

Ellen

Ellen Jones
Graduate Environmental Scientist

CampbellReith
consulting engineers

Raven House,
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Redhill, Surrey
RH1 1SS

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www.campbellreith.com

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Date 14 November 2012
Our Ref 20878-SI-6-141112
Your Ref 11167
To Ellen Jones
Campbell Reith
EllenJones@campbellreith.com



London Underground Limited

Hello Ellen

Greenwood Place, Highgate Road, NW5

Thank you for your communication of 13th February 2012.

I can confirm that London Underground has no assets within 50 metres of your site as shown on the plan you provided.

Should you have any further enquiries, please do not hesitate to contact me.

Shahina Inayathusein
Information Manager
LUL Infrastructure Protection
E-mail: Locationenquiries@tube.tfl.gov.uk
Tel: 020 7918 0016



11167 Petroleum Search Request Enquiry
Ellen Jones to: barryc.walford, petroleum
Cc: Rhyadd Watkins

27/02/2013 18:07

Hi Barry,

Many thanks for assisting me with my earlier query .

Please find attached a site location plan for the search area. The site comprises three separate buildings in close proximity which some I believe historically were part of the same site .

As discussed, would it be possible to undertake a search for the three buildings as part of one request? As they are in close proximity I ideally would not want to pay for three separate searches .

Below is some information regarding the three buildings .

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Greenwood Centre/ Camden society, Greenwood Place
AA self storage, Greenwood Place
NW5 1LB*

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I would be most grateful if you could confirm whether the search for the three buildings could be undertaken using the same request.

If you have any questions please do not hesitate to contact me.

Many thanks,

Ellen



11167-GIS001A-DSFig1_SiteLocn.pdf



11167 Greenwood Place Location Map.pdf

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RE: 11167 Petroleum Search Request Enquiry 

Ellen Jones to: petroleum, barryc.walford

Cc: Rhyadd Watkins

28/02/2013 14:16

From: Ellen Jones/CRH
To: petroleum@london-fire.gov.uk, barryc.walford@london-fire.gov.uk,
Cc: Rhyadd Watkins/CRH@Campbellreith

Hello Barry,

Apologies for the late response.

Please find attached the search template required in order to obtain a quote. There are now only two buildings I am concerned with; the Highgate Day Centre 19-37 Highgate Road NW5 1JY and Greenwood Centre/Choices/Camden Society 37 Greenwood Place NW5 1LB.

I look forward to receiving a quote for the search. I would be most grateful if you don't undertake the work prior to me confirming that we would be happy with the cost.

If you have any questions just ask.

Many thanks for your help.

Ellen



11167 Petroleum Search.docx

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Dear Ellen,

28/02/2013 08:34:13

From: <barryc.walford@london-fire.gov.uk>
To: <EllenJones@campbellreith.com>,
Date: 28/02/2013 08:34
Subject: RE: 11167 Petroleum Search Request Enquiry

Dear Ellen,

Thank you for your e-mail below and attachments.

I attach our revised Environment Search Request Template completion. Please list the full postal address for each site to be searched. I will confirm the fees to be charged in due course based on the

information provided.

Please send your completed Environmental Search Request Form to the following web address petroleum@london-fire.gov.uk and my e-mail address as well.

There are two fundamental reasons for the revision:-

1. The current financial climate together with a substantial increase in the number of requests received forced the Authority to review the real cost of providing the service and to consider how the continue to provide adequate resources to continue to provide the service within the statutory and voluntary (the Express Service) time limits. We have not reviewed the system or the fees since its inception in 2006. The new template shows the new fees that come into force from 1st April 2012.
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Many thanks.

Regards

Barry

Barry Walford
Petroleum Group Admin. Manager
Fire Safety Regulation
London Fire Brigade

T: 020 8555 1200 x30858

F: 020 7960 3624

E: barryc.walford@london-fire.gov.uk

Visit our website at www.london-fire.gov.uk

From: EllenJones@campbellreith.com [mailto:EllenJones@campbellreith.com]

Sent: 27 February 2013 18:08

To: WALFORD, BARRY; Petroleum

Cc: RhyaddWatkins@campbellreith.com

Subject: 11167 Petroleum Search Request Enquiry

Hi Barry,

Many thanks for assisting me with my earlier query.

Please find attached a site location plan for the search area. The site comprises three separate buildings in close proximity which some I believe historically were part of the same site.

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RE: 11167 Petroleum Search Request Enquiry 

Ellen Jones to: barryc.walford
Cc: brian.humm, RhyaddWatkins

01/03/2013 11:51

From: Ellen Jones/CRH
To: <barryc.walford@london-fire.gov.uk>,
Cc: brian.humm@london-fire.gov.uk, RhyaddWatkins@campbellreith.com

Hi Barry,

Many thanks for your email.

We are having trouble confirming the exact numbers of the buildings that need to be searched. For the building at Greenwood Place the numbers range between 25-37. Would it be possible to check the buildings that come up on your register with the site location plan attached please? (All buildings within the red line boundary excluding the AA storage building need to be searched).

Apologies for the confusion. If you should have any questions please feel free to give me a call.

Many thanks for your help.

Ellen



11167 Greenwood Place Location Map.pdf 11167 Petroleum Search.docx

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Hi Ellen,

01/03/2013 09:36:19

From: <barryc.walford@london-fire.gov.uk>
To: <EllenJones@campbellreith.com>,
Cc: <RhyaddWatkins@campbellreith.com>, <brian.humm@london-fire.gov.uk>
Date: 01/03/2013 09:36
Subject: RE: 11167 Petroleum Search Request Enquiry

Hi Ellen,

Further to your e-mail below, I have spoken with my manager, Brian Humm. It has been agreed that we will charge a single fee (£70.00 +VAT /£140.00 + VAT as per the fees listed on the submitted Environment Search Request form) to undertake the search for each of the buildings listed below. Both of these buildings have separate file numbers on our Fire Safety database.

Please confirm by e-mail if you are happy for me to proceed with these searches on this basis or if you decide to cancel your request. I will not start any work on these searches until I hear from you either way.

Regards

Barry

Barry Walford
Petroleum Group Admin. Manager
Fire Safety Regulation
London Fire Brigade

T: 020 8555 1200 x30858

F: 020 7960 3624

E: barryc.walford@london-fire.gov.uk

Visit our website at www.london-fire.gov.uk

From: EllenJones@campbellreith.com [mailto:EllenJones@campbellreith.com]

Sent: 28 February 2013 14:16

To: Petroleum; WALFORD, BARRY

Cc: RhyaddWatkins@campbellreith.com

Subject: RE: 11167 Petroleum Search Request Enquiry

Hello Barry,

Apologies for the late response.

Please find attached the search template required in order to obtain a quote. There are now only two buildings I am concerned with; the Highgate Day Centre 19-37 Highgate Road NW5 1JY and Greenwood Centre/Choices/Camden Society 37 Greenwood Place NW5 1LB.

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From: <barryc.walford@london-fire.gov.uk>
To: <EllenJones@campbellreith.com>,
Date: 28/02/2013 08:34
Subject: RE: 11167 Petroleum Search Request Enquiry

Dear Ellen,

Thank you for your e-mail below and attachments.

I attach our revised Environment Search Request Template completion. Please list the full postal address for each site to be searched. I will confirm the fees to be charged in due course based on the information provided.

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E: barryc.walford@london-fire.gov.uk

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From: EllenJones@campbellreith.com [<mailto:EllenJones@campbellreith.com>]

Sent: 27 February 2013 18:08

To: WALFORD, BARRY; Petroleum

Cc: RhyaddWatkins@campbellreith.com

Subject: 11167 Petroleum Search Request Enquiry

Hi Barry,

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RE: 11167 Petroleum Search Request Enquiry 

Ellen Jones to: barryc.walford

Cc: brian.humm, RhyaddWatkins

01/03/2013 15:45

From: Ellen Jones/CRH
To: <barryc.walford@london-fire.gov.uk>,
Cc: brian.humm@london-fire.gov.uk, RhyaddWatkins@campbellreith.com

Hi Barry,

No problem I appreciate you must be extremely busy.

Please find attached an up to date search request form. If the cost is still £70.00 +VAT /£140.00 + VAT I would be happy to proceed.

Look forward to hearing from you.

Kind regards,

Ellen



11167 Petroleum Search.docx

Ellen Jones
Graduate Environmental Scientist

CampbellReith
consulting engineers

Raven House,
29 Linkfield Lane,
Redhill, Surrey
RH1 1SS

Tel +44 (0)1737 784500

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Hi Ellen,

01/03/2013 13:29:20

From: <barryc.walford@london-fire.gov.uk>
To: <EllenJones@campbellreith.com>,
Cc: <brian.humm@london-fire.gov.uk>, <RhyaddWatkins@campbellreith.com>
Date: 01/03/2013 13:29
Subject: RE: 11167 Petroleum Search Request Enquiry

Hi Ellen,

Thank you for your e-mail below.

Unfortunately, I am unable to look up the information that you require due to time and workload constraints. We will search on whatever address data that you submit and cost it and then inform you accordingly.

Regards

Barry

Barry Walford
Petroleum Group Admin. Manager
Fire Safety Regulation
London Fire Brigade

T: 020 8555 1200 x30858

F: 020 7960 3624

E: barryc.walford@london-fire.gov.uk

Visit our website at www.london-fire.gov.uk

From: EllenJones@campbellreith.com [mailto:EllenJones@campbellreith.com]

Sent: 01 March 2013 11:52

To: WALFORD, BARRY

Cc: HUMM, BRIAN; RhyaddWatkins@campbellreith.com

Subject: RE: 11167 Petroleum Search Request Enquiry

Hi Barry,

Many thanks for your email.

We are having trouble confirming the exact numbers of the buildings that need to be searched. For the building at Greenwood Place the numbers range between 25-37. Would it be possible to check the buildings that come up on your register with the site location plan attached please? (All buildings within the red line boundary excluding the AA storage building need to be searched).

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Tel +44 (0)1737 784500

www.campbellreith.com

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PETROLEUM ENVIRONMENTAL ENQUIRY DETAIL FORMS:- GREENWOOD CENTRE/CAMDEN SOCIETY, 25-37 GREENWOOD PLACE, NW5 1LB & HIGHGATE DAY CENTRE, 19-37 HIGHGATE ROAD, NW5 1JY

barryc.walford

to:

EllenJones

25/03/2013 16:12

Hide Details

From: <barryc.walford@london-fire.gov.uk>

To: <EllenJones@campbellreith.com>,

History: This message has been forwarded.

2 Attachments



02-015892 B11 ES response to Campbell Reith Hill LLP 25 03 13.docx



02-018794 B11 ES response to Campbell Reith Hill LLP 25 03 13.docx

Hi Ellen,

Please find the attached electronic copy of the covering letter and Petroleum Environmental Enquiry Detail Form for each of the above sites.

I will arrange for a separate invoice for a total of £70.00 + VAT for each site to be sent to you in due course under separate cover from our Finance Office

Regards

Barry

Barry Walford
Petroleum Group Admin. Manager
Fire Safety Regulation
London Fire Brigade

T: 020 8555 1200 x30858

F: 020 7960 3624

E: barryc.walford@london-fire.gov.uk

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Re: FW: 11167 Petroleum Search Request Enquiry 

Ellen Jones to: barryc.walford

Cc: brian.humm, RhyaddWatkins, petroleum

01/03/2013 17:09

From: Ellen Jones/CRH
To: <barryc.walford@london-fire.gov.uk>,
Cc: brian.humm@london-fire.gov.uk, RhyaddWatkins@campbellreith.com,
petroleum@london-fire.gov.uk

Hi Barry,

I can confirm we are happy for you to undertake the two separate searches for the Highgate Day Centre and the Greenwood Centre/Camden Society.

Kind regards,

Ellen

Ellen Jones
Graduate Environmental Scientist

CampbellReith
consulting engineers

Raven House,
29 Linkfield Lane,
Redhill, Surrey
RH1 1SS

Tel +44 (0)1737 784500
www.campbellreith.com

Hi Ellen,

01/03/2013 16:45:22

From: <barryc.walford@london-fire.gov.uk>
To: <EllenJones@campbellreith.com>,
Cc: <RhyaddWatkins@campbellreith.com>, <brian.humm@london-fire.gov.uk>
Date: 01/03/2013 16:45
Subject: FW: 11167 Petroleum Search Request Enquiry

Hi Ellen,

Thank you for your e-mail.

Can you please confirm, via e-mail, that you understand that we will charge the normal fee (£70.00 +VAT /£140.00 + VAT) for each search on the Highgate Day Centre and the Greenwood Centre/Camden Society? I will proceed with the search process upon your confirmation.

Regards

Barry

Barry Walford
Petroleum Group Admin. Manager
Fire Safety Regulation
London Fire Brigade

T: 020 8555 1200 x30858

F: 020 7960 3624
E: barryc.walford@london-fire.gov.uk
Visit our website at www.london-fire.gov.uk

From: EllenJones@campbellreith.com [mailto:EllenJones@campbellreith.com]
Sent: 01 March 2013 15:46
To: WALFORD, BARRY
Cc: HUMM, BRIAN; RhyaddWatkins@campbellreith.com
Subject: RE: 11167 Petroleum Search Request Enquiry

Hi Barry,

No problem I appreciate you must be extremely busy.

Please find attached an up to date search request form. If the cost is still £70.00 +VAT /£140.00 + VAT I would be happy to proceed.

Look forward to hearing from you.

Kind regards,

Ellen

Ellen Jones
Graduate Environmental Scientist

CampbellReith
consulting engineers

Raven House,
29 Linkfield Lane,
Redhill, Surrey
RH1 1SS

Tel +44 (0)1737 784500
www.campbellreith.com

From: <barryc.walford@london-fire.gov.uk>
To: <EllenJones@campbellreith.com>,
Cc: <brian.humm@london-fire.gov.uk>, <RhyaddWatkins@campbellreith.com>
Date: 01/03/2013 13:29
Subject: RE: 11167 Petroleum Search Request Enquiry

Hi Ellen,

Thank you for your e-mail below.

Unfortunately, I am unable to look up the information that you require due to time and workload constraints. We will search on whatever address data that you submit and cost it and then inform you accordingly.

Regards

Barry

Barry Walford
Petroleum Group Admin. Manager
Fire Safety Regulation
London Fire Brigade

T: 020 8555 1200 x30858

F: 020 7960 3624

E: barryc.walford@london-fire.gov.uk

Visit our website at www.london-fire.gov.uk

From: EllenJones@campbellreith.com [<mailto:EllenJones@campbellreith.com>]

Sent: 01 March 2013 11:52

To: WALFORD, BARRY

Cc: HUMM, BRIAN; RhyaddWatkins@campbellreith.com

Subject: RE: 11167 Petroleum Search Request Enquiry

Hi Barry,

Many thanks for your email.

We are having trouble confirming the exact numbers of the buildings that need to be searched. For the building at Greenwood Place the numbers range between 25-37. Would it be possible to check the buildings that come up on your register with the site location plan attached please? (All buildings within the red line boundary excluding the AA storage building need to be searched).

Apologies for the confusion. If you should have any questions please feel free to give me a call.

Many thanks for your help.

Ellen

Ellen Jones

Graduate Environmental Scientist

CampbellReith
consulting engineers

Raven House,
29 Linkfield Lane,

Redhill, Surrey
RH1 1SS

Tel +44 (0)1737 784500

www.campbellreith.com

From: <barryc.walford@london-fire.gov.uk>
To: <EllenJones@campbellreith.com>,
Cc: <RhyaddWatkins@campbellreith.com>, <brian.humm@london-fire.gov.uk>
Date: 01/03/2013 09:36
Subject: RE: 11167 Petroleum Search Request Enquiry

Hi Ellen,

Further to your e-mail below, I have spoken with my manager, Brian Humm. It has been agreed that we will charge a single fee (£70.00 +VAT /£140.00 + VAT as per the fees listed on the submitted Environment Search Request form) to undertake the search for each of the buildings listed below. Both of these buildings have separate file numbers on our Fire Safety database.

Please confirm by e-mail if you are happy for me to proceed with these searches on this basis or if you decide to cancel your request. I will not start any work on these searches until I hear from you either way.

Regards

Barry

Barry Walford
Petroleum Group Admin. Manager
Fire Safety Regulation
London Fire Brigade

T: 020 8555 1200 x30858

F: 020 7960 3624

E: barryc.walford@london-fire.gov.uk

Visit our website at www.london-fire.gov.uk

From: EllenJones@campbellreith.com [<mailto:EllenJones@campbellreith.com>]

Sent: 28 February 2013 14:16

To: Petroleum; WALFORD, BARRY

Cc: RhyaddWatkins@campbellreith.com

Subject: RE: 11167 Petroleum Search Request Enquiry

Hello Barry,

Apologies for the late response.

Please find attached the search template required in order to obtain a quote. There are now only two buildings I am concerned with; the Highgate Day Centre 19-37 Highgate Road NW5 1JY and Greenwood Centre/Choices/Camden Society 37 Greenwood Place NW5 1LB.

I look forward to receiving a quote for the search. I would be most grateful if you don't undertake the work prior to me confirming that we would be happy with the cost.

If you have any questions just ask.

Many thanks for your help.

Ellen

Ellen Jones
Graduate Environmental Scientist

CampbellReith
consulting engineers

Raven House,
29 Linkfield Lane,
Redhill, Surrey
RH1 1SS

Tel +44 (0)1737 784500

www.campbellreith.com

From: <barryc.walford@london-fire.gov.uk>
To: <EllenJones@campbellreith.com>,
Date: 28/02/2013 08:34
Subject: RE: 11167 Petroleum Search Request Enquiry

Dear Ellen,

Thank you for your e-mail below and attachments.

I attach our revised Environment Search Request Template completion. Please list the full postal address for each site to be searched. I will confirm the fees to be charged in due course based on the information provided.

Please send your completed Environmental Search Request Form to the following web address petroleum@london-fire.gov.uk and my e-mail address as well.

There are two fundamental reasons for the revision:-

1. The current financial climate together with a substantial increase in the number of requests received forced the Authority to review the real cost of providing the service and to consider how the continue to provide

adequate resources to continue to provide the service within the statutory and voluntary (the Express Service) time limits. We have not reviewed the system or the fees since its inception in 2006. The new template shows the new fees that come into force from 1st April 2012.

2. There are restrictions on how we are able to interrogate both our current and historic databases. They are all purely based on the addresses at which petrol was stored in below ground tanks at the time when a Petroleum Licence was in force for the premises. In many cases when searching for the addresses requested, we may miss a historic address either because it is now encompassed by a larger site following a redevelopment, or that at some point the address has changed. To overcome this likelihood, we will now undertake to search both current and historic addresses for a single location should this information be provided at the time of making the request.

From 1st April 2012 onwards, we will only accept requests submitted on the new template. Please take time to read the revised 'Additional Information' on Page 2 of the form, which we hope will clearly explain the limitations of our searches, and how best to ensure that any locations that have or had underground petrol tanks will be encompassed by your request.

Many thanks.

Regards

Barry

Barry Walford
Petroleum Group Admin. Manager
Fire Safety Regulation
London Fire Brigade

T: 020 8555 1200 x30858

F: 020 7960 3624

E: barryc.walford@london-fire.gov.uk

Visit our website at www.london-fire.gov.uk

From: EllenJones@campbellreith.com [<mailto:EllenJones@campbellreith.com>]

Sent: 27 February 2013 18:08

To: WALFORD, BARRY; Petroleum

Cc: RhyaddWatkins@campbellreith.com

Subject: 11167 Petroleum Search Request Enquiry

Hi Barry,

Many thanks for assisting me with my earlier query.

Please find attached a site location plan for the search area. The site comprises three separate buildings in close proximity which some I believe historically were part of the same site.

As discussed, would it be possible to undertake a search for the three buildings as part of one request? As they are in close proximity I ideally would not want to pay for three separate searches.

Below is some information regarding the three buildings.

*Highgate Day Centre, Highgate Road
Greenwood Centre/ Camden society, Greenwood Place
AA self storage, Greenwood Place*

NW5 1LB

I am unsure if there was a different historical address for the site, however, I believe the Camden Society/ Greenwood community centre used to be a heavy chemical works, AA self storage used to be a building coach works and the Highgate Day Centre was previously used for terraced housing.

I would be most grateful if you could confirm whether the search for the three buildings could be undertaken using the same request.

If you have any questions please do not hesitate to contact me.

Many thanks,

Ellen

Ellen Jones

Graduate Environmental Scientist

CampbellReith
consulting engineers

Raven House,
29 Linkfield Lane,
Redhill, Surrey
RH1 1SS

Tel +44 (0)1737 784500

www.campbellreith.com

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[attachment "11167 Petroleum Search.docx" deleted by Ellen Jones/CRH]

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RE: Planning Enquiry (Ref. ENQ\09113) - 11167 Greenwood Place, Highgate Road,
NW5
Planning
to:
'EllenJones@campbellreith.com'
22/11/2012 12:11
Hide Details
From: Planning <Planning@camden.gov.uk>
To: "'EllenJones@campbellreith.com'" <EllenJones@campbellreith.com>,
History: This message has been forwarded.

1 Attachment



How to search for planning records on Camden web pages - August 2011.pdf

Dear Ellen,

Thank you for your enquiry, please accept our apologies for the delay in providing you with a response.

The Council's [Online Planning Search](#) enables you to find planning applications using a wide variety of search options. I would recommend looking at the planning history of the site to establish the previous uses and current use (should the most recent permission have been implemented). You can also view the planning applications online and any plans, drawings and documents associated with the applications. I have attached some guidance notes on how to do this.

You would need to contact the [contaminated land](#) team to establish whether the land is contaminated and if there were any tanks on the land. More information can be found in the frequently asked questions section on this page.

Please use the following pages on our website to check if the building is listed or is in a conservation area:

- [Find a listed building](#)
- [Find a conservation area](#)

More information on archeological priority areas can be found in Camden's [Local Development Framework Development Policies Document 2010](#) (adopted version) in policy DP25 and there is a map on page 122 which shows the areas.

I trust this information is of assistance. Should you have any further queries please do not hesitate to contact me.

Kind regards,

Sally Shepherd
Planning Officer
Advice and Consultation Team
Planning and Regeneration
Culture and Environment Directorate
London Borough of Camden

Telephone: 0207 974 4672

Web: camden.gov.uk

6th Floor
Camden Town Hall
Judd Street
London WC1H 8ND

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From: EllenJones@campbellreith.com [<mailto:EllenJones@campbellreith.com>]
Sent: 13 November 2012 12:09
To: Planning
Cc: RhyaddWatkins@campbellreith.com
Subject: ENQ\09113 - 11167 Greenwood Place, Highgate Road, NW5

Dear Sir/ Madam,

I am undertaking a geo-environmental desk study review of Greenwood Place, Highgate, NW5, National Grid Reference: 528840^E, 185400^N.

I would be grateful if you could provide any information on the following:

- What is the site's current and previous land use history, including that of the adjacent land?
- Are there any concerns about the site or surrounding areas being contaminated?
- Are there any planning constraints placed on the site, for example, Listed Buildings, archaeology, etc?
- Do you hold any plans or drawings relating to the site which we could have access to?
- Have there been any tanks containing hazardous substances stored on site?

If you are aware of any other information (factual, anecdotal etc) that you believe would better inform the study, please feel free to add this or any other comments.

Please could you advise if there is likely to be a charge for providing the above information. Thank you for your time in advance.

I look forward to hearing from you.

Many thanks,

Ellen

Ellen Jones
Graduate Environmental Scientist

CampbellReith
consulting engineers

Raven House,
29 Linkfield Lane,
Redhill, Surrey
RH1 1SS

Tel +44 (0)1737 784500
www.campbellreith.com

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Appendix C: SITE INVESTIGATION INFORMATION

**PHASE 2 – GROUND INVESTIGATION REPORT
FOR A PROPOSED COMMERCIAL DEVELOPMENT**

AT

GREENWOOD CENTRE, GREENWOOD PLACE, CAMDEN, LONDON. NW5 1LB

Prepared For

Kier Construction Ltd
2 Langston Road
Loughton
Essex
IG10 3SD

Report Reference Number: 1655,GI/LF,PD/23-06-16/V1
Project Number: 1655,GI
Issue Reference: 1
Issue Date: 23 June 2016



ADDRESS

Brightwell Barns, Ipswich Road, Brightwell, Suffolk, IP10 0BJ

TELEPHONE

01603 298 076

FAX




01603 298 075

WEBSITE

www.geosphere-environmental.co.uk

DOCUMENT ISSUED RECORD

Report Number:	1655,GI/LF,PD/23-06-16/V1
Client:	Kier Construction Ltd
Project:	Greenwood Centre, Greenwood Place, Camden
Project Number:	1655,GI
Report Type:	Factual Ground Investigation Report
Date of Report:	23 June 2016

Prepared by:	Lianne Fountain		Date: 23 June 2016
Reviewed by:	Tom Powling		Date: 23 June 2016
Authorised by:	Paul Davies		Date: 23 June 2016

Prepared by: Geosphere Environmental Ltd, Brightwell Barns, Ipswich Road, Brightwell, Suffolk, IP10 0BJ. Telephone (01603) 298 076. www.geosphere-environmental.co.uk

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REVISION RECORD

Revision	Date	Document	Prepared By:	Admin

AMENDMENT RECORD

Revision	Date	Amendments

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1. INTRODUCTION

Geosphere Environmental Ltd was commissioned by the Client, Kier Construction Ltd, to undertake a Phase 2 Ground Investigation for a proposed commercial development at the Greenwood Centre, Greenwood Place, Camden, NW5 1LB.

The primary objective of this ground investigation are to:

- Assess the ground conditions at the site for use in the design of the proposed development.

These are to be achieved by:

- Undertaking an intrusive investigation of the site based on proposals provided by Campbell Reith;
- Logging, sampling and in-situ testing of the soils encountered;
- Environmental and geotechnical laboratory analysis of selected samples;
- Subsequent monitoring and sampling of ground gas and ground water levels.

A Proposed Development Plan drawn by PCKO, Drawing ref. 1213 PL 002 Rev B, was provided by the Client, and is presented within Appendix 8.

It was understood that the proposed development will comprise of the demolition of the existing structures at the site, and the construction of a new four storey community centre, including a basement, which will cover an overall approximate area of 3600m². A new access way, cycle parking and associated soft landscaped areas are also proposed.

2. SITE SETTINGS

2.1 Site Description

The subject site was situated in Camden, London, approximately 0.2 km to the north west of the Kentish Town Station, and may be located by National Grid Reference, (NGR), TQ 28816 85385.

A Site Location Plan, Drawing ref. 1655,GI 001/Rev 0 is included in Appendix 8 at the back of the report, and in Figure 1 below:



Figure 1 – Site Location Plan



Figure 2 – Site Plan

The subject site comprised of an irregularly shaped former community centre, previously known as the Greenwood Community Centre. At the time of the investigation, the building was derelict and comprised of two adjoining single storey structures.

The former Greenwood Community Centre was of brick construction, and as mentioned above, comprised of two adjoining structures. A basement was present in the south west of the building, and a small garden area and pathway existed in the south of the site.

Ground levels were found to decrease toward the south west of the site, falling from approximately 40mAOD in the north, to approximately 34mAOD in the south.

The neighbouring building of Deane House bounded the site to the north west, and Greenwood Place ran adjacent to the eastern boundary of the site. A compound owned by Murphy and unspecified buildings bounded the site to the south and south west respectively.

A site plan Drawing ref. GIS001 – A, is presented in Figure 2 above, and within Appendix 8 of this report.

3. SITE WORKS

3.1 Methodology

This ground investigation was carried out on the basis of the practices set out in BS 10175: 2011+A1:2013, (ref. **R.1**), and BS 5930: 2015, (ref. **R.2**).

A geoenvironmental engineer from Geosphere Environmental Ltd, supervised the intrusive works and ensured safe methods of working at all times.

3.2 Scope of Investigation

Site works were carried out over a period of five weeks, between 14 March and 21 April 2016, and comprised of the following:

- The formation of two cable percussive boreholes, (BH01 and BH02), to an approximate depth of 25.0m bgl;
- The formation of two windowless sampler boreholes, (WS101 and WS102), to an approximate depth of 6.0m bgl;
- The extension of a windowless sampler borehole, WS102, by dynamic probing to an approximate depth of 12.0m bgl;
- The excavation of four hand dug or vacuum excavated foundation pits, (FIP1-FIP4), to varying depths;
- The excavation of two hand dug trial pits, (CBR3 and CBR4), and the subsequent CBR testing of encountered soils by in-situ methods with a TRL probe;
- In-situ soil logging, sampling and testing within each exploratory hole location;
- The installation of three ground gas and groundwater monitoring wells within cable percussive and windowless sampler boreholes, (BH1, BH2 and WS102) to depths of 10.0m and 6.0m bgl respectively;
- Subsequent return visits to site in order to monitor ground gas and groundwater levels;
- Installation of ground gas sampling equipment within the monitoring wells during monitoring visit 2 and the subsequent uninstallation during monitoring visit 3;
- Low flow monitoring of groundwater, where present, and subsequent sampling from monitoring wells installed during this investigation as well as the previous investigation.

3.3 Exploratory Holes

The locations and depths of the exploratory holes were defined by the consulting engineer, Campbell Reith. The positions of exploratory holes are presented on the exploratory hole location plan provided within Appendix 8 of this report, Drawing ref. 1655,GI 002/Rev 0.

The details of the methods used are provided within the following sections.

3.3.1 Cable Percussive Boreholes

Two cable percussive boreholes, (BH01 and BH02), were drilled within the existing structure using a track mounted cut down cable percussive rig to a required depth of 25.0m bgl. The original scope of the investigation included the formation of three cable percussive boreholes, however, due to restricted headroom, BH03 could not be undertaken.

Representative disturbed and undisturbed samples were collected at regular intervals throughout the boreholes. These samples included undisturbed thin wall samples, (UT100s), within clay soils, nominal disturbed, (D), samples and SPT samples. Environmental samples were of the Made Ground, and natural soils were also collected at each position.

Standard Penetration Tests, (SPTs), were undertaken at regular intervals throughout the depth of the boreholes using a split spoon sampler.

Following completion of drilling, the boreholes were backfilled to a depth of 10.0m bgl, and 50mm diameter combined ground gas and groundwater monitoring wells were installed with a gravel surround and a bentonite seal.

As the third cable percussive borehole could not be commenced, the intended BH03 position was relocated to outside of the existing structure, within the small garden area in the south of the site. Due to further access constraints, this borehole could not be commenced using cable percussive techniques, and windowless sampling and dynamic probing methods were used instead.

3.3.2 Windowless Sampling and Dynamic Probing

As mentioned above, windowless sampling and dynamic probing methods were used within the south of the site, within vicinity of the original BH03 position. A windowless sampler borehole, WS102, was drilled to 6.0m depth and disturbed samples for environmental and geotechnical purposes were collected throughout the depth of the borehole. SPTs were also undertaken every metre.

In order to achieve sufficient depth, the windowless sampling was ceased at 6.0m bgl, and dynamic probing methods were used to extend the borehole to 12.0m bgl where refusal was encountered.

Following the completion of WS102, a 50mm diameter combined ground gas and groundwater monitoring well was installed to a depth of 5.0m bgl.

A windowless sampler borehole, (WS101), was also undertaken in the proposed position of CBR1, to a depth of 6.0m bgl. Windowless sampling was undertaken in this position, as hand-digging was not possible due to the presence of a block and beam suspended floor. Disturbed samples were collected and SPTs were undertaken at regular intervals.

3.3.3 Hand-dug Pits for California Bearing Ratio Testing

Four hand pit positions, (CBR1-CBR4), were defined by the Client, for the purpose of undertaking in-situ California Bearing Ratio, (CBR), testing. Each position required surface break out, which was completed prior to undertaking the in-situ CBR tests. Block and beam suspended floors were encountered within positions CBR1 and CBR2, and therefore hand excavation and in-situ testing were deemed to be unsuitable.

Hand pits were excavated within the positions of CBR3 and CBR4, to depths of 0.60m and 0.85m bgl respectively, for the purpose of undertaking in-situ CBR tests. A CBR test by TRL Probe methods was undertaken in each pit, and the results of these tests are presented within Appendix 7 of this report.

Representative environmental samples were also collected within these pits to ensure appropriate coverage of the site.

3.3.4 Foundation Inspection Pits

Four hand dug pits were excavated at the site, in order to determine the depth and type of existing foundations.

Foundation inspection pits FIP2, FIP3 and FIP4, were hand dug to various depths to expose the top of the foundations. Hand auger methods were then used to extend the pits, in order to determine an approximate depth of the underside of the foundations. Representative samples for environmental and geotechnical purposes were collected from these pits.

Due to the nature of the ground conditions encountered within FIP1, hand excavation was not possible and vacuum excavation methods were used. A concrete obstruction, presumed to be the underlying concrete slab of the suspended floor, was encountered at a depth of 1.1m bgl, and therefore excavation was ceased.

Foundation profile sketches were produced for each foundation inspection pits, these are provided within Appendix 4 of this report.

3.4 Ground Conditions Encountered

The sequence of the strata encountered during the investigation generally confirms the anticipated geology as interpreted from the British Geological Survey (BGS) map, Sheet Number 256, Solid Edition, 1:50,000 scale, published, 2001 as well as the BGS digital mapping geology viewer, at a scale of 1:50,000.

The sequence and indicative thickness of strata are provided below:

Table 1 - Ground Conditions				
Strata	Depth Encountered (mgl)		Strata Thickness (m)	Location and Composition
	From	To		
Surface Materials	0.00 - 0.20	0.10 - 0.30	0.10 to 0.30	BH01, BH02, WS101, FIP1, FIP3, FIP2, FIP4, CBR4 - Concrete WS102, CBR4 - Wooden decking FIP4, CBR4 - Flexible Surfacing
Made Ground	0.10 - 0.45	2.00 - 5.00	1.90 to 4.90	Numerous layers of Made Ground of varying consistency were recorded. FIP1, BH01, BH02: Coarse granular Made Ground within the sub-floor void space recorded to comprise a dark red

				<p>brown, grey and brown sand and gravel with angular to subangular brick, concrete, glass and wood fragments.</p> <p>BH01, WS102, WS102, FIP2, FIP3, CBR3:</p> <p>Dark brown, orange brown and grey clayey sand and gravel with brick, clinker, charcoal fragments and flint.</p> <p>BH01, BH02, WS101, WS102, FIP3, FIP4, CBR4:</p> <p>Dark brown and orange brown mottled silty clay with brick, concrete, clinker fragments and flint and varying sand content.</p>
Weathered London Clay	2.00 - 5.00	10.50 - 13.00	7.50 to 8.00	<p>FIP4, BH01, BH02, WS101, WS102:</p> <p>Orange brown and blue grey mottled fissured clay</p>
London Clay Formation	10.50 - 13.00	>25.00	Base not proven	<p>BH01 and BH02:</p> <p>Dark grey silty clay with occasional white fossils and occasional claystone bands</p>

3.5 Groundwater

Groundwater seepage was recorded in FIP3 and FIP4, at a depth of 1.70 mbgl and 1.35 mbgl respectively. No groundwater was encountered in any of the other exploratory holes.

During subsequent visits to site to monitor groundwater levels, it was found that water had accumulated within monitoring wells DSC1, DSCBH2 (otherwise known as OBH2), and DSC4, (installed during the previous investigation), as well as WS102. The depths at which water was recorded is presented within section 5.2 of this report.

3.6 Visual and Olfactory Evidence of Contamination

Significant thicknesses of Made Ground were recorded during the intrusive investigation. Fragments of brick, concrete, clinker and charcoal were recorded within the Made Ground soils, and a natural organic odour with associated discolouration was noted within FIP2.

A suspected volatile odour was recorded within the Weathered London Clay in BH01 and WS101, at depths of 5.00m and 5.30m bgl respectively.

During surface break-out of the concrete slab at positions BH02 and FIP1, suspected asbestos containing materials were encountered.

4. LABORATORY TESTING

4.1 Methodology

Representative disturbed and undisturbed samples were taken at the depths shown on the exploratory hole records and dispatched to the laboratory. The exploratory hole logs are included in Appendix 4.

Numerous samples were collected for environmental purposes in amber glass jars and bulk bags and kept in a cool box with cooling aid. Geotechnical samples were recovered in plastic bulk bags, plastic tubs and undisturbed thin walled UT100 liners.

Water samples were collected from the monitoring wells during subsequent monitoring visits to site in glass bottles and vials, and kept in a cool box with cooling aid.

Ground gas samples were collected using Tenax Tubes and dispatched to the environmental laboratory. The Tenax tubes were installed into the monitoring wells during the second monitoring visit, and removed during the third monitoring visit.

All analyses of the soil samples took place in the laboratory.

4.2 Environmental Testing Suite

4.2.1 Quality Control

The environmental laboratories used, (Envirolab Ltd and Gradko International Ltd), were accredited laboratories by the United Kingdom Accreditation Service, (UKAS), and at least 50% of individual parameters are from methods pending accreditation to the Environment Agency Monitoring Certification Scheme, (MCERTS), for the range of analyses undertaken as part of this investigation. The MCERTS performance standard for the chemical testing of soil is an application of ISO 17025: 2000 specifically for the chemical testing of soil.

4.2.2 Environmental Testing Suite – Soils

The suite of chemical analyses was defined by Campbell Reith, and carried out on a number of samples. The nature of the analyses is detailed below:

- Metals screen - arsenic, cadmium, chromium, lead, mercury, selenium, boron, (water soluble), beryllium, copper, nickel, vanadium and zinc;
- Organic screen - total petroleum hydrocarbons, (TPH) – with specific carbon banding; benzene, toluene, ethylbenzene and xylenes, (BTEX); polyaromatic hydrocarbons, (PAH) – USEPA 16 suite; monohydric phenols;
- Inorganics screen – cyanide, (total), sulphate, (water soluble);
- Others - pH, organic matter, asbestos;
- Volatile Organic Compounds, (VOC) - including: benzene, toluene, ethylbenzene and xylenes, (BTEX), and chlorinated solvents;
- Semi-Volatile Organic Compounds, (SVOC) - including: phenols and polyaromatic hydrocarbons, (PAH).

A copy of the laboratory test results is included in Appendix 6 toward the end of this report.

4.2.3 Environmental Testing Suite – Water

The suite of chemical analyses was defined by Campbell Reith, and carried out on three samples. The nature of the analyses is detailed below:

- Metals screen - arsenic, cadmium, chromium, hexavalent chromium, lead, mercury, selenium, boron, (water soluble), copper, nickel, and zinc;
- Organic screen - total petroleum hydrocarbons, (TPH), polyaromatic hydrocarbons, (PAH) – USEPA 16 suite; phenol, (total);
- Inorganics screen – cyanide, (total and free), sulphate, (water soluble), sulphur and sulphide;
- Others - pH;
- Volatile Organic Compounds, (VOC);
- Semi-Volatile Organic Compounds, (SVOC).

A copy of the laboratory test results is included in Appendix 6 toward the end of this report.

4.2.4 Environmental Testing Suite – Ground Gas

The suite of chemical analyses undertaken on the ground gas samples was defined by Campbell Reith, and is detailed below:

- Top 15 VOC suite.

A copy of the laboratory test results is included in Appendix 6 toward the end of this report.

4.3 Geotechnical Testing Suite

The geotechnical testing schedule was also defined by Campbell Reith, and undertaken in accordance with BS 1377 at a UKAS accredited laboratory. The following tests were undertaken:

- Moisture content determination;
- Plasticity testing;
- pH and soluble sulphate testing;
- Total sulphur content;
- Organic content (dichromate) testing;
- Particle size distribution testing;
- Determination of undrained shear strength.

A copy of the laboratory test results is included in Appendix 7 toward the end of this report.

5. MONITORING

Ground gas and groundwater monitoring wells were installed within three exploratory holes excavated during the intrusive investigation, (BH01, BH02 and WS102). Subsequent return visits were undertaken in order to monitor ground gas and groundwater levels which had accumulated within these wells. Monitoring wells installed during the previous investigation, (DSC1, DSC4 and DCSBH2), were also monitored during these visits. The results are presented within the following sections and within Appendix 5 of this report.

5.1 Ground Gas

Ground gas monitoring was undertaken by a suitably qualified environmental consultant, using a GA2000 landfill gas analyser. The main determinants recorded were methane, (CH₄), carbon dioxide, (CO₂), oxygen, (O₂), as well as flow and groundwater levels. Levels of hydrogen sulphide, (H₂S), carbon monoxide, (CO), and volatile organic compounds, (VOC), were recorded using a Photoionization Detector, (PID).

Ground gas monitoring was carried out in accordance with current guidance, (ref. **R.3**). Three consecutive monitoring visits were undertaken over a period of four weeks and included a monitoring visit during low barometric pressure conditions.

The results and dates of the monitoring visits are presented in Tables 2 and 3 below. Graphical representation of these results are presented within Appendix 5 of this report.

