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Alterations at Elliott Carnaby

Elliott

Phase 2 Ground Investigation Report

March 2021

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P3264

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	Nick North Director		Graham Helme Director

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Contents

1. Introduction

This report describes the results of an intrusive geotechnical investigation undertaken on the site of land at Elliott Carnaby. The purpose of the investigation is to determine the nature and engineering properties of the underlying ground to allow the foundations to be designed for two steel framed portal sheds.

2. The Site

The site is located approximately 0.5km south west of Carnaby and is in on a large industrial estate in a coastal residential / rural area.

The site lies at national grid reference TA141644. The elevation of the site is approximately 10m above Ordnance Datum.

The site is currently a modular manufacturing facility for Elliotts and is predominantly hard surfaced with a large industrial shed and several smaller modular buildings. The site is bounded by field to the northern and eastern boundaries with a line of mature bushes to the north boundary.

Figure 1 shows the site location plan and the trial pit log is included in Appendix A.

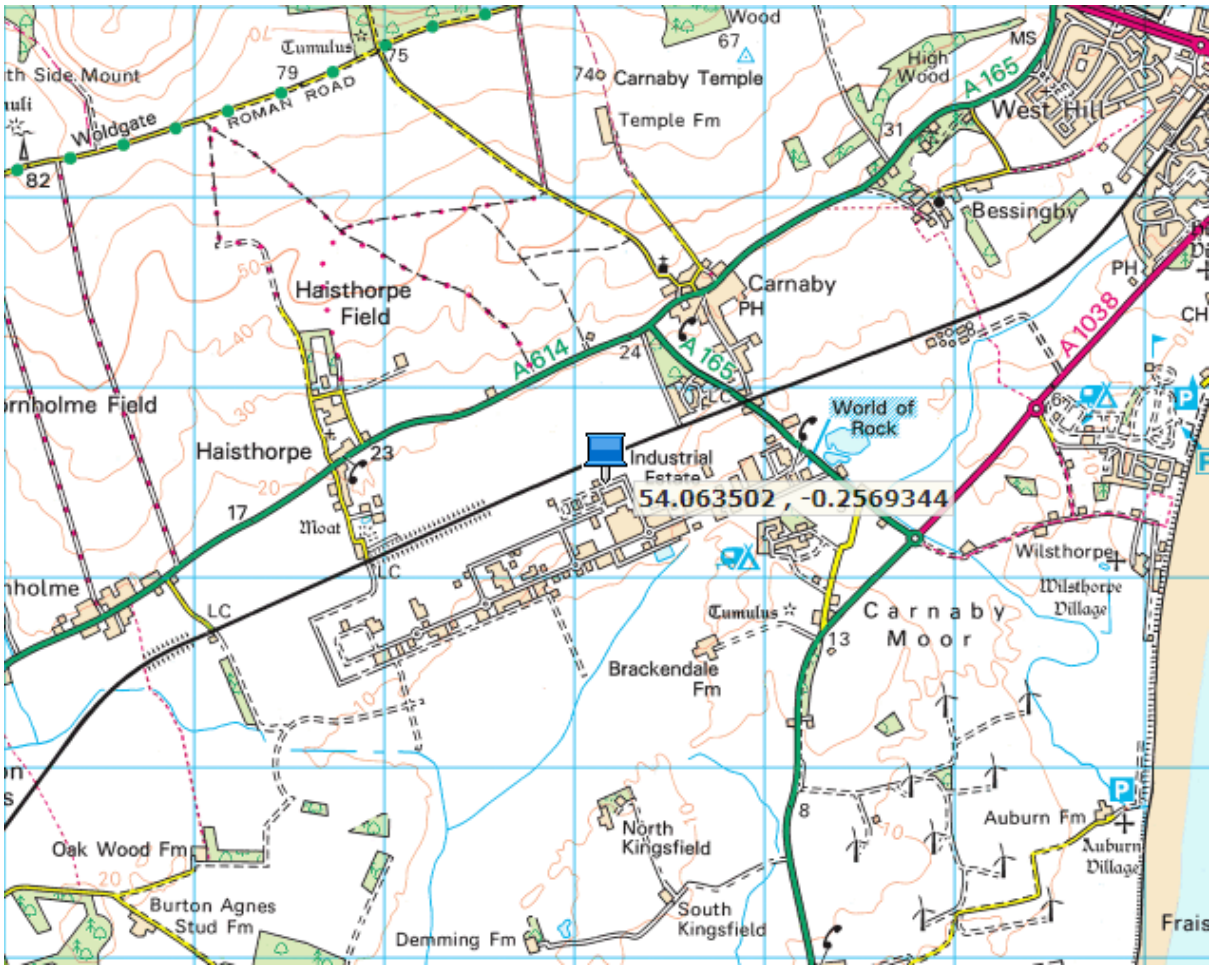

Figure 1. Location Plan

3. Report Objectives and Scope

Objectives

The objective of the investigation is to determine the nature and engineering properties of the strata beneath the site and to establish sufficient information to allow foundation designs to be carried out.

