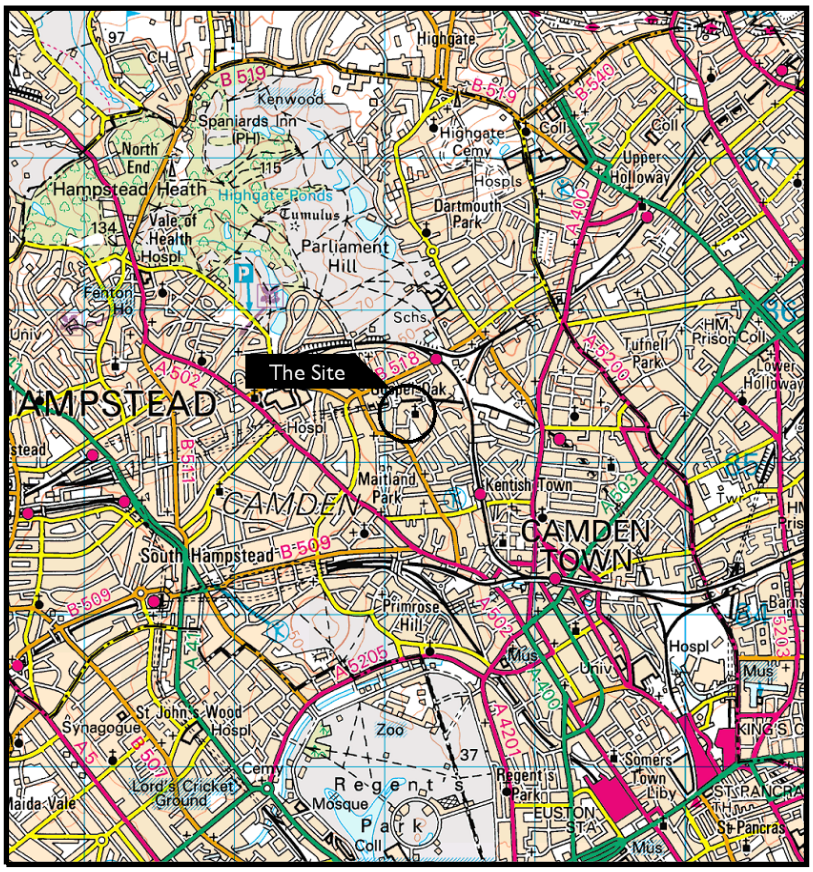
See separate plans for site layout and borehole locations. Drilling is to be by percussion techniques (shell and auger).

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

APPENDIX 2

Site Location Plan

SITE LOCATION PLAN



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

geotechnics