Table 2 - Ground Gas Monitoring Results						
Monitoring Well	Monitoring Date	Atmospheric Pressure (mb)	Flow Rate (l/hr)	Methane (%)	Carbon Dioxide (%)	Oxygen (%)
BH01	27-04-16	1009	-0.2	<0.1	0.1	20.9
	12-05-16	996	-0.4	<0.1	0.2	19.6
	19-05-16	1004	+0.5	<0.1	0.3	20.0
BH02	27-04-16	1009	-0.2	<0.1	0.1	20.9
	12-05-16	996	-0.5	<0.1	0.1	20.9
	19-05-16	1004	+0.5	<0.1	0.1	21.2
WS102	27-04-16	1009	-0.2	<0.1	0.9	20.9
	12-05-16	996	-0.3	0.1	0.7	20.7
	19-05-16	1005	+0.5	<0.1	1.0	20.7
DCS1	27-04-16	1010	-0.1	<0.1	4.9	8.8
	12-05-16	996	-0.5	<0.1	3.7	15.8
	19-05-16	1004	+0.5	0.1	5.3	15.0
DCSBH2	27-04-16	1010	-0.1	<0.1	2.7	18.3
	12-05-16	996	-0.3	<0.1	5.2	15.3
	19-05-16	1004	+0.4	0.1	5.3	12.3
DCS4	27-04-16	nm	nm	nm	nm	nm

	12-05-16	996	-0.3	<0.1	1.0	20.2
	19-05-16	1005	+0.5	<0.1	0.9	20.6

Table 3 - Ground Gas Monitoring Results by PID				
Monitoring Well	Monitoring Date	Carbon Monoxide (ppm)	Hydrogen Sulphide (ppm)	VOC (ppm)
BH01	27-04-16	56.0	<0.1	241.0
	12-05-16	38.0	0.1	326.0
	19-05-16	35.0	<0.1	406.0
BH02	27-04-16	1.0	<0.1	9.0
	12-05-16	<0.1	<0.1	19.0
	19-05-16	<0.1	<0.1	12.0
WS102	27-04-16	<0.1	<0.1	15.0
	12-05-16	4.0	<0.1	28.0
	19-05-16	<0.1	<0.1	<0.1
DCS1	27-04-16	<0.1	<0.1	3.0
	12-05-16	<0.1	<0.1	5.0
	19-05-16	<0.1	<0.1	3.0
DCSBH2	27-04-16	<0.1	<0.1	1.0
	12-05-16	<0.1	<0.1	3.0
	19-05-16	45.0	<0.1	23.0
DCS4	27-04-16	nm	nm	nm
	12-05-16	<0.1	<0.1	<0.1
	19-05-16	<0.1	<0.1	<0.1

5.2 Groundwater

The groundwater levels were also monitored during the monitoring visits, over a period of four weeks. The water levels and dates of monitoring are presented in the table below:

Table 4 - Groundwater Monitoring Results				
Monitoring Well	Depth of Monitoring Well (mbgl)	Groundwater Encountered at (mbgl)		
		Visit 1 27/04/16	Visit 2 12/05/16	Visit 3 19/05/16
BH01	9.95	Dry	Dry	Dry
BH02	10.00	Dry	Dry	Dry
WS102	5.00	Dry	2.30	2.00
DSC1	4.10	1.43	1.40	1.75
DSCBH2	2.20	1.66	1.65	1.40
DSC4	2.15	1.97	Dry	Dry

Notes:
Dry - no groundwater encountered
n/m – not measured
0 - well filled with water

As mentioned previously, groundwater samples were collected during the second monitoring visit and dispatched to the environmental laboratory for analysis. Prior to collecting the samples, low flow monitoring was undertaken, whereby conductivity, dissolved oxygen, pH and redox potential values of the groundwater were measured. The results of this monitoring are presented in the table overleaf.

Table 5 - Low Flow Groundwater Monitoring

Monitoring Well	Depth of Monitoring Well (mbgl)	Time (mins)	Parameter			
			Dissolved Oxygen (%)	Electrical Conductivity (µs/cm)	pH	Redox Potential (mV)
WS102	5.00	0	52.3	5757	7.62	254
		5	12.5	5681	7.59	256
		10	11.3	5534	7.57	240
		15	10.7	5528	7.58	238
		20	10.0	5521	7.57	236
		25	10.1	5522	7.58	237
		30	10.0	5520	7.58	237
DSC1	4.10	0	36.5	1379	7.17	261
		5	15.0	1334	7.13	259
		10	12.6	1295	7.11	247
		15	8.9	1232	7.12	246
		20	8.7	1159	7.12	243
		25	8.8	1132	7.11	242
		30	8.8	1120	7.12	241
DSCBH2	2.20	0	21.0	1259	7.56	369
		5	4.6	1187	7.58	321
		10	10.8	1065	7.33	297
		15	11.6	1066	7.34	291
		20	9.9	899	7.32	250
		25	9.5	789	7.34	246
		30	9.8	890	7.31	245

Notes:

Dry - no groundwater encountered
n/m – not measured
0 - well filled with water

6. CONCLUSIONS

Geosphere Environmental Ltd was commissioned by the Client, Kier Construction Ltd, to undertake a Phase 2 Ground Investigation for a proposed commercial development at the Greenwood Centre, Greenwood Place, Camden.

A ground investigation was undertaken at the former Greenwood Centre, Greenwood Place, Camden. The investigation comprised of the formation of cable percussive boreholes, windowless sampler boreholes and the excavation of a number of hand dug or vacuum excavated pits to varying depths. Monitoring wells were installed within three boreholes and three subsequent monitoring visits were undertaken after the intrusive works, in order to monitor ground gas and groundwater levels and collect samples of ground gas and groundwater.

The ground conditions beneath the site were found to comprise of varying thicknesses of surface materials and Made Ground overlying cohesive deposits of the London Clay Formation. A number of samples were collected during the ground investigation, for environmental and geotechnical purposes, and dispatched to the relevant laboratories for testing.

Whilst this report provides a detailed account of the intrusive investigation and the subsequent monitoring and laboratory testing undertaken, the interpretation of the laboratory results and the ground conditions encountered is the responsibility of the consulting engineers instructed by the Client.

ADDITIONAL INFORMATION

A. CONSULTATION

During the development of a contaminated site, consultation may be required for a number of reasons with a number of Regulatory Authorities. The following provides an indication as to the most likely Authorities with which consultation may be required. The remediation strategy would have to be agreed with the following:

- Local Authority. Consultation is likely to be required with a designated Contaminated Land Officer within the Environmental Health Department, as part of the planning process. The Local Authority is generally concerned with human health risks. Some Authorities now require 'Completion Certificates' to be signed off following remediation works;
- Environment Agency. Where a site is within a groundwater protection zone or has been designated as a special site, the Environment Agency is likely to be involved to ensure that controlled waters are protected.

In addition to which, the following may also be involved in the consultation process:

National House Building Council, NHBC. Section 4.1 of the NHBC Standards requires land management to be addressed.

- Water Authorities. They are likely to impose constraints on the nature of water supply pipes that are to be laid in contaminated land. Guidance on the selection of materials for water pipes is provided by the Water Regulations Advisory Scheme, (ref. **R.4**).

Based upon the results of any consultation, there may be specific remediation requirements imposed by one or more of the aforementioned Authorities.

B. SHORT-TERM MITIGATION MEASURES

During site preparatory works of any potential development/construction works, some short-term mitigation measures will be required to protect the site workers, neighbouring sites users and the environment from the potential effects of exposure to potentially contaminated materials and soils. The majority of the proposed measures represent good practice for the construction industry and include:

- Briefing all of the site workers of the identified contamination on site, and ensuring they are aware of the potential health effects from exposure;
- Where appropriate, workers who are at potentially risk due to their working in areas of identified contamination will be provided with suitable PPE;
- Ensuring good hygiene is enforced on site and washing facilities are maintained on the site. Workers are discouraged from smoking, eating or drinking without washing their hands first;
- Ensuring site personnel report any unusual complaints, such as skin rashes, nausea, light-headedness etc. which may be attributable to the contamination on the site;
- Ensuring that dust suppression measures are put into practice where contamination is becoming airborne;

- Site drainage should be prevented from entering the adjacent watercourse;
- Where necessary contamination will be prevented from dirtying adjacent highways, a wheel-wash or other method for cleaning vehicles may be required.

Where contaminated materials are being removed from the site they should be disposed of at a suitably licensed landfill, with a 'duty of care' system in place and maintained throughout the disposal operations. The classification of contaminated soils for disposal is dependent upon the individual landfill operator, which is in term dependent upon the operator's license.

C. DISCOVERY STRATEGY

There is the possibility that other sources of contamination may be present on the site which were not detected during the investigation. Should such contamination be identified or suspected during the site clearance or ground works, these should be dealt with accordingly. A number of options are available for handling this material, which include:

- The removal from site and disposal to a suitably licensed tip of all material suspected of being contaminated;
- Short-term storage of the suspected material while undertaking verification testing for suspected contamination. The storage area should be a contained area to ensure that contamination does not migrate and affect other areas of the site. Depending upon the amounts of material under consideration, this could be either a skip or a lined area;
- Treatment of the identified contamination in accordance with the site-specific Remediation Method Statement;
- Having a suitably experienced Environmental Engineer either on-call or with a watching brief for the visual and olfactory assessment of the material, and sampling for verification purposes.

Should any anomalous materials be identified within the soils, the Regulatory Authorities should be informed and where necessary the remedial strategy agreed.

APPENDICES



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APPENDIX 1 – ACRONYMS AND ABBREVIATIONS

Acronym / Abbreviation	Definition
ACM	Asbestos containing material
ADE	Average daily exposure
ASPT	Average score per Taxon
BOD	Biochemical oxygen demand
BH	Borehole
BRE	Building Research Establishment
BS	British Standard
BTEX	Benzene, Toluene, Ethyl benzene and Xylenes
CIRIA	Construction Industry Research and Information Association
CLEA	Contaminated Land Exposure Assessment
CLR	Contaminated Land Research reports
DEFRA	Department of the Environment, Food and Rural Affairs (formerly the DoE and DETR)
DETR	Department of the Environment, Transport and the Regions (formerly the DoE and now Defra)
DO	Dissolved oxygen
DoE	Department of the Environment (then DETR and later Defra)
DQRA	Detailed quantitative risk assessment (Tier 2)
EA	Environment Agency
EPH	Extractable petroleum hydrocarbons
EQI	Environmental Quality Index
EQS	Environmental Quality Standards
GQRA	Generic quantitative risk assessment (Tier 1)
mAOD	Metres above ordnance datum
mbgl	Metres below ground level
NGR	National grid reference
NHBC	National House Building Council
NRA	National Rivers Authority (now the Environment Agency)
PACM	Potentially asbestos containing material

APPENDIX 2 – REPORT LIMITATIONS AND CONDITIONS

This report refers, within the limitations stated, to the condition of the site at the time of the inspections. No warranty is given as to the possibility of future changes in the condition of the site.

The comments given in this report, and the opinions expressed herein, are based upon the readily available information collated for the report and an assessment based upon the current UK guidance, primarily the Contaminated Land Research (CLR) Reports, and most importantly CLR Report 3, (ref. **R.5**).

This report has been prepared for the sole use of the Client for the purposes described and no extended duty of care to any third party is implied or offered. Third parties using any information contained within this report do so at their own risk.

This report is prepared and written for the use stated herein; it should not be used for any other purposes without reference to Geosphere Environmental Limited. The report has been prepared in relation to the proposed end-use should another end-use be intended a further re-assessment may be required. It is likely that over time practises will improve and the relevant guidance and legislation be amended or superseded, which may necessitate a re-assessment of the site.

The report is limited to those aspects of land contamination specifically reported on and is necessarily qualified accordingly, no liability shall be accepted for other aspects which may be the result of gradual or sudden pollution incidents, past or present unrecorded land uses both on~ and off~ site and the potential for associated contaminant migration. The opinions expressed cannot be absolute due to the limitations of time and resources imposed by the agreed brief.

The accuracy of any map extracts cannot be guaranteed. It is possible that different conditions existed on site, between and subsequent to the various map surveys appended.

Whilst the report may express an opinion on possible configurations of strata between or beyond exploratory holes discussed or on the possible presence of features based on visual, verbal or published evidence, this is for guidance only and no liability can be accepted for its accuracy.

The conceptual model is based on the information available at the time of conducting this assessment and is an interpretative assessment of the conditions at the site. It should be noted that the redevelopment and/or further investigation of the site may reveal additional information and therefore alter the conceptual model and the conclusion of this report.

APPENDIX 3 – REFERENCES

- R.1.** British Standards Institute: BS 10175 'Code of practice for the investigation of potentially contaminated sites', BSI 2011+A1:2013.
- R.2.** British Standards Institute: BS 5930 'Code of practice for ground investigations', 2015.
- R.3.** CIRIA Report C665, 'Assessing risks posed by hazardous ground gases to buildings', 2007.
- R.4.** Water Regulations Advisory Scheme, Information and Guidance Note, October 2002, 'The Selection of Materials for Water Supply Pipes to be Laid in Contaminated Land'.
- R.5.** CLR 3, 'Documentary research on industrial sites', Report by RPS Consultants Ltd, DoE 1994.

APPENDIX 4 – EXPLORATORY HOLE LOGS

Borehole Logs
(BH01 and BH02)

Windowless Sample Hole Logs
(WS101 and WS102)

CBR Pits
(CBR3 and CBR4)

Foundation Inspection Pit Logs
(FIP1 to FIP4)

Hand Auger Logs
(HA1)

Dynamic Probe Logs
(BH01, WS102)

CLIENT: Kier Construction Ltd		PROJECT: Greenwood Centre			GROUND LEVEL m			HOLE No. BH02		
LOGGED BY: LF FIELDWORK BY: DRILLT TEMPLATE REF: GEL AGS BH BETA		CHECKED BY: SG DATE:		EXCAVATION METHOD: Cable Percussion (shell and auger) Uncased to 25.0 m			GRID REFERENCE			SHEET 2 OF 3
							DATES -			PROJECT NO. 1655,GI

Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata		Graphical Representation				Sampling/In-Situ Testing			Laboratory Testing						Additional Tests and Notes					
					Leg	Reduced Level	Depth	SPT 'N' Value				Depths	Type	No.	Blows	SPT N	<425 %	WC %	PL %		LL %	r Mg/m ³	Cu kN/m ²		
							0	10	20	30	40														
				Stiff dark grey silty CLAY with occasional fine white fossil fragments and bands of claystone (LONDON CLAY FORMATION)		10.50						10.00	10	D	10										
												10.50	11	D	11										
												11.00	11	U100	12				27	29	76	2.02	290	Atterberg limit and triaxial	
												11.45	D												
												11.00	D												
				13.20 - 13.60 Claystone band								12.00	12	D	13										
												12.50	D												
												12.95	D												
												13.00	13	D											
												14.00	14	D		23		22						pH & sulphate	
												14.45	D		45										
												15.00	15	D		67									
												15.50	U100						30			1.98	132	Triaxial	
												15.95	D												
												15.95	16	D											
												16.00	D												
												17.00	17	D		36		31							
												17.45	D		77										
												18.00	18	D		710									
												18.50	U100									28	2.00	175	Triaxial
												18.95	D												
												18.95	19	D											
												19.00	D												
												20.00	20												

GEL AGS BH BETA 1655,GI - GREENWOOD PLACE, 29-03-16.GPJ GINT STD AGS 3 1.GDT 23/6/16

*WATER Standing water level PIEZOMETER Upper seal Response zone Lower seal

SAMPLE AND TEST KEY
 D Small disturbed sample
 B Bulk disturbed sample
 U Undisturbed sample
 P Piston sample
 J Disturbed jar sample
 ES Environmental soil sample
 W Water Sample

S Standard penetration test
 C Cone penetration test
 K Permeability test

Blows SPT N
 SPT N = SPT N value (blows after seating)
 N*120 = Total blows/penetration including seating
 <425 Sample % passing 425 micron sieve

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PROJECT No
1655,GI
SHEET
2 OF 3
HOLE No.
BH02

DEPTH All depths, level and thicknesses in metres

CLIENT: Kier Construction Ltd		PROJECT: Greenwood Centre		GROUND LEVEL m		HOLE No. WS101	
LOGGED BY: LF FIELDWORK BY: DRILLT TEMPLATE REF: GEL AGS BH BETA		CHECKED BY: SG DATE:		EXCAVATION METHOD: Windowless sampler Uncased to 6.0 m		GRID REFERENCE	
				DATES 20/04/2016 - 20/04/2016		SHEET 1 OF 1	
						PROJECT NO. 1655,GI	

Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata		Graphical Representation				Sampling/In-Situ Testing				Laboratory Testing						Additional Tests and Notes	
					Leg	Reduced Level	Depth	SPT 'N' Value				Depths	Type	No.	Blows	SPT N	<425 %	WC %	PL %	LL %		r Mg/m ³
							0	10	20	30	40											
				CONCRETE		0.00						0										
				SUB FLOOR VOID		0.05																
				CONCRETE		1.20						1										
				MADE GROUND (Grey brown slightly clayey sand and gravel. Gravel of angular to subangular fine to coarse brick, concrete and flint)		1.30						1.30	J	1								
				MADE GROUND (Orange brown and blue grey mottled clay. Gravel of angular to subrounded fine to coarse flint, occasional fine brick and charcoal fragments)		1.50						1.50	J	2								
						1.60						1.60	D	1								
						1.80						1.80	J	3								
				Firm orange brown and blue grey mottled fissured CLAY (LONDON CLAY FORMATION)		2.10						2.00	2	D	2	00	7					
												2.00	C		12							
												2.00			22							
												2.50	J	4								
												3.00	3	D	3	11	9					
												3.00	J	5	12							
												3.00	C		33							
				3.50 Becoming silty and sheared with depth																		
				3.80 Fine selenite crystals present with depth																		
												4.00	4	D	4	12	10					
												4.00	C		13							
												5.00	5	D	5	22	13					
												5.00	C		23							
				Firm becoming stiff dark brown fissured CLAY with blue grey veining. (LONDON CLAY FORMATION)		5.00						5.00	J	6	24							
				5.30 Moderate suspected volatile odour with depth								5.30	J	6	44							
												5.70	J	7								
												5.80	D	6								
												6.00	6	C		20	23					
												6.00			31							

*WATER	Standing water level	PIEZOMETER	Upper seal	SAMPLE AND TEST KEY	D Small disturbed sample	S Standard penetration test	Blows	SPT blows for each 75mm increment
	Water strikes		Response zone		B Bulk disturbed sample	C Cone penetration test		(35) Undisturbed sample blow count
			Lower seal		U Undisturbed sample	K Permeability test	SPT N	N = SPT N value (blows after seating)
					P Piston sample			N*120 = Total blows/penetration including seating
					J Disturbed jar sample			<425 Sample % passing 425 micron sieve
					ES Environmental soil sample			
					W Water Sample			

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PROJECT No
1655,GI

SHEET
1 OF 1

HOLE No.
WS101

GEL AGS BH BETA 1655,GI - GREENWOOD PLACE, 29-03-16.GPJ GINT STD AGS 3 1.GDT 23/6/16

DEPTH All depths, level and thicknesses in metres



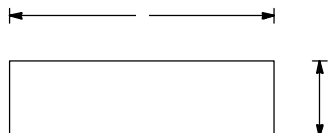
Geosphere Environmental Ltd
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TRIAL PIT LOG

Project Greenwood Centre		Client Kier Construction Ltd		TRIAL PIT No CBR 3
Job No 1655,GI	Date	Ground Level (m)	Grid Reference ()	
Fieldwork By DRILLT		Logged By LF		Sheet 1 of 1

Depth	DESCRIPTION	Legend	Depth	No	Remarks/Tests
0.00-0.10	FLEXIBLE SURFACING				
0.10-0.60	MADE GROUND (Yellow brown silty very gravelly fine to coarse sand. Gravel of brick, clinker, concrete and flint).		0.40	1J	Metals, cyanide, pH, TPH, PAH and asbestos screen
					Metals, cyanide, pH, TPH and PAH

GEL AGS TP BETA 1655.GI - GREENWOOD PLACE, 29-03-16.GPJ GINT STD AGS 3_1.GDT 23/6/16



Shoring/Support:
Stability:

All dimensions in metres Scale 1:8.33333333333333	Method Hand Method	Plant Used HAND	Checked By SG
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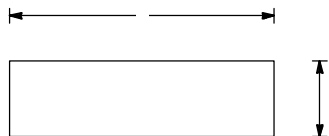
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TRIAL PIT LOG

Project Greenwood Centre		Client Kier Construction Ltd		TRIAL PIT No CBR 4
Job No 1655,GI	Date	Ground Level (m)	Grid Reference ()	
Fieldwork By DRILLT		Logged By LF		Sheet 1 of 1

Depth	DESCRIPTION	Legend	Depth	No	Remarks/Tests
0.00-0.20	PATIO				
0.20-0.30	CONCRETE				
0.30-0.85	MADE GROUND (Dark brown very sandy very gravelly clay with bricks, wood, glass and fragments of flexible surfacing).				
			0.80	1J	Metals, cyanide, pH, TPH, PAH and asbestos screen
					Metals, cyanide, pH, TPH and PAH

GEL AGS TP BETA 1655.GI - GREENWOOD PLACE, 29-03-16.GPJ GINT STD AGS 3_1.GDT 23/6/16



Shoring/Support:
Stability:

All dimensions in metres Scale 1:8.33333333333333	Method Hand Method	Plant Used HAND	Checked By SG
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TRIAL PIT LOG

Project Greenwood Centre		Client Kier Construction Ltd		TRIAL PIT No FIP1
Job No 1655,GI	Date 01-04-16 01-04-16	Ground Level (m)	Grid Reference ()	
Fieldwork By DRILLT		Logged By LF		Sheet 1 of 1

Depth	DESCRIPTION	Legend	Depth	No	Remarks/Tests
0.00-0.12	CONCRETE				
0.12-1.10	MADE GROUND (Red/brown/grey silty sand & gravel with bricks and cobbles of concrete. Gravel of angular to subangular fine to coarse brick, concrete and clinker)		0.50	1J	Metals, cyanide, pH, TPH, PAH and asbestos screen
					Hand pit completed at 1.1m due to concrete obstruction

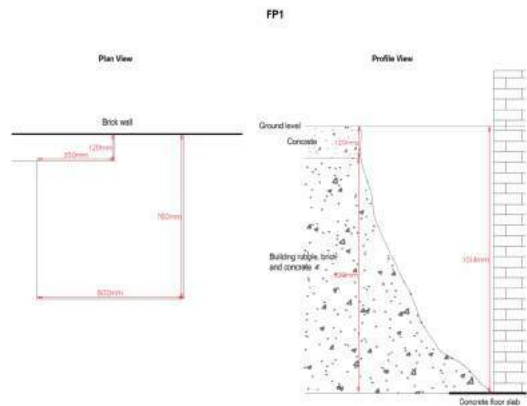
GEL AGS TP BETA 1655.GI - GREENWOOD PLACE, 29-03-16.GPJ GINT STD AGS 3_1.GDT 23/6/16



0.76



0.6



Shoring/Support: None
 Stability: Stable

All dimensions in metres Scale 1:18.333333333333	Method Foundation Pit	Plant Used HAND	Checked By SG
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TRIAL PIT LOG

Project Greenwood Centre		Client Kier Construction Ltd		TRIAL PIT No FIP2
Job No 1655,GI	Date 01-04-16 01-04-16	Ground Level (m)	Grid Reference ()	
Fieldwork By DRILLT		Logged By LF		Sheet 1 of 1

Depth	DESCRIPTION	Legend	Depth	No	Remarks/Tests
0.00-0.10	MADE GROUND (Patio slab)	[Cross-hatch pattern]			
0.10-0.80	MADE GROUND (Orange brown slightly clayey sand & gravel. Gravel of angular to subrounded fine to coarse flint and brick)	[Cross-hatch pattern]	0.30	1J	Metals, cyanide, pH, TPH, PAH and asbestos screen
0.80-0.86	MADE GROUND (Black clinker and charcoal)	[Cross-hatch pattern]	0.80	2J	Metals, cyanide, pH, TPH, PAH and asbestos screen
0.86-1.00	MADE GROUND (Orange brown slightly clayey sand & gravel. Gravel of angular to subrounded fine to coarse flint and brick)	[Cross-hatch pattern]			
1.00-1.40	MADE GROUND (Black/orange brown sand & gravel. Gravel of angular to subangular fine to coarse flint and clinker)	[Cross-hatch pattern]	1.30	2D	
1.40-1.50	Dark grey/brown CLAY with occasional gravel of flint and moderate natural organic odour	[Horizontal line pattern]	1.40	1D	Hand pit extended to 1.5m via hand auger

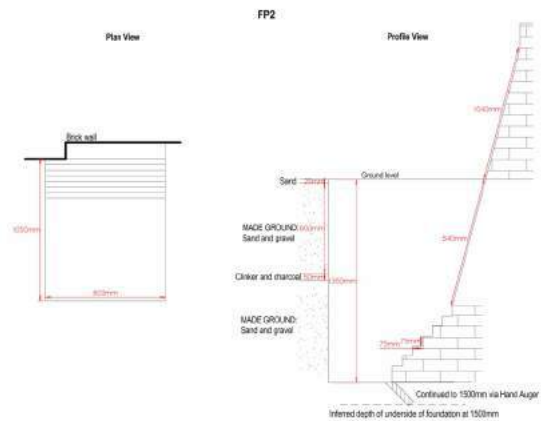
GEL AGS TP BETA 1655.GI - GREENWOOD PLACE, 29-03-16.GPJ GINT STD AGS 3_1.GDT 23/6/16



1.05



0.8



Shoring/Support: None
 Stability: Stable

All dimensions in metres Scale 1:18.333333333333	Method Foundation Pit	Plant Used HAND	Checked By SG
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TRIAL PIT LOG

Project Greenwood Centre		Client Kier Construction Ltd		TRIAL PIT No FIP3
Job No 1655,GI	Date 01-04-16 01-04-16	Ground Level (m)	Grid Reference ()	
Fieldwork By DRILLT		Logged By LF		Sheet 1 of 1

Depth	DESCRIPTION	Legend	Depth	No	Remarks/Tests
0.00-0.03	MADE GROUND (Flexible surfacing)				
0.03-0.20	CONCRETE				
0.20-1.20	MADE GROUND (Dark brown very gravelly silty fine to coarse sand. Gravel of angular to subangular fine to coarse brick, clinker and flint)		0.20	1D	Fraction organic carbon
			0.20	3J	
			0.40	1J	Metals, cyanide, pH, TPH, PAH and asbestos screen
			0.80	2J	
1.20-1.70	MADE GROUND (Orange brown/blue grey mottled gravelly sandy clay. Gravel of angular to subangular fine to medium brick and clinker)		1.20	4J	Metals, cyanide, pH, TPH and PAH
1.70-2.00	Soft to firm orange brown/blue grey mottled CLAY		1.70	3D	Seepage inflow of water at 1.7 m
					Hand pit extended to 2.0m via hand auger

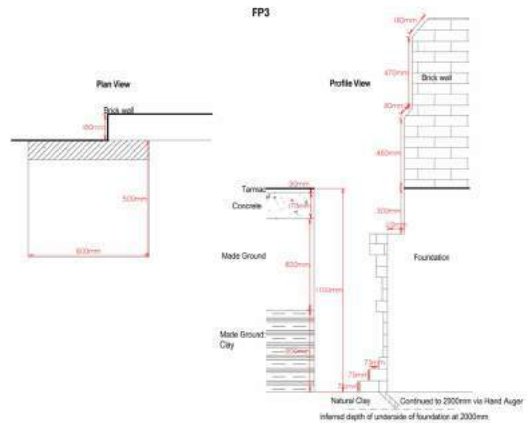
GEL AGS TP BETA 1655.GI - GREENWOOD PLACE, 29-03-16.GPJ GINT STD AGS 3_1.GDT 23/6/16



0.6



0.5



Shoring/Support: None
 Stability: Stable

All dimensions in metres Scale 1:18.333333333333	Method Foundation Pit	Plant Used HAND	Checked By SG
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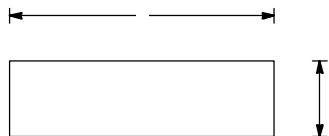
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TRIAL PIT LOG

Project Greenwood Centre		Client Kier Construction Ltd		TRIAL PIT No HA1
Job No 1655,GI	Date 20-04-16 20-04-16	Ground Level (m)	Grid Reference ()	
Fieldwork By DRILLT		Logged By LF		Sheet 1 of 1

Depth	DESCRIPTION	Legend	Depth	No	Remarks/Tests
0.00-0.10	PATIO SLAB				
0.10-1.40	MADE GROUND (Orange brown and black slightly clayey sand and gravel. Gravel of angular to subrounded fine to coarse flint, charcoal and brick)				
1.40-1.50	Dark grey and brown CLAY with occasional gravel of flint and moderate natural organic odour		1.40	1J	

GEL AGS TP BETA 1655.GI - GREENWOOD PLACE, 29-03-16.GPJ GINT STD AGS 3_1.GDT 23/6/16



Shoring/Support:
Stability:

All dimensions in metres Scale 1:16.6666666666667	Method Hand Auger	Plant Used HAND	Checked By SG
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DYNAMIC PROBE LOG

Project Greenwood Centre				PROBE No DP1 (BH01)	
Job No 1655,GI	Date 06-04-16 06-04-16	Ground Level (m)	Co-Ordinates ()		
Contractor Geosphere Environmental Limited					Sheet 1 of 1

Depth (m)	Readings (blows/100mm)	Diagram (N100 Values)						Torque (Nm)	Remarks
		5	10	15	20	25	30		
1	1 1 3 2								
2	1 1 1 1 2 2 1 1								
3	1 1 1 1 1 1 1 1 1 1 2 1								
4	1 1 2 1 3 2 2 2 2 2 1 3								
5	2 2 2 2 2 2 1 2 2 2 3 2 3 3								
6	3 2 3 3								

AGS3 DYNAMIC PROBE 1655.GI - GREENWOOD PLACE, 29-03-16.GPJ GINT STD.AGS.3.1.GDT. 23/6/16

Hammer Wt (kg)	63.5		GENERAL REMARKS
Hammer Drop (mm)	760		
Cone Dia (mm)	50		
Cone Type	DPH		
Damper	None		

All dimensions in metres Scale 1:43.75	Client Kier Construction Ltd	Method/ Plant Used Dynamic Probe sampling	Logged By PS
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DYNAMIC PROBE LOG

Project Greenwood Centre				PROBE No DP2 (WS102)	
Job No 1655,GI	Date 21-04-16 21-04-16	Ground Level (m)	Co-Ordinates ()		
Contractor Geosphere Environmental Limited					Sheet 1 of 2

Depth (m)	Readings (blows/100mm)	Diagram (N100 Values)						Torque (Nm)	Remarks
		5	10	15	20	25	30		
1									
2									
3									
4									
5									
6	1 1 2 2 2								

Hammer Wt (kg)	63.5		GENERAL REMARKS
Hammer Drop (mm)	760		
Cone Dia (mm)	50		
Cone Type			
Damper	None		

All dimensions in metres Scale 1:43.75	Client Kier Construction Ltd	Method/ Plant Used Dynamic Probe sampling	Logged By LF
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AGS3 DYNAMIC PROBE 1655.GI - GREENWOOD PLACE 29-03-16.GPJ GINT STD.AGS.3 1.GDT 23/6/16



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DYNAMIC PROBE LOG

Project Greenwood Centre				PROBE No DP2 (WS102)
Job No 1655,GI	Date 21-04-16 21-04-16	Ground Level (m)	Co-Ordinates ()	Sheet 2 of 2
Contractor Geosphere Environmental Limited				

Depth (m)	Readings (blows/100mm)	Diagram (N100 Values)						Torque (Nm)	Remarks
		5	10	15	20	25	30		
4	4								
5	7								
6	6								
7	9								
8	8								
9	11								
10	13								
11	12								
12	12								
13	12								
14	13								
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16	14								
17	16								
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27	24								
28	28								
29	28								
30	30								
31	31								
32	31								
33	32								
34	33								
35	35								

AGS3 DYNAMIC PROBE 1655.GI - GREENWOOD PLACE, 29-03-16.GPJ GINT STD.AGS.3.1.GDT. 23/6/16

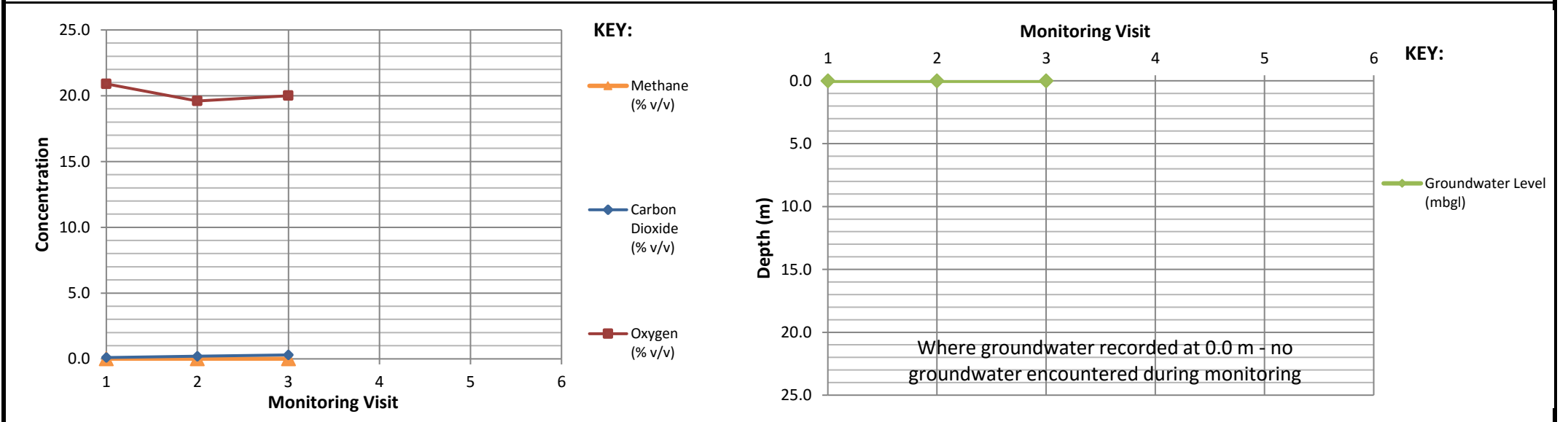
Hammer Wt (kg)	63.5		GENERAL REMARKS
Hammer Drop (mm)	760		
Cone Dia (mm)	50		
Cone Type			
Damper	None		

All dimensions in metres Scale 1:43.75	Client Kier Construction Ltd	Method/ Plant Used Dynamic Probe sampling	Logged By LF
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APPENDIX 5 – GAS AND GROUNDWATER MONITORING DATA

Exploratory Hole Location		BH1										Date of Installation	
Return Visit #	Monitoring Date	Atmospheric Pressure (mb)	Methane Content (% v/v) (% LEL)		Carbon Dioxide (% v/v)	Oxygen (% v/v)	Flow Rate (l/hr)	VOC (ppm)	H2S (ppm)	CO (ppm)	Water Level (mbgl)	Comments	
1	27/04/2016	1009	<0.1	<2	0.1	20.9	-0.2	241.0	<0.1	56	Dry	Cold, sunny, dry and breezy	
2	12/05/2016	996	<0.1	<2	0.2	19.6	-0.4	326.0	1.0	38	Dry	Cool, sunny, dry and calm	
3	19/05/2016	1004	<0.1	<2	0.3	20.0	+0.5	406.0	<0.1	35	Dry	Cool, overcast, damp and calm	

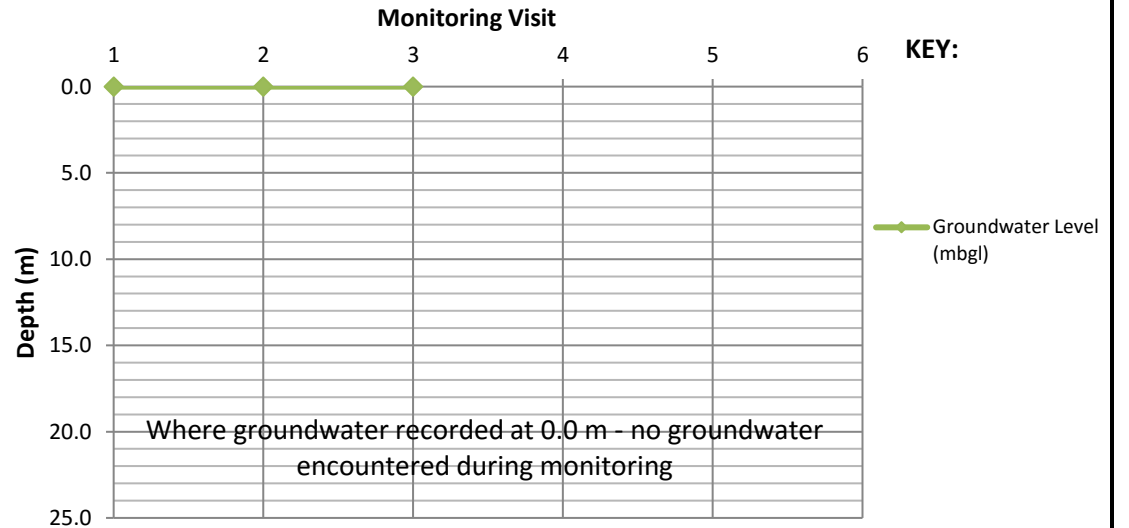
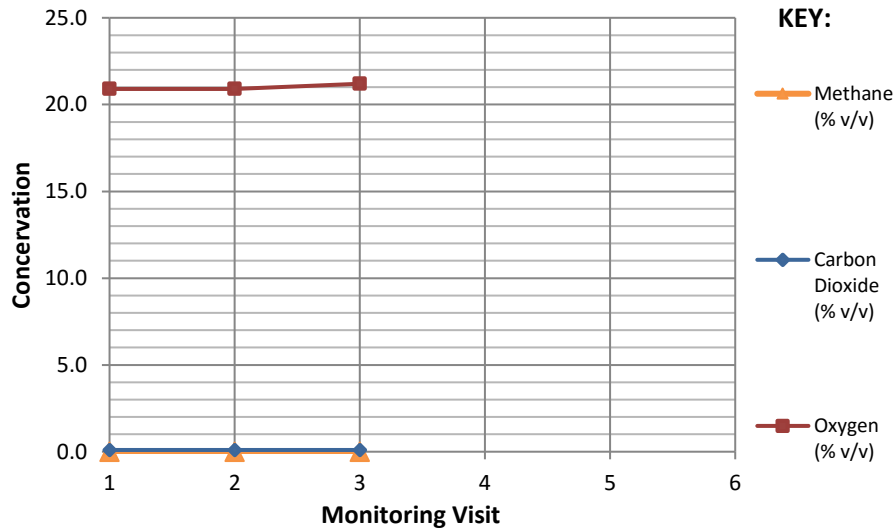
Instrument Used: GA2000 gas analyser
 REMARKS: NOTE: n/a Not applicable
 nm Not measured



SITE: Greenwood Centre, Greenwood Place, Camden
 REPORT: 1655,GI
 DATE: 20/06/2016

Exploratory Hole Location		BH2										Date of Installation	
Return Visit #	Monitoring Date	Atmospheric Pressure (mb)	Methane Content (% v/v) (% LEL)		Carbon Dioxide (% v/v)	Oxygen (% v/v)	Flow Rate (l/hr)	VOC (ppm)	H2S (ppm)	CO (ppm)	Water Level (mbgl)	Comments	
1	27/04/2016	1009	<0.1	<2	0.1	20.9	-0.2	9.0	<0.1	1.0	Dry	Cold, sunny, dry and breezy	
2	12/05/2016	996	<0.1	<2	0.1	20.9	-0.5	19.0	<0.1	<0.1	Dry	Cool, sunny, dry and calm	
3	19/05/2016	1004	<0.1	<2	0.1	21.2	+0.5	12.0	<0.1	<0.1	Dry	Cool, overcast, damp and calm	

Instrument Used: GA2000 gas analyser
 REMARKS: NOTE: n/a Not applicable
 nm Not measured