Scope

The scope of this investigation is to provide sufficient information for the proposed development of the site for two steel framed portal sheds. Should the nature of the development vary then further investigations may be required.

4. Results of Ground Investigation

Field Work

Four mechanically excavated trial pits were excavated on 16th December 2020 and the strata encountered was recorded by an experienced structural engineer and soil samples were collected and sent to a NAMAS accredited laboratory for testing.

The location of the trial pits are enclosed in Appendix A with the trial pit logs included in Appendix B. and the laboratory test results are included in Appendix C.

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Ground Conditions

The ground conditions in the trial pit were scalpings and hardcore / made ground overlying firm soft to firm clay. There were no signs of fine roots and signs or desiccation in the clay. The sides of the pits were stable and no groundwater was encountered.

No potentially contaminated materials were encountered.

Geotechnical Test Results

Three samples were tested for soluble sulphates and pH value. When assessed against BS8500-1:2002 the ground conditions fall within ACEC-Class AC-1 for pH.

Two samples were tested for the plasticity index of the soil. When assessed against BS1377-2:1990: 4 & 5 the soil was found to be of high volume change potential.

5. Environmental

Section 78a (2) of the Environmental Protection Act 1990 defines contaminated land for the purposes of Part II A as:

"any land which appears to the Local Authority in whose area it is situated to be in such a condition, by reason of substance in, on or under the land, that:

Significant harm is being caused or there is significant possibility of such harm being caused; or

Pollution of controlled waters is being, or is likely to be caused"

In the context of land contamination, there are three essential elements to any risk:

A **contaminant** – a substance that is in, on or under the land and has the potential to cause harm or to cause pollution of controlled waters;

A **receptor** – in general terms, something that could be adversely affected by a contaminant, such as people, an ecological system, property, or a water body; and

A **pathway** – a route or means by which a receptor can be exposed to, or affected by, a contaminant.

Each of these elements can exist independently, but they create a risk only where they are linked together, so that a particular contaminant affects a particular receptor through a particular pathway. If one of these items is missing there can be no significant risk.

The proposed redevelopment of the teaching block site will not alter either the current end use of the building, or the age classes of the current end users, nor the potential pathways.

Contamination analysis was not included within the scope of this report. However there were no visual or olfactory indications of contamination during trial pit excavation.

Short term contact with spoil during the construction period is unlikely to result in any risk to site workers and although no risk would be posed to site occupiers, the risk is further mitigated by the hard cover of the development itself preventing access to the soil.

As part of these works it is not intended to remove any spoil materials from site.

6. Recommendations

For the portal sheds, the foundations should be founded on the firm clay at depth with an allowable ground bearing capacity of 100kN/m² adopted. Generally a minimum foundation depth of 1000mm should be adopted.

Foundation depths should be assessed in accordance with Appendix B of NHBC Part 4: Foundations – Chapter 4.2.

Aggressive Chemical Environment of Concrete (ACEC) class AC-1 should be used for the foundation concrete mix design.

It is known that existing drains and services exist in the vicinity of the new building. Before any excavations are carried out, reference should be made to the services scan which has been carried out by others.

No short term risk to human health is anticipated to construction workers by contact with the soils. However any areas of contamination discovered should be treated as a hot spot with further testing undertaken immediately.

It is not anticipated that any soils will be removed from site.