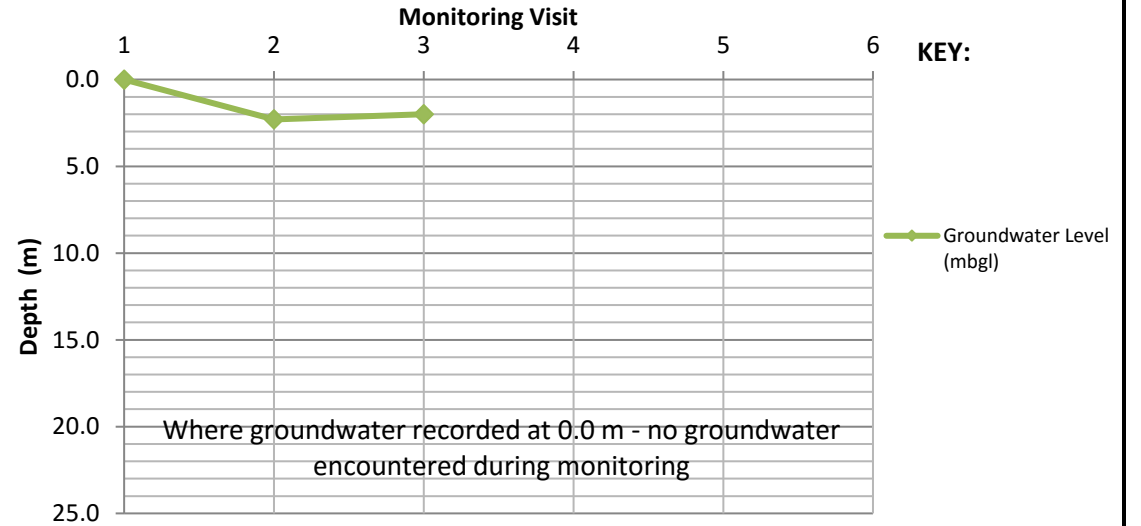
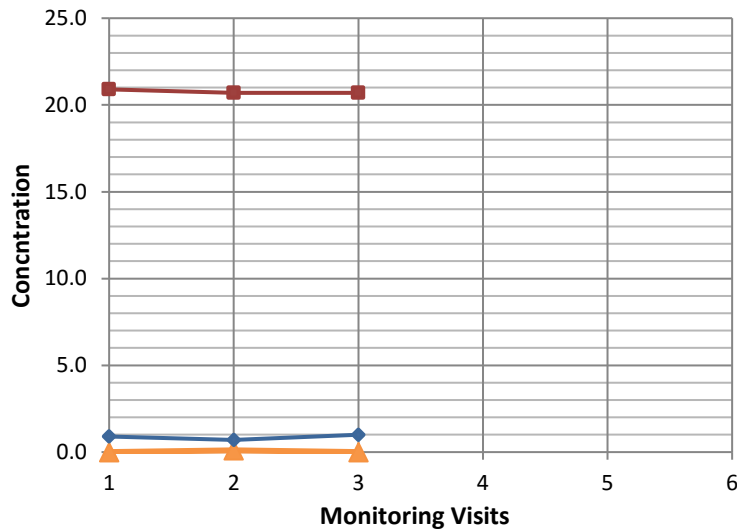
SITE
 Greenwood Centre, Greenwood Place, Camden

REPORT
 1655,GI

DATE
 20/06/2016

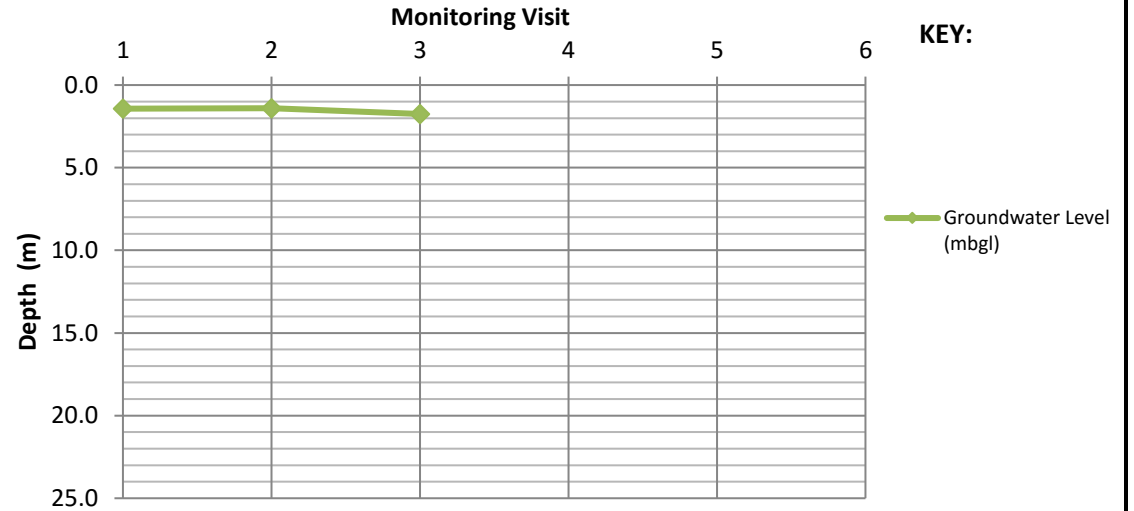
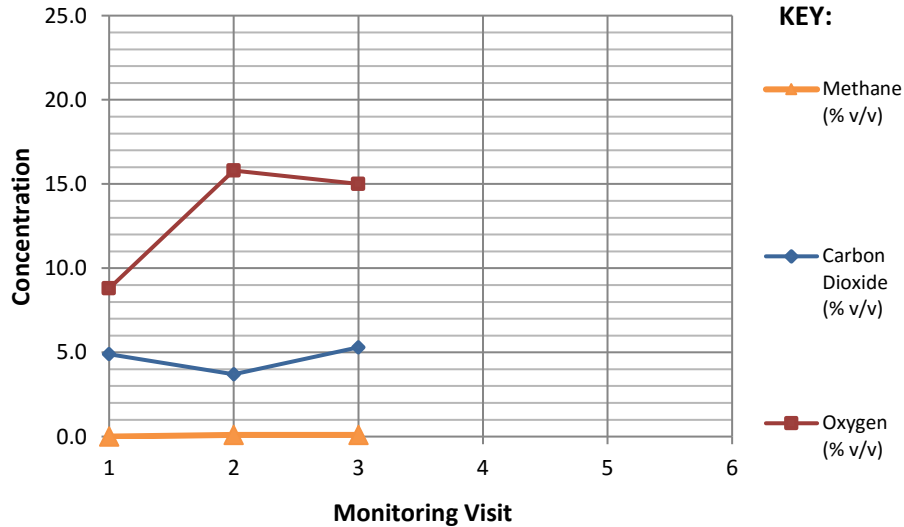
Exploratory Hole Location		WS102										Date of Installation	
Return Visit #	Monitoring Date	Atmospheric Pressure (mb)	Methane Content		Carbon Dioxide	Oxygen	Flow Rate	VOC	H2S	CO	Water Level	Comments	
			(% v/v)	(% LEL)	(% v/v)	(% v/v)	(l/hr)	(ppm)	(ppm)	(ppm)	(mbgl)		
1	27/04/2016	1009	<0.1	<2	0.9	20.9	-0.2	15.0	<0.1	<0.1	Dry	Cold, sunny, dry and breezy	
2	12/05/2016	996	0.1	1	0.7	20.7	-0.3	28.0	<0.1	4.0	2.30	Cool, sunny, dry and calm	
3	19/05/2016	1005	<0.1	<2	1.0	20.7	+0.5	<0.1	<0.1	<0.1	2.00	Cool, overcast, damp and calm	

Instrument Used: GA2000 gas analyser
 REMARKS: NOTE: n/a Not applicable
 nm Not measured



SITE Greenwood Centre, Greenwood Place, Camden	REPORT 1655,GI	DATE 20/06/2016
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Exploratory Hole Location		DCS1										Date of Installation	
Return Visit #	Monitoring Date	Atmospheric Pressure (mb)	Methane Content		Carbon Dioxide	Oxygen	Flow Rate	VOC	H2S	CO	Water Level	Comments	
			(% v/v)	(% LEL)	(% v/v)	(% v/v)	(l/hr)	(ppm)	(ppm)	(ppm)	(mbgl)		
1	27/04/2016	1010	<0.1	<2	4.9	8.8	-0.1	3.0	<0.1	<0.1	1.43	Cold, sunny, dry and breezy	
2	12/05/2016	996	0.1	1	3.7	15.8	-0.5	5.0	<0.1	<0.1	1.40	Cool, sunny, dry and calm	
3	19/05/2016	1004	0.1	1	5.3	15.0	+0.5	3.0	<0.1	<0.1	1.75	Cool, overcast, damp and calm	
Instrument Used:		GA2000 gas analyser					NOTE:				n/a	Not applicable	
REMARKS											nm	Not measured	



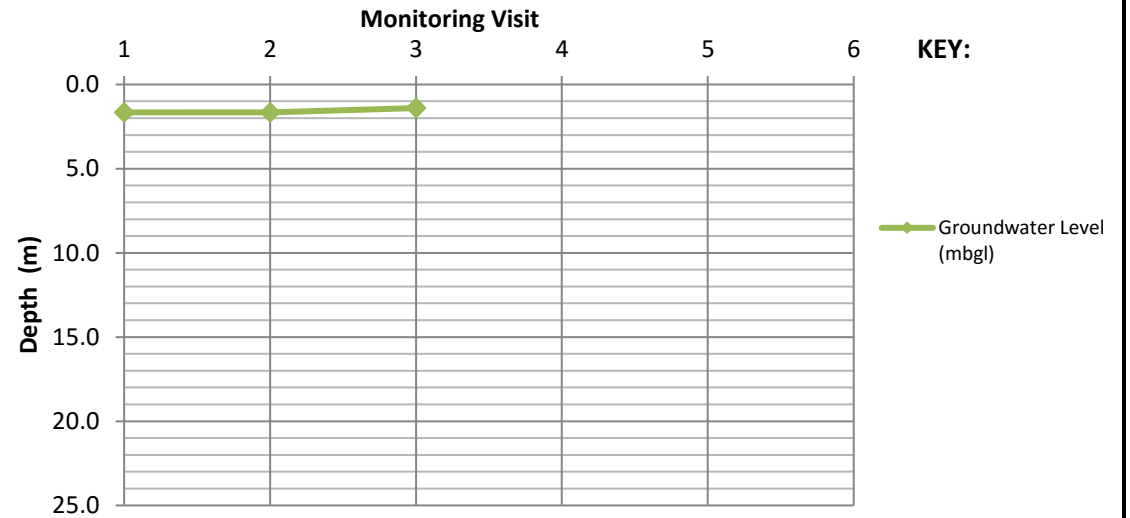
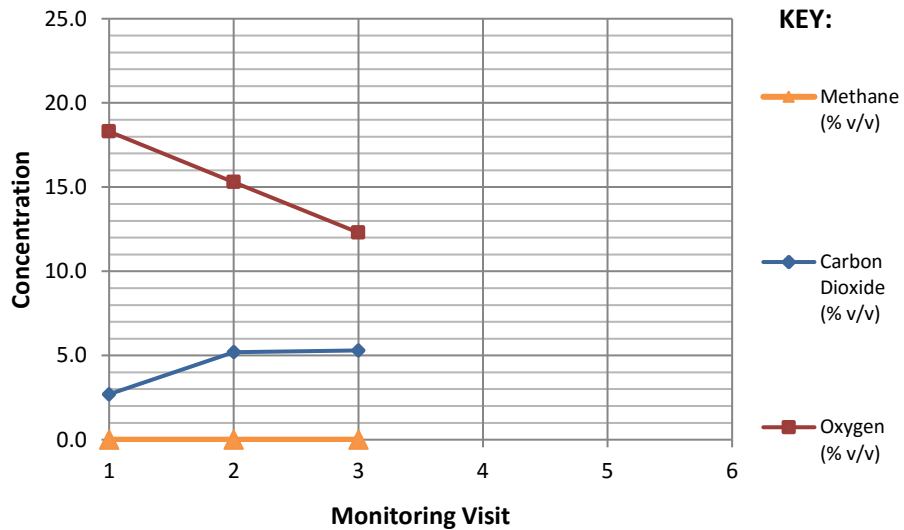
SITE
Greenwood Centre, Greenwood Place, Camden

REPORT
1655,GI

DATE
20/06/2016

Exploratory Hole Location		DCSBH2										Date of Installation	
Return Visit #	Monitoring Date	Atmospheric Pressure (mb)	Methane Content		Carbon Dioxide	Oxygen	Flow Rate	VOC	H2S	CO	Water Level	Comments	
			(% v/v)	(% LEL)	(% v/v)	(% v/v)	(l/hr)	(ppm)	(ppm)	(ppm)	(mbgl)		
1	27/04/2016	1010	<0.1	<2	2.7	18.3	-0.1	1.0	<0.1	<0.1	1.66	Cold, sunny, dry and breezy	
2	12/05/2016	996	<0.1	<2	5.2	15.3	-0.3	3.0	<0.1	<0.1	1.65	Cool, sunny, dry and calm	
3	19/05/2016	1004	<0.1	3	5.3	12.3	+0.4	23.0	<0.1	45.0	1.40	Cool, overcast, damp and calm	

Instrument Used: GA2000 gas analyser
 REMARKS: NOTE: n/a Not applicable
 nm Not measured



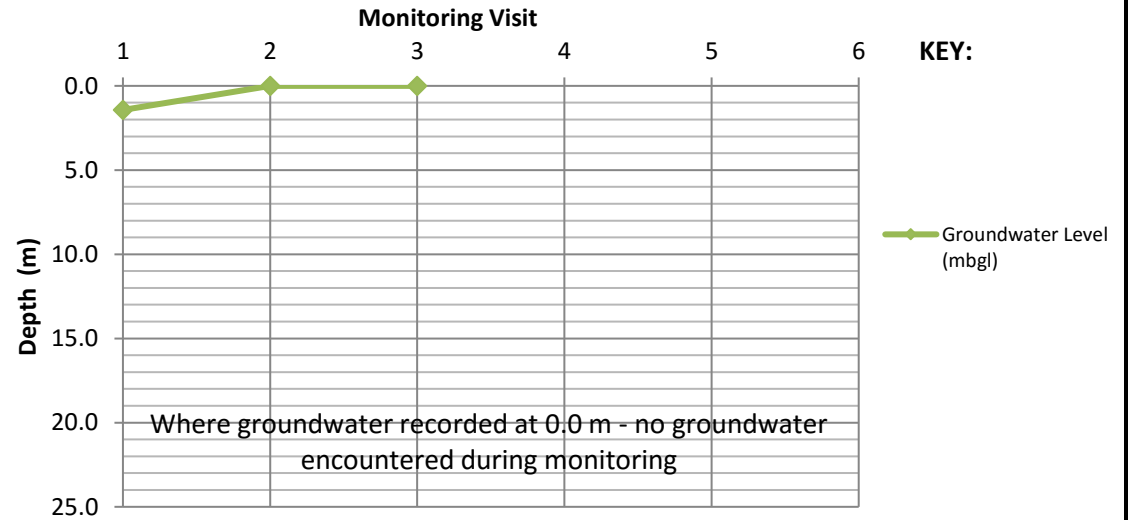
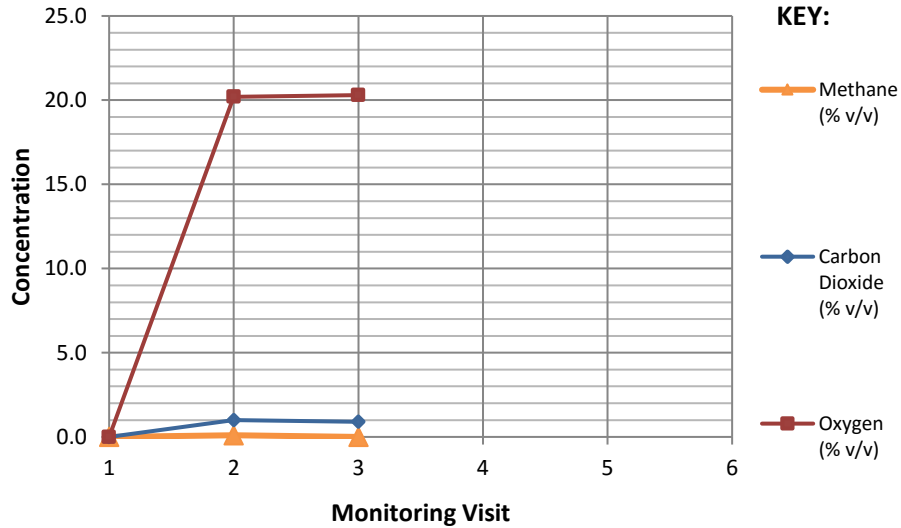
SITE
 Greenwood Centre, Greenwood Place, Camden

REPORT
 1655,GI

DATE
 20/06/2016

Exploratory Hole Location		DCS4										Date of Installation	
Return Visit #	Monitoring Date	Atmospheric Pressure (mb)	Methane Content		Carbon Dioxide	Oxygen	Flow Rate	VOC	H2S	CO	Water Level	Comments	
			(% v/v)	(% LEL)	(% v/v)	(% v/v)	(l/hr)	(ppm)	(ppm)	(ppm)	(mbgl)		
1	27/04/2016	1010	-	-	-	-	-	-	-	-	1.43	Cold, sunny, dry and breezy	
2	12/05/2016	996	0.1	1	1.0	20.2	-0.3	<0.1	<0.1	<0.1	Dry	Cool, sunny, dry and calm	
3	19/05/2016	1004	<0.1	1	0.9	20.3	+0.5	<0.1	<0.1	<0.1	Dry	Cool, overcast, damp and calm	

Instrument Used: GA2000 gas analyser
 REMARKS: n/a
 NOTE: Not applicable
 nm Not measured



SITE
 Greenwood Centre, Greenwood Place, Camden

REPORT
 1655,GI

DATE
 20/06/2016

APPENDIX 6 – ENVIRONMENTAL LABORATORY TEST RESULTS

FINAL ANALYTICAL TEST REPORT

Envirolab Job Number: 16/02271
Issue Number: 1
Date: 25 April, 2016

Client: Geosphere Environmental Ltd
Unit 11
Brightwell Barns
Ipswich Road
Brightwell
Ipswich
Suffolk
IP10 0BJ

Project Manager: Lianne Fountain
Project Name: Greenwood Place Resource Centre
Project Ref: 1655, GI
Order No: 1655GI
Date Samples Received: 19/04/16
Date Instructions Received: 19/04/16
Date Analysis Completed: 25/04/16

Prepared by:



Kate Ellison
Administrative Assistant

Approved by:



Lianne Bromiley
Senior Client Manager

Envirolab Job Number: 16/02271

Client Project Name: Greenwood Place Resource Centre

Client Project Ref: 1655, GI

Lab Sample ID	16/02271/1	16/02271/2	16/02271/3	16/02271/4	16/02271/5				Units	Method ref
Client Sample No	J1	J2	J3	J4	J5					
Client Sample ID	BH01	BH01	BH01	BH01	BH01					
Depth to Top	2.00	3.00	4.00	5.00	6.00					
Depth To Bottom										
Date Sampled	12-Apr-16	12-Apr-16	12-Apr-16	12-Apr-16	12-Apr-16					
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES					
Sample Matrix Code	5A	5A	5A	3	3					
% Moisture _A	10.6	-	14.1	18.5	18.8					
% Stones >10mm _A [#]	<0.1	24.8	9.6	<0.1	<0.1				% w/w	A-T-044
pH _D ^{M#}	11.61	-	8.92	8.02	7.85				pH	A-T-031s
Sulphate (acid soluble) _D ^{M#}	4400	-	5800	5600	11000				mg/kg	A-T-028s
Cyanide (total) _A ^{M#}	<1	-	<1	1	<1				mg/kg	A-T-042sTCN
Phenols - Total by HPLC _A	<0.2	-	<0.2	<0.2	<0.2				mg/kg	A-T-050s
Sulphide _A	<15	-	<15	<15	<15				mg/kg	A-T-S2-s
Total Organic Carbon _D ^{M#}	-	0.74	-	-	-				% w/w	A-T-032s
Arsenic _D ^{M#}	7	-	7	3	4				mg/kg	A-T-024s
Cadmium _D ^{M#}	0.7	-	0.7	1.0	1.0				mg/kg	A-T-024s
Copper _D ^{M#}	35	-	15	17	16				mg/kg	A-T-024s
Chromium _D ^{M#}	21	-	26	40	33				mg/kg	A-T-024s
Chromium (hexavalent) _D	<1	-	-	<1	-				mg/kg	A-T-040s
Lead _D ^{M#}	54	-	42	12	11				mg/kg	A-T-024s
Mercury _D	1.28	-	0.23	<0.17	0.33				mg/kg	A-T-024s
Nickel _D ^{M#}	16	-	21	31	31				mg/kg	A-T-024s
Selenium _D	<1	-	<1	<1	2				mg/kg	A-T-024s
Vanadium _D ^{M#}	27	-	-	56	-				mg/kg	A-T-024s
Zinc _D ^{M#}	43	-	41	55	52				mg/kg	A-T-024s

Envirolab Job Number: 16/02271

Client Project Name: Greenwood Place Resource Centre

Client Project Ref: 1655, GI

Lab Sample ID	16/02271/1	16/02271/2	16/02271/3	16/02271/4	16/02271/5				Units	Method ref
Client Sample No	J1	J2	J3	J4	J5					
Client Sample ID	BH01	BH01	BH01	BH01	BH01					
Depth to Top	2.00	3.00	4.00	5.00	6.00					
Depth To Bottom										
Date Sampled	12-Apr-16	12-Apr-16	12-Apr-16	12-Apr-16	12-Apr-16					
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES					
Sample Matrix Code	5A	5A	5A	3	3					
Asbestos in Soil (inc. matrix)										
Asbestos in soil _A [#]	Chrysotile	NAD	-	-	-					A-T-045
Asbestos Matrix (microscope) _A	Loose Fibres	-	-	-	-					A-T-045
Asbestos ACM - Suitable for Water Absorption Test? _D	N/A	N/A	-	-	-					Gravimetry

Envirolab Job Number: 16/02271

Client Project Name: Greenwood Place Resource Centre

Client Project Ref: 1655, GI

Lab Sample ID	16/02271/1	16/02271/2	16/02271/3	16/02271/4	16/02271/5				Units	Method ref
Client Sample No	J1	J2	J3	J4	J5					
Client Sample ID	BH01	BH01	BH01	BH01	BH01					
Depth to Top	2.00	3.00	4.00	5.00	6.00					
Depth To Bottom										
Date Sampled	12-Apr-16	12-Apr-16	12-Apr-16	12-Apr-16	12-Apr-16					
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES					
Sample Matrix Code	5A	5A	5A	3	3					
PAH 16										
Acenaphthene _A ^{M#}	<0.01	-	<0.01	<0.01	<0.01				mg/kg	A-T-019s
Acenaphthylene _A ^{M#}	<0.01	-	<0.01	<0.01	<0.01				mg/kg	A-T-019s
Anthracene _A ^{M#}	<0.02	-	<0.02	<0.02	<0.02				mg/kg	A-T-019s
Benzo(a)anthracene _A ^{M#}	<0.04	-	<0.04	<0.04	<0.04				mg/kg	A-T-019s
Benzo(a)pyrene _A ^{M#}	<0.04	-	<0.04	<0.04	<0.04				mg/kg	A-T-019s
Benzo(b)fluoranthene _A ^{M#}	<0.05	-	<0.05	<0.05	<0.05				mg/kg	A-T-019s
Benzo(ghi)perylene _A ^{M#}	<0.05	-	<0.05	<0.05	<0.05				mg/kg	A-T-019s
Benzo(k)fluoranthene _A ^{M#}	<0.07	-	<0.07	<0.07	<0.07				mg/kg	A-T-019s
Chrysene _A ^{M#}	<0.06	-	<0.06	<0.06	<0.06				mg/kg	A-T-019s
Dibenzo(ah)anthracene _A ^{M#}	<0.04	-	<0.04	<0.04	<0.04				mg/kg	A-T-019s
Fluoranthene _A ^{M#}	<0.08	-	<0.08	<0.08	<0.08				mg/kg	A-T-019s
Fluorene _A ^{M#}	<0.01	-	<0.01	<0.01	<0.01				mg/kg	A-T-019s
Indeno(123-cd)pyrene _A ^{M#}	<0.03	-	<0.03	<0.03	<0.03				mg/kg	A-T-019s
Naphthalene _A ^{M#}	<0.03	-	<0.03	<0.03	<0.03				mg/kg	A-T-019s
Phenanthrene _A ^{M#}	0.07	-	<0.03	<0.03	<0.03				mg/kg	A-T-019s
Pyrene _A ^{M#}	<0.07	-	<0.07	<0.07	<0.07				mg/kg	A-T-019s
PAH (total 16) _A ^{M#}	<0.08	-	<0.08	<0.08	<0.08				mg/kg	A-T-019s
TPH Banded 1										
>C6-C8 _A [#]	<10	-	<10	<10	<10				mg/kg	A-T-007s
>C8-C10 _A [#]	<10	-	<10	<10	<10				mg/kg	A-T-007s
>C10-C12 _A [#]	<10	-	<10	<10	<10				mg/kg	A-T-007s
>C12-C16 _A [#]	<10	-	<10	<10	<10				mg/kg	A-T-007s
>C16-C21 _A [#]	<10	-	<10	<10	<10				mg/kg	A-T-007s
>C21-C40 _A	23	-	<10	<10	<10				mg/kg	A-T-007s
TPH Total (sum of bands) (>C6-C40) _A	23	-	<10	<10	<10				mg/kg	A-T-007s

Envirolab Job Number: 16/02271

Client Project Name: Greenwood Place Resource Centre

Client Project Ref: 1655, GI

Lab Sample ID	16/02271/1	16/02271/2	16/02271/3	16/02271/4	16/02271/5				Units	Method ref
Client Sample No	J1	J2	J3	J4	J5					
Client Sample ID	BH01	BH01	BH01	BH01	BH01					
Depth to Top	2.00	3.00	4.00	5.00	6.00					
Depth To Bottom										
Date Sampled	12-Apr-16	12-Apr-16	12-Apr-16	12-Apr-16	12-Apr-16					
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES					
Sample Matrix Code	5A	5A	5A	3	3					
SVOC										
Hexachlorobenzene _A	-	-	-	<100	-				µg/kg	A-T-052s
Diethyl phthalate _A	-	-	-	<100	-				µg/kg	A-T-052s
Dimethyl phthalate _A	-	-	-	<100	-				µg/kg	A-T-052s
Dibenzofuran _A	-	-	-	<100	-				µg/kg	A-T-052s
Carbazole _A	-	-	-	<100	-				µg/kg	A-T-052s
Butylbenzyl phthalate _A	-	-	-	<100	-				µg/kg	A-T-052s
Bis(2-ethylhexyl)phthalate _A	-	-	-	<100	-				µg/kg	A-T-052s
Bis(2-chloroethoxy)methane _A	-	-	-	<100	-				µg/kg	A-T-052s
Bis(2-chloroethyl)ether _A	-	-	-	<100	-				µg/kg	A-T-052s
4-Nitrophenol _A	-	-	-	<100	-				µg/kg	A-T-052s
4-Methylphenol _A	-	-	-	<100	-				µg/kg	A-T-052s
4-Chloro-3-methylphenol _A	-	-	-	<100	-				µg/kg	A-T-052s
2-Nitrophenol _A	-	-	-	<100	-				µg/kg	A-T-052s
2-Methylphenol _A	-	-	-	<100	-				µg/kg	A-T-052s
2-Chlorophenol _A	-	-	-	<100	-				µg/kg	A-T-052s
2,6-Dinitrotoluene _A	-	-	-	<100	-				µg/kg	A-T-052s
2,4-Dinitrotoluene _A	-	-	-	<100	-				µg/kg	A-T-052s
2,4-Dimethylphenol _A	-	-	-	<100	-				µg/kg	A-T-052s
2,4-Dichlorophenol _A	-	-	-	<100	-				µg/kg	A-T-052s
2,4,6-Trichlorophenol _A	-	-	-	<100	-				µg/kg	A-T-052s
2,4,5-Trichlorophenol _A	-	-	-	<100	-				µg/kg	A-T-052s
2-Chloronaphthalene _A	-	-	-	<100	-				µg/kg	A-T-052s
2-Methylnaphthalene _A	-	-	-	<100	-				µg/kg	A-T-052s
Bis(2-chloroisopropyl)ether _A	-	-	-	<100	-				µg/kg	A-T-052s
Phenol _A	-	-	-	<100	-				µg/kg	A-T-052s
Pentachlorophenol _A	-	-	-	<100	-				µg/kg	A-T-052s
n-Nitroso-n-dipropylamine _A	-	-	-	<100	-				µg/kg	A-T-052s
n-Diethylphthalate _A	-	-	-	<100	-				µg/kg	A-T-052s
n-Dibutylphthalate _A	-	-	-	<100	-				µg/kg	A-T-052s
Nitrobenzene _A	-	-	-	<100	-				µg/kg	A-T-052s
Isophorone _A	-	-	-	<100	-				µg/kg	A-T-052s
Hexachloroethane _A	-	-	-	<100	-				µg/kg	A-T-052s

Envirolab Job Number: 16/02271

Client Project Name: Greenwood Place Resource Centre

Client Project Ref: 1655, GI

Lab Sample ID	16/02271/1	16/02271/2	16/02271/3	16/02271/4	16/02271/5				Units	Method ref
Client Sample No	J1	J2	J3	J4	J5					
Client Sample ID	BH01	BH01	BH01	BH01	BH01					
Depth to Top	2.00	3.00	4.00	5.00	6.00					
Depth To Bottom										
Date Sampled	12-Apr-16	12-Apr-16	12-Apr-16	12-Apr-16	12-Apr-16					
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES					
Sample Matrix Code	5A	5A	5A	3	3					
Hexachlorocyclopentadiene _A	-	-	-	<100	-				µg/kg	A-T-052s
Perylene _A	-	-	-	<100	-				µg/kg	A-T-052s

Envirolab Job Number: 16/02271

Client Project Name: Greenwood Place Resource Centre

Client Project Ref: 1655, GI

Lab Sample ID	16/02271/1	16/02271/2	16/02271/3	16/02271/4	16/02271/5				Units	Method ref
Client Sample No	J1	J2	J3	J4	J5					
Client Sample ID	BH01	BH01	BH01	BH01	BH01					
Depth to Top	2.00	3.00	4.00	5.00	6.00					
Depth To Bottom										
Date Sampled	12-Apr-16	12-Apr-16	12-Apr-16	12-Apr-16	12-Apr-16					
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES					
Sample Matrix Code	5A	5A	5A	3	3					
VOC										
Dichlorodifluoromethane _A [#]	-	-	-	<1	-				µg/kg	A-T-006s
Chloromethane _A [#]	-	-	-	<10	-				µg/kg	A-T-006s
Vinyl Chloride _A [#]	-	-	-	<1	-				µg/kg	A-T-006s
Bromomethane _A [#]	-	-	-	<1	-				µg/kg	A-T-006s
Chloroethane _A [#]	-	-	-	<1	-				µg/kg	A-T-006s
Trichlorofluoromethane _A [#]	-	-	-	<1	-				µg/kg	A-T-006s
1,1-Dichloroethene _A [#]	-	-	-	12	-				µg/kg	A-T-006s
Carbon Disulphide _A [#]	-	-	-	<1	-				µg/kg	A-T-006s
Dichloromethane _A	-	-	-	21	-				µg/kg	A-T-006s
trans 1,2-Dichloroethene _A [#]	-	-	-	4	-				µg/kg	A-T-006s
1,1-Dichloroethane _A [#]	-	-	-	<1	-				µg/kg	A-T-006s
cis 1,2-Dichloroethene _A [#]	-	-	-	15	-				µg/kg	A-T-006s
2,2-Dichloropropane _A [#]	-	-	-	<1	-				µg/kg	A-T-006s
Bromochloromethane _A [#]	-	-	-	<5	-				µg/kg	A-T-006s
Chloroform _A [#]	-	-	-	85	-				µg/kg	A-T-006s
1,1,1-Trichloroethane _A [#]	-	-	-	<1	-				µg/kg	A-T-006s
1,1-Dichloropropene _A [#]	-	-	-	<1	-				µg/kg	A-T-006s
Carbon Tetrachloride _A [#]	-	-	-	<1	-				µg/kg	A-T-006s
1,2-Dichloroethane _A [#]	-	-	-	29	-				µg/kg	A-T-006s
Benzene _A [#]	-	-	-	4	-				µg/kg	A-T-006s
Trichloroethene _A [#]	-	-	-	21100	-				µg/kg	A-T-006s
1,2-Dichloropropane _A [#]	-	-	-	<1	-				µg/kg	A-T-006s
Dibromomethane _A [#]	-	-	-	<1	-				µg/kg	A-T-006s
Bromodichloromethane _A [#]	-	-	-	<10	-				µg/kg	A-T-006s
cis 1,3-Dichloropropene _A [#]	-	-	-	<1	-				µg/kg	A-T-006s
Toluene _A [#]	-	-	-	10	-				µg/kg	A-T-006s
trans 1,3-Dichloropropene _A [#]	-	-	-	<1	-				µg/kg	A-T-006s
1,1,2-Trichloroethane _A [#]	-	-	-	243	-				µg/kg	A-T-006s
1,3-Dichloropropane _A [#]	-	-	-	<1	-				µg/kg	A-T-006s
Tetrachloroethene _A [#]	-	-	-	3690	-				µg/kg	A-T-006s
Dibromochloromethane _A [#]	-	-	-	<3	-				µg/kg	A-T-006s
1,2-Dibromoethane _A [#]	-	-	-	<1	-				µg/kg	A-T-006s

Envirolab Job Number: 16/02271

Client Project Name: Greenwood Place Resource Centre

Client Project Ref: 1655, GI

Lab Sample ID	16/02271/1	16/02271/2	16/02271/3	16/02271/4	16/02271/5				Units	Method ref
Client Sample No	J1	J2	J3	J4	J5					
Client Sample ID	BH01	BH01	BH01	BH01	BH01					
Depth to Top	2.00	3.00	4.00	5.00	6.00					
Depth To Bottom										
Date Sampled	12-Apr-16	12-Apr-16	12-Apr-16	12-Apr-16	12-Apr-16					
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES					
Sample Matrix Code	5A	5A	5A	3	3					
Chlorobenzene _A [#]	-	-	-	<1	-				µg/kg	A-T-006s
1,1,1,2-Tetrachloroethane _A	-	-	-	6	-				µg/kg	A-T-006s
Ethylbenzene _A [#]	-	-	-	<1	-				µg/kg	A-T-006s
m & p Xylene _A [#]	-	-	-	4	-				µg/kg	A-T-006s
o-Xylene _A [#]	-	-	-	<1	-				µg/kg	A-T-006s
Styrene _A [#]	-	-	-	<1	-				µg/kg	A-T-006s
Bromoform _A [#]	-	-	-	<1	-				µg/kg	A-T-006s
Isopropylbenzene _A [#]	-	-	-	<1	-				µg/kg	A-T-006s
1,1,2,2-Tetrachloroethane _A	-	-	-	2	-				µg/kg	A-T-006s
1,2,3-Trichloropropane _A [#]	-	-	-	<1	-				µg/kg	A-T-006s
Bromobenzene _A [#]	-	-	-	<1	-				µg/kg	A-T-006s
n-Propylbenzene _A [#]	-	-	-	<1	-				µg/kg	A-T-006s
2-Chlorotoluene _A [#]	-	-	-	<1	-				µg/kg	A-T-006s
1,3,5-Trimethylbenzene _A [#]	-	-	-	<1	-				µg/kg	A-T-006s
4-Chlorotoluene _A [#]	-	-	-	<1	-				µg/kg	A-T-006s
tert-Butylbenzene _A [#]	-	-	-	<2	-				µg/kg	A-T-006s
1,2,4-Trimethylbenzene _A [#]	-	-	-	<1	-				µg/kg	A-T-006s
sec-Butylbenzene _A [#]	-	-	-	<1	-				µg/kg	A-T-006s
4-Isopropyltoluene _A [#]	-	-	-	<1	-				µg/kg	A-T-006s
1,3-Dichlorobenzene _A	-	-	-	<1	-				µg/kg	A-T-006s
1,4-Dichlorobenzene _A [#]	-	-	-	<1	-				µg/kg	A-T-006s
n-Butylbenzene _A [#]	-	-	-	<1	-				µg/kg	A-T-006s
1,2-Dichlorobenzene _A [#]	-	-	-	<1	-				µg/kg	A-T-006s
1,2-Dibromo-3-chloropropane _A	-	-	-	<2	-				µg/kg	A-T-006s
1,2,4-Trichlorobenzene _A	-	-	-	<3	-				µg/kg	A-T-006s
Hexachlorobutadiene _A [#]	-	-	-	<1	-				µg/kg	A-T-006s
1,2,3-Trichlorobenzene _A	-	-	-	<3	-				µg/kg	A-T-006s

Envirolab Job Number: 16/02271

Client Project Name: Greenwood Place Resource Centre

Client Project Ref: 1655, GI

Lab Sample ID	16/02271/1	16/02271/2	16/02271/3	16/02271/4	16/02271/5				Units	Method ref
Client Sample No	J1	J2	J3	J4	J5					
Client Sample ID	BH01	BH01	BH01	BH01	BH01					
Depth to Top	2.00	3.00	4.00	5.00	6.00					
Depth To Bottom										
Date Sampled	12-Apr-16	12-Apr-16	12-Apr-16	12-Apr-16	12-Apr-16					
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES					
Sample Matrix Code	5A	5A	5A	3	3					
TPH UKCWG										
Ali >C5-C6 _A [#]	-	-	-	<0.01	-				mg/kg	A-T-022s
Ali >C6-C8 _A [#]	-	-	-	<0.01	-				mg/kg	A-T-022s
Ali >C8-C10 _A [#]	-	-	-	<0.01	-				mg/kg	A-T-022s
Ali >C10-C12 _A [#]	-	-	-	<0.1	-				mg/kg	A-T-023s
Ali >C12-C16 _A [#]	-	-	-	<0.1	-				mg/kg	A-T-023s
Ali >C16-C21 _A [#]	-	-	-	<0.1	-				mg/kg	A-T-023s
Ali >C21-C35 _A [#]	-	-	-	<0.1	-				mg/kg	A-T-023s
Ali >C35-C44 _A	-	-	-	<0.1	-				mg/kg	A-T-023s
Total Aliphatics _A	-	-	-	<0.1	-				mg/kg	A-T-023s
Aro >C5-C7 _A [#]	-	-	-	<0.01	-				mg/kg	A-T-022s
Aro >C7-C8 _A [#]	-	-	-	<0.01	-				mg/kg	A-T-022s
Aro >C8-C9 _A [#]	-	-	-	<0.01	-				mg/kg	A-T-022s
Aro >C9-C10 _A [#]	-	-	-	<0.01	-				mg/kg	A-T-022s
Aro >C10-C12 _A [#]	-	-	-	<0.1	-				mg/kg	A-T-023s
Aro >C12-C16 _A [#]	-	-	-	<0.1	-				mg/kg	A-T-023s
Aro >C16-C21 _A [#]	-	-	-	<0.1	-				mg/kg	A-T-023s
Aro >C21-C35 _A [#]	-	-	-	<0.1	-				mg/kg	A-T-023s
Aro >C35-C44 _A	-	-	-	<0.1	-				mg/kg	A-T-023s
Total Aromatics _A	-	-	-	<0.1	-				mg/kg	A-T-023s
TPH (Ali & Aro) _A	-	-	-	<0.1	-				mg/kg	A-T-023s
BTEX - Benzene _A [#]	-	-	-	<0.01	-				mg/kg	A-T-022s
BTEX - Toluene _A [#]	-	-	-	<0.01	-				mg/kg	A-T-022s
BTEX - Ethyl Benzene _A [#]	-	-	-	<0.01	-				mg/kg	A-T-022s
BTEX - m & p Xylene _A [#]	-	-	-	<0.01	-				mg/kg	A-T-022s
BTEX - o Xylene _A [#]	-	-	-	<0.01	-				mg/kg	A-T-022s
MTBE _A [#]	-	-	-	<0.01	-				mg/kg	A-T-022s

REPORT NOTES

Notes - Soil chemical analysis

All results are reported as dry weight (<40°C).

For samples with Matrix Codes 1 - 6 natural stones and brick and concrete fragments >10mm are removed or excluded from the sample prior to analysis and reported results corrected to a whole sample basis. For samples with Matrix Code 7 the whole sample is dried and crushed prior to analysis.

Notes - General

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Subscript "A" indicates analysis performed on the sample as received. "D" indicates analysis performed on the dried sample, crushed to pass a 2mm sieve, unless asbestos is found to be present in which case all analysis is performed on the sample as received.

All analysis is performed on the dried and crushed sample for samples with Matrix Code 7 and this supersedes any "A" subscripts.

All analysis is performed on the sample as received for soil samples which are positive for asbestos and/or if they are from outside the European Union and this supercedes any "D" subscripts.

Superscript "M" indicates method accredited to MCERTS.

If results are in italic font they are associated with an AQC failure. These are not accredited and are unreliable.

A deviating samples report is appended and will indicate if samples or tests have been found to be deviating. Any test results affected may not be an accurate record of the concentration at the time of sampling and, as a result, may be invalid.

TPH analysis of water by method A-T-007

Free and visible oils are excluded from the sample used for analysis so that the reported result represents the dissolved phase only.

Asbestos in soil

Asbestos in soil analysis is performed on a dried aliquot of the submitted sample and cannot guarantee to identify asbestos if present as discrete fibres/fragments. Stones etc. are not removed from the sample prior to analysis.

Quantification of asbestos is a 3 stage process including visual identification, hand picking and weighing and fibre counting by sedimentation/phase contrast optical microscopy if required. If asbestos is identified as being present but is not in a form that is suitable for analysis by hand picking and weighing (normally if the asbestos is present as free fibres) quantification by sedimentation is performed. Where ACMs are found a percentage asbestos is assigned to each with reference to 'HSG264, Asbestos: The survey guide' and the calculated asbestos content is expressed as a percentage of the dried soil sample aliquot used.

Predominant Matrix Codes:

1 = SAND, 2 = LOAM, 3 = CLAY, 4 = LOAM/SAND, 5 = SAND/CLAY, 6 = CLAY/LOAM, 7 = OTHER, 8 = Asbestos bulk ID sample. Samples with Matrix Code 7 are not predominantly a SAND/LOAM/CLAY mix and are not covered by our BSEN 17025 or MCERTS accreditations.

Secondary Matrix Codes:

A = contains stones, B = contains construction rubble, C = contains visible hydrocarbons, D = contains glass/metal, E = contains roots/twigs.

IS indicates Insufficient Sample for analysis.

US indicates Unsuitable Sample for analysis.

NDP indicates No Determination Possible.

NAD indicates No Asbestos Detected.

N/A indicates Not Applicable.

Superscript # indicates method accredited to ISO 17025.

Analytical results reflect the quality of the sample at the time of analysis only. Opinions and interpretations expressed are outside the scope of our accreditation.

Please contact us if you need any further information.

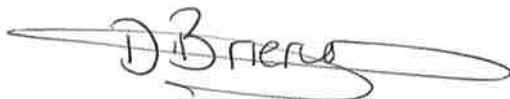
FINAL ANALYTICAL TEST REPORT

Envirolab Job Number: 16/02115
Issue Number: 1
Date: 15 April, 2016

Client: Geosphere Environmental Ltd
Unit 11
Brightwell Barns
Ipswich Road
Brightwell
Ipswich
Suffolk
IP10 0BJ

Project Manager: Lianne Fountain
Project Name: Greenwood Place Resource Centre
Project Ref: 1655, GI
Order No: 1655, GI
Date Samples Received: 08/04/16
Date Instructions Received: 11/04/16
Date Analysis Completed: 15/04/16

Prepared by:



Danielle Brierley
Administrative Assistant

Approved by:



John Gustafson
Director

Envirolab Job Number: 16/02115

Client Project Name: Greenwood Place Resource Centre

Client Project Ref: 1655, GI

Lab Sample ID	16/02115/1	16/02115/2	16/02115/3							
Client Sample No	J1	J3	J4							
Client Sample ID	FIP1	FIP3	FIP3							
Depth to Top	0.50	0.20	1.20							
Depth To Bottom										
Date Sampled	01-Apr-16	06-Apr-16	06-Apr-16							
Sample Type	Solid	Soil - ES	Soil - ES							
Sample Matrix Code	7	5AB	5AB							
									Units	Method ref
% Stones >10mm _A [#]	<0.1	29.2	10.4						% w/w	A-T-044
pH _D ^{M#}	12.22	-	8.76						pH	A-T-031s
Cyanide (total) _A ^{M#}	<1	-	<1						mg/kg	A-T-042sTCN
Fraction of organic carbon _D [#]	-	0.0110	-						N/A	A-T-032 FOC
Arsenic _D ^{M#}	5	-	6						mg/kg	A-T-024s
Cadmium _D ^{M#}	0.5	-	1.0						mg/kg	A-T-024s
Copper _D ^{M#}	6	-	29						mg/kg	A-T-024s
Chromium _D ^{M#}	21	-	44						mg/kg	A-T-024s
Lead _D ^{M#}	14	-	38						mg/kg	A-T-024s
Mercury _D	0.41	-	<0.17						mg/kg	A-T-024s
Nickel _D ^{M#}	14	-	31						mg/kg	A-T-024s
Selenium _D	2	-	<1						mg/kg	A-T-024s
Zinc _D ^{M#}	28	-	84						mg/kg	A-T-024s
TPH total (>C6-C40) _A	<10	-	<10						mg/kg	A-T-007s

Envirolab Job Number: 16/02115

Client Project Name: Greenwood Place Resource Centre

Client Project Ref: 1655, GI

Lab Sample ID	16/02115/1	16/02115/2	16/02115/3						Units	Method ref
Client Sample No	J1	J3	J4							
Client Sample ID	FIP1	FIP3	FIP3							
Depth to Top	0.50	0.20	1.20							
Depth To Bottom										
Date Sampled	01-Apr-16	06-Apr-16	06-Apr-16							
Sample Type	Solid	Soil - ES	Soil - ES							
Sample Matrix Code	7	5AB	5AB							
Asbestos in Soil (inc. matrix)										
Asbestos in soil [#]	NAD	-	-							A-T-045
Asbestos ACM - Suitable for Water Absorption Test? _D	N/A	-	-							Gravimetry

Envirolab Job Number: 16/02115

Client Project Name: Greenwood Place Resource Centre

Client Project Ref: 1655, GI

Lab Sample ID	16/02115/1	16/02115/2	16/02115/3							
Client Sample No	J1	J3	J4							
Client Sample ID	FIP1	FIP3	FIP3							
Depth to Top	0.50	0.20	1.20							
Depth To Bottom										
Date Sampled	01-Apr-16	06-Apr-16	06-Apr-16							
Sample Type	Solid	Soil - ES	Soil - ES							
Sample Matrix Code	7	5AB	5AB							
PAH 16										
Acenaphthene _A ^{M#}	<0.01	-	<0.01						mg/kg	A-T-019s
Acenaphthylene _A ^{M#}	<0.01	-	<0.01						mg/kg	A-T-019s
Anthracene _A ^{M#}	0.03	-	<0.02						mg/kg	A-T-019s
Benzo(a)anthracene _A ^{M#}	0.07	-	<0.04						mg/kg	A-T-019s
Benzo(a)pyrene _A ^{M#}	0.05	-	<0.04						mg/kg	A-T-019s
Benzo(b)fluoranthene _A ^{M#}	0.07	-	<0.05						mg/kg	A-T-019s
Benzo(ghi)perylene _A ^{M#}	<0.05	-	<0.05						mg/kg	A-T-019s
Benzo(k)fluoranthene _A ^{M#}	<0.07	-	<0.07						mg/kg	A-T-019s
Chrysene _A ^{M#}	0.07	-	<0.06						mg/kg	A-T-019s
Dibenzo(ah)anthracene _A ^{M#}	<0.04	-	<0.04						mg/kg	A-T-019s
Fluoranthene _A ^{M#}	0.17	-	<0.08						mg/kg	A-T-019s
Fluorene _A ^{M#}	<0.01	-	<0.01						mg/kg	A-T-019s
Indeno(123-cd)pyrene _A ^{M#}	0.04	-	<0.03						mg/kg	A-T-019s
Naphthalene _A ^{M#}	<0.03	-	<0.03						mg/kg	A-T-019s
Phenanthrene _A ^{M#}	0.09	-	<0.03						mg/kg	A-T-019s
Pyrene _A ^{M#}	0.12	-	<0.07						mg/kg	A-T-019s
PAH (total 16) _A ^{M#}	0.75	-	<0.08						mg/kg	A-T-019s

REPORT NOTES

Notes - Soil chemical analysis

All results are reported as dry weight (<40°C).

For samples with Matrix Codes 1 - 6 natural stones and brick and concrete fragments >10mm are removed or excluded from the sample prior to analysis and reported results corrected to a whole sample basis. For samples with Matrix Code 7 the whole sample is dried and crushed prior to analysis.

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All analysis is performed on the dried and crushed sample for samples with Matrix Code 7 and this supersedes any "A" subscripts.

All analysis is performed on the sample as received for soil samples which are positive for asbestos and/or if they are from outside the European Union and this supercedes any "D" subscripts.

Superscript "M" indicates method accredited to MCERTS.

If results are in italic font they are associated with an AQC failure. These are not accredited and are unreliable.

A deviating samples report is appended and will indicate if samples or tests have been found to be deviating. Any test results affected may not be an accurate record of the concentration at the time of sampling and, as a result, may be invalid.

TPH analysis of water by method A-T-007

Free and visible oils are excluded from the sample used for analysis so that the reported result represents the dissolved phase only.

Asbestos in soil

Asbestos in soil analysis is performed on a dried aliquot of the submitted sample and cannot guarantee to identify asbestos if present as discrete fibres/fragments. Stones etc. are not removed from the sample prior to analysis.

Quantification of asbestos is a 3 stage process including visual identification, hand picking and weighing and fibre counting by sedimentation/phase contrast optical microscopy if required. If asbestos is identified as being present but is not in a form that is suitable for analysis by hand picking and weighing (normally if the asbestos is present as free fibres) quantification by sedimentation is performed. Where ACMs are found a percentage asbestos is assigned to each with reference to 'HSG264, Asbestos: The survey guide' and the calculated asbestos content is expressed as a percentage of the dried soil sample aliquot used.

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1 = SAND, 2 = LOAM, 3 = CLAY, 4 = LOAM/SAND, 5 = SAND/CLAY, 6 = CLAY/LOAM, 7 = OTHER, 8 = Asbestos bulk ID sample. Samples with Matrix Code 7 are not predominantly a SAND/LOAM/CLAY mix and are not covered by our BSEN 17025 or MCERTS accreditations.

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A = contains stones, B = contains construction rubble, C = contains visible hydrocarbons, D = contains glass/metal, E = contains roots/twigs.

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N/A indicates Not Applicable.

Superscript # indicates method accredited to ISO 17025.

Analytical results reflect the quality of the sample at the time of analysis only. Opinions and interpretations expressed are outside the scope of our accreditation.

Please contact us if you need any further information.

FINAL ANALYTICAL TEST REPORT SUPPLEMENT TO TEST REPORT 16/01877/1

Envirolab Job Number: 16/01877
Issue Number: 2

Date: 15 April, 2016

Client: Geosphere Environmental Ltd
Unit 11
Brightwell Barns
Ipswich Road
Brightwell
Ipswich
Suffolk
IP10 0BJ

Project Manager: Lianne Fountain
Project Name: Greenwood Place Resource Centre
Project Ref: 1655, GI
Order No: 0872/LF
Date Samples Received: 24/03/16
Date Instructions Received: 04/04/16
Date Analysis Completed: 15/04/16

Prepared by:



Kate Ellison
Administrative Assistant

Approved by:



Lianne Bromiley
Senior Client Manager

Envirolab Job Number: 16/01877

Client Project Name: Greenwood Place Resource Centre

Client Project Ref: 1655, GI

Lab Sample ID	16/01877/1	16/01877/2	16/01877/3	16/01877/4	16/01877/5	16/01877/6	16/01877/7	16/01877/8	Units	Method ref
Client Sample No	J1	J2	J3	J4	J1	J1	J2	J1		
Client Sample ID	BH02	BH02	BH02	BH02	CBR3	CBR4	CBR4	FIP3		
Depth to Top	0.30	0.50	1.70	2.00	0.40	0.60	0.80	0.40		
Depth To Bottom										
Date Sampled	15-Mar-16	15-Mar-16	15-Mar-16	15-Mar-16	18-Mar-16	17-Mar-16	18-Mar-16	21-Mar-16		
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES		
Sample Matrix Code	7	4A	5A	5A	4A	4A	4A	4AB		
% Stones >10mm _A [#]	<0.1	<0.1	11.8	<0.1	23.2	13.0	24.6	<0.1		
pH _D ^{M#}	10.96	9.92	10.22	8.76	10.13	8.63	7.80	9.64	pH	A-T-031s
Cyanide (total) _A ^{M#}	<1	1	<1	<1	<1	<1	<1	<1	mg/kg	A-T-042sTCN
Arsenic _D ^{M#}	9	23	8	7	5	75	14	9	mg/kg	A-T-024s
Cadmium _D ^{M#}	0.8	1.3	0.6	0.7	0.6	4.9	1.0	0.8	mg/kg	A-T-024s
Copper _D ^{M#}	24	48	25	8	17	262	144	24	mg/kg	A-T-024s
Chromium _D ^{M#}	25	28	18	19	15	35	16	26	mg/kg	A-T-024s
Lead _D ^{M#}	264	580	106	30	45	377	296	73	mg/kg	A-T-024s
Mercury _D	0.41	0.78	0.25	<0.17	<0.17	0.42	0.35	<0.17	mg/kg	A-T-024s
Nickel _D ^{M#}	15	18	11	8	20	88	18	17	mg/kg	A-T-024s
Selenium _D	7	8	3	1	<1	4	<1	3	mg/kg	A-T-024s
Zinc _D ^{M#}	174	397	48	30	70	1040	143	61	mg/kg	A-T-024s
TPH total (>C6-C40) _A	44	175	45	<10	52	<10	<10	<10	mg/kg	A-T-007s

Envirolab Job Number: 16/01877

Client Project Name: Greenwood Place Resource Centre

Client Project Ref: 1655, GI

Lab Sample ID	16/01877/1	16/01877/2	16/01877/3	16/01877/4	16/01877/5	16/01877/6	16/01877/7	16/01877/8	Units	Method ref		
Client Sample No	J1	J2	J3	J4	J1	J1	J2	J1				
Client Sample ID	BH02	BH02	BH02	BH02	CBR3	CBR4	CBR4	FIP3				
Depth to Top	0.30	0.50	1.70	2.00	0.40	0.60	0.80	0.40				
Depth To Bottom												
Date Sampled	15-Mar-16	15-Mar-16	15-Mar-16	15-Mar-16	18-Mar-16	17-Mar-16	18-Mar-16	21-Mar-16				
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES				
Sample Matrix Code	7	4A	5A	5A	4A	4A	4A	4AB				
Asbestos in Soil (inc. matrix)												
Asbestos in soil _A [#]	Chrysotile & Amosite	Chrysotile & Amosite	NAD	NAD	NAD	NAD	-	Chrysotile		A-T-045		
Asbestos Matrix (visual) _A	-	Loose Insulation	-	-	-	-	-	-		A-T-045		
Asbestos Matrix (microscope) _A	Loose Insulation & Loose Fibres	Loose Fibres	-	-	-	-	-	Loose Fibres		A-T-045		
Asbestos ACM - Suitable for Water Absorption Test? _D	N/A	N/A	N/A	N/A	N/A	N/A	-	N/A		Gravimetry		
Asbestos in Soil Quantification % (Hand Picking & Weighing)												
Asbestos in soil % composition (hand picking and weighing) _D	0.026	0.073	-	-	-	-	-	<0.001	% w/w	A-T-054		

Envirolab Job Number: 16/01877

Client Project Name: Greenwood Place Resource Centre

Client Project Ref: 1655, GI

Lab Sample ID	16/01877/1	16/01877/2	16/01877/3	16/01877/4	16/01877/5	16/01877/6	16/01877/7	16/01877/8	Units	Method ref
Client Sample No	J1	J2	J3	J4	J1	J1	J2	J1		
Client Sample ID	BH02	BH02	BH02	BH02	CBR3	CBR4	CBR4	FIP3		
Depth to Top	0.30	0.50	1.70	2.00	0.40	0.60	0.80	0.40		
Depth To Bottom										
Date Sampled	15-Mar-16	15-Mar-16	15-Mar-16	15-Mar-16	18-Mar-16	17-Mar-16	18-Mar-16	21-Mar-16		
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES		
Sample Matrix Code	7	4A	5A	5A	4A	4A	4A	4AB		
PAH 16										
Acenaphthene _A ^{M#}	<0.01	0.02	0.09	0.02	<0.01	<0.01	<0.01	<0.01	mg/kg	A-T-019s
Acenaphthylene _A ^{M#}	<0.01	0.07	<0.01	<0.01	0.05	0.01	<0.01	<0.01	mg/kg	A-T-019s
Anthracene _A ^{M#}	<0.02	0.15	0.16	0.35	0.06	0.04	<0.02	<0.02	mg/kg	A-T-019s
Benzo(a)anthracene _A ^{M#}	0.18	1.33	0.49	0.07	0.15	0.31	<0.04	0.07	mg/kg	A-T-019s
Benzo(a)pyrene _A ^{M#}	0.09	1.24	0.42	0.06	0.16	0.38	<0.04	<0.04	mg/kg	A-T-019s
Benzo(b)fluoranthene _A ^{M#}	0.21	1.74	0.55	0.09	0.21	0.50	0.07	0.07	mg/kg	A-T-019s
Benzo(ghi)perylene _A ^{M#}	0.08	0.87	0.26	<0.05	0.20	0.26	<0.05	<0.05	mg/kg	A-T-019s
Benzo(k)fluoranthene _A ^{M#}	0.20	0.50	0.21	<0.07	<0.07	0.17	<0.07	<0.07	mg/kg	A-T-019s
Chrysene _A ^{M#}	0.10	1.45	0.49	0.09	0.17	0.34	<0.06	0.07	mg/kg	A-T-019s
Dibenzo(ah)anthracene _A ^{M#}	<0.04	0.23	0.07	<0.04	<0.04	0.06	<0.04	<0.04	mg/kg	A-T-019s
Fluoranthene _A ^{M#}	0.18	1.65	1.12	0.27	0.34	0.33	0.10	0.18	mg/kg	A-T-019s
Fluorene _A ^{M#}	<0.01	0.02	0.08	0.02	<0.01	<0.01	<0.01	<0.01	mg/kg	A-T-019s
Indeno(123-cd)pyrene _A ^{M#}	0.08	0.92	0.30	0.04	0.17	0.33	0.05	0.04	mg/kg	A-T-019s
Naphthalene _A ^{M#}	<0.03	<0.03	0.19	<0.03	<0.03	<0.03	<0.03	<0.03	mg/kg	A-T-019s
Phenanthrene _A ^{M#}	0.10	0.68	1.01	0.25	0.12	0.12	0.06	0.08	mg/kg	A-T-019s
Pyrene _A ^{M#}	0.17	2.04	0.92	0.24	0.31	0.32	0.09	0.15	mg/kg	A-T-019s
PAH (total 16) _A ^{M#}	1.39	12.9	6.34	1.51	2.03	3.21	0.45	0.66	mg/kg	A-T-019s

Envirolab Job Number: 16/01877

Client Project Name: Greenwood Place Resource Centre

Client Project Ref: 1655, GI

Lab Sample ID	16/01877/11	16/01877/12	16/01877/13							
Client Sample No	J1	J2	J1							
Client Sample ID	FIP2	FIP2	FIP4							
Depth to Top	0.30	0.80	0.50							
Depth To Bottom			0.70							
Date Sampled	23-Mar-16	23-Mar-16	23-Mar-16							
Sample Type	Soil - ES	Soil - ES	Soil - ES							
Sample Matrix Code	1A	4A	5A							
% Stones >10mm _A [#]	48.8	14.2	<0.1							
pH _D ^{M#}	8.54	8.23	7.91							
Cyanide (total) _A ^{M#}	<1	<1	4							
Arsenic _D ^{M#}	4	23	4							
Cadmium _D ^{M#}	<0.5	1.8	0.8							
Copper _D ^{M#}	4	353	9							
Chromium _D ^{M#}	9	27	35							
Lead _D ^{M#}	12	636	19							
Mercury _D	<0.17	5.69	2.23							
Nickel _D ^{M#}	9	36	13							
Selenium _D	<1	<1	3							
Zinc _D ^{M#}	21	674	49							
TPH total (>C6-C40) _A	<10	25	<10							

Envirolab Job Number: 16/01877

Client Project Name: Greenwood Place Resource Centre

Client Project Ref: 1655, GI

Lab Sample ID	16/01877/11	16/01877/12	16/01877/13						Units	Method ref
Client Sample No	J1	J2	J1							
Client Sample ID	FIP2	FIP2	FIP4							
Depth to Top	0.30	0.80	0.50							
Depth To Bottom			0.70							
Date Sampled	23-Mar-16	23-Mar-16	23-Mar-16							
Sample Type	Soil - ES	Soil - ES	Soil - ES							
Sample Matrix Code	1A	4A	5A							
Asbestos in Soil (inc. matrix)										
Asbestos in soil [#]	NAD	-	NAD							A-T-045
Asbestos ACM - Suitable for Water Absorption Test? _D	N/A	-	N/A							Gravimetry

Envirolab Job Number: 16/01877

Client Project Name: Greenwood Place Resource Centre

Client Project Ref: 1655, GI

Lab Sample ID	16/01877/11	16/01877/12	16/01877/13							
Client Sample No	J1	J2	J1							
Client Sample ID	FIP2	FIP2	FIP4							
Depth to Top	0.30	0.80	0.50							
Depth To Bottom			0.70							
Date Sampled	23-Mar-16	23-Mar-16	23-Mar-16							
Sample Type	Soil - ES	Soil - ES	Soil - ES							
Sample Matrix Code	1A	4A	5A							
PAH 16										
Acenaphthene _A ^{M#}	<0.01	<0.01	<0.01						mg/kg	A-T-019s
Acenaphthylene _A ^{M#}	<0.01	<0.01	<0.01						mg/kg	A-T-019s
Anthracene _A ^{M#}	<0.02	<0.02	<0.02						mg/kg	A-T-019s
Benzo(a)anthracene _A ^{M#}	<0.04	<0.04	<0.04						mg/kg	A-T-019s
Benzo(a)pyrene _A ^{M#}	<0.04	<0.04	<0.04						mg/kg	A-T-019s
Benzo(b)fluoranthene _A ^{M#}	<0.05	0.06	<0.05						mg/kg	A-T-019s
Benzo(ghi)perylene _A ^{M#}	<0.05	<0.05	<0.05						mg/kg	A-T-019s
Benzo(k)fluoranthene _A ^{M#}	<0.07	<0.07	<0.07						mg/kg	A-T-019s
Chrysene _A ^{M#}	<0.06	<0.06	<0.06						mg/kg	A-T-019s
Dibenzo(ah)anthracene _A ^{M#}	<0.04	<0.04	<0.04						mg/kg	A-T-019s
Fluoranthene _A ^{M#}	<0.08	<0.08	<0.08						mg/kg	A-T-019s
Fluorene _A ^{M#}	<0.01	<0.01	<0.01						mg/kg	A-T-019s
Indeno(123-cd)pyrene _A ^{M#}	<0.03	0.03	<0.03						mg/kg	A-T-019s
Naphthalene _A ^{M#}	<0.03	<0.03	<0.03						mg/kg	A-T-019s
Phenanthrene _A ^{M#}	0.04	<0.03	<0.03						mg/kg	A-T-019s
Pyrene _A ^{M#}	<0.07	<0.07	<0.07						mg/kg	A-T-019s
PAH (total 16) _A ^{M#}	0.15	0.09	<0.08						mg/kg	A-T-019s

Envirolab Job Number: 16/01877

Client Project Name: Greenwood Place Resource Centre

Client Project Ref: 1655, GI

Lab Sample ID	16/01877/11	16/01877/12	16/01877/13							Units	Method ref
Client Sample No	J1	J2	J1								
Client Sample ID	FIP2	FIP2	FIP4								
Depth to Top	0.30	0.80	0.50								
Depth To Bottom			0.70								
Date Sampled	23-Mar-16	23-Mar-16	23-Mar-16								
Sample Type	Soil - ES	Soil - ES	Soil - ES								
Sample Matrix Code	1A	4A	5A								
TPH UKCWG											
Ali >C5-C6 _A [#]	-	<0.02	-							mg/kg	A-T-022s
Ali >C6-C8 _A [#]	-	<0.02	-							mg/kg	A-T-022s
Ali >C8-C10 _A [#]	-	<0.02	-							mg/kg	A-T-022s
Ali >C10-C12 _A [#]	-	<0.1	-							mg/kg	A-T-023s
Ali >C12-C16 _A [#]	-	<0.1	-							mg/kg	A-T-023s
Ali >C16-C21 _A [#]	-	<0.1	-							mg/kg	A-T-023s
Ali >C21-C35 _A [#]	-	<0.1	-							mg/kg	A-T-023s
Ali >C35-C44 _A	-	<0.1	-							mg/kg	A-T-023s
Total Aliphatics _A	-	<0.1	-							mg/kg	A-T-023s
Aro >C5-C7 _A [#]	-	<0.02	-							mg/kg	A-T-022s
Aro >C7-C8 _A [#]	-	<0.02	-							mg/kg	A-T-022s
Aro >C8-C9 _A [#]	-	<0.02	-							mg/kg	A-T-022s
Aro >C9-C10 _A [#]	-	<0.02	-							mg/kg	A-T-022s
Aro >C10-C12 _A [#]	-	<0.1	-							mg/kg	A-T-023s
Aro >C12-C16 _A [#]	-	<0.1	-							mg/kg	A-T-023s
Aro >C16-C21 _A [#]	-	<0.1	-							mg/kg	A-T-023s
Aro >C21-C35 _A [#]	-	<0.1	-							mg/kg	A-T-023s
Aro >C35-C44 _A	-	<0.1	-							mg/kg	A-T-023s
Total Aromatics _A	-	<0.1	-							mg/kg	A-T-023s
TPH (Ali & Aro) _A	-	<0.1	-							mg/kg	A-T-023s
BTEX - Benzene _A [#]	-	<0.02	-							mg/kg	A-T-022s
BTEX - Toluene _A [#]	-	<0.02	-							mg/kg	A-T-022s
BTEX - Ethyl Benzene _A [#]	-	<0.02	-							mg/kg	A-T-022s
BTEX - m & p Xylene _A [#]	-	<0.02	-							mg/kg	A-T-022s
BTEX - o Xylene _A [#]	-	<0.02	-							mg/kg	A-T-022s
MTBE _A [#]	-	<0.02	-							mg/kg	A-T-022s

REPORT NOTES

Notes - Soil chemical analysis

All results are reported as dry weight (<40°C).

For samples with Matrix Codes 1 - 6 natural stones and brick and concrete fragments >10mm are removed or excluded from the sample prior to analysis and reported results corrected to a whole sample basis. For samples with Matrix Code 7 the whole sample is dried and crushed prior to analysis.

Notes - General

This report shall not be reproduced, except in full, without written approval from Envirolab.

Subscript "A" indicates analysis performed on the sample as received. "D" indicates analysis performed on the dried sample, crushed to pass a 2mm sieve, unless asbestos is found to be present in which case all analysis is performed on the sample as received.

All analysis is performed on the dried and crushed sample for samples with Matrix Code 7 and this supersedes any "A" subscripts.

All analysis is performed on the sample as received for soil samples which are positive for asbestos and/or if they are from outside the European Union and this supercedes any "D" subscripts.

Superscript "M" indicates method accredited to MCERTS.

If results are in italic font they are associated with an AQC failure. These are not accredited and are unreliable.

A deviating samples report is appended and will indicate if samples or tests have been found to be deviating. Any test results affected may not be an accurate record of the concentration at the time of sampling and, as a result, may be invalid.

TPH analysis of water by method A-T-007

Free and visible oils are excluded from the sample used for analysis so that the reported result represents the dissolved phase only.

Asbestos in soil

Asbestos in soil analysis is performed on a dried aliquot of the submitted sample and cannot guarantee to identify asbestos if present as discrete fibres/fragments. Stones etc. are not removed from the sample prior to analysis.

Quantification of asbestos is a 3 stage process including visual identification, hand picking and weighing and fibre counting by sedimentation/phase contrast optical microscopy if required. If asbestos is identified as being present but is not in a form that is suitable for analysis by hand picking and weighing (normally if the asbestos is present as free fibres) quantification by sedimentation is performed. Where ACMs are found a percentage asbestos is assigned to each with reference to 'HSG264, Asbestos: The survey guide' and the calculated asbestos content is expressed as a percentage of the dried soil sample aliquot used.

Predominant Matrix Codes:

1 = SAND, 2 = LOAM, 3 = CLAY, 4 = LOAM/SAND, 5 = SAND/CLAY, 6 = CLAY/LOAM, 7 = OTHER, 8 = Asbestos bulk ID sample. Samples with Matrix Code 7 are not predominantly a SAND/LOAM/CLAY mix and are not covered by our BSEN 17025 or MCERTS accreditations.

Secondary Matrix Codes:

A = contains stones, B = contains construction rubble, C = contains visible hydrocarbons, D = contains glass/metal, E = contains roots/twigs.

IS indicates Insufficient Sample for analysis.

US indicates Unsuitable Sample for analysis.

NDP indicates No Determination Possible.

NAD indicates No Asbestos Detected.

N/A indicates Not Applicable.

Superscript # indicates method accredited to ISO 17025.

Analytical results reflect the quality of the sample at the time of analysis only. Opinions and interpretations expressed are outside the scope of our accreditation.

Please contact us if you need any further information.

FINAL ANALYTICAL TEST REPORT SUPPLEMENT TO TEST REPORT 16/02405/1

Envirolab Job Number: 16/02405
Issue Number: 2

Date: 20 May, 2016

Client: Geosphere Environmental Ltd
Unit 11
Brightwell Barns
Ipswich Road
Brightwell
Ipswich
Suffolk
IP10 0BJ

Project Manager: Lianne Fountain
Project Name: Greenwood Place Resource Centre
Project Ref: 1655,G1
Order No: 0880/LF
Date Samples Received: 25/04/16
Date Instructions Received: 26/04/16
Date Analysis Completed: 18/05/16

Prepared by:



Kate Ellison
Administrative Assistant

Approved by:



Lianne Bromiley
Senior Client Manager

Envirolab Job Number: 16/02405

Client Project Name: Greenwood Place Resource Centre

Client Project Ref: 1655,GI

Lab Sample ID	16/02405/1	16/02405/3	16/02405/6	16/02405/7	16/02405/8	16/02405/10	16/02405/16		Units	Method ref
Client Sample No	J1	J3	J6	J7	J1	J3	J1			
Client Sample ID	WS101 (CBR1)	WS101 (CBR1)	WS101 (CBR1)	WS101 (CBR1)	WS102 (BH3)	WS102 (BH3)	HA1			
Depth to Top	1.30	1.80	5.30	5.70	0.50	1.10	1.40			
Depth To Bottom										
Date Sampled	20-Apr-16	20-Apr-16	20-Apr-16	20-Apr-16	21-Apr-16	21-Apr-16	20-Apr-16			
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES			
Sample Matrix Code	5A	5A	3	5	5AD	5AD	5			
% Moisture _A	17.2	16.5	-	15.9	20.3	25.5	17.3			
% Stones >10mm _A [#]	24.2	22.7	<0.1	<0.1	<0.1	5.0	<0.1		% w/w	A-T-044
pH _D ^{M#}	10.02	8.04	-	7.63	9.60	7.98	7.93		pH	A-T-031s
Sulphate (acid soluble) _D ^{M#}	1500	250	-	8300	5000	1200	290		mg/kg	A-T-028s
Cyanide (total) _A ^{M#}	<1	<1	-	<1	<1	<1	<1		mg/kg	A-T-042sTCN
Phenols - Total by HPLC _A	<0.2	<0.2	-	<0.2	<0.2	<0.2	<0.2		mg/kg	A-T-050s
Sulphide _A	<15	<15	-	<15	<15	<15	<15		mg/kg	A-T-S2-s
Total Organic Carbon _D ^{M#}	-	-	-	-	5.81	-	-		% w/w	A-T-032s
Arsenic _D ^{M#}	6	9	-	4	53	17	9		mg/kg	A-T-024s
Cadmium _D ^{M#}	<0.5	0.8	-	1.0	2.4	0.9	1.1		mg/kg	A-T-024s
Copper _D ^{M#}	58	8	-	19	25200	122	28		mg/kg	A-T-024s
Chromium _D ^{M#}	20	39	-	52	33	23	45		mg/kg	A-T-024s
Chromium (hexavalent) _D	-	-	<1	-	-	-	<1		mg/kg	A-T-040s
Lead _D ^{M#}	95	12	-	14	4710	1240	22		mg/kg	A-T-024s
Mercury _D	0.39	<0.17	-	<0.17	1.24	1.62	0.51		mg/kg	A-T-024s
Nickel _D ^{M#}	13	13	-	40	54	21	36		mg/kg	A-T-024s
Selenium _D	2	<1	-	1	2	<1	<1		mg/kg	A-T-024s
Vanadium _D ^{M#}	-	-	57	-	-	-	75		mg/kg	A-T-024s
Zinc _D ^{M#}	37	35	-	68	5280	173	71		mg/kg	A-T-024s

Envirolab Job Number: 16/02405

Client Project Name: Greenwood Place Resource Centre

Client Project Ref: 1655,GI

Lab Sample ID	16/02405/1	16/02405/3	16/02405/6	16/02405/7	16/02405/8	16/02405/10	16/02405/16		Units	Method ref
Client Sample No	J1	J3	J6	J7	J1	J3	J1			
Client Sample ID	WS101 (CBR1)	WS101 (CBR1)	WS101 (CBR1)	WS101 (CBR1)	WS102 (BH3)	WS102 (BH3)	HA1			
Depth to Top	1.30	1.80	5.30	5.70	0.50	1.10	1.40			
Depth To Bottom										
Date Sampled	20-Apr-16	20-Apr-16	20-Apr-16	20-Apr-16	21-Apr-16	21-Apr-16	20-Apr-16			
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES			
Sample Matrix Code	5A	5A	3	5	5AD	5AD	5			
Asbestos in Soil (inc. matrix)										
Asbestos in soil [#]	-	-	-	-	Chrysotile	-	-			A-T-045
Asbestos Matrix (microscope) _A	-	-	-	-	Loose Fibres	-	-			A-T-045
Asbestos ACM - Suitable for Water Absorption Test? _D	-	-	-	-	N/A	-	-			Gravimetry
Asbestos in Soil Quantification % (Hand Picking & Weighing)										
Asbestos in soil % composition (hand picking and weighing) _D	-	-	-	-	<0.001	-	-		% w/w	A-T-054

Envirolab Job Number: 16/02405

Client Project Name: Greenwood Place Resource Centre

Client Project Ref: 1655,GI

Lab Sample ID	16/02405/1	16/02405/3	16/02405/6	16/02405/7	16/02405/8	16/02405/10	16/02405/16		Units	Method ref
Client Sample No	J1	J3	J6	J7	J1	J3	J1			
Client Sample ID	WS101 (CBR1)	WS101 (CBR1)	WS101 (CBR1)	WS101 (CBR1)	WS102 (BH3)	WS102 (BH3)	HA1			
Depth to Top	1.30	1.80	5.30	5.70	0.50	1.10	1.40			
Depth To Bottom										
Date Sampled	20-Apr-16	20-Apr-16	20-Apr-16	20-Apr-16	21-Apr-16	21-Apr-16	20-Apr-16			
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES			
Sample Matrix Code	5A	5A	3	5	5AD	5AD	5			
PAH 16										
Acenaphthene _A ^{M#}	0.05	<0.01	-	<0.01	<0.01	<0.01	<0.01	mg/kg	A-T-019s	
Acenaphthylene _A ^{M#}	<0.01	<0.01	-	<0.01	<0.01	<0.01	<0.01	mg/kg	A-T-019s	
Anthracene _A ^{M#}	0.05	<0.02	-	<0.02	<0.02	0.04	<0.02	mg/kg	A-T-019s	
Benzo(a)anthracene _A ^{M#}	0.24	<0.04	-	<0.04	0.10	0.24	<0.04	mg/kg	A-T-019s	
Benzo(a)pyrene _A ^{M#}	0.23	<0.04	-	<0.04	0.10	0.28	<0.04	mg/kg	A-T-019s	
Benzo(b)fluoranthene _A ^{M#}	0.27	<0.05	-	<0.05	0.13	0.38	<0.05	mg/kg	A-T-019s	
Benzo(ghi)perylene _A ^{M#}	0.14	<0.05	-	<0.05	<0.05	0.18	<0.05	mg/kg	A-T-019s	
Benzo(k)fluoranthene _A ^{M#}	0.11	<0.07	-	<0.07	<0.07	0.14	<0.07	mg/kg	A-T-019s	
Chrysene _A ^{M#}	0.24	<0.06	-	<0.06	0.11	0.33	<0.06	mg/kg	A-T-019s	
Dibenzo(ah)anthracene _A ^{M#}	<0.04	<0.04	-	<0.04	<0.04	<0.04	<0.04	mg/kg	A-T-019s	
Fluoranthene _A ^{M#}	0.39	<0.08	-	<0.08	0.19	0.56	<0.08	mg/kg	A-T-019s	
Fluorene _A ^{M#}	0.04	<0.01	-	<0.01	<0.01	<0.01	<0.01	mg/kg	A-T-019s	
Indeno(123-cd)pyrene _A ^{M#}	0.16	<0.03	-	<0.03	0.08	0.20	<0.03	mg/kg	A-T-019s	
Naphthalene _A ^{M#}	0.12	<0.03	-	<0.03	<0.03	<0.03	<0.03	mg/kg	A-T-019s	
Phenanthrene _A ^{M#}	0.33	<0.03	-	<0.03	0.08	0.20	<0.03	mg/kg	A-T-019s	
Pyrene _A ^{M#}	0.34	<0.07	-	<0.07	0.16	0.48	<0.07	mg/kg	A-T-019s	
PAH (total 16) _A ^{M#}	2.73	<0.08	-	<0.08	0.94	3.03	<0.08	mg/kg	A-T-019s	
TPH Banded 1										
>C6-C8 _A [#]	<10	<10	-	<10	<10	<10	<10	mg/kg	A-T-007s	
>C8-C10 _A [#]	<10	<10	-	<10	<10	<10	<10	mg/kg	A-T-007s	
>C10-C12 _A [#]	<10	<10	-	<10	<10	<10	<10	mg/kg	A-T-007s	
>C12-C16 _A [#]	<10	<10	-	<10	<10	<10	<10	mg/kg	A-T-007s	
>C16-C21 _A [#]	<10	<10	-	<10	<10	<10	<10	mg/kg	A-T-007s	
>C21-C40 _A	80	<10	-	<10	<10	<10	<10	mg/kg	A-T-007s	
TPH Total (sum of bands) (>C6-C40) _A	80	<10	-	<10	<10	<10	<10	mg/kg	A-T-007s	

Envirolab Job Number: 16/02405

Client Project Name: Greenwood Place Resource Centre

Client Project Ref: 1655,GI

Lab Sample ID	16/02405/1	16/02405/3	16/02405/6	16/02405/7	16/02405/8	16/02405/10	16/02405/16		Units	Method ref
Client Sample No	J1	J3	J6	J7	J1	J3	J1			
Client Sample ID	WS101 (CBR1)	WS101 (CBR1)	WS101 (CBR1)	WS101 (CBR1)	WS102 (BH3)	WS102 (BH3)	HA1			
Depth to Top	1.30	1.80	5.30	5.70	0.50	1.10	1.40			
Depth To Bottom										
Date Sampled	20-Apr-16	20-Apr-16	20-Apr-16	20-Apr-16	21-Apr-16	21-Apr-16	20-Apr-16			
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES			
Sample Matrix Code	5A	5A	3	5	5AD	5AD	5			
SVOC										
Hexachlorobenzene _A	-	-	<100	-	-	-	<100	µg/kg	A-T-052s	
Diethyl phthalate _A	-	-	<100	-	-	-	<100	µg/kg	A-T-052s	
Dimethyl phthalate _A	-	-	<100	-	-	-	<100	µg/kg	A-T-052s	
Dibenzofuran _A	-	-	<100	-	-	-	<100	µg/kg	A-T-052s	
Carbazole _A	-	-	<100	-	-	-	<100	µg/kg	A-T-052s	
Butylbenzyl phthalate _A	-	-	<100	-	-	-	<100	µg/kg	A-T-052s	
Bis(2-ethylhexyl)phthalate _A	-	-	<100	-	-	-	<100	µg/kg	A-T-052s	
Bis(2-chloroethoxy)methane _A	-	-	<100	-	-	-	<100	µg/kg	A-T-052s	
Bis(2-chloroethyl)ether _A	-	-	<100	-	-	-	<100	µg/kg	A-T-052s	
4-Nitrophenol _A	-	-	<100	-	-	-	<100	µg/kg	A-T-052s	
4-Methylphenol _A	-	-	<100	-	-	-	<100	µg/kg	A-T-052s	
4-Chloro-3-methylphenol _A	-	-	<100	-	-	-	<100	µg/kg	A-T-052s	
2-Nitrophenol _A	-	-	<100	-	-	-	<100	µg/kg	A-T-052s	
2-Methylphenol _A	-	-	<100	-	-	-	<100	µg/kg	A-T-052s	
2-Chlorophenol _A	-	-	<100	-	-	-	<100	µg/kg	A-T-052s	
2,6-Dinitrotoluene _A	-	-	<100	-	-	-	<100	µg/kg	A-T-052s	
2,4-Dinitrotoluene _A	-	-	<100	-	-	-	<100	µg/kg	A-T-052s	
2,4-Dimethylphenol _A	-	-	<100	-	-	-	<100	µg/kg	A-T-052s	
2,4-Dichlorophenol _A	-	-	<100	-	-	-	<100	µg/kg	A-T-052s	
2,4,6-Trichlorophenol _A	-	-	<100	-	-	-	<100	µg/kg	A-T-052s	
2,4,5-Trichlorophenol _A	-	-	<100	-	-	-	<100	µg/kg	A-T-052s	
2-Chloronaphthalene _A	-	-	<100	-	-	-	<100	µg/kg	A-T-052s	
2-Methylnaphthalene _A	-	-	<100	-	-	-	<100	µg/kg	A-T-052s	
Acenaphthylene _A	-	-	<100	-	-	-	-	µg/kg	A-T-052s	
Acenaphthene _A	-	-	<100	-	-	-	-	µg/kg	A-T-052s	
Anthracene _A	-	-	<100	-	-	-	-	µg/kg	A-T-052s	
Benzo(a)anthracene _A	-	-	<100	-	-	-	-	µg/kg	A-T-052s	
Benzo(b)fluoranthene _A	-	-	<100	-	-	-	-	µg/kg	A-T-052s	
Benzo(k)fluoranthene _A	-	-	<100	-	-	-	-	µg/kg	A-T-052s	
Benzo(a)pyrene _A	-	-	<100	-	-	-	-	µg/kg	A-T-052s	
Benzo(ghi)perylene _A	-	-	<100	-	-	-	-	µg/kg	A-T-052s	
Chrysene _A	-	-	<100	-	-	-	-	µg/kg	A-T-052s	