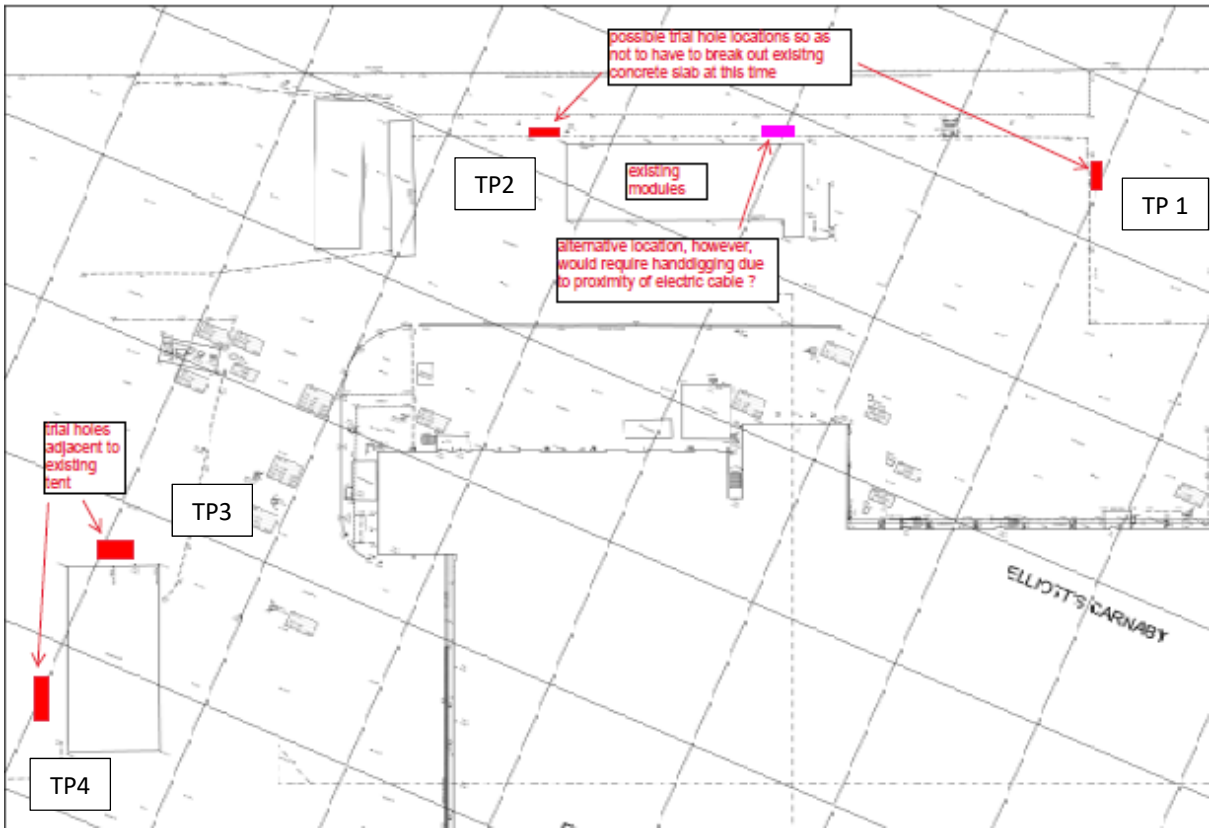
7. General Remarks

This report reflects the ground conditions found at the points sampled on the day of the ground investigation. Whilst it is considered to be a representative indication of the ground conditions on the subject site, it is possible that other undetected information and ground conditions may exist between sampling points. The investigation was only undertaken within the site boundaries and should not be used for interpretation purposes elsewhere. The report should be read in full to ensure all the recommendations have been understood.

This report is for the sole use of Elliotts and their immediate advisors in connection with the development of the subject site for a teaching block. It shall not be reproduced in whole or in part or relied upon by third parties for any use whatsoever without the express permission of Avie consulting Ltd. Avie Consulting Ltd shall have no liability for any use of this report other than for the purposes for which it was originally prepared.

APPENDIX A

Trial Pit Location Plan



APPENDIX B

Trial Pit Logs

Avie Consulting 6 Killingbeck Court Killingbeck Office Village, Killingbeck Drive Leeds LS14 6FD	Project: Elliotts Carnaby Alterations			Job Ref.: P3264	
	Section: Trial Pit Logs			Sheet no./rev.: TP 1	
	Calc. by: NN	Date: 22/12/2020	Chk'd by:	Date:	App'd by: / Date:

TRIAL PIT AND BOREHOLE LOGGING (BS5930)

TRIAL PIT LOG

Trial pit reference TP1 Sheet 1 of 1

Water	Reduced Level (m)	Legend	Depth (m)	Description
	0.00			
	-0.10	X X	0.10	MADE GROUND TARMAC
	-0.35	X X X X	(0.25) 0.35	MADE GROUND GRANULAR HARDCORE
	-0.75	- : - : - : : - : - : -	(0.40) 0.75	Soft to firm brown sandy CLAY
				Trial pit ends

Not shown to scale

Additional notes:

Avie Consulting 6 Killingbeck Court Killingbeck Office Village, Killingbeck Drive Leeds LS14 6FD	Project: Elliotts Carnaby Alterations			Job Ref.: P3264	
	Section: Trial Pit Logs			Sheet no./rev.: TP 2	
	Calc. by: NN	Date: 22/12/2020	Chk'd by:	Date:	App'd by: / Date:

TRIAL PIT LOG

Trial pit reference TP2 Sheet 1 of 1

Water	Reduced Level (m)	Legend	Depth (m)	Description
	0.00			
	-0.15	X X	0.15	MADE GROUND PEA GRAVEL
	-0.45	X X X X	(0.30) 0.45	MADE GROUND GRANULAR HARDCORE
	-0.85	- - - - - -	(0.40) 0.85	Firm brown CLAY
				Trial pit ends

Not shown to scale

Additional notes:

Avie Consulting 6 Killingbeck Court Killingbeck Office Village, Killingbeck Drive Leeds LS14 6FD	Project: Elliotts Carnaby Alterations			Job Ref.: P3264	
	Section: Trial Pit Logs			Sheet no./rev.: TP 3	
	Calc. by: NN	Date: 22/12/2020	Chk'd by:	Date:	App'd by: / Date:

TRIAL PIT LOG

Trial pit reference TP3 Sheet 1 of 1

Water	Reduced Level (m)	Legend	Depth (m)	Description
	0.00			
	-0.15	X X	0.15	MADE GROUND SCALPINGS
	-0.50	X X X X	(0.35) 0.50	MADE GROUND LEAN MIX CONCRETE SLAB
	-0.90	- : - : - : : - : - : -	(0.40) 0.90	Soft to firm brown sandy CLAY
				Trial pit ends

Not shown to scale

Additional notes:

Avie Consulting 6 Killingbeck Court Killingbeck Office Village, Killingbeck Drive Leeds LS14 6FD	Project: Elliotts Carnaby Alterations			Job Ref.: P3264	
	Section: Trial Pit Logs			Sheet no./rev.: TP 4	
	Calc. by: NN	Date: 22/12/2020	Chk'd by:	Date:	App'd by: / Date:

TRIAL PIT LOG

Trial pit reference TP4 Sheet 1 of 1

Water	Reduced Level (m)	Legend	Depth (m)	Description
	0.00			
	-0.30	X X X X	(0.30) 0.30	MADE GROUND SCALPINGS
	-0.50	X X	0.50	MADE GROUND BROKEN BRICK HARDCORE
	-0.95	- - - - - - - - -	(0.45) 0.95	Firm brown CLAY
				Trial pit ends

Not shown to scale

Additional notes:

APPENDIX C

Laboratory Results

TEST CERTIFICATE FOR THE DETERMINATION OF THE SULPHATE AND pH CONTENT OF SOILS

LABORATORY REFERENCE :	21/22285/1
CLIENT :	Avie Consulting Limited
ADDRESS :	6 Killingbeck Court, Killingbeck Office Village, Killingbeck Drive, Leeds LS14 6FD
REPORT DATE :	05/01/21
DATE RECEIVED :	17/12/20
IDENTIFICATION :	Elliotts Alterations - Carnaby 1. TP1-D1 0.6m 2. TP2-D2 0.7m 3. TP3-D3 0.7m
TEST METHOD :	UKA methods no.9 and 10 based on BS1377 : Part 3 : 1990 : 5 & 9
SAMPLING CERTIFICATE :	No

RESULTS :

Sample Reference	pH	g/1 Sulphate (SO_4) 2:1 water extract
1. TP1 D1 0.6m	7.75	0.10
2. TP2 D2 0.7m	8.00	0.14
3. TP3 D3 0.7m	6.89	0.16

J M Noone Director

Samples are kept for a period of one month from the report date.

TEST CERTIFICATE FOR THE DETERMINATION OF THE PLASTICITY INDEX OF SOIL BY BS1377 : PART 2: 1990 : 4 & 5

LABORATORY REFERENCE :	21/22285/2
CLIENT :	Avie Consulting Limited
ADDRESS :	6 Killingbeck Court, Killingbeck Office Village, Killingbeck Drive, Leeds LS14 6FD
REPORT DATE :	05/01/21
DATE RECEIVED :	17/12/20
IDENTIFICATION :	Elliotts Alterations - Carnaby 1. TP1 D1 0.6m 2. TP2 D2 0.7m

RESULTS :

Sample Reference	1	2
LIQUID LIMIT TEST :	1 point	1 point
MOISTURE CONTENT % : as received	16.63	31.22
LIQUID LIMIT LL % :	33	58
PLASTIC LIMIT PL % :	18	27
PLASTICITY INDEX PI :	15	31

COMMENTS :

The samples are in the following plasticity range according to BS5930

Sample 1	Low	27.86% >425 micron fraction
Sample 2	High	6.34% >425 micron fraction

>425 micron portion removed before testing as per BS.

J M Noone Director

Samples are kept for a period of one month from the report date.