Envirolab Job Number: 16/02405

Client Project Name: Greenwood Place Resource Centre

Client Project Ref: 1655,GI

Lab Sample ID	16/02405/1	16/02405/3	16/02405/6	16/02405/7	16/02405/8	16/02405/10	16/02405/16		Units	Method ref
Client Sample No	J1	J3	J6	J7	J1	J3	J1			
Client Sample ID	WS101 (CBR1)	WS101 (CBR1)	WS101 (CBR1)	WS101 (CBR1)	WS102 (BH3)	WS102 (BH3)	HA1			
Depth to Top	1.30	1.80	5.30	5.70	0.50	1.10	1.40			
Depth To Bottom										
Date Sampled	20-Apr-16	20-Apr-16	20-Apr-16	20-Apr-16	21-Apr-16	21-Apr-16	20-Apr-16			
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES			
Sample Matrix Code	5A	5A	3	5	5AD	5AD	5			
Fluoranthene _A	-	-	<100	-	-	-	-		µg/kg	A-T-052s
Fluorene _A	-	-	<100	-	-	-	-		µg/kg	A-T-052s
Indeno(1,2,3-cd)pyrene _A	-	-	<100	-	-	-	-		µg/kg	A-T-052s
Phenanthrene _A	-	-	<100	-	-	-	-		µg/kg	A-T-052s
Pyrene _A	-	-	<100	-	-	-	-		µg/kg	A-T-052s
Naphthalene _A	-	-	<100	-	-	-	-		µg/kg	A-T-052s
Dibenzo(ah)anthracene _A	-	-	<100	-	-	-	-		µg/kg	A-T-052s
Bis(2-chloroisopropyl)ether _A	-	-	<100	-	-	-	<100		µg/kg	A-T-052s
Phenol _A	-	-	<100	-	-	-	<100		µg/kg	A-T-052s
Pentachlorophenol _A	-	-	<100	-	-	-	<100		µg/kg	A-T-052s
n-Nitroso-n-dipropylamine _A	-	-	<100	-	-	-	<100		µg/kg	A-T-052s
n-Dioctylphthalate _A	-	-	<100	-	-	-	<100		µg/kg	A-T-052s
n-Dibutylphthalate _A	-	-	<100	-	-	-	<100		µg/kg	A-T-052s
Nitrobenzene _A	-	-	<100	-	-	-	<100		µg/kg	A-T-052s
Isophorone _A	-	-	<100	-	-	-	<100		µg/kg	A-T-052s
Hexachloroethane _A	-	-	<100	-	-	-	<100		µg/kg	A-T-052s
Hexachlorocyclopentadiene _A	-	-	<100	-	-	-	<100		µg/kg	A-T-052s
Perylene _A	-	-	<100	-	-	-	<100		µg/kg	A-T-052s

Envirolab Job Number: 16/02405

Client Project Name: Greenwood Place Resource Centre

Client Project Ref: 1655,GI

Lab Sample ID	16/02405/1	16/02405/3	16/02405/6	16/02405/7	16/02405/8	16/02405/10	16/02405/16		Units	Method ref
Client Sample No	J1	J3	J6	J7	J1	J3	J1			
Client Sample ID	WS101 (CBR1)	WS101 (CBR1)	WS101 (CBR1)	WS101 (CBR1)	WS102 (BH3)	WS102 (BH3)	HA1			
Depth to Top	1.30	1.80	5.30	5.70	0.50	1.10	1.40			
Depth To Bottom										
Date Sampled	20-Apr-16	20-Apr-16	20-Apr-16	20-Apr-16	21-Apr-16	21-Apr-16	20-Apr-16			
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES			
Sample Matrix Code	5A	5A	3	5	5AD	5AD	5			
VOC										
Dichlorodifluoromethane _A [#]	-	-	<1	-	-	-	<1	µg/kg	A-T-006s	
Chloromethane _A [#]	-	-	<10	-	-	-	<10	µg/kg	A-T-006s	
Vinyl Chloride _A [#]	-	-	<1	-	-	-	<1	µg/kg	A-T-006s	
Bromomethane _A [#]	-	-	<1	-	-	-	<1	µg/kg	A-T-006s	
Chloroethane _A [#]	-	-	<1	-	-	-	<1	µg/kg	A-T-006s	
Trichlorofluoromethane _A [#]	-	-	<1	-	-	-	<1	µg/kg	A-T-006s	
1,1-Dichloroethene _A [#]	-	-	<1	-	-	-	<1	µg/kg	A-T-006s	
Carbon Disulphide _A [#]	-	-	<1	-	-	-	<1	µg/kg	A-T-006s	
Dichloromethane _A	-	-	<5	-	-	-	7	µg/kg	A-T-006s	
trans 1,2-Dichloroethene _A [#]	-	-	<1	-	-	-	<1	µg/kg	A-T-006s	
1,1-Dichloroethane _A [#]	-	-	<1	-	-	-	<1	µg/kg	A-T-006s	
cis 1,2-Dichloroethene _A [#]	-	-	<1	-	-	-	305	µg/kg	A-T-006s	
2,2-Dichloropropane _A [#]	-	-	<1	-	-	-	<1	µg/kg	A-T-006s	
Bromochloromethane _A [#]	-	-	<5	-	-	-	<5	µg/kg	A-T-006s	
Chloroform _A [#]	-	-	<1	-	-	-	<1	µg/kg	A-T-006s	
1,1,1-Trichloroethane _A [#]	-	-	<1	-	-	-	<1	µg/kg	A-T-006s	
1,1-Dichloropropene _A [#]	-	-	<1	-	-	-	<1	µg/kg	A-T-006s	
Carbon Tetrachloride _A [#]	-	-	<1	-	-	-	<1	µg/kg	A-T-006s	
1,2-Dichloroethane _A [#]	-	-	<2	-	-	-	<2	µg/kg	A-T-006s	
Benzene _A [#]	-	-	<1	-	-	-	<1	µg/kg	A-T-006s	
Trichloroethene _A [#]	-	-	1640	-	-	-	1300	µg/kg	A-T-006s	
1,2-Dichloropropane _A [#]	-	-	<1	-	-	-	<1	µg/kg	A-T-006s	
Dibromomethane _A [#]	-	-	<1	-	-	-	<1	µg/kg	A-T-006s	
Bromodichloromethane _A [#]	-	-	<10	-	-	-	<10	µg/kg	A-T-006s	
cis 1,3-Dichloropropene _A [#]	-	-	<1	-	-	-	<1	µg/kg	A-T-006s	
Toluene _A [#]	-	-	<1	-	-	-	<1	µg/kg	A-T-006s	
trans 1,3-Dichloropropene _A [#]	-	-	<1	-	-	-	<1	µg/kg	A-T-006s	
1,1,2-Trichloroethane _A [#]	-	-	11	-	-	-	4	µg/kg	A-T-006s	
1,3-Dichloropropane _A [#]	-	-	<1	-	-	-	<1	µg/kg	A-T-006s	
Tetrachloroethene _A [#]	-	-	486	-	-	-	104	µg/kg	A-T-006s	
Dibromochloromethane _A [#]	-	-	<3	-	-	-	<3	µg/kg	A-T-006s	
1,2-Dibromoethane _A [#]	-	-	<1	-	-	-	<1	µg/kg	A-T-006s	

Envirolab Job Number: 16/02405

Client Project Name: Greenwood Place Resource Centre

Client Project Ref: 1655,GI

Lab Sample ID	16/02405/1	16/02405/3	16/02405/6	16/02405/7	16/02405/8	16/02405/10	16/02405/16		Units	Method ref
Client Sample No	J1	J3	J6	J7	J1	J3	J1			
Client Sample ID	WS101 (CBR1)	WS101 (CBR1)	WS101 (CBR1)	WS101 (CBR1)	WS102 (BH3)	WS102 (BH3)	HA1			
Depth to Top	1.30	1.80	5.30	5.70	0.50	1.10	1.40			
Depth To Bottom										
Date Sampled	20-Apr-16	20-Apr-16	20-Apr-16	20-Apr-16	21-Apr-16	21-Apr-16	20-Apr-16			
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES			
Sample Matrix Code	5A	5A	3	5	5AD	5AD	5			
Chlorobenzene _A [#]	-	-	<1	-	-	-	<1			
1,1,1,2-Tetrachloroethane _A	-	-	<1	-	-	-	<1		µg/kg	A-T-006s
Ethylbenzene _A [#]	-	-	<1	-	-	-	<1		µg/kg	A-T-006s
m & p Xylene _A [#]	-	-	<1	-	-	-	<1		µg/kg	A-T-006s
o-Xylene _A [#]	-	-	<1	-	-	-	<1		µg/kg	A-T-006s
Styrene _A [#]	-	-	<1	-	-	-	<1		µg/kg	A-T-006s
Bromoform _A [#]	-	-	<1	-	-	-	<1		µg/kg	A-T-006s
Isopropylbenzene _A [#]	-	-	<1	-	-	-	<1		µg/kg	A-T-006s
1,1,1,2,2-Tetrachloroethane _A	-	-	<1	-	-	-	<1		µg/kg	A-T-006s
1,2,3-Trichloropropane _A [#]	-	-	<1	-	-	-	<1		µg/kg	A-T-006s
Bromobenzene _A [#]	-	-	<1	-	-	-	<1		µg/kg	A-T-006s
n-Propylbenzene _A [#]	-	-	<1	-	-	-	<1		µg/kg	A-T-006s
2-Chlorotoluene _A [#]	-	-	<1	-	-	-	<1		µg/kg	A-T-006s
1,3,5-Trimethylbenzene _A [#]	-	-	<1	-	-	-	<1		µg/kg	A-T-006s
4-Chlorotoluene _A [#]	-	-	<1	-	-	-	<1		µg/kg	A-T-006s
tert-Butylbenzene _A [#]	-	-	<2	-	-	-	<2		µg/kg	A-T-006s
1,2,4-Trimethylbenzene _A [#]	-	-	<1	-	-	-	<1		µg/kg	A-T-006s
sec-Butylbenzene _A [#]	-	-	<1	-	-	-	<1		µg/kg	A-T-006s
4-Isopropyltoluene _A [#]	-	-	<1	-	-	-	<1		µg/kg	A-T-006s
1,3-Dichlorobenzene _A	-	-	<1	-	-	-	<1		µg/kg	A-T-006s
1,4-Dichlorobenzene _A [#]	-	-	<1	-	-	-	<1		µg/kg	A-T-006s
n-Butylbenzene _A [#]	-	-	<1	-	-	-	<1		µg/kg	A-T-006s
1,2-Dichlorobenzene _A [#]	-	-	<1	-	-	-	<1		µg/kg	A-T-006s
1,2-Dibromo-3-chloropropane _A	-	-	<2	-	-	-	<2		µg/kg	A-T-006s
1,2,4-Trichlorobenzene _A	-	-	<3	-	-	-	<3		µg/kg	A-T-006s
Hexachlorobutadiene _A [#]	-	-	<1	-	-	-	<1		µg/kg	A-T-006s
1,2,3-Trichlorobenzene _A	-	-	<3	-	-	-	<3		µg/kg	A-T-006s

REPORT NOTES

Notes - Soil chemical analysis

All results are reported as dry weight (<40°C).

For samples with Matrix Codes 1 - 6 natural stones and brick and concrete fragments >10mm are removed or excluded from the sample prior to analysis and reported results corrected to a whole sample basis. For samples with Matrix Code 7 the whole sample is dried and crushed prior to analysis.

Notes - General

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Subscript "A" indicates analysis performed on the sample as received. "D" indicates analysis performed on the dried sample, crushed to pass a 2mm sieve, unless asbestos is found to be present in which case all analysis is performed on the sample as received.

All analysis is performed on the dried and crushed sample for samples with Matrix Code 7 and this supersedes any "A" subscripts.

All analysis is performed on the sample as received for soil samples which are positive for asbestos and/or if they are from outside the European Union and this supercedes any "D" subscripts.

Superscript "M" indicates method accredited to MCERTS.

If results are in italic font they are associated with an AQC failure. These are not accredited and are unreliable.

A deviating samples report is appended and will indicate if samples or tests have been found to be deviating. Any test results affected may not be an accurate record of the concentration at the time of sampling and, as a result, may be invalid.

TPH analysis of water by method A-T-007

Free and visible oils are excluded from the sample used for analysis so that the reported result represents the dissolved phase only.

Asbestos in soil

Asbestos in soil analysis is performed on a dried aliquot of the submitted sample and cannot guarantee to identify asbestos if present as discrete fibres/fragments. Stones etc. are not removed from the sample prior to analysis.

Quantification of asbestos is a 3 stage process including visual identification, hand picking and weighing and fibre counting by sedimentation/phase contrast optical microscopy if required. If asbestos is identified as being present but is not in a form that is suitable for analysis by hand picking and weighing (normally if the asbestos is present as free fibres) quantification by sedimentation is performed. Where ACMs are found a percentage asbestos is assigned to each with reference to 'HSG264, Asbestos: The survey guide' and the calculated asbestos content is expressed as a percentage of the dried soil sample aliquot used.

Predominant Matrix Codes:

1 = SAND, 2 = LOAM, 3 = CLAY, 4 = LOAM/SAND, 5 = SAND/CLAY, 6 = CLAY/LOAM, 7 = OTHER, 8 = Asbestos bulk ID sample. Samples with Matrix Code 7 are not predominantly a SAND/LOAM/CLAY mix and are not covered by our BSEN 17025 or MCERTS accreditations.

Secondary Matrix Codes:

A = contains stones, B = contains construction rubble, C = contains visible hydrocarbons, D = contains glass/metal, E = contains roots/twigs.

IS indicates Insufficient Sample for analysis.

US indicates Unsuitable Sample for analysis.

NDP indicates No Determination Possible.

NAD indicates No Asbestos Detected.

N/A indicates Not Applicable.

Superscript # indicates method accredited to ISO 17025.

Analytical results reflect the quality of the sample at the time of analysis only. Opinions and interpretations expressed are outside the scope of our accreditation.

Please contact us if you need any further information.

LABORATORY ANALYSIS REPORT

REPORT NUMBER	AMENDMENT TO REPORT K03210R
CUSTOMER	GEOSPHERE ENVIRONMENTAL
	Brightwell Barns, Ipswich Road
	Brightwell
	Suffolk
	IP10 0BJ
GRADKO LAB REFERENCE	02K0837-02K0842
DESPATCH NOTE No.	30302
JOB REFERENCE	1655
DATE SAMPLES RECEIVED	26.05.2016
BOOKING IN REF.	X5915

**IDENTIFICATION AND ESTIMATION (SEMI-QUANTITATIVE ANALYSIS) OF TOP 15 VOC
 ON TENAX DIFFUSION TUBES BY GC/MS**
 Analysis has been carried out in accordance with in-house method GLM 13

Index to UKAS Accreditation Status

U	Analysis is UKAS accredited under our Fixed Scope
F	Analysis is UKAS accredited under our Flexible Scope
N	Analysis is not UKAS accredited

Tube Number	GRA 02692			
Exposure Time(mins)	10080			
Sample ID	OBH2			
	Accreditation			
Top 15 VOC	Status	ng on tube	ppb in air*	µgm^{-3*}
Tetrachloroethylene	F	4391	217.79	1428.7
Trichloroethylene	F	3551	176.14	915.92
cis-1,2-Dichloroethylene	F	552.92	27.43	105.32
4,7-Methano-1H-indene, octahydro-	N	122.66	6.08	33.10
Carbon disulfide	F	64.45	3.20	9.72
Cyclopentane, methyl-	N	58.85	2.92	9.81
Cyclohexane, isothiocyanato-	N	55.73	2.76	15.59
Toluene	F	54.08	2.68	9.87
m/p-Xylene	F	46.33	2.30	9.74
trans-1,2-Dichloroethylene	F	42.51	2.11	8.10
Benzene, 1-ethyl-3-methyl-	F	37.30	1.85	8.88
Naphthalene, decahydro-1,2-dimethyl-	N	31.29	1.55	10.30
Pentane, 3-methyl-	F	29.80	1.48	5.08
Decahydro-4,4,8,9,10-pentamethylnaphthalene	N	29.70	1.47	12.26
Naphthalene, decahydro-2,6-dimethyl-	N	28.81	1.43	9.49

The Diffusion Tubes have been tested within the scope of Gradko International Ltd. Laboratory Quality Procedures calculations and assessments involving the exposure procedures and periods provided by the client are not within the scope of our UKAS accreditation. Those results obtained using exposure data shall be indicated by an asterisk. Any queries concerning the data in this report should be directed to the Laboratory Manager Gradko International Ltd. This report is not to be reproduced, except in full, without the written permission of Gradko International Ltd.



Gradko International Ltd
This signature confirms the authenticity of these results
Signed..... <i>L. Gates</i>
L. Gates, Laboratory Manager

LABORATORY ANALYSIS REPORT

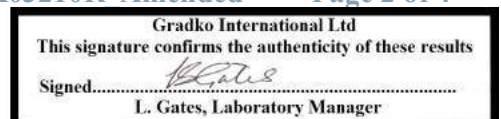
Tube Number GRA 04596
Exposure Time(mins) 10080
Sample ID DCS1
Accreditation

Top 15 VOC	Status	ng on tube	ppb in air*	µgm ⁻³ *
Tetrachloroethylene	F	17393	862.73	5659.5
Trichloroethylene	F	7612	377.57	1963.4
cis-1,2-Dichloroethylene	F	6768	335.70	1289.1
Dichloroacetaldehyde	N	419.19	20.79	93.15
Benzene, 1-ethyl-3-methyl-	F	147.26	7.30	35.06
m/p-Xylene	F	130.21	6.46	27.38
trans-1,2-Dichloroethylene	F	125.20	6.21	23.85
Toluene	F	107.75	5.34	19.67
Cyclohexadecane	N	87.86	4.36	39.05
Heptane, 2,2,4,6,6-pentamethyl-	N	83.26	4.13	28.08
o-Xylene	F	74.86	3.71	15.74
Benzene, 1,2,4-trimethyl-	F	74.31	3.69	17.69
Cyclohexane, 1-ethyl-2,3-dimethyl-	N	69.91	3.47	19.42
3-Carene	F	69.10	3.43	18.65
Cyclohexane, 1,2,4-trimethyl-, (1.alpha.,2.beta.,4.beta.)-	N	61.93	3.07	15.48

Tube Number GRA 05727
Exposure Time(mins) 10080
Sample ID BH2
Accreditation

Top 15 VOC	Status	ng on tube	ppb in air*	µgm ⁻³ *
Trichloroethylene	F	19886	986.39	5129.3
Tetrachloroethylene	F	7130	353.69	2320.2
Decane	F	3477	172.46	979.57
Decane, 4-methyl-	N	1429	70.87	442.23
Undecane	F	1373	68.09	424.88
Benzene, 1,2,4-trimethyl-	F	1302	64.57	309.95
Benzene, 1-ethyl-3-methyl-	F	1286	63.80	306.22
Octane, 2,6-dimethyl-	N	1264	62.67	355.99
Decane, 2-methyl-	N	1224	60.71	378.85
4,7-Methano-1H-indene, octahydro-	N	1205	59.77	325.15
Cyclohexane, butyl-	N	1107	54.91	307.49
Nonane, 2-methyl-	N	1080	53.58	304.31
sec-Butylbenzene	F	1004	49.79	266.85
Nonane	F	1002	49.70	254.47
Decane, 3-methyl-	N	920.11	45.64	284.79

The Diffusion Tubes have been tested within the scope of Gradko International Ltd. Laboratory Quality Procedures calculations and assessments involving the exposure procedures and periods provided by the client are not within the scope of our UKAS accreditation. Those results obtained using exposure data shall be indicated by an asterisk. Any queries concerning the data in this report should be directed to the Laboratory Manager Gradko International Ltd. This report is not to be reproduced, except in full, without the written permission of Gradko International Ltd.



LABORATORY ANALYSIS REPORT

Tube Number	GRA 06921			
Exposure Time(mins)	10080			
Sample ID	BH1			
	Accreditation			
Top 15 VOC	Status	ng on tube	ppb in air*	µgm ⁻³ *
Trichloroethylene	F	40214	1994.7	10373
Tetrachloroethylene	F	39667	1967.6	12907
Decane	F	2824	140.06	795.56
Benzene, 1,2,4-trimethyl-	F	1145	56.79	272.60
Undecane	F	1135	56.28	351.16
Decane, 4-methyl-	N	1117	55.38	345.59
Benzene, 1-ethyl-3-methyl-	F	1038	51.51	247.26
Octane, 2,6-dimethyl-	N	990.92	49.15	279.19
4,7-Methano-1H-indene, octahydro-	N	973.84	48.31	262.78
Decane, 2-methyl-	N	945.92	46.92	292.79
Cyclohexane, butyl-	N	872.01	43.25	242.23
m/p-Xylene	F	839.15	41.62	176.49
Nonane, 2-methyl-	N	822.52	40.80	231.74
sec-Butylbenzene	F	781.78	38.78	207.85
Decane, 3-methyl-	N	740.66	36.74	229.25

Tube Number	GRA 10132			
Exposure Time(mins)	10080			
Sample ID	WS102			
	Accreditation			
Top 15 VOC	Status	ng on tube	ppb in air*	µgm ⁻³ *
Trichloroethylene	F	16644	825.61	4293.2
cis-1,2-Dichloroethylene	F	3133	155.43	596.84
Decane	F	2897	143.69	816.18
Undecane	F	1473	73.08	456.05
Benzene, 1,2,4-trimethyl-	F	1435	71.20	341.77
Benzene, 1-ethyl-3-methyl-	F	1298	64.39	309.09
Decane, 4-methyl-	N	1281	63.54	396.50
Decane, 2-methyl-	N	1149	56.97	355.50
4,7-Methano-1H-indene, octahydro-	N	1142	56.64	308.14
Octane, 2,6-dimethyl-	N	1088	53.98	306.63
m/p-Xylene	F	1007	49.95	211.79
Cyclohexane, butyl-	F	1004	49.82	278.99
Nonane, 2-methyl-	N	936.55	46.46	263.87
sec-Butylbenzene	F	893.23	44.31	237.49
Nonane	F	882.56	43.78	224.14

The Diffusion Tubes have been tested within the scope of Gradko International Ltd. Laboratory Quality Procedures calculations and assessments involving the exposure procedures and periods provided by the client are not within the scope of our UKAS accreditation. Those results obtained using exposure data shall be indicated by an asterisk. Any queries concerning the data in this report should be directed to the Laboratory Manager Gradko International Ltd. This report is not to be reproduced, except in full, without the written permission of Gradko International Ltd.

REPORT OFFICIALLY CHECKED

Gradko International Ltd
This signature confirms the authenticity of these results
Signed.....*L. Gates*.....
L. Gates, Laboratory Manager

LABORATORY ANALYSIS REPORT

Tube Number GRA 02680
Exposure Time(mins) 10080
Sample ID DCS4

Accreditation

Top 15 VOC	Status	ng on tube	ppb in air*	µgm ⁻³ *
Trichloroethylene	F	8880	440.48	2290.5
Tetrachloroethylene	F	7017	348.06	2283.2
m/p-Xylene	F	291.48	14.46	61.30
Butane, 2-methyl-	N	260.87	12.94	37.27
o-Xylene	F	165.58	8.21	34.82
Benzene, 1,2,4-trimethyl-	F	157.02	7.79	37.39
Toluene	F	140.65	6.98	25.67
Benzene, 1-ethyl-3-methyl-	F	118.32	5.87	28.17
Ethylbenzene	F	101.89	5.05	21.43
alpha-Pinene	F	86.86	4.31	23.44
3-Carene	F	54.66	2.71	14.75
Benzene, 1,2,3-trimethyl-	F	53.05	2.63	12.63
1,2,4-Metheno-1H-indene, octahydro-1,7a-dimethyl-5-(1-methylethyl)-, [1S-(1.alpha.,2.alpha.,3a.beta.,4.alpha.,5.alpha.,7a.beta.,8S*)]-	N	51.68	2.56	20.92
Benzene, 1-ethyl-2-methyl-	F	51.66	2.56	12.30
cis-1,2-Dichloroethylene	F	51.44	2.55	9.80

UPTAKE RATES

All Compounds 2.00ng.ppm⁻¹.min⁻¹

Identification and estimation results for ng on tube are calculated by reference to toluene and toluene-d8 Internal standard.

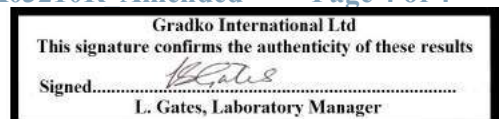
Results greater than 1000ng are outside of our UKAS accredited calibration range.

Exposure time was calculated from start and finish dates given on the exposure sheet.

Report was amended to add µgm⁻³ at the customer request.

	Date of Analysis	02.06.2016
Analysts Name	Mariella Angelova	Date of Amended Report
		17.06.2016

The Diffusion Tubes have been tested within the scope of Gradko International Ltd. Laboratory Quality Procedures calculations and assessments involving the exposure procedures and periods provided by the client are not within the scope of our UKAS accreditation. Those results obtained using exposure data shall be indicated by an asterisk. Any queries concerning the data in this report should be directed to the Laboratory Manager Gradko International Ltd. This report is not to be reproduced, except in full, without the written permission of Gradko International Ltd.



APPENDIX 7 – GEOTECHNICAL LABORATORY TEST RESULTS



TEST REPORT.

ISSUED BY : SOIL PROPERTY TESTING LTD.
DATE OF ISSUE : 18/03/16 PAGE 1 of 7 Pages
Contract Serial No.
Greenwood Road Camden London 16131

**CLIENT:**

Geosphere Environmental Ltd
Brightwell Barns
Ipswich Road
Brightwell
Suffolk
IP10 0BJ

Soil Property Testing Ltd

Materials Division

15,16 & 18 Halcyon Court,
St Margarets Way,
Stukeley Meadows, Huntingdon,
Cams. PE29 6DG.

Telephone (01480) 455579 Fax (01480) 453619
Email enquiries@soilpropertytesting.com

SAMPLES SUBMITTED BY:

DCP Tests carried out
by our own engineer

APPROVED SIGNATORIES:

- J.C.GARNER B.Eng (Hons.) FGS
Technical Director
- S.P.TOWNEND FGS
Quality Manager
- W.JOHNSTONE
Materials Lab Manager

SAMPLES LABELLED:

-

DATE RECEIVED: 18/03/16

SAMPLES TESTED BETWEEN 18/03/16 and 18/03/16

REMARKS: For the attention of Mr Stephen Gilchrist

- NOTES:**
- 1 All remaining samples or remnants from this contract will be disposed of after 21 days from today, unless we are notified to the contrary.
 - 2 (a) UKAS - United Kingdom Accreditation Service.
(b) Opinions and interpretations expressed herein are outside the scope of UKAS accreditation.
 - 3 Tests marked "NOT UKAS ACCREDITED" in this test report are not included in the UKAS Accreditation Schedule for this testing laboratory.
 - 4 This test report may not be reproduced other than in full except with the prior written approval of the issuing laboratory.



TEST REPORT
Soil Property Testing Ltd



Date of Issue: as page 1
Contract: Greenwood Road Camden London

Page 2 of 7 Pages
Serial No: 16131

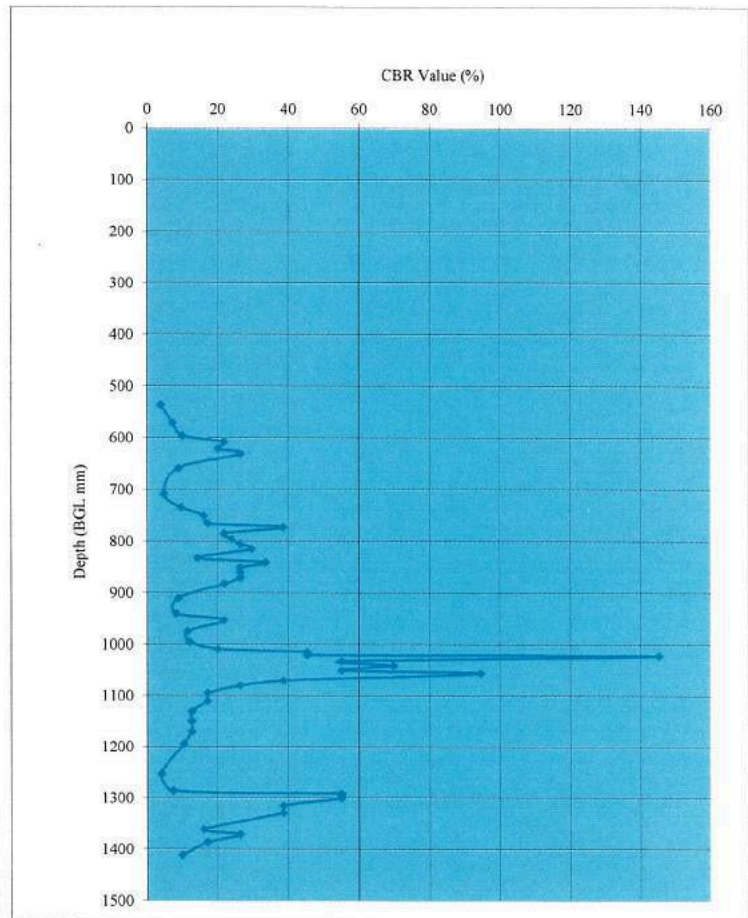
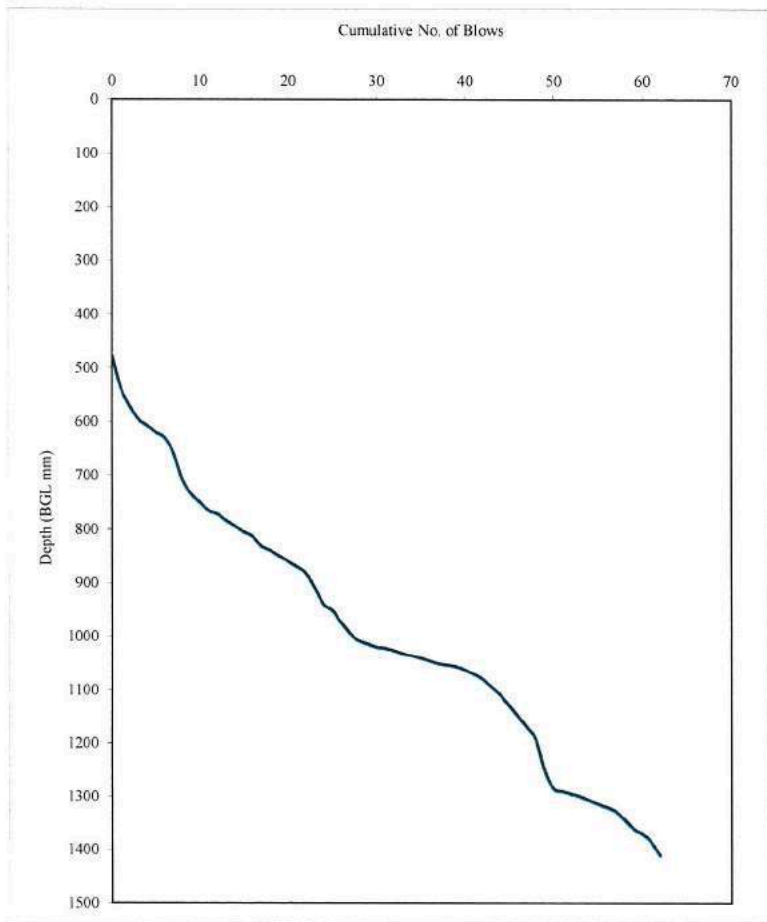
TRL Dynamic Cone Penetrometer - Determination of CBR Value (%)

To TRL Report PR INT 277 04 and CNS Farnell Operating Instructions

Chainage: 0
Test No.: DCP 1
Location: CBR3
Direction: 0
Final Depth (mm BGL): 1410
Date Tested: 18/03/2016

Layers Removed: 0.45m
Surface Type: Dark yellowish brown slightly silty gravelly SAND.
Surface moisture: DRY
Easting: 0
Northing: 0
Existing Level: m OD 0.000
Test Level: m OD 0.000

Dynamic Cone Penetrometer Graph



Remarks:	<p>Dark yellowish brown slightly silty gravelly SAND. Gravel is brown white and black fine to coarse sub angular to sub rounded flint with occasional brick fragments.</p> <p>Test started at 450mm below Ground Level. Material removed was engineered fill consisting of crushed concrete, brick and asphalt.</p> <p>Excessively high or anomalous readings may be the result of cone encountering obstructions such as large gravel fragments.</p> <p>See attached sheet for Equivalent CBR values for each penetration</p>
-----------------	--



TEST REPORT

Soil Property Testing Ltd



Date of Issue: as page 1
Contract: Greenwood Road Camden London

Page 3 of 7 Pages
Serial No: 16131

TRL Dynamic Cone Penetrometer - Determination of CBR Value (%)

To TRL Report PR/INT/277/04 and CNS Farnell Operating Instructions

Chainage: 0
Test No.: DCP 1
Location: CBR3
Direction: 0
Final Depth (mm BGL): 1410
Date Tested: 18/03/2016

Layers Removed: 0.45m
Surface Type: Dark yellowish brown slightly silty gravelly SAND.
Surface moisture: DRY
Easting: 0
Northing: 0.000
Existing Level: m OD 0.000
Test Level: m OD 0.000

Initial Zero reading = 60

No. of Blows	Total Blows	Measured Depth (mm BGL)	Corrected Depth (mm BGL)	Penetration (mm/blow)	Log 10 CBR	CBR Value (%)
0	0	85	475	0.00	0.00	0.00
1	1	146	536	61.00	0.59	3.92
1	2	180	570	34.00	0.86	7.26
1	3	205	595	25.00	1.00	10.05
1	4	217	607	12.00	1.34	21.84
1	5	230	620	13.00	1.30	20.07
1	6	240	630	10.00	1.42	26.49
1	7	268	658	28.00	0.95	8.92
1	8	318	708	50.00	0.68	4.83
1	9	344	734	26.00	0.98	9.65
1	10	360	750	16.00	1.21	16.12
1	11	375	765	15.00	1.24	17.25
1	12	382	772	7.00	1.59	38.61
1	13	394	784	12.00	1.34	21.84
1	14	405	795	11.00	1.38	23.95
1	15	415	805	10.00	1.42	26.49
1	16	424	814	9.00	1.47	29.61
1	17	442	832	18.00	1.15	14.23
1	18	450	840	8.00	1.53	33.53
1	19	460	850	10.00	1.42	26.49
1	20	470	860	10.00	1.42	26.49
1	21	480	870	10.00	1.42	26.49
1	22	492	882	12.00	1.34	21.84
1	23	520	910	28.00	0.95	8.92
1	24	550	940	30.00	0.92	8.29
1	25	562	952	12.00	1.34	21.84
1	26	584	974	22.00	1.06	11.51
1	27	605	995	21.00	1.08	12.09
1	28	618	1008	13.00	1.30	20.07
1	29	624	1014	6.00	1.66	45.45
1	30	630	1020	6.00	1.66	45.45
1	31	632	1022	2.00	2.16	145.15
2	33	1032	1032	5.00	1.74	55.10
2	35	1040	1040	4.00	1.84	69.76
2	37	1050	1050	5.00	1.74	55.10
2	39	1056	1056	3.00	1.98	94.55
2	41	680	1070	7.00	1.59	38.61
1	42	690	1080	10.00	1.42	26.49
1	43	705	1095	15.00	1.24	17.25
1	44	720	1110	15.00	1.24	17.25
1	45	740	1130	20.00	1.10	12.73
1	46	760	1150	20.00	1.10	12.73
1	47	780	1170	20.00	1.10	12.73



TEST REPORT
Soil Property Testing Ltd



Date of Issue: as page 1
Contract: Greenwood Road Camden London

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Serial No: 16131

TRL Dynamic Cone Penetrometer - Determination of CBR Value (%)

To TRL Report PR/INT/277/04 and CNS Farnell Operating Instructions

Chainage: 0
Test No.: DCP 1
Location: CBR3
Direction: 0
Final Depth (mm BGL): 1410
Date Tested: 18/03/2016

Layers Removed: 0.45m
Surface Type: Dark yellowish brown slightly silty gravelly SAND.
Surface moisture: DRY
Easting: 0
Northing: 0.000
Existing Level: m OD 0.000
Test Level: m OD 0.000

1	48	804	1194	24.00	1.02	10.50
1	49	862	1252	58.00	0.62	4.13
1	50	895	1285	33.00	0.87	7.50
1	51	900	1290	5.00	1.74	55.10
1	52	905	1295	5.00	1.74	55.10
1	53	910	1300	5.00	1.74	55.10
2	55	924	1314	7.00	1.59	38.61
2	57	938	1328	7.00	1.59	38.61
2	59	970	1360	16.00	1.21	16.12
1	60	980	1370	10.00	1.42	26.49
1	61	995	1385	15.00	1.24	17.25
1	62	1020	1410	25.00	1.00	10.05



TEST REPORT
Soil Property Testing Ltd



Date of Issue: as page 1
Contract: Greenwood Road Camden London

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Serial No: 16131

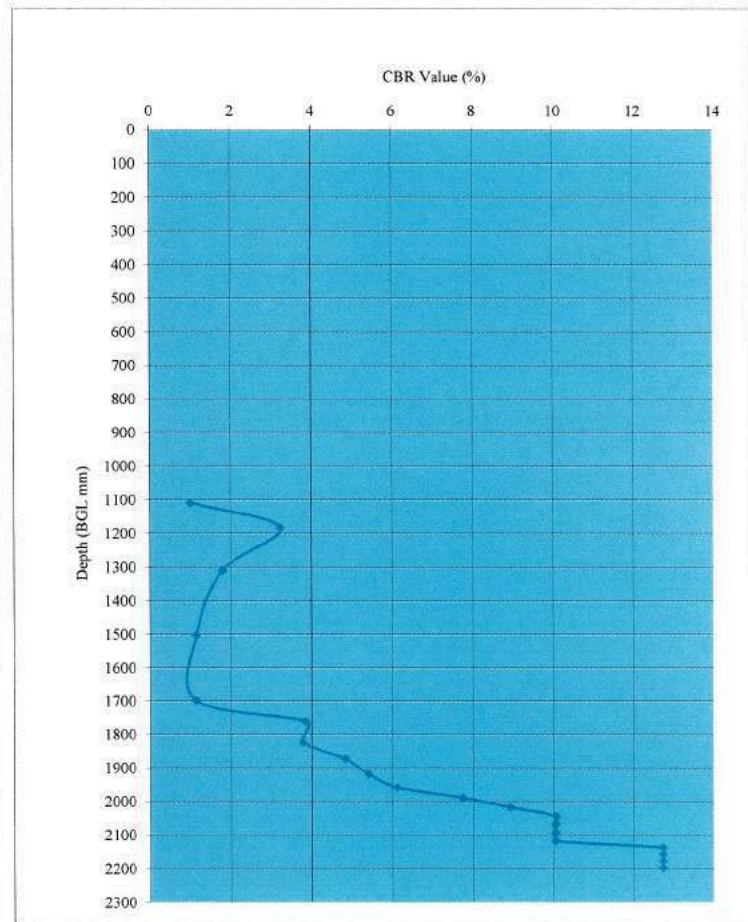
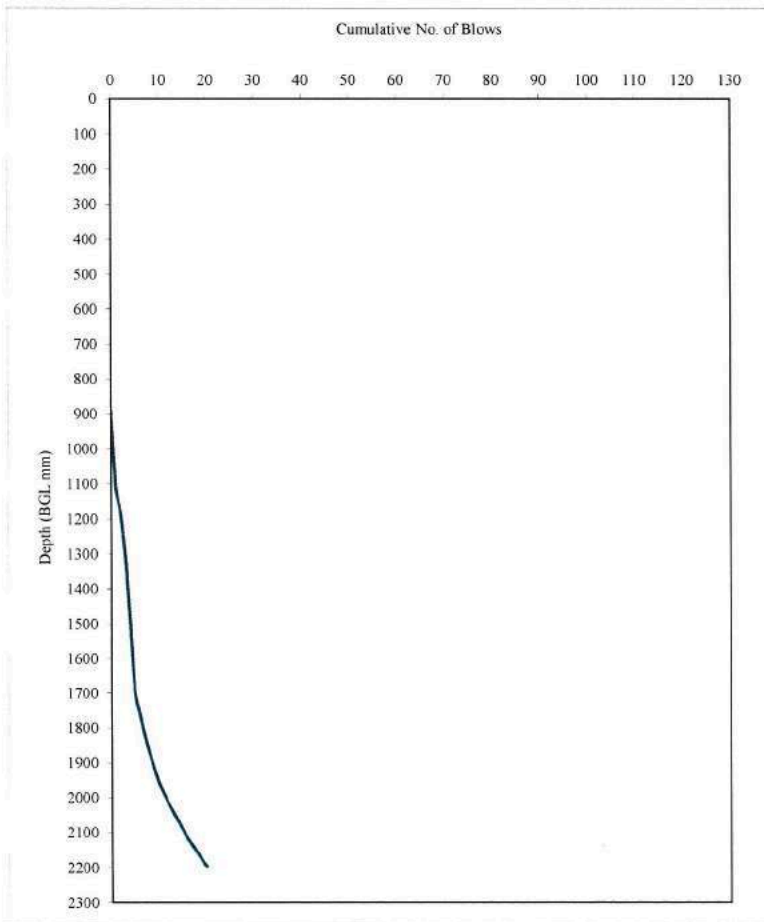
TRL Dynamic Cone Penetrometer - Determination of CBR Value (%)

To TRL Report PR INT 277.04 and CNS Farnell Operating Instructions

Chainage: 0
Test No.: DCP 2
Location: CBR4
Direction: 0
Final Depth (mm BGL): 2196
Date Tested: 18/03/2016

Layers Removed: 0.85m
Surface Type: Greyish brown slightly sandy gravelly CLAY.
Surface moisture: DRY
Easting: 0
Northing: 0
Existing Level: m OD 0.000
Test Level: m OD 0.000

Dynamic Cone Penetrometer Graph



Remarks:	<p>Greyish brown slightly sandy gravelly CLAY. Gravel is brown white and black fine to coarse sub angular to sub rounded flint with occasional brick fragments.</p> <p>Rod appeared very wet on retrieval</p> <p>Test started at 850mm below ground level. Material removed was engineered fill consisting of crushed concrete, brick and asphalt.</p> <p>Excessively high or anomalous readings may be the result of cone encountering obstructions such as large gravel fragments.</p> <p>See attached sheet for Equivalent CBR values for each penetration.</p>
-----------------	--



TEST REPORT
Soil Property Testing Ltd



Date of Issue: as page 1
Contract: Greenwood Road Camden London

Page 6 of 7 Pages
Serial No: 16131

TRL Dynamic Cone Penetrometer - Determination of CBR Value (%)

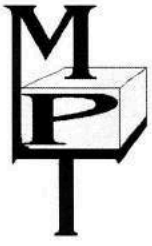
To TRL Report PR/INT/277/04 and CNS Farnell Operating Instructions

Chainage: 0
Test No.: DCP 2
Location: CBR4
Direction: 0
Final Depth (mm BGL): 2196
Date Tested: 18/03/2016

Layers Removed: 0.85m
Surface Type: Greyish brown slightly sandy gravelly CLAY
Surface moisture: DRY
Easting: 0
Northing: 0.000
Existing Level: m OD 0.000
Test Level: m OD 0.000

Initial Zero reading = 850

No. of Blows	Total Blows	Measured Depth (mm BGL)	Corrected Depth (mm BGL)	Penetration (mm/blow)	Log 10 CBR	CBR Value (%)
0	0	124	890	0.00	0.00	0.00
1	1	342	1108	218.00	0.01	1.02
1	2	415	1181	73.00	0.51	3.24
1	3	542	1308	127.00	0.26	1.80
1	4	735	1501	193.00	0.06	1.16
1	5	930	1696	195.00	0.06	1.15
1	6	992	1758	62.00	0.59	3.85
1	7	1055	1821	63.00	0.58	3.79
1	8	1105	1871	50.00	0.68	4.83
1	9	1150	1916	45.00	0.73	5.40
1	10	1190	1956	40.00	0.79	6.12
1	11	1222	1988	32.00	0.89	7.75
1	12	1250	2016	28.00	0.95	8.92
1	13	1275	2041	25.00	1.00	10.05
1	14	1300	2066	25.00	1.00	10.05
1	15	1325	2091	25.00	1.00	10.05
1	16	1350	2116	25.00	1.00	10.05
1	17	1370	2136	20.00	1.10	12.73
1	18	1390	2156	20.00	1.10	12.73
1	19	1410	2176	20.00	1.10	12.73
1	20	1430	2196	20.00	1.10	12.73



TEST REPORT.

ISSUED BY : MATERIAL PROPERTY TESTING LTD.

DATE OF ISSUE : 18/03/16 PAGE 7 of 7 Pages

Contract

Serial No.

Greenwood Road Camden London

16131



TRL Dynamic Cone Penetrometer
Location Plan

NOT TO SCALE

DATE: 18/3/16

A. Butler BSc(Hon)



TEST REPORT.

ISSUED BY : SOIL PROPERTY TESTING LTD.

DATE OF ISSUE : 23/04/16 PAGE 1 of 19 Pages

Contract

Serial No.

Greenwood Centre, Greenwood
Place, Camden, London.

S29908



CLIENT:

Geosphere Environmental Ltd.
Brightwell Barns
Brightwell
Ipswich
IP10 0BJ

Soil Property Testing Ltd.

15,16 & 18 Halcyon Court, St Margarets Way,
Stukeley Meadows, Huntingdon,
Cambs. PE29 6DG.

Telephone (01480) 455579 Fax (01480) 453619
Email enquiries@soilpropertytesting.com

SAMPLES SUBMITTED BY:

Geosphere Environmental Ltd.

APPROVED SIGNATORIES:

- J.C.GARNER B.Eng (Hons.) FGS
Technical Director
- S.P.TOWNEND FGS
Quality Manager
- W. JOHNSTONE
Materials Lab Manager

S.P. Townend

SAMPLES LABELLED:

Greenwood Centre, Greenwood Place, Camden, London.

DATE RECEIVED: 30/03/16

SAMPLES TESTED BETWEEN 30/03/16 and 23/04/16

REMARKS:

For the attention of Lianne Fountain
Your Ref: 1655,GI
Sulphate suite of tests subcontracted to Chemtest - results
included as Appendix A of this Test Report

NOTES:

- 1 All remaining samples or remnants from this contract will be disposed of after 21 days from today, unless we are notified to the contrary.
- 2 (a) UKAS - United Kingdom Accreditation Service.
(b) Opinions and interpretations expressed herein are outside the scope of UKAS accreditation.
- 3 Tests marked "NOT UKAS ACCREDITED" in this test report are not included in the UKAS Accreditation Schedule for this testing laboratory.
- 4 This test report may not be reproduced other than in full except with the prior written approval of the issuing laboratory.



TEST REPORT.

ISSUED BY : SOIL PROPERTY TESTING LTD.

DATE OF ISSUE : As page 1 PAGE 3 of 19

Contract Serial No.
Greenwood Centre, Greenwood S29908
Place, Camden, London.



SUMMARY OF MOISTURE CONTENT, LIQUID LIMIT, PLASTIC LIMIT, PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole/ Pit No.	Depth m.	Sample	Moisture Content (%)	Liquid Limit (%)	Plastic Limit (%)	Plasti- city Index (%)	Liqui- dity Index (%)	SAMPLE PREPARATION				Description	CLASS
								Method S/N	Ret'd 0.425mm (%)	Corr'd M/C <0.425mm	Curing Time (hrs.)		
BH2	2.50	D2.5	19	69	24	45	0.18*	S	41 (M)	32	24	Stiff yellowish brown slightly sandy gravelly CLAY. Gravel is brown, black and white fine to coarse angular to subrounded flint	CH
BH2	3.45	D3.45	31	-	-	-						Stiff closely fissured yellowish brown CLAY with occasional bluish grey mottling, recently active and decayed roots and rare selenite crystals	-
BH2	4.00	D4.0	28	65	26	39	0.05	N	0 (A)		95	Stiff dark yellowish brown CLAY with rare bluish grey veins, decayed roots and selenite crystals	CH
BH2	9.00	D9.0	28	-	-	-						Stiff dark yellowish brown CLAY with rare orange silt partings and selenite crystals	-
BH2	11.00	UT11	27	76	29	47	-0.04	N	0 (A)		75	Very stiff (Very high strength) fissured friable locally thickly laminated dark greyish brown CLAY with occasional dark grey mottling	CV

METHOD OF PREPARATION : BS 1377:PART 1:1990:7.4 & PART 2:1990:4.2

S = Wet Sieved Specimen
N = prepared from Natural

METHOD OF TEST : BS 1377:PART 2:1990:3.2, 4.3, 5.3, 5.4

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter. A = Assumed, M = Measured

COMMENTS :

REMARKS TO INCLUDE : Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample. Oven drying temperature if not 105-110 deg C.



TEST REPORT.

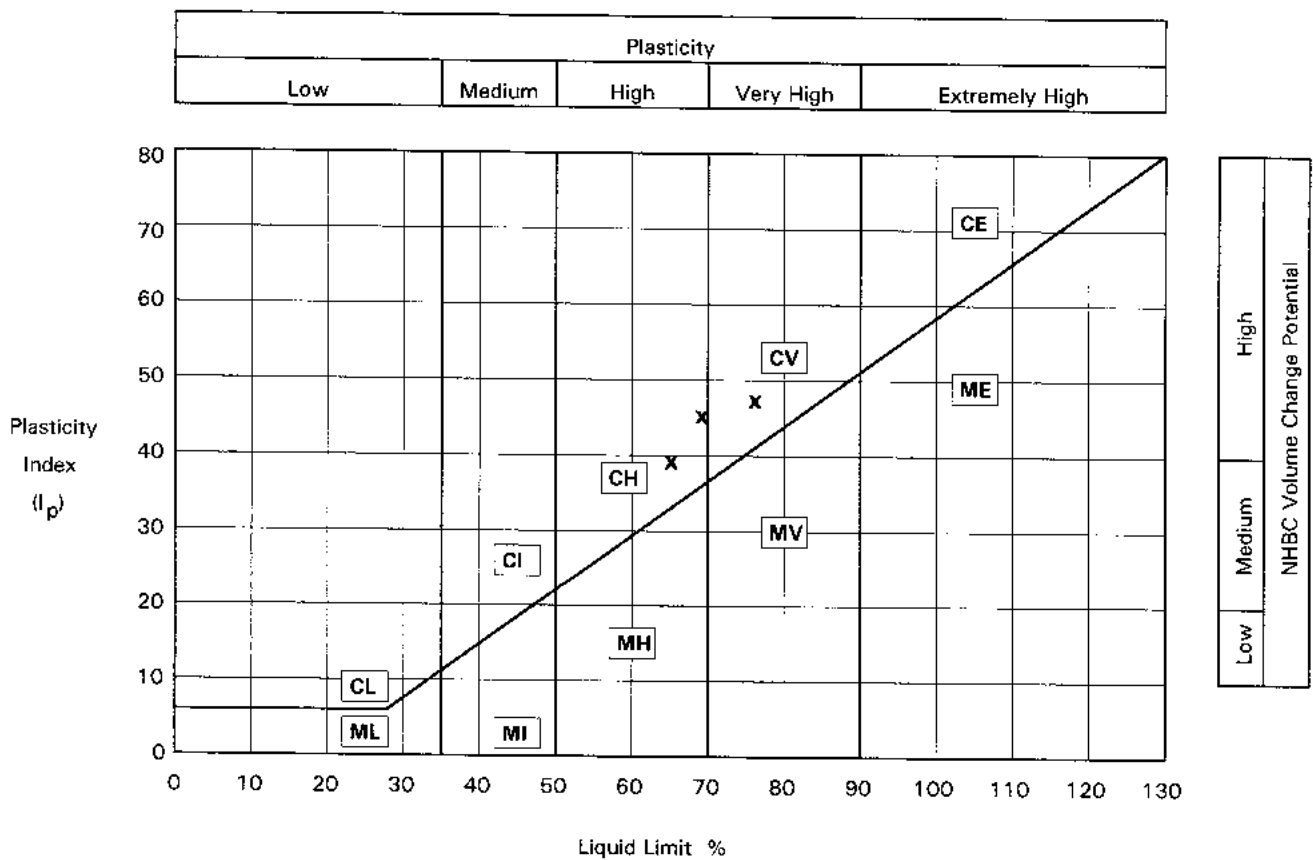
ISSUED BY : SOIL PROPERTY TESTING LTD.

DATE OF ISSUE : As page 1 PAGE 4 of 19

Contract
Greenwood Centre, Greenwood
Place, Camden, London.

Serial No.
S29908

PLOT OF PLASTICITY INDEX AGAINST LIQUID LIMIT USING CASAGRANDE CLASSIFICATION CHART



METHOD OF PREPARATION: BS 1377:PART 1:1990:7.4 & PART 2:1990:4.2

METHOD OF TEST : BS 1377:PART 2:1990:3.2, 4.3, 5.3, 5.4

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

COMMENTS : VOLUME CHANGE POTENTIAL: NHBC Standards Chapter 4.2 Unmodified Plasticity Index PLASTICITY CHART BS5930:1999:Figure 18



TEST REPORT.

ISSUED BY : SOIL PROPERTY TESTING LTD.

DATE OF ISSUE : As page 1 PAGE 5 of 19

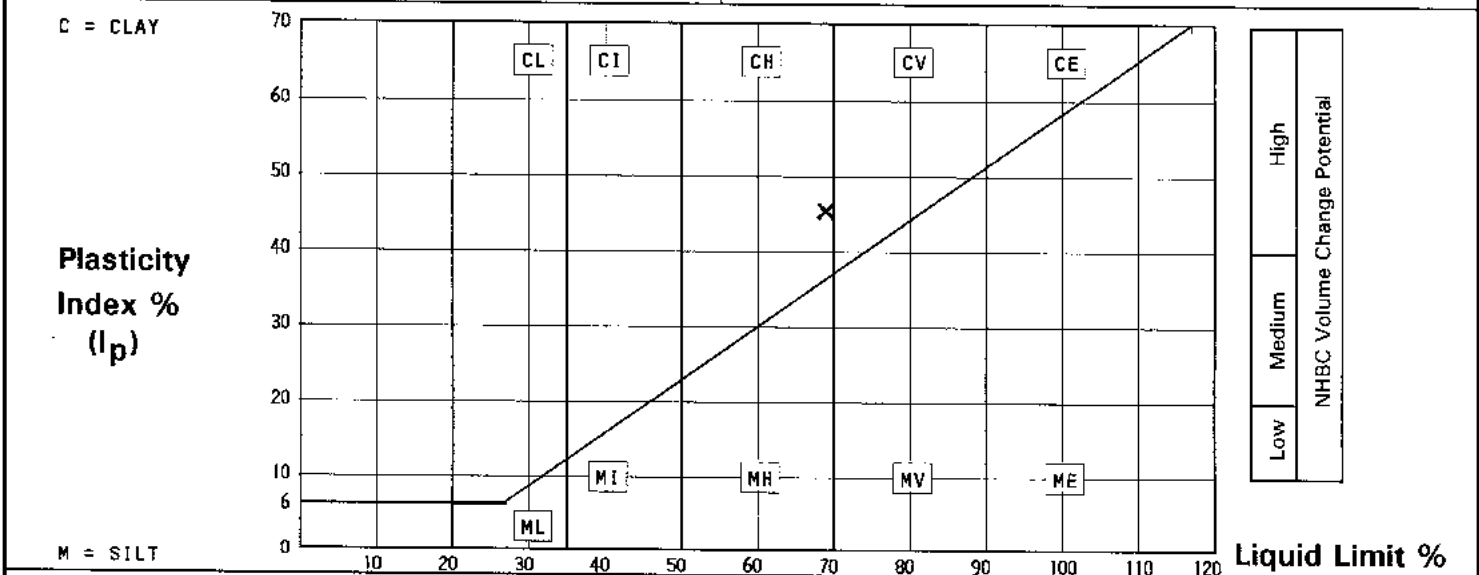
Contract Serial No.
Greenwood Centre, Greenwood S29908
Place, Camden, London.



DETERMINATION OF MOISTURE CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole/ Pit No.	Depth m.	Sample	Moisture Content %	Description	Remarks
BH2	2.50	D2.5	19	Stiff yellowish brown slightly sandy gravelly CLAY. Gravel is brown, black and white fine to coarse angular to subrounded flint	

PREPARATION				Liquid Limit	69 %
Method of Preparation	Sieved Specimen			Plastic Limit	24 %
Sample retained 0.425 sieve	(Measured)	41 %		Plasticity Index	45 %
Corrected moisture content for material passing 0.425mm		32 %		Liquidity Index	0.18
Curing Time		24 Hours		Clay Content	Not analysed. %
				Derived Activity (PI/CC)	Not analysed.



METHOD OF PREPARATION: BS 1377:PART 1:1990:7.4 & PART 2:1990:4.2

METHOD OF TEST : BS 1377:PART 2:1990:3.2, 4.3, 5.3, 5.4

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

COMMENTS : PLASTICITY CHART BS5930:1999:Figure 18
VOLUME CHANGE POTENTIAL: NHBC Standards Chapter 4.2 Unmodified Plasticity Index
NOTE: Modified Plasticity Index I'p = Ip x (% less than 425 microns/100)
40% retained on 2mm sieve.
Corrected moisture content and calculated liquidity index assume material greater than 0.425mm non porous. See BS1377:Part2:1990 Clause 3 Note 1.



TEST REPORT.

ISSUED BY : SOIL PROPERTY TESTING LTD.

DATE OF ISSUE : As page 1 PAGE 6 of 19

Contract
Greenwood Centre, Greenwood
Place, Camden, London.

Serial No.
S29908



DETERMINATION OF MOISTURE CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX

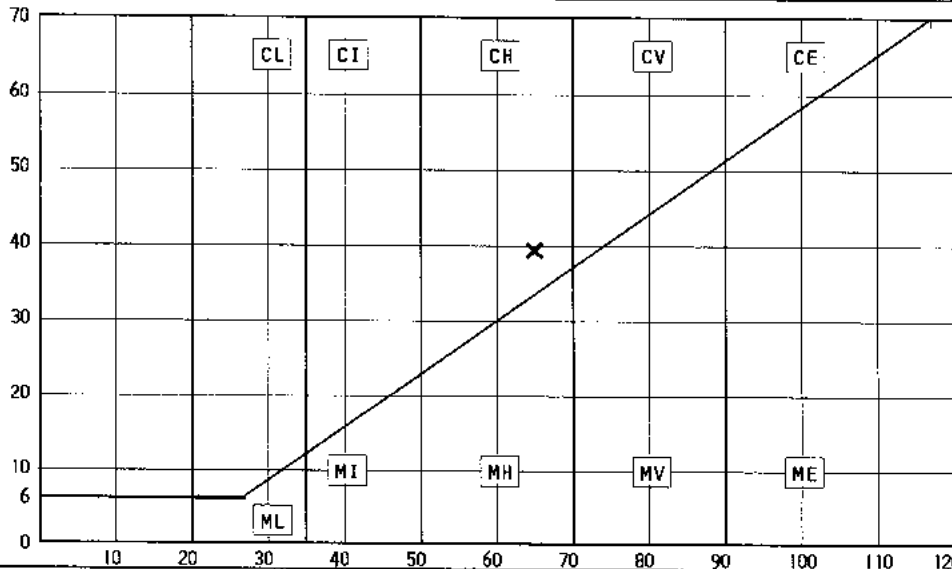
Borehole/ Pit No.	Depth m.	Sample	Moisture Content %	Description	Remarks
BH2	4.00	D4.0	28	Stiff dark yellowish brown CLAY with rare bluish grey veins, decayed roots and selenite crystals	Oven dried at a maximum of 80°C due to the presence of selenite

PREPARATION				Liquid Limit	65 %
Method of Preparation	Specimen from Natural Soil			Plastic Limit	26 %
Sample retained 0.425 sieve	(Assumed)	0 %	Plasticity Index	39 %	
Corrected moisture content for material passing 0.425mm				Liquidity Index	0.05
Curing Time	95 Hours			Clay Content	Not analysed. %
				Derived Activity (PI/CC)	Not analysed.

C = CLAY

Plasticity
Index %
(I_p)

M = SILT



High	NHBC Volume Change Potential
Medium	
Low	

Liquid Limit %

METHOD OF PREPARATION: BS 1377:PART 1:1990:7.4 & PART 2:1990:4.2

METHOD OF TEST : BS 1377:PART 2:1990:3.2, 4.3, 5.3, 5.4

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

COMMENTS : PLASTICITY CHART BS5930:1999:Figure 18
VOLUME CHANGE POTENTIAL: NHBC Standards Chapter 4.2 Unmodified Plasticity Index
NOTE: Modified Plasticity Index I'_p = I_p x (% less than 425 microns/100)



TEST REPORT.

ISSUED BY : SOIL PROPERTY TESTING LTD.

DATE OF ISSUE : As page 1 PAGE 7 of 19

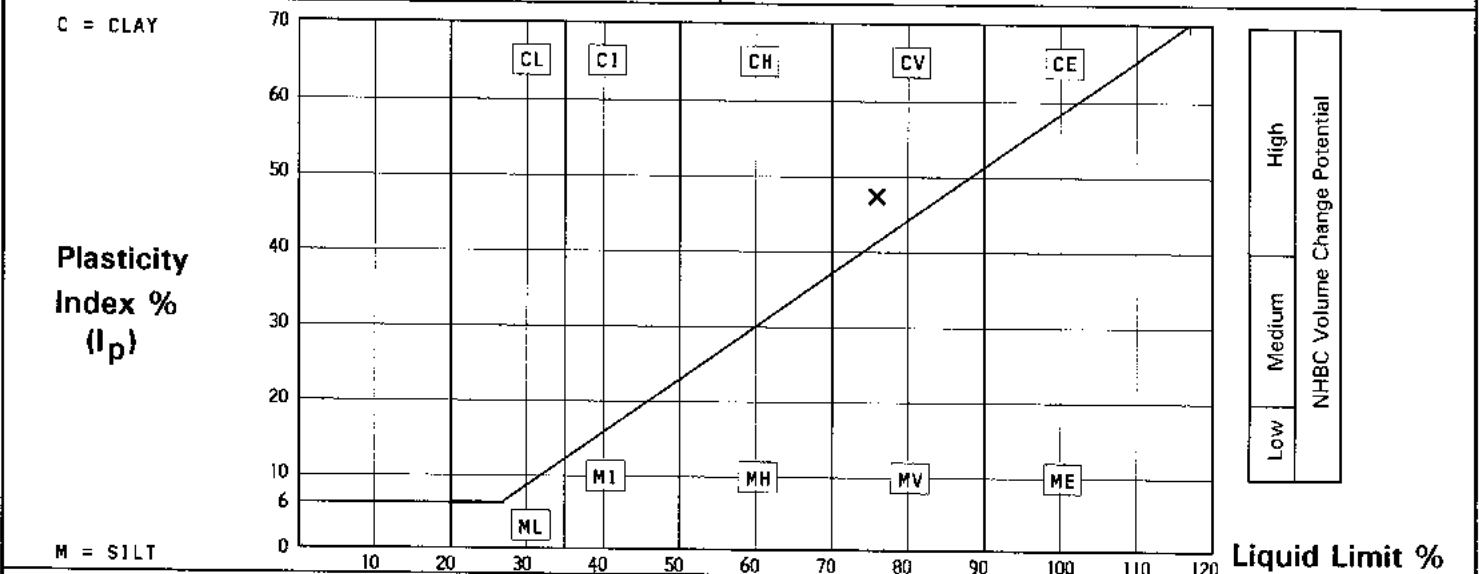
Contract Serial No.
Greenwood Centre, Greenwood S29908
Place, Camden, London.



DETERMINATION OF MOISTURE CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole/ Pit No.	Depth m.	Sample	Moisture Content %	Description	Remarks
BH2	11.00	UT11	27	Very stiff (Very high strength) fissured friable locally thickly laminated dark greyish brown CLAY with occasional dark grey mottling	

PREPARATION		Liquid Limit	76 %
Method of Preparation	Specimen from Natural Soil	Plastic Limit	29 %
Sample retained 0.425 sieve (Assumed)	0 %	Plasticity Index	47 %
Corrected moisture content for material passing 0.425mm	%	Liquidity Index	-0.04
Curing Time	75 Hours	Clay Content	Not analysed. %
		Derived Activity (PI/CC)	Not analysed.



METHOD OF PREPARATION: BS 1377:PART 1:1990:7.4 & PART 2:1990:4.2

METHOD OF TEST : BS 1377:PART 2:1990:3.2, 4.3, 5.3, 5.4

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

COMMENTS : PLASTICITY CHART BS5930:1999:Figure 18
VOLUME CHANGE POTENTIAL: NHBC Standards Chapter 4.2 Unmodified Plasticity Index
NOTE: Modified Plasticity Index I_p = I_p x (% less than 425 microns/100)



TEST REPORT.

ISSUED BY : SOIL PROPERTY TESTING LTD.

DATE OF ISSUE : As page 1 PAGE 8 of 9

Contract Serial No.
Greenwood Centre, Greenwood S29908
Place, Camden, London.



DETERMINATION OF DENSITY, MOISTURE CONTENT AND UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION WITHOUT MEASUREMENT OF PORE PRESSURE

Borehole/ Pit No.	Depth m.	Sample	Moisture Content (%)	Bulk Density (Mg/m ³)	Dry Density (Mg/m ³)	Lateral Pressure (kPa)	Deviator Stress (kPa)	Shear Stress (kPa)	MOHR'S CIRCLE ANALYSIS		Description
									Cu (kPa)	φ (degrees)	
BH2	3.00	U3	30	1.98	1.52	64	159	80			Stiff (High strength) fissured yellowish brown CLAY with occasional grey and orangish brown mottling and rare decayed roots
BH2	5.00	UT5	30	1.96	1.51	101	254	127			Stiff (High strength) fissured dark yellowish brown CLAY with occasional grey and orangish brown mottling and selenite crystals
BH2	8.00	UT8	27	1.98	1.56	161	265	133			Stiff (High strength) fissured dark yellowish brown CLAY with occasional grey and orangish brown mottling and selenite crystals
BH2	11.00	UT11	27	2.02	1.59	222	579	290			Very stiff (Very high strength) fissured friable locally thickly laminated dark greyish brown CLAY with occasional dark grey mottling
BH2	15.50	UT15	30	1.98	1.52	310	265	132			Stiff (High strength) fissured dark greyish brown CLAY with occasional dark grey mottling and rare fossil fragments
BH2	18.50	UT18	28	2.00	1.56	372	349	175			Very stiff (Very high strength) fissured dark greyish brown CLAY with occasional dark grey mottling
BH2	21.50	UT21	26	0.02	0.02	434	698	349			Extremely weak fissured dark greyish brown MUDSTONE with occasional dark grey mottling
BH2	24.50	UT24	25	2.05	1.64	491	439	219			Very stiff (Very high strength) fissured friable dark greyish brown CLAY with occasional dark grey mottling

METHOD OF PREPARATION : BS 1377:PART 1:1990:7.4.2 & 8 PART 2:1990:7.2 PART 7:1990:8.3

METHOD OF TEST : BS 1377:PART 2:1990:3 Determination of Moisture Content 1990:7 Determination of Density
:PART 7:1990:8 Undrained Shear Strength 1990:9 Multi-stage test
Note Multi-stage test used when specimen has granular content / behaviour and length of specimen precludes the taking of 3 x 100mm dia by 200mm long specimens.

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

COMMENTS :

REMARKS TO INCLUDE : Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample. Oven drying temperature if not 105-110 deg C.



TEST REPORT.

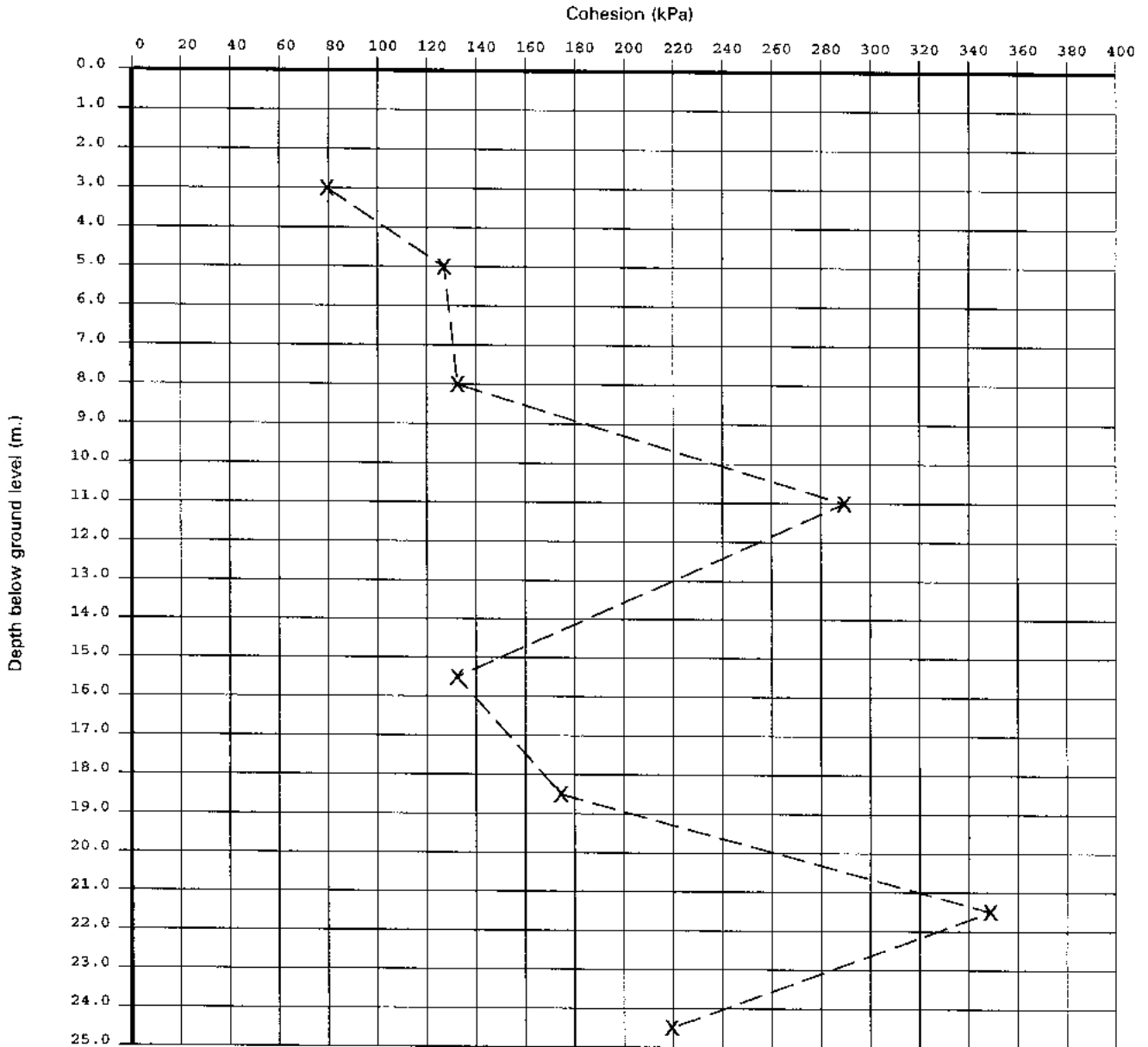
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DATE OF ISSUE : As page 1 PAGE 9 of 9

Contract
Greenwood Centre, Greenwood
Place, Camden, London.

Serial No.
S29908

Cohesion (kPa) vs Depth below ground level (m.).



Key to
Data Points

X: BH2



TEST REPORT.

ISSUED BY : SOIL PROPERTY TESTING LTD.

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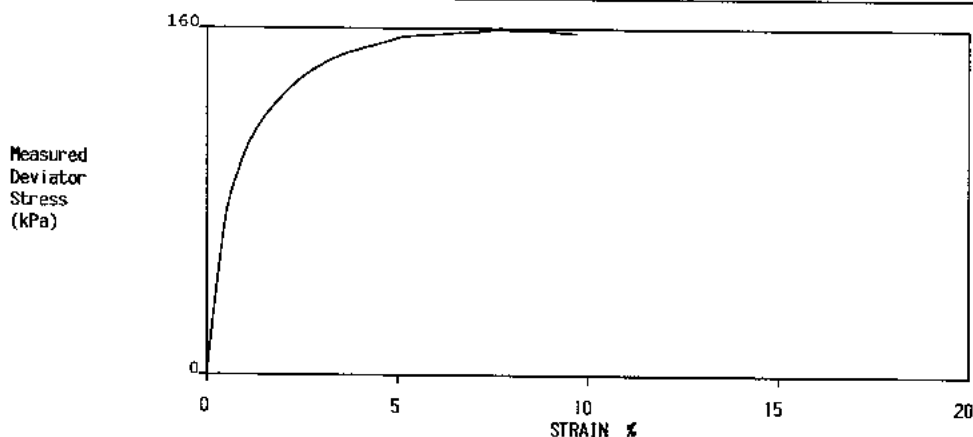
Contract Greenwood Centre, Greenwood Place, Camden, London. Serial No. S29908



DETERMINATION OF UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION WITHOUT MEASUREMENT OF PORE PRESSURE

Borehole/ Pit No.	Depth m.	Sample	Description				Remarks
BH2	3.00	U3	Stiff (High strength) fissured yellowish brown CLAY with occasional grey and orangish brown mottling and rare decayed roots				
Initial Specimen		Height mm	Diameter mm	Weight g	Moisture Content %	Wet Density Mg/m ³	Dry Density Mg/m ³
Depth of Top of Specimen (m) 3.05		199.6	102.1	3235	30	1.98	1.52

TEST INFORMATION Rate of Strain 1.0 % per Min Rubber Membrane Thickness 0.3 mm



Specimen at Failure	Measured Cell Pressure σ_3 (kPa)	Strain at Failure (%)	Stress Corrections (kPa)		Corrected Max. Deviator Stress $\sigma_1 - \sigma_3$ (kPa)	Shear Stress $\frac{1}{2}(\sigma_1 - \sigma_3)_f$ (kPa)	Mohr's Circle Analysis	
			Rubber Membrane	Piston Friction			c_u (kPa)	ϕ_{HI}^o
	64	8.7	0.6	/	159	80		

METHOD OF PREPARATION: BS 1377:PART 1:1990:

METHOD OF TEST : BS 1377:PART 7:1990:8 Definitive Method. 1990:9 Multi-stage loading

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

COMMENTS : Tested in Vertical Orientation.
UKAS Calibration - loads from 0.2 to 10kN.

REMARKS TO INCLUDE : Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample. Oven drying temperature if not 105-110 deg C.



TEST REPORT.

ISSUED BY : SOIL PROPERTY TESTING LTD.


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Contract Serial No.
Greenwood Centre, Greenwood S29908
Place, Camden, London.



DETERMINATION OF UNDRAINED SHEAR STRENGTH

IN TRIAXIAL COMPRESSION WITHOUT MEASUREMENT OF PORE PRESSURE

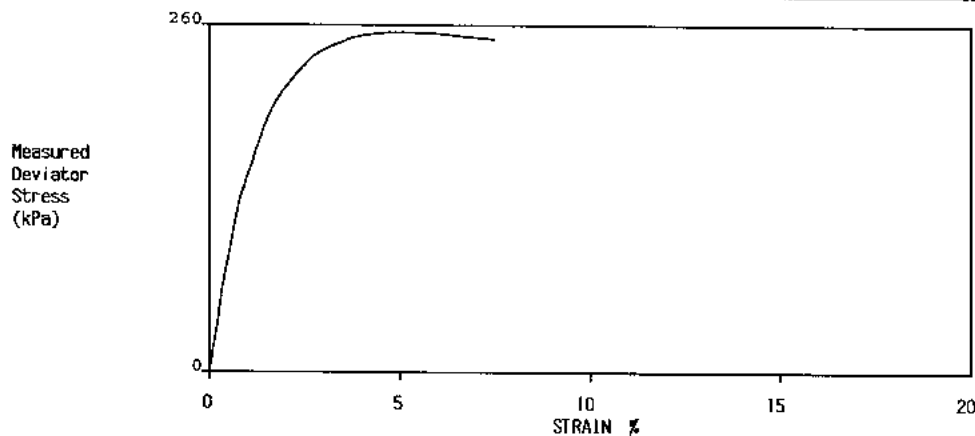
Borehole/ Pit No.	Depth m.	Sample	Description	Remarks			
BH2	5.00	UTS	Stiff (High strength) fissured dark yellowish brown CLAY with occasional grey and orangish brown mottling and selenite crystals	Oven dried at a maximum of 80°C due to the presence of selenite			
Initial Specimen		Height mm	Diameter mm	Weight g	Moisture Content %	Wet Density Mg/m ³	Dry Density Mg/m ³
 Depth of Top of Specimen (m) 5.06		199.6	102.8	3252	30	1.96	1.51


TEST INFORMATION

Rate of Strain 1.0 % per Min

Rubber Membrane Thickness

0.3 mm



Specimen at Failure	Measured Cell Pressure σ_3 (kPa)	Strain at Failure (%)	Stress Corrections (kPa)		Corrected Max. Deviator Stress $\sigma_1 - \sigma_3$ (kPa)	Shear Stress C_u $\frac{1}{2}(\sigma_1 - \sigma_3)_f$ (kPa)	Mohr's Circle Analysis	
			Rubber Membrane	Piston Friction			C_u (kPa)	ϕ_{HI}°
	101	5.1	0.4	/	254	127		

METHOD OF PREPARATION: BS 1377:PART 1:1990:

METHOD OF TEST : BS 1377:PART 7:1990:8 Definitive Method. 1990:9 Multi-stage loading

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

COMMENTS : Tested in Vertical Orientation.
UKAS Calibration - loads from 0.2 to 10kN.

REMARKS TO INCLUDE : Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample. Oven drying temperature if not 105-110 deg C.



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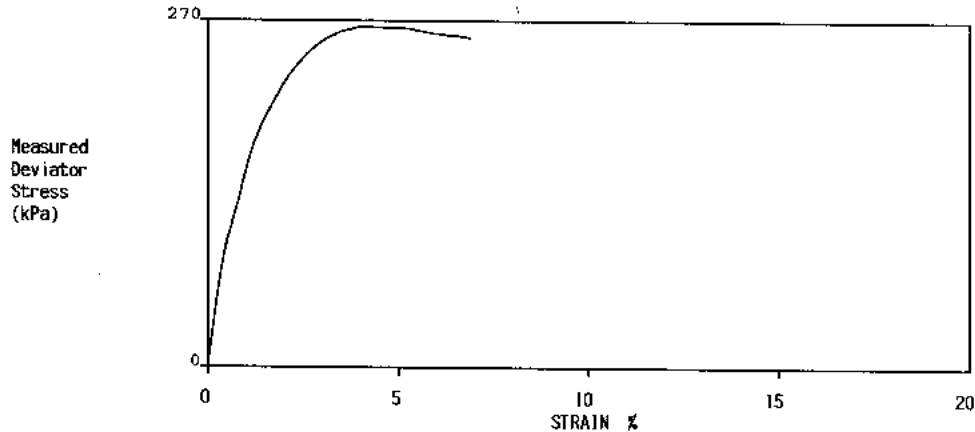
Contract Serial No.
Greenwood Centre, Greenwood S29908
Place, Camden, London.




DETERMINATION OF UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION WITHOUT MEASUREMENT OF PORE PRESSURE

Borehole/ Pit No.	Depth m.	Sample	Description				Remarks	
BH2	8.00	UT8	Stiff (High strength) fissured dark yellowish brown CLAY with occasional grey and orangish brown mottling and selenite crystals				Oven dried at a maximum of 80°C due to the presence of selenite	
Initial Specimen		Height mm	Diameter mm	Weight g	Moisture Content %	Wet Density Mg/m ³	Dry Density Mg/m ³	
	Depth of Top of Specimen (m)	184.6	103.4	3069	27	1.98	1.56	
	8.04							

TEST INFORMATION Rate of Strain 1.0 % per Min Rubber Membrane Thickness 0.3 mm



Specimen at Failure	Measured Cell Pressure σ_3 (kPa)	Strain at Failure (%)	Stress Corrections (kPa)		Corrected Max. Deviator Stress $\sigma_1 - \sigma_3$ (kPa)	Shear Stress $\frac{1}{2}(\sigma_1 - \sigma_3)_f$ (kPa)	Mohr's Circle Analysis	
			Rubber Membrane	Piston Friction			c_u (kPa)	ϕ_{HI}^o
	161	4.1	0.3	/	265	133		

METHOD OF PREPARATION: BS 1377:PART 1:1990:

METHOD OF TEST : BS 1377:PART 7:1990:8 Definitive Method. 1990:9 Multi-stage loading

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

COMMENTS : Tested in Vertical Orientation.
UKAS Calibration - loads from 0.2 to 10kN.

REMARKS TO INCLUDE : Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample. Oven drying temperature if not 105-110 deg C.



TEST REPORT.

ISSUED BY : SOIL PROPERTY TESTING LTD.

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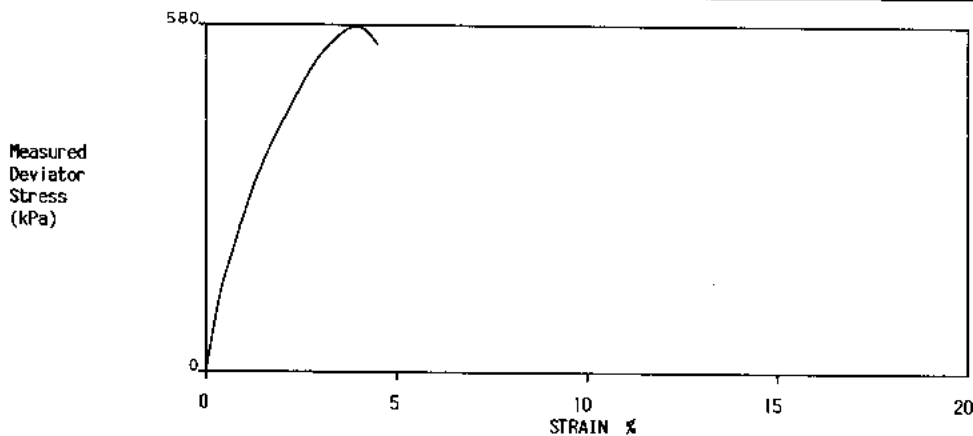
Contract Serial No.
Greenwood Centre, Greenwood S29908
Place, Camden, London.



DETERMINATION OF UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION WITHOUT MEASUREMENT OF PORE PRESSURE

Borehole/ Pit No.	Depth m.	Sample	Description	Remarks			
BH2	11.00	UT11	Very stiff (Very high strength) fissured friable locally thickly laminated dark greyish brown CLAY with occasional dark grey mottling				
Initial Specimen							
	Depth of Top of Specimen (m)	Height mm	Diameter mm	Weight g	Moisture Content %	Wet Density Mg/m ³	Dry Density Mg/m ³
	11.05	184.7	103.3	3125	27	2.02	1.59

TEST INFORMATION Rate of Strain 0.9 % per Min Rubber Membrane Thickness 0.3 mm



Specimen at Failure	Measured Cell Pressure σ_3 (kPa)	Strain at Failure (%)	Stress Corrections (kPa)		Corrected Max Deviator Stress $\sigma_1 - \sigma_3$ (kPa)	Shear Stress C_u $\frac{1}{2}(\sigma_1 - \sigma_3)_f$ (kPa)	Mohr's Circle Analysis	
			Rubber Membrane	Piston Friction			C_u (kPa)	ϕ_{HI}
	222	4.0	0.3	/	575	290		

METHOD OF PREPARATION: BS 1377:PART 1:1990:

METHOD OF TEST : BS 1377:PART 7:1990:8 Definitive Method. 1990:9 Multi-stage loading

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

COMMENTS : Tested in Vertical Orientation.
UKAS Calibration - loads from 0.2 to 10kN.

REMARKS TO INCLUDE : Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample. Oven drying temperature if not 105-110 deg C.



TEST REPORT.

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Place, Camden, London.



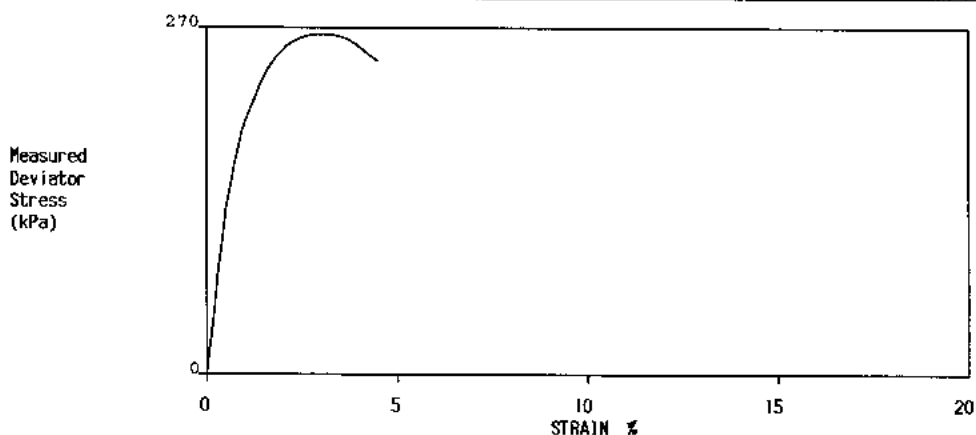
DETERMINATION OF UNDRAINED SHEAR STRENGTH


IN TRIAXIAL COMPRESSION WITHOUT MEASUREMENT OF PORE PRESSURE

Borehole/ Pit No.	Depth m.	Sample	Description	Remarks
BH2	15.50	UT15	Stiff (High strength) fissured dark greyish brown CLAY with occasional dark grey mottling and rare fossil fragments	Premature failure at 3.1% strain

Initial Specimen		Height mm	Diameter mm	Weight g	Moisture Content %	Wet Density Mg/m ³	Dry Density Mg/m ³
Depth of Top of Specimen (m)							
	15.56	199.5	103.4	3313	30	1.98	1.52

TEST INFORMATION Rate of Strain 0.9 % per Min Rubber Membrane Thickness 0.3 mm



Specimen at Failure	Measured Cell Pressure σ_3 (kPa)	Strain at Failure (%)	Stress Corrections (kPa)		Corrected Max. Deviator Stress $\sigma_1 - \sigma_3$ (kPa)	Shear Stress C_u $\frac{1}{2}(\sigma_1 - \sigma_3)_f$ (kPa)	Mohr's Circle Analysis	
			Rubber Membrane	Piston Friction			C_u (kPa)	ϕ
	310	3.1	0.2	/	265	132		

METHOD OF PREPARATION: BS 1377:PART 1:1990:

METHOD OF TEST : BS 1377:PART 7:1990:8 Definitive Method. 1990:9 Multi-stage loading

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

COMMENTS : Tested in Vertical Orientation.
UKAS Calibration - loads from 0.2 to 10kN.

REMARKS TO INCLUDE : Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample. Oven drying temperature if not 105-110 deg C.



TEST REPORT.

ISSUED BY : SOIL PROPERTY TESTING LTD.

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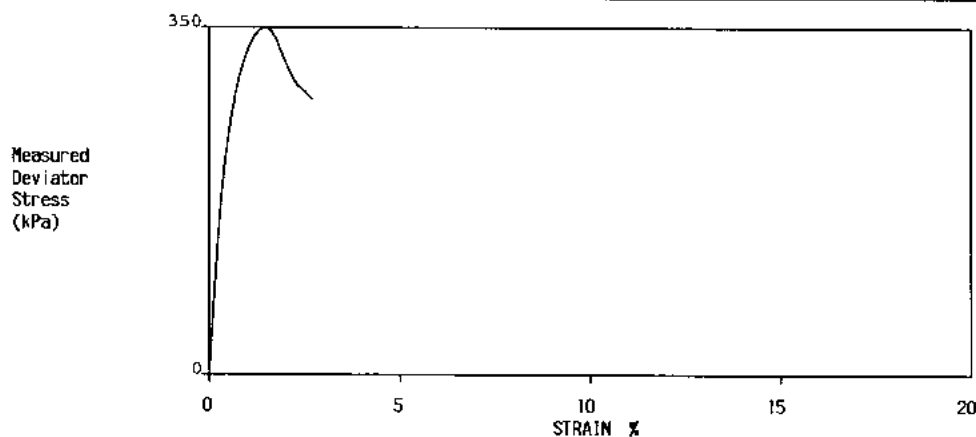
Contract Greenwood Centre, Greenwood Place, Camden, London. Serial No. S29908



DETERMINATION OF UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION WITHOUT MEASUREMENT OF PORE PRESSURE

Borehole/ Pit No.	Depth m.	Sample	Description				Remarks	
BH2	18.50	UT18	Very stiff (Very high strength) fissured dark greyish brown CLAY with occasional dark grey mottling				Premature failure at 1.5% strain	
Initial Specimen		Height mm	Diameter mm	Weight g	Moisture Content %	Wet Density Mg/m ³	Dry Density Mg/m ³	
Depth of Top of Specimen (m) 18.53		199.6	103.6	3370	28	2.00	1.56	

TEST INFORMATION Rate of Strain 0.9 % per Min Rubber Membrane Thickness 0.3 mm



Specimen at Failure	Measured Cell Pressure σ_3 (kPa)	Strain at Failure (%)	Stress Corrections (kPa)		Corrected Max. Deviator Stress $\sigma_1 - \sigma_3$ (kPa)	Shear Stress $\tau_c = \frac{1}{2}(\sigma_1 - \sigma_3)_f$ (kPa)	Mohr's Circle Analysis	
			Rubber Membrane	Piston Friction			τ_c (kPa)	ϕ
	372	1.5	0.2	/	349	175		

METHOD OF PREPARATION: BS 1377:PART 1:1990:

METHOD OF TEST : BS 1377:PART 7:1990:8 Definitive Method. 1990:9 Multi-stage loading

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

COMMENTS : Tested in Vertical Orientation.
UKAS Calibration - loads from 0.2 to 10kN.

REMARKS TO INCLUDE : Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample. Oven drying temperature if not 105-110 deg C.



TEST REPORT.

ISSUED BY : SOIL PROPERTY TESTING LTD.

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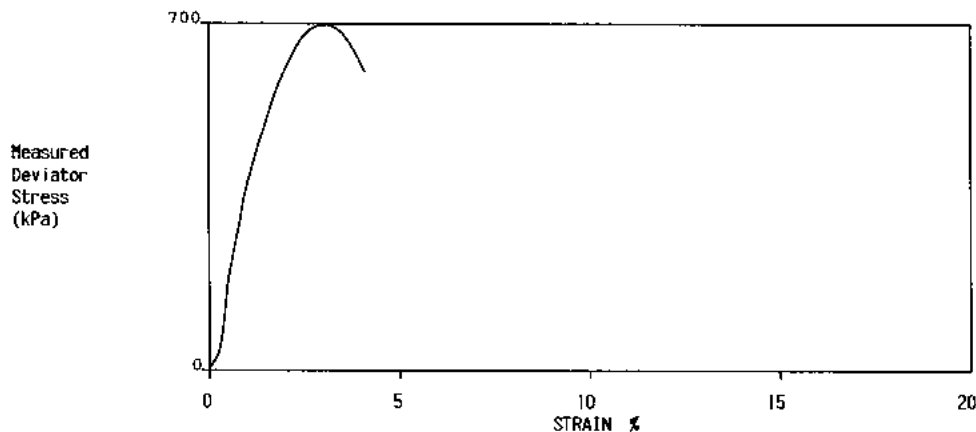
Contract Serial No.
Greenwood Centre, Greenwood S29908
Place, Camden, London.



DETERMINATION OF UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION WITHOUT MEASUREMENT OF PORE PRESSURE

Borehole/ Pit No.	Depth m.	Sample	Description				Remarks	
BH2	21.50	UT21	Extremely weak fissured dark greyish brown MUDSTONE with occasional dark grey mottling				Premature failure at 3.1% strain	
Initial Specimen		Height mm	Diameter mm	Weight g	Moisture Content %	Wet Density Mg/m ³	Dry Density Mg/m ³	
 Depth of Top of Specimen (m) 21.54								
		199.5	103.3	34	26	0.02	0.02	

TEST INFORMATION Rate of Strain 0.8 % per Min Rubber Membrane Thickness 0.3 mm



Specimen at Failure	Measured Cell Pressure σ_3 (kPa)	Strain at Failure (%)	Stress Corrections (kPa)		Corrected Max. Deviator Stress $\sigma_1 - \sigma_3$ (kPa)	Shear Stress $\tau_c = \frac{1}{2}(\sigma_1 - \sigma_3)_f$ (kPa)	Mohr's Circle Analysis	
			Rubber Membrane	Piston Friction			τ_c (kPa)	ϕ (°)
	434	3.1	0.2	/	696	349		

METHOD OF PREPARATION: BS 1377:PART 1:1990:

METHOD OF TEST : BS 1377:PART 7:1990:8 Definitive Method. 1990:9 Multi-stage loading

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

COMMENTS : Tested in Vertical Orientation.
UKAS Calibration - loads from 0.2 to 10kN.

REMARKS TO INCLUDE : Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample. Oven drying temperature if not 105-110 deg C.



TEST REPORT.

ISSUED BY : SOIL PROPERTY TESTING LTD.


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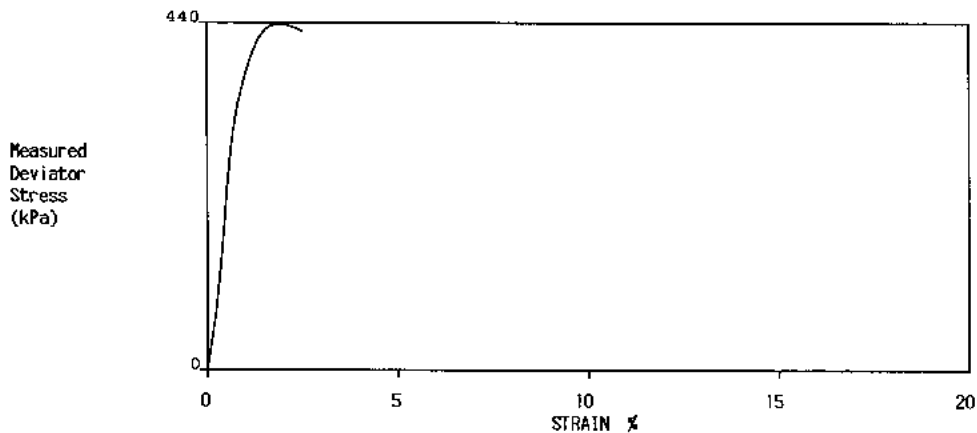



DETERMINATION OF UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION WITHOUT MEASUREMENT OF PORE PRESSURE

Borehole/ Pit No.	Depth m.	Sample	Description	Remarks
BH2	24.50	UT24	Very stiff (Very high strength) fissured friable dark greyish brown CLAY with occasional dark grey mottling	Premature failure at 1.9% strain

Initial Specimen		Height mm	Diameter mm	Weight g	Moisture Content %	Wet Density Mg/m ³	Dry Density Mg/m ³
 Depth of Top of Specimen (m)							
	24.54	199.5	103.4	3428	25	2.05	1.64

TEST INFORMATION	Rate of Strain	0.8	% per Min	Rubber Membrane Thickness	0.3	mm
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Specimen at Failure	Measured Cell Pressure σ_3 (kPa)	Strain at Failure (%)	Stress Corrections (kPa)		Corrected Max. Deviator Stress $\sigma_1 - \sigma_3$ (kPa)	Shear Stress $\frac{1}{2}(\sigma_1 - \sigma_3)_f$ (kPa)	Mohr's Circle Analysis	
			Rubber Membrane	Piston Friction			C_u (kPa)	ϕ
	491	1.9	0.2	/	439	219		

METHOD OF PREPARATION: BS 1377:PART 1:1990:

METHOD OF TEST : BS 1377:PART 7:1990:8 Definitive Method. 1990:9 Multi-stage loading

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

COMMENTS : Tested in Vertical Orientation.
UKAS Calibration - loads from 0.2 to 10kN.

REMARKS TO INCLUDE : sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample. Oven drying temperature if not 105-110 deg C.



TEST REPORT.

ISSUED BY : SOIL PROPERTY TESTING LTD.

DATE OF ISSUE : As page 1 PAGE 1 of 19

Contract Greenwood Centre, Greenwood Place, Camden, London. Serial No. S29908

DETERMINATION OF THE SULPHATE CONTENT OF SOIL AND GROUNDWATER

Borehole/ Pit No.	Depth m.	Sample	Concentration of Soluble Sulphate			% of sample passing 2mm sieve	Description	Remarks
			Soil	Soil	Groundwater			
			Acid Soluble SO ₄ %	Water Soluble 2:1 SO ₄ g/l	g/l			
BH2	14.00	D14.0		0.72		100	Very stiff fissured dark greyish brown CLAY	

METHOD OF PREPARATION: BS 1377:PART 1:1990:7.5 BS1377:PART 3:1990:5.2 Acid Soluble, 5.3 Soil/Water Extract :5.4 Groundwater

METHOD OF TEST : BS 1377:PART 3:1990:5.5

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

COMMENTS : Test not URAS accredited.

REMARKS TO INCLUDE : Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample. Oven drying temperature if not 105-110 deg C.



TEST REPORT.

ISSUED BY : SOIL PROPERTY TESTING LTD.

DATE OF ISSUE : As page 1 PAGE 19 of 19

Contract Greenwood Centre, Greenwood Place, Camden, London. Serial No. S29908

DETERMINATION OF THE pH VALUE

Borehole/ Pit No.	Depth m.	Sample	pH Value	Description	Remarks
BH2	14.00	D14.0	8.0	Very stiff fissured dark greyish brown CLAY	

METHOD OF PREPARATION: BS 1377:PART 1:1990:7 BS 1377:PART 3:1990:9.4

METHOD OF TEST : BS 1377:PART 3:1990:9.5

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

COMMENTS : Test not UKAS accredited.

REMARKS TO INCLUDE : Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample. Oven drying temperature if not 105-110 deg C.



SPT Test Report No.: S29908
Appendix A

Chemtest
The right chemistry to deliver results

Chemtest Ltd.
Depot Road
Newmarket
CB8 0AL

Tel: 01638 606070

Email: info@chemtest.co.uk

Final Report

Report No.: 16-08730-1

Initial Date of Issue: 20-Apr-2016

Client: Soil Property Testing

Client Address: 18 Halycon Court
St Margarets Way
Stukeley Meadows
Huntingdon
Cambridgeshire
PE29 6DG

Contact(s): Jon Garner

Project: S29908 - Greenwood Centre,
Greenwood Place, Camden, London

Quotation No.: Q16-06170 **Date Received:** 15-Apr-2016

Order No.: S29908 **Date Instructed:** 15-Apr-2016

No. of Samples: 3

Turnaround (Wkdays): 5 **Results Due:** 21-Apr-2016

Date Approved: 20-Apr-2016

Approved By:

Keith Jones

Details: Keith Jones, Technical Manager

Project: S29908 - Greenwood Centre, Greenwood Place, Camden,
London

Client: Soil Property Testing	Chemtest Job No.		16-06730	16-06730	16-06730		
Quotation No.: Q16-06170	Chemtest Sample ID.:		280667	280668	280669		
Order No.: S29908	Client Sample Ref.:		BH2	BH2	BH2		
	Client Sample ID.:		D4.0	D9.0	UT24.5		
	Sample Type:		SOIL	SOIL	SOIL		
	Top Depth (m):		4.00	9.00	24.50		
Moisture	N	2030	%	0.020	21	21	20
pH	U	2010		N/A	7.9	7.9	8.7
Sulphate (2:1 Water Soluble) as SO ₄	U	2120	g/l	0.010	2.1	2.4	0.25
Total Sulphur	U	2175	%	0.010	0.36	1.2	0.50
Sulphate (Acid Soluble)	U	2430	%	0.010	0.88	1.7	0.16

Report Information

Key

- U UKAS accredited
- M MCERTS and UKAS accredited
- N Unaccredited
- S This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
- SN This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
- T This analysis has been subcontracted to an unaccredited laboratory
- I/S Insufficient Sample
- U/S Unsuitable Sample
- N/E not evaluated
- < "less than"
- > "greater than"

Comments or interpretations are beyond the scope of UKAS accreditation

The results relate only to the items tested

Uncertainty of measurement for the determinands tested are available upon request

None of the results in this report have been recovery corrected

All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis

All Asbestos testing is performed at our Coventry laboratory

Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

- A - Date of sampling not supplied
- B - Sample age exceeds stability time (sampling to extraction)
- C - Sample not received in appropriate containers
- D - Broken Container

Sample Retention and Disposal

All soil samples will be retained for a period of 45 days from the date of receipt

All water samples will be retained for 14 days from the date of receipt

Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:

customerservices@chemtest.co.uk



TEST REPORT.

ISSUED BY : SOIL PROPERTY TESTING LTD.

DATE OF ISSUE : 11/05/16 PAGE 1 of 7 Pages

Contract

Serial No.

Greenwood Centre, Greenwood
Place, Camden, London

S29994-1



CLIENT:

Geosphere Environmental Ltd.
Brightwell Barns
Brightwell
Ipswich
IP10 0BJ

Soil Property Testing Ltd.

15,16 & 18 Halcyon Court, St Margarets Way,
Stukeley Meadows, Huntingdon,
Cambs. PE29 6DG.

Telephone (01480) 455579 Fax (01480) 453619
Email enquiries@soilpropertytesting.com

SAMPLES SUBMITTED BY:

Geosphere Environmental Ltd.

APPROVED SIGNATORIES:

- J.C.GARNER B.Eng (Hons.) FGS
Technical Director
- S.P.TOWNEND FGS
Quality Manager
- W.JOHNSTONE
Materials Lab Manager

SAMPLES LABELLED:

Greenwood Centre, Greenwood Place, Camden, London

DATE RECEIVED: 22/04/16

SAMPLES TESTED BETWEEN 22/04/16 and 11/05/16

REMARKS: For the attention of Lianne Fountain
Your reference 1655,GI

- NOTES:**
- 1 All remaining samples or remnants from this contract will be disposed of after 21 days from today, unless we are notified to the contrary.
 - 2 (a) UKAS - United Kingdom Accreditation Service.
(b) Opinions and interpretations expressed herein are outside the scope of UKAS accreditation.
 - 3 Tests marked "NOT UKAS ACCREDITED" in this test report are not included in the UKAS Accreditation Schedule for this testing laboratory.
 - 4 This test report may not be reproduced other than in full except with the prior written approval of the issuing laboratory.



TEST REPORT.

ISSUED BY : SOIL PROPERTY TESTING LTD.

DATE OF ISSUE : As page 1 PAGE 3 OF 7

Contract Serial No.
Greenwood Centre, Greenwood S29994-1
Place, Camden, London



SUMMARY OF MOISTURE CONTENT, LIQUID LIMIT, PLASTIC LIMIT, PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole/ Pit No.	Depth m.	Sample	Moisture Content (%)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)	Liquidity Index (%)	SAMPLE PREPARATION				Description	CLASS
								Method S/N	Ret'd 0.425mm (%)	Corr'd M/C <0.425mm	Curing Time (hrs.)		
FIP2	1.40	D1	38	58	22	36	0.69*	S	19(M)	47	73	Very soft yellowish brown slightly sandy slightly gravelly CLAY with occasional greyish brown mottling and coke/coal fragments. Gravel is white, grey, light brown and brown fine and medium subangular and subrounded	CH
FIP3	1.70	D3	39	73	26	47	0.38*	S	11(M)	44	28	Soft yellowish brown slightly sandy slightly gravelly CLAY with occasional grey mottling and brick fragments. Gravel is dark grey and black fine and medium rounded to subangular	CV
FIP4	0.90	D1	25	51	19	32	0.25*	S	7(M)	27	25	Stiff yellowish brown slightly sandy slightly gravelly CLAY with occasional grey and light orangish brown mottling. Gravel is red, white, grey, dark grey and brown fine and medium rounded to subangular	CH
FIP4	1.20	D3	29	-	-	-	-	-	-	-	-	Stiff slightly fissured yellowish brown CLAY with occasional grey and light orangish brown mottling and calcareous aggregations and powder	-
FIP4	1.80	D2	27	-	-	-	-	-	-	-	-	Stiff slightly fissured yellowish brown CLAY with occasional grey mottling, rare orange staining, calcareous aggregations and powder and decayed roots	-

METHOD OF PREPARATION : BS 1377:PART 1:1990:7.4 & PART 2:1990:4.2 S = Wet Sieved Specimen
M = prepared from Natural

METHOD OF TEST : BS 1377:PART 2:1990:3.2, 4.3, 5.3, 5.4

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter. A = Assumed, M = Measured

COMMENTS :

REMARKS TO INCLUDE : Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample. Oven drying temperature if not 105-110 deg C.



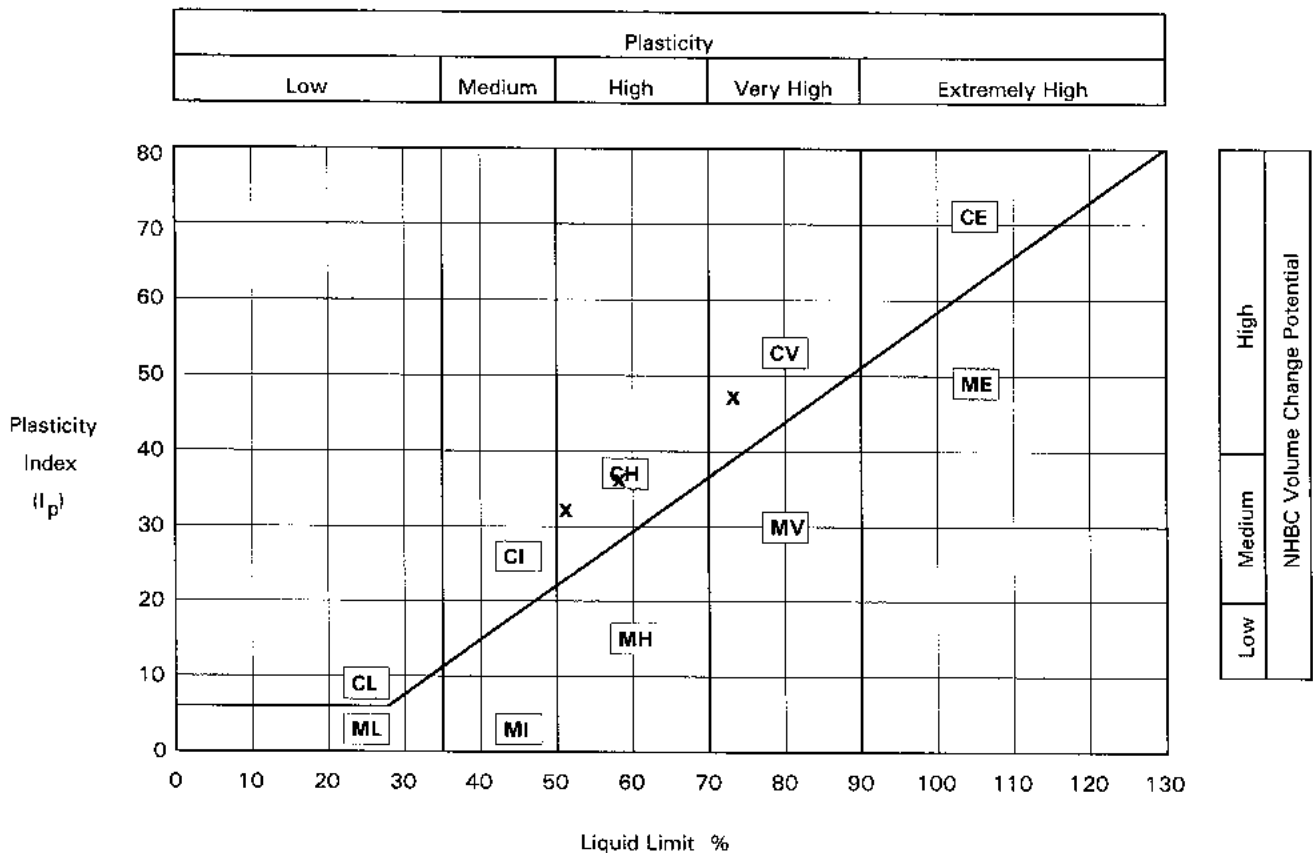
TEST REPORT.

ISSUED BY : SOIL PROPERTY TESTING LTD.

DATE OF ISSUE : As page 1 PAGE 4 of 7

Contract Greenwood Centre, Greenwood Place, Camden, London
 Serial No. S29994-1

PLOT OF PLASTICITY INDEX AGAINST LIQUID LIMIT USING CASAGRANDE CLASSIFICATION CHART



METHOD OF PREPARATION: BS 1377:PART 1:1990:7.4 & PART 2:1990:4.2

METHOD OF TEST : BS 1377:PART 2:1990:3.2, 4.3, 5.3, 5.4

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

COMMENTS : VOLUME CHANGE POTENTIAL: NHBC Standards Chapter 4.2 Unmodified Plasticity Index PLASTICITY CHART BS5930:1999:Figure 18



TEST REPORT.

ISSUED BY : SOIL PROPERTY TESTING LTD.

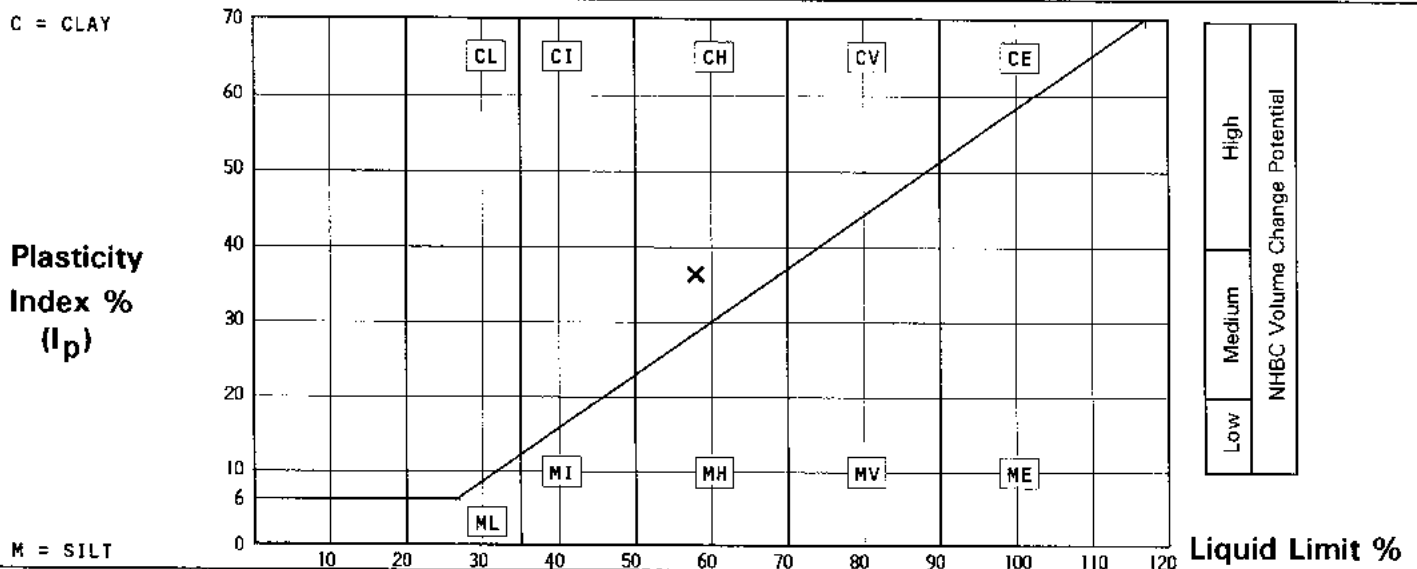
DATE OF ISSUE : As page 1 PAGE 5 of 7

Contract Serial No.
Greenwood Centre, Greenwood S29994-1
Place, Camden, London



DETERMINATION OF MOISTURE CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole/ Pit No.	Depth m.	Sample	Moisture Content %	Description	Remarks
FLP2	1.40	D1	38	Very soft yellowish brown slightly sandy slightly gravelly CLAY with occasional greyish brown mottling and coke/coal fragments. Gravel is white, grey, light brown and brown fine and medium subangular and subrounded	
PREPARATION				Liquid Limit	58 %
Method of Preparation Sieved Specimen				Plastic Limit	22 %
Sample retained 0.425 sieve (Measured) 19 %				Plasticity Index	36 %
Corrected moisture content for material passing 0.425mm 47 %				Liquidity Index	0.69
Curing Time 73 Hours				Clay Content	Not analysed. %
				Derived Activity (PI/CC)	Not analysed.



METHOD OF PREPARATION: BS 1377:PART 1:1990:7.4 & PART 2:1990:4.2

METHOD OF TEST : BS 1377:PART 2:1990:3.2, 4.3, 5.3, 5.4

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

COMMENTS : PLASTICITY CHART BS5930:1999:Figure 18
VOLUME CHANGE POTENTIAL: NHBC Standards Chapter 4.2 Unmodified Plasticity Index
NOTE: Modified Plasticity Index I_p = I_p x (% less than 425 microns/100)
15% retained on 2mm sieve.
Corrected moisture content and calculated liquidity index assume material greater than 0.425mm non porous. See BS1377:Part2:1990 Clause 3 Note 1.



TEST REPORT.

ISSUED BY : SOIL PROPERTY TESTING LTD.

DATE OF ISSUE : As page 1 PAGE 6 of 7

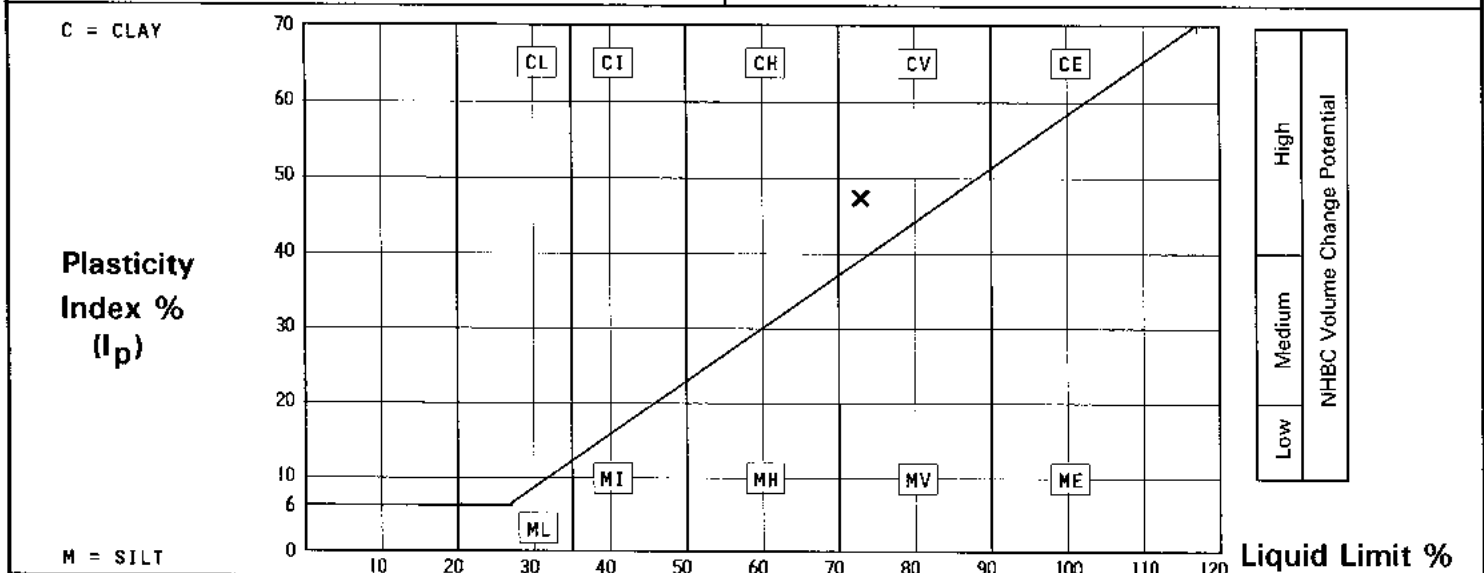
Contract Serial No.
Greenwood Centre, Greenwood S29994-1
Place, Camden, London



DETERMINATION OF MOISTURE CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole/ Pit No.	Depth m.	Sample	Moisture Content %	Description	Remarks
FIP3	1.70	D3	39	Soft yellowish brown slightly sandy slightly gravelly CLAY with occasional grey mottling and brick fragments. Gravel is dark grey and black fine and medium rounded to subangular	

PREPARATION		Liquid Limit	73 %
Method of Preparation	Sieved Specimen	Plastic Limit	26 %
Sample retained 0.425 sieve (Measured)	11 %	Plasticity Index	47 %
Corrected moisture content for material passing 0.425mm	44 %	Liquidity Index	0.38
Curing Time	28 Hours	Clay Content	Not analysed. %
		Derived Activity (PI/CC)	Not analysed.



METHOD OF PREPARATION: BS 1377:PART 1:1990:7.4 & PART 2:1990:4.2

METHOD OF TEST : BS 1377:PART 2:1990:3.2, 4.3, 5.3, 5.4

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

COMMENTS : PLASTICITY CHART BS5930:1999:Figure 18
VOLUME CHANGE POTENTIAL: NHBC Standards Chapter 4.2 Unmodified Plasticity Index
NOTE: Modified Plasticity Index I'_p = I_p x (% less than 425 microns/100)
10% retained on 2mm sieve.
Corrected moisture content and calculated liquidity index assume material greater than 0.425mm non porous. See BS1377:Part2:1990 Clause 3 Note 1.



TEST REPORT.

ISSUED BY : SOIL PROPERTY TESTING LTD.

DATE OF ISSUE : As page 1 PAGE 7 of 7

Contract
Greenwood Centre, Greenwood
Place, Camden, London

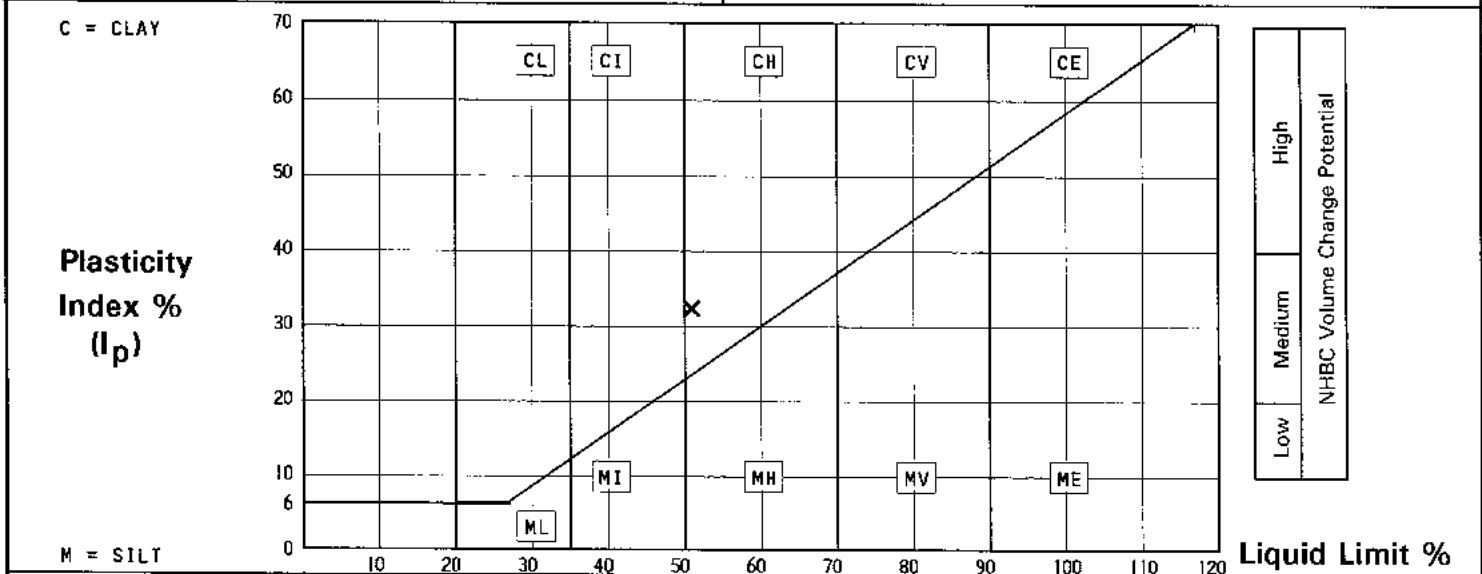
Serial No.
S29994-1



DETERMINATION OF MOISTURE CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole/ Pit No.	Depth m.	Sample	Moisture Content %	Description	Remarks
PIP4	0.90	D1	25	Stiff yellowish brown slightly sandy slightly gravelly CLAY with occasional grey and light orangish brown mottling. Gravel is red, white, grey, dark grey and brown fine and medium rounded to subangular.	Strong odour noted

PREPARATION				Liquid Limit	51 %
Method of Preparation	Sieved Specimen			Plastic Limit	19 %
Sample retained 0.425 sieve	(Measured)	7 %		Plasticity Index	32 %
Corrected moisture content for material passing 0.425mm		27 %		Liquidity Index	0.25
Curing Time		25 Hours		Clay Content	Not analysed. %
				Derived Activity (PI/CC)	Not analysed.



METHOD OF PREPARATION: BS 1377:PART 1:1990:7.4 & PART 2:1990:4.2

METHOD OF TEST : BS 1377:PART 2:1990:3.2, 4.3, 5.3, 5.4

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

COMMENTS : PLASTICITY CHART BS5930:1999:Figure 18
VOLUME CHANGE POTENTIAL: NHBC Standards Chapter 4.2 Unmodified Plasticity Index
NOTE: Modified Plasticity Index I'_p = I_p × (% less than 425 microns/100)
6% retained on 2mm sieve.
Corrected moisture content and calculated liquidity index assume material greater than 0.425mm non porous. See BS1377:Part2:1990 Clause 3 Note 1.



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SPT Test Report No.: S29994-1

Appendix A

Chemtest

The right chemistry to deliver results

Chemtest Ltd.

Depot Road

Newmarket

CB8 0AL

Tel: 01638 606070

Email: info@chemtest.co.uk

Final Report

Report No.: 16-10385-1

Initial Date of Issue: 11-May-2016

Client: Soil Property Testing

Client Address: 18 Halycon Court
St Margarets Way
Stukeley Meadows
Huntingdon
Cambridgeshire
PE29 6DG

Contact(s): Jon Garner

Project: S29994-1 Greenwood Centre,
Greenwood Place

Quotation No.: Q16-06170 **Date Received:** 05-May-2016


Order No.: S29994-1 **Date Instructed:** 05-May-2016

No. of Samples: 2

Turnaround (Wkdays): 5 **Results Due:** 11-May-2016

Date Approved: 11-May-2016

Approved By:



Details: Keith Jones, Technical Manager

Project: S29994-1 Greenwood Centre, Greenwood Place

Client: Soil Property Testing						
Quotation No.: Q16-06170	Chemtest Sample ID.:		289713	289714		
Order No.: S29994-1	Client Sample Ref.:		FIP2	FIP4		
	Client Sample ID.:		D1	D1		
	Sample Type:		SOIL	SOIL		
	Top Depth (m):		1.40	0.90		
Element						
Moisture	N	2030	%	0.020	26	26
pH	U	2010		N/A	8.3	8.3
Sulphate (2:1 Water Soluble) as SO4	U	2120	g/l	0.010	0.11	0.12
Total Sulphur	U	2175	%	0.010	0.030	0.050
Sulphate (Acid Soluble)	U	2430	%	0.010	0.079	0.077

Report Information

Key

- U UKAS accredited
- M MCERTS and UKAS accredited
- N Unaccredited
- S This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
- SN This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
- T This analysis has been subcontracted to an unaccredited laboratory
- I/S Insufficient Sample
- U/S Unsuitable Sample
- N/E not evaluated
- < "less than"
- > "greater than"

Comments or interpretations are beyond the scope of UKAS accreditation

The results relate only to the items tested

Uncertainty of measurement for the determinands tested are available upon request

None of the results in this report have been recovery corrected

All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis

All Asbestos testing is performed at our Coventry laboratory

Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

- A - Date of sampling not supplied
- B - Sample age exceeds stability time (sampling to extraction)
- C - Sample not received in appropriate containers
- D - Broken Container

Sample Retention and Disposal

All soil samples will be retained for a period of 45 days from the date of receipt

All water samples will be retained for 14 days from the date of receipt

Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:

customerservices@chemtest.co.uk



TEST REPORT.

ISSUED BY : SOIL PROPERTY TESTING LTD.

DATE OF ISSUE : 13/05/16 PAGE 1 of 7 Pages

Contract

Serial No.

Greenwood Centre, Greenwood
Place, Camden, London

S29994-2



CLIENT:

Geosphere Environmental Ltd.
Brightwell Barns
Brightwell
Ipswich
IP10 0BJ

Soil Property Testing Ltd.

15,16 & 18 Halcyon Court, St Margarets Way,
Stukeley Meadows, Huntingdon,
Cambs. PE29 6DG.

Telephone (01480) 455579 Fax (01480) 453619
Email enquiries@soilpropertytesting.com

SAMPLES SUBMITTED BY:

Geosphere Environmental Ltd.

APPROVED SIGNATORIES:

- J.C.GARNER B.Eng (Hons.) FGS
Technical Director
- S.P.TOWNEND FGS
Quality Manager
- W.JOHNSTONE
Materials Lab Manager

SAMPLES LABELLED:

Greenwood Centre, Greenwood Place, Camden, London

DATE RECEIVED: 27/04/16

SAMPLES TESTED BETWEEN 27/04/16 and 13/05/16

REMARKS: For the attention of Lianne Fountain
Your reference 1655,GI
Chemical testing subcontracted to Chemtest - results
included as Appendix A to this Test Report

- NOTES:**
- 1 All remaining samples or remnants from this contract will be disposed of after 21 days from today, unless we are notified to the contrary.
 - 2 (a) UKAS - United Kingdom Accreditation Service.
(b) Opinions and interpretations expressed herein are outside the scope of UKAS accreditation.
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TEST REPORT.

ISSUED BY : SOIL PROPERTY TESTING LTD.

DATE OF ISSUE : As page 1 PAGE 3 of 7

Contract Serial No.
Greenwood Centre, Greenwood S29994-2
Place, Camden, London



SUMMARY OF MOISTURE CONTENT, LIQUID LIMIT, PLASTIC LIMIT, PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole/ Pit No.	Depth m.	Sample	Moisture Content (%)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)	Liquidity Index (%)	SAMPLE PREPARATION				Description	CLASS
								Method S/N	Ret'd 0.425mm (%)	Corr'd M/C <0.425mm	Curing Time (hrs.)		
WS102	0.90	D1	30	51	30	21	1.05*	S	42 (M)	52	24	MADE GROUND comprising dark grey and dark greyish brown slightly organic sandy clay, brick, mortar, concrete and glass fragments, fine and medium subangular and subrounded flint, rare ceramic fragments and decayed roots	MHO
WS102	1.90	D2	25	-	-	-						Soft yellowish brown slightly gravelly CLAY with occasional light brownish grey and light orangish brown mottling. Gravel is white, brown and grey fine and medium angular to subrounded gravel	-
WS102	2.90	D3	22	57	23	34	-0.03	N	0 (A)		25	Stiff slightly fissured reddish yellow and dark grey CLAY with occasional grey and light orangish brown mottling	CH
WS102	4.00	D4	28	-	-	-						Stiff slightly fissured brown CLAY with occasional grey and yellowish brown mottling	-
WS102	5.80	D6	28	75	29	46	-0.02	N	0 (A)		24	Stiff slightly fissured yellowish brown CLAY with occasional grey mottling and selenite crystals	CV

METHOD OF PREPARATION : BS 1377:PART 1:1990:7.4 & PART 2:1990:4.2 S = Wet Sieved Specimen
N = prepared from Natural

METHOD OF TEST : BS 1377:PART 2:1990:3.2, 4.3, 5.3, 5.4

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter. A = Assumed, M = Measured

COMMENTS :

REMARKS TO INCLUDE : Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample. Oven drying temperature if not 105-110 deg C.



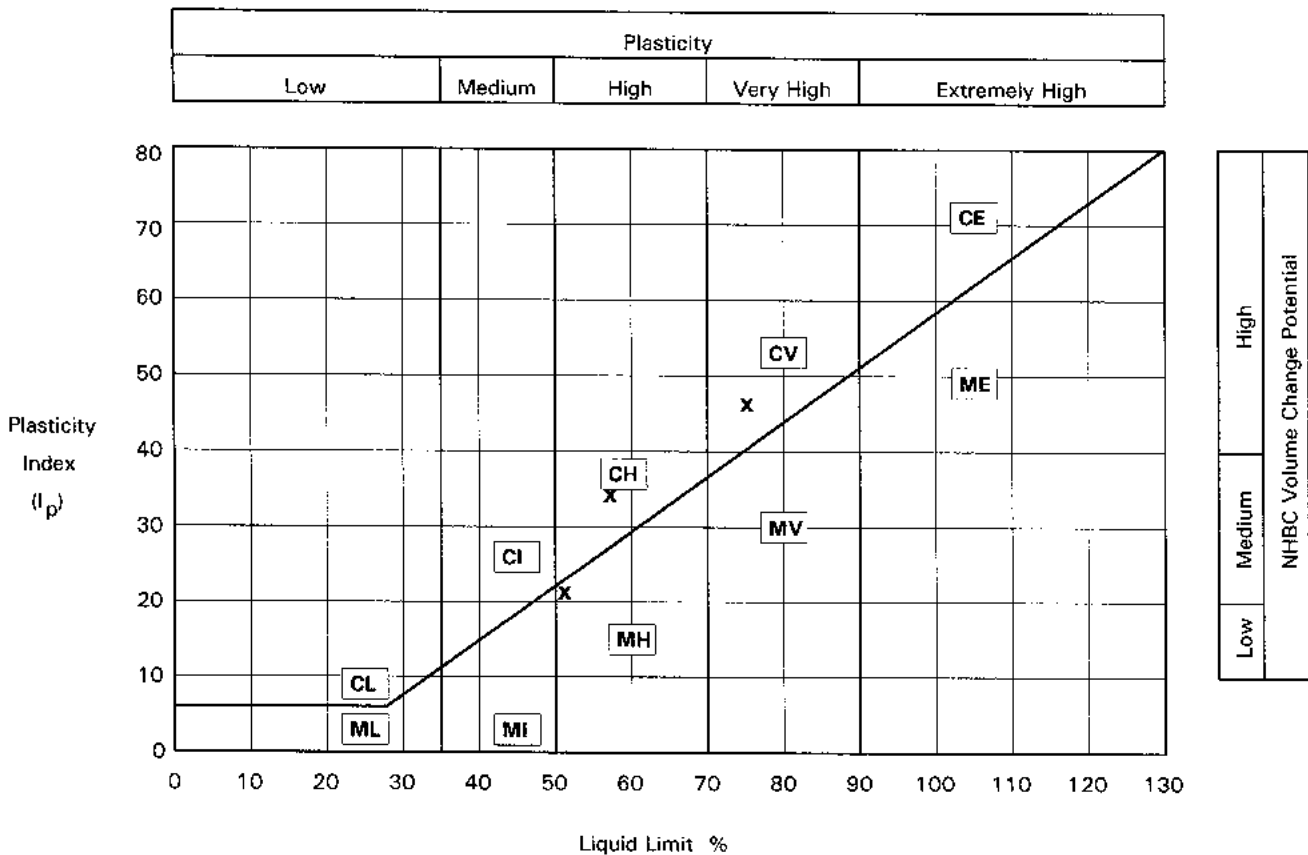
TEST REPORT.

ISSUED BY : SOIL PROPERTY TESTING LTD.

DATE OF ISSUE : As page 1 PAGE 4 of 7

Contract Greenwood Centre, Greenwood Place, Camden, London
 Serial No. S29994-2

PLOT OF PLASTICITY INDEX AGAINST LIQUID LIMIT USING CASAGRANDE CLASSIFICATION CHART



METHOD OF PREPARATION: BS 1377:PART 1:1990:7.4 & PART 2:1990:4.2

METHOD OF TEST : BS 1377:PART 2:1990:3.2, 4.3, 5.3, 5.4

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

COMMENTS : VOLUME CHANGE POTENTIAL: NHBC Standards Chapter 4.2 Unmodified Plasticity Index PLASTICITY CHART BS5930:1999:Figure 18



TEST REPORT.

ISSUED BY : SOIL PROPERTY TESTING LTD.

DATE OF ISSUE : As page 1 PAGE 5 of 7

Contract Greenwood Centre, Greenwood Place, Camden, London
Serial No. S29994-2



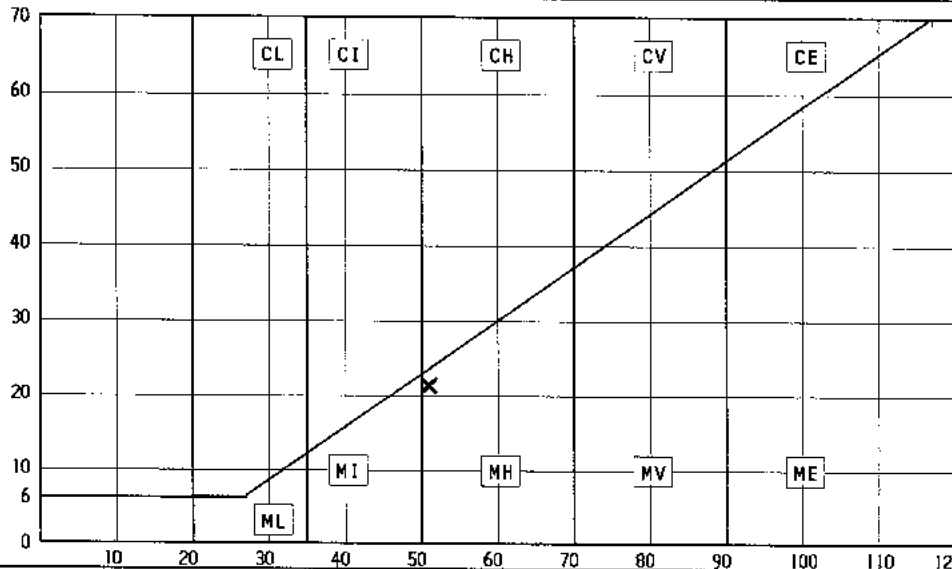
DETERMINATION OF MOISTURE CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole/ Pit No.	Depth m.	Sample	Moisture Content %	Description	Remarks
WS102	0.90	D1	30	MADE GROUND comprising dark grey and dark greyish brown slightly organic sandy clay, brick, mortar, concrete and glass fragments, fine and medium subangular and subrounded flint, rare ceramic fragments and decayed roots	
PREPARATION				Liquid Limit	51 %
Method of Preparation Sieved Specimen				Plastic Limit	10 %
Sample retained 0.425 sieve (Measured) 42 %				Plasticity Index	21 %
Corrected moisture content for material passing 0.425mm 52 %				Liquidity Index	1.05
Curing Time 24 Hours				Clay Content	Not analysed. %
				Derived Activity (PI/CC)	Not analysed.

C = CLAY

Plasticity Index % (I_p)

M = SILT



High
Medium
Low
NHBC Volume Change Potential

Liquid Limit %

METHOD OF PREPARATION: BS 1377:PART 1:1990:7.4 & PART 2:1990:4.2

METHOD OF TEST : BS 1377:PART 2:1990:3.2, 4.3, 5.3, 5.4

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

COMMENTS : PLASTICITY CHART BS5930:1999:Figure 18
VOLUME CHANGE POTENTIAL: NHBC Standards Chapter 4.2 Unmodified Plasticity Index
NOTE: Modified Plasticity Index I'_p = I_p x (% less than 425 microns/100)
29% retained on 2mm sieve.
Corrected moisture content and calculated liquidity index assume material greater than 0.425mm non porous. See BS1377:Part2:1990 Clause 3 Note 1.



TEST REPORT.

ISSUED BY : SOIL PROPERTY TESTING LTD.

DATE OF ISSUE : As page 1 PAGE 6 of 7

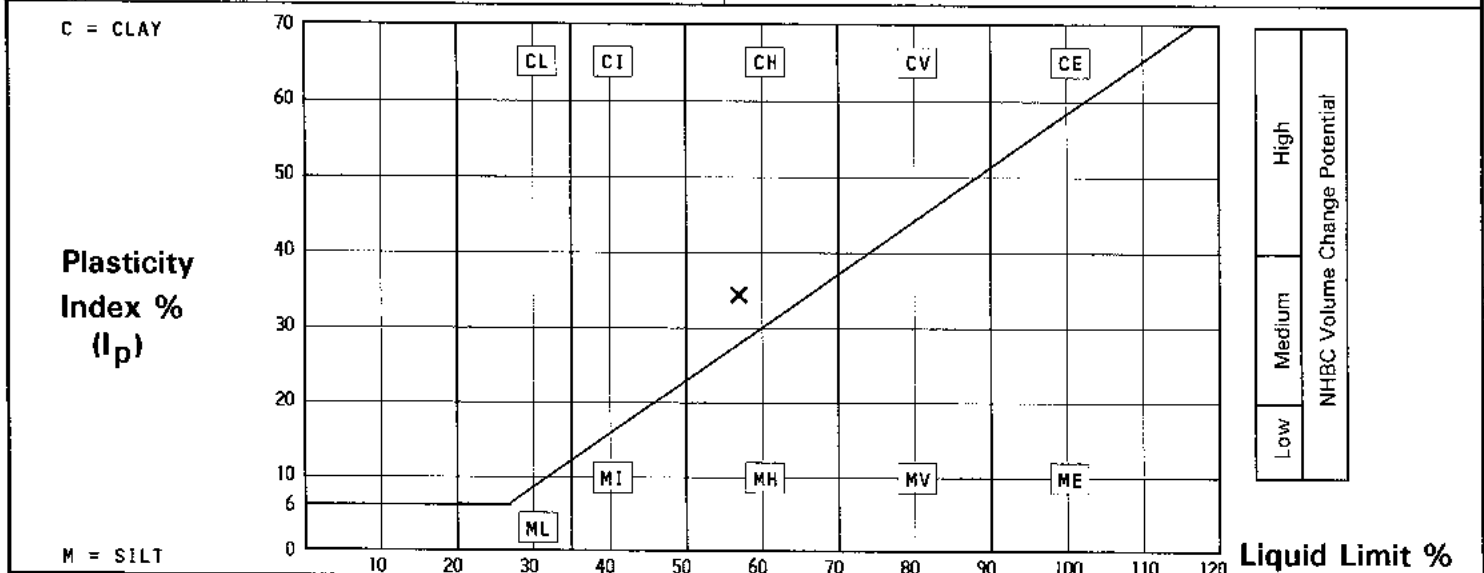
Contract Greenwood Centre, Greenwood Place, Camden, London
 Serial No. S29994-2



DETERMINATION OF MOISTURE CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole/ Pit No.	Depth m.	Sample	Moisture Content %	Description	Remarks
WS102	2.90	D3	22	Stiff slightly fissured reddish yellow and dark grey CLAY with occasional grey and light orangish brown mottling	Rare slightly organic pockets and fine and medium gravel noted - possibly fallen from above during sampling

PREPARATION		Liquid Limit	57 %
Method of Preparation	Specimen from Natural Soil	Plastic Limit	23 %
Sample retained 0.425 sieve	(Assumed) 0 %	Plasticity Index	34 %
Corrected moisture content for material passing 0.425mm	%	Liquidity Index	-0.03
Curing Time	25 Hours	Clay Content	Not analysed. %
		Derived Activity (PI/CC)	Not analysed.



METHOD OF PREPARATION: BS 1377:PART 1:1990:7.4 & PART 2:1990:4.2

METHOD OF TEST : BS 1377:PART 2:1990:3.2, 4.3, 5.3, 5.4

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

COMMENTS : PLASTICITY CHART BS5930:1999:Figure 18
 VOLUME CHANGE POTENTIAL: NHBC Standards Chapter 4.2 Unmodified Plasticity Index
 NOTE: Modified Plasticity Index I'_p = I_p x (% less than 425 microns/100)
 <1% gravel by dry mass picked out by hand and excluded from limits tests.



TEST REPORT.

ISSUED BY : SOIL PROPERTY TESTING LTD.

DATE OF ISSUE : As page 1 PAGE 7 of 7

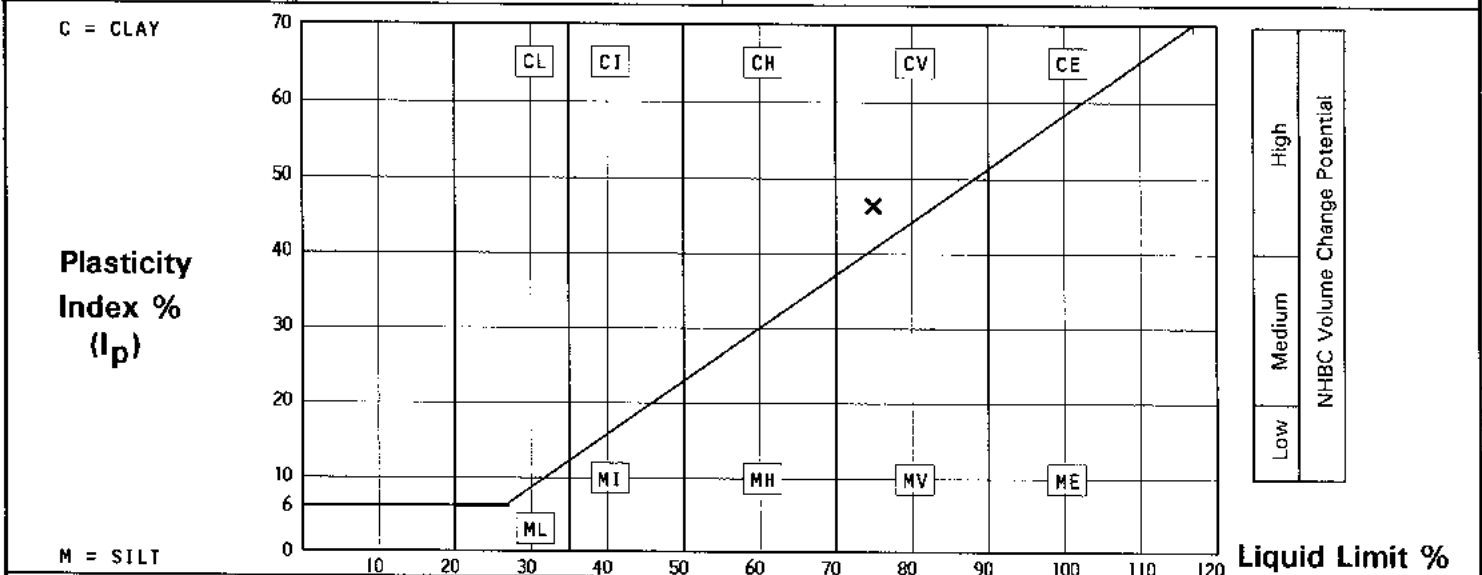
Contract Greenwood Centre, Greenwood Place, Camden, London
 Serial No. S29994-2



DETERMINATION OF MOISTURE CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole/ Pit No.	Depth m.	Sample	Moisture Content %	Description	Remarks
WS102	5.80	D6	28	Stiff slightly fissured yellowish brown CLAY with occasional grey mottling and selenite crystals	Oven dried at a maximum of 80°C due to the presence of selenite

PREPARATION		Liquid Limit	75 %
Method of Preparation	Specimen from Natural Soil	Plastic Limit	29 %
Sample retained 0.425 sieve (Assumed)	0 %	Plasticity Index	46 %
Corrected moisture content for material passing 0.425mm	%	Liquidity Index	-0.02
Curing Time	24 Hours	Clay Content	Not analysed. %
		Derived Activity (PI/CC)	Not analysed.



METHOD OF PREPARATION: BS 1377:PART 1:1990:7.4 & PART 2:1990:4.2

METHOD OF TEST : BS 1377:PART 2:1990:3.2, 4.3, 5.3, 5.4

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

COMMENTS : PLASTICITY CHART BS5930:1999:Figure 18
 VOLUME CHANGE POTENTIAL: NHBC Standards Chapter 4.2 Unmodified Plasticity Index
 NOTE: Modified Plasticity Index I'_p = I_p x (% less than 425 microns/100)



2183

SPT Test Report No: S29994-2
Appendix A

Chemtest

The right chemistry to deliver results

Chemtest Ltd.

Depot Road

Newmarket

CB8 0AL

Tel: 01638 606070

Email: info@chemtest.co.uk

Final Report

Report No.: 16-10366-1

Initial Date of Issue: 11-May-2016

Client: Soil Property Testing

Client Address: 18 Halycon Court
St Margarets Way
Stukeley Meadows
Huntingdon
Cambridgeshire
PE29 6DG

Contact(s): Jon Garner

Project: S29994-2 - Greenwood Centre,
Greenwood Place, Camden, London

Quotation No.: Q16-06170 **Date Received:** 05-May-2016


Order No.: S29994-2 **Date Instructed:** 05-May-2016

No. of Samples: 6

Turnaround (Wkdays): 5 **Results Due:** 11-May-2016

Date Approved: 11-May-2016

Approved By:



Details: Keith Jones, Technical Manager

Project: S29994-2 - Greenwood Centre, Greenwood Place, Camden,
London

Client: Soil Property Testing	Chemest Job No.	16-10363	16-10364	16-10365	16-10366	16-10367	16-10368			
Quotation No.: Q16-06170	Chemtest Sample ID.:	289638	289639	289640	289641	289642	289643			
Order No.: S29994-2	Client Sample Ref.:	WS101	WS102	WS102	WS102	WS102	WS102			
	Client Sample ID.:	D1	D1	D2	D3	D4	D6			
	Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL			
	Top Depth (m):	1.60	0.90	1.90	2.90	4.00	5.80			
Parameter	Units	16-10363	16-10364	16-10365	16-10366	16-10367	16-10368			
Moisture	N	2030	%	0.020	20	19	20	18	22	21
pH	U	2010		N/A	8.3	8.5	8.0	8.1	8.3	8.1
Sulphate (2:1 Water Soluble) as SO ₄	U	2120	g/l	0.010	0.065	0.019	< 0.010	0.061	0.34	0.72
Total Sulphur	U	2175	%	0.010	0.020	0.18				0.22
Sulphate (Acid Soluble)	U	2430	%	0.010	0.025	0.15				0.55
Organic Matter BS1377	N	2930	%	0.10	0.90	2.1		0.90		

Report Information

Key

- U UKAS accredited
- M MCERTS and UKAS accredited
- N Unaccredited
- S This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
- SN This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
- T This analysis has been subcontracted to an unaccredited laboratory
- I/S Insufficient Sample
- U/S Unsuitable Sample
- N/E not evaluated
- < "less than"
- > "greater than"

Comments or interpretations are beyond the scope of UKAS accreditation

The results relate only to the items tested

Uncertainty of measurement for the determinands tested are available upon request

None of the results in this report have been recovery corrected

All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis

All Asbestos testing is performed at our Coventry laboratory

Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

- A - Date of sampling not supplied
- B - Sample age exceeds stability time (sampling to extraction)
- C - Sample not received in appropriate containers
- D - Broken Container

Sample Retention and Disposal

All soil samples will be retained for a period of 45 days from the date of receipt

All water samples will be retained for 14 days from the date of receipt

Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:

customerservices@chemtest.co.uk



TEST REPORT.

ISSUED BY : SOIL PROPERTY TESTING LTD.

DATE OF ISSUE : 19/05/16 PAGE 1 of 17 Pages

Contract

Serial No.

Greenwood Centre, Greenwood
Place, Camden, London

S29994-3



CLIENT:

Geosphere Environmental Ltd.
Brightwell Barns
Brightwell
Ipswich
IP10 0BJ

Soil Property Testing Ltd.

15,16 & 18 Halcyon Court, St Margarets Way,
Stukeley Meadows, Huntingdon,
Cambs. PE29 6DG.

Telephone (01480) 455579 Fax (01480) 453619
Email enquiries@soilpropertytesting.com

SAMPLES SUBMITTED BY:

Geosphere Environmental Ltd.

APPROVED SIGNATORIES:

- J.C.GARNER B.Eng (Hons.) FGS
Technical Director
- S.P.TOWNEND FGS
Quality Manager
- W.JOHNSTONE
Materials Lab Manager

SAMPLES LABELLED:

Greenwood Centre, Greenwood Place, Camden, London

DATE RECEIVED: 27/04/16

SAMPLES TESTED BETWEEN 27/04/16 and 19/05/16

REMARKS: For the attention of Lianne Fountain
Your reference 1655,GI
Chemical tests subcontracted to Chemtest - results
included as Appendix A to this Test Report

- NOTES:**
- 1 All remaining samples or remnants from this contract will be disposed of after 21 days from today, unless we are notified to the contrary.
 - 2 (a) UKAS - United Kingdom Accreditation Service.
(b) Opinions and interpretations expressed herein are outside the scope of UKAS accreditation.
 - 3 Tests marked "NOT UKAS ACCREDITED" in this test report are not included in the UKAS Accreditation Schedule for this testing laboratory.
 - 4 This test report may not be reproduced other than in full except with the prior written approval of the issuing laboratory.



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Serial No.

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SCHEDULE OF LABORATORY TESTS

Bh./ Tp No.	Sample Ref	Depth (from)	700: Sulphate Test (2:1 Water Soluble) 702: pH value of Soil or Water 705: Organic Content (Dichromate) 1: Moisture Content Determination 3: Liquid / Plastic Limit 4 point 5: Wet Sieve Preparation for Limb 718: Total Sulphur Content 704: Acid Soluble Sulphate 13: Triaxial Test single stage											Remarks		
BH01	D3	4.00	*	*	*	*	*	*	*	*	*	*	*			
	D4	5.00	*	*		*				*	*					
	D5	6.00				*	*									
	D6	7.00				*										
	UT1	7.50										*				
	D7	8.00	*	*		*				*	*					
	UT2	10.50										*				
	UT3	13.50										*				
	D13	14.00	*	*												
	UT4	16.50										*				
	UT5	19.50										*				
	UT6	22.50										*				
	UT7	25.00										*				
-	-	-	4	4	1	5	2	1	3	3	7	← Total Number of Tests →				

Scheduled by: Geosphere Environmental Ltd.

Target Date: 12/05/16



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SUMMARY OF MOISTURE CONTENT, LIQUID LIMIT, PLASTIC LIMIT, PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole/ Pit No.	Depth m.	Sample	Moisture Content (%)	Liquid Limit (%)	Plastic Limit (%)	Plasti- city Index (%)	Liqui- dity Index (%)	SAMPLE PREPARATION				Description	CLASS
								Method S/N	Ret'd 0.425mm (%)	Corr'd N/C <0.425mm	Curing Time (hrs.)		
BH01	4.00	D3	20	62	22	40	0.25*	S	37 (M)	32	28	Firm brown slightly sandy slightly gravelly CLAY. Gravel is black, brown and white fine to coarse angular to subrounded	CH
BH01	5.00	D4	30	-	-	-						Stiff dark yellowish brown CLAY with occasional bluish grey mottling, rare selenite crystals and decayed roots.	-
BH01	6.00	D5	30	76	29	47	0.02	N	0 (A)		27	Stiff dark yellowish brown CLAY with rare bluish grey mottling, rare decayed roots and selenite crystals	CV
BH01	7.00	D6	29	-	-	-						Stiff dark yellowish brown CLAY with rare bluish grey mottling, selenite crystals and decayed roots.	-
BH01	8.00	D7	30	-	-	-						Stiff fissured dark yellowish brown CLAY	-

METHOD OF PREPARATION : BS 1377:PART 1:1990:7.4 & PART 2:1990:4.2

S = Wet Sieved Specimen
N = prepared from Natural

METHOD OF TEST : BS 1377:PART 2:1990:3.2, 4.3, 5.3, 5.4

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter. A = Assumed, M = Measured

COMMENTS :

REMARKS TO INCLUDE : Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample. Oven drying temperature if not 105-110 deg C.



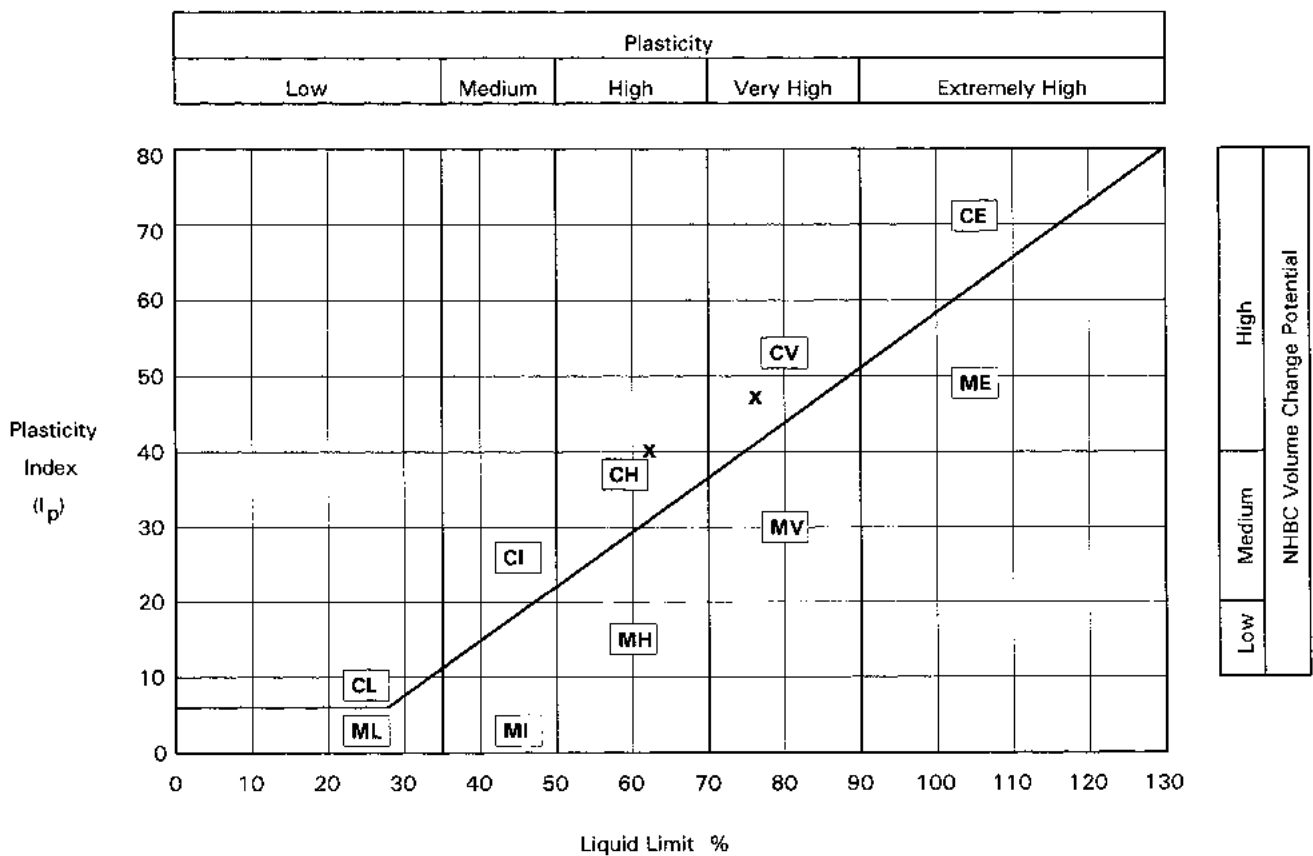
TEST REPORT.

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Greenwood Centre, Greenwood S29994-3
Place, Camden, London

PLOT OF PLASTICITY INDEX AGAINST LIQUID LIMIT USING CASAGRANDE CLASSIFICATION CHART



METHOD OF PREPARATION: BS 1377:PART 1:1990:7.4 & PART 2:1990:4.2

METHOD OF TEST : BS 1377:PART 2:1990:3.2, 4.3, 5.3, 5.4

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

COMMENTS : VOLUME CHANGE POTENTIAL: NHBC Standards Chapter 4.2 Unmodified Plasticity Index PLASTICITY CHART BS5930:1999:Figure 18



TEST REPORT.

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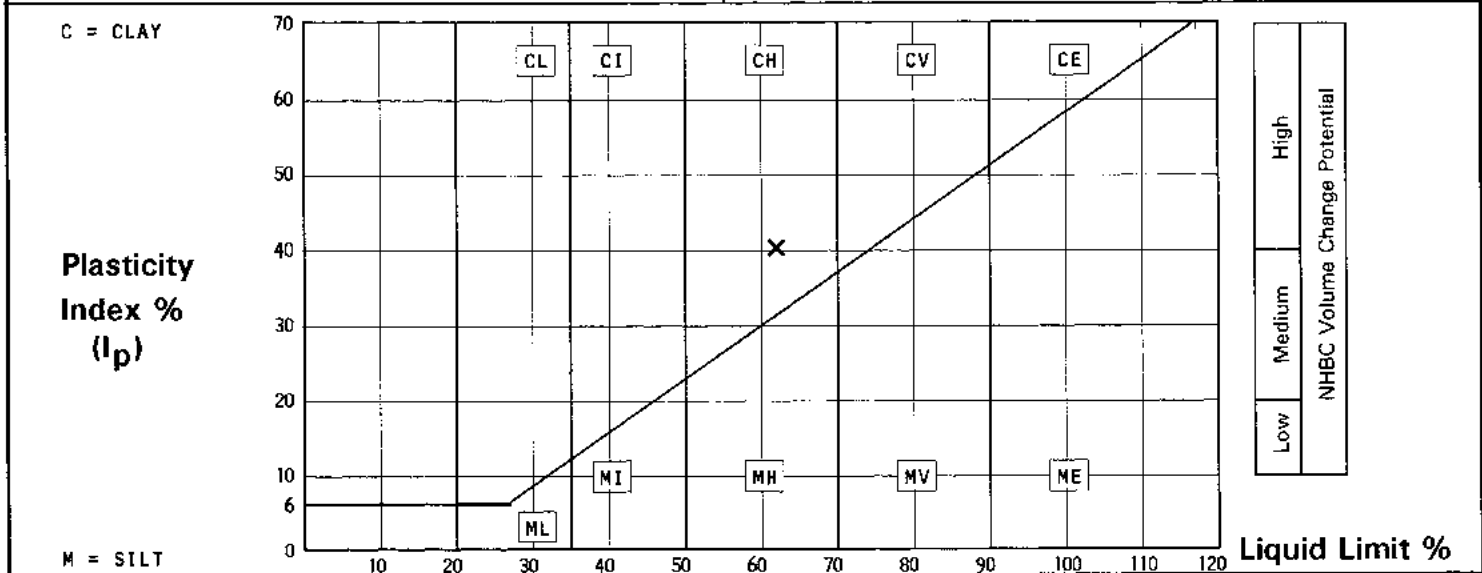
Contract Greenwood Centre, Greenwood Place, Camden, London
 Serial No. S29994-3



DETERMINATION OF MOISTURE CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole/ Pit No.	Depth m.	Sample	Moisture Content %	Description	Remarks
BH01	4.00	D3	20	Firm brown slightly sandy slightly gravelly CLAY. Gravel is black, brown and white fine to coarse angular to subrounded	

PREPARATION		Liquid Limit	62 %
Method of Preparation	Sieved Specimen	Plastic Limit	22 %
Sample retained 0.425 sieve (Measured)	37 %	Plasticity Index	40 %
Corrected moisture content for material passing 0.425mm	32 %	Liquidity Index	0.25
Curing Time	28 Hours	Clay Content	Not analysed. %
		Derived Activity (PI/CC)	Not analysed.



METHOD OF PREPARATION: BS 1377:PART 1:1990:7.4 & PART 2:1990:4.2

METHOD OF TEST : BS 1377:PART 2:1990:3.2, 4.3, 5.3, 5.4

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

COMMENTS : PLASTICITY CHART BS5930:1999:Figure 18
 VOLUME CHANGE POTENTIAL: NHBC Standards Chapter 4.2 Unmodified Plasticity Index
 NOTE: Modified Plasticity Index $I_p' = I_p \times (\% \text{ less than } 425 \text{ microns}/100)$
 31% retained on 2mm sieve.
 Corrected moisture content and calculated liquidity index assume material greater than 0.425mm non porous. See BS1377:Part2:1990 Clause 3 Note 1.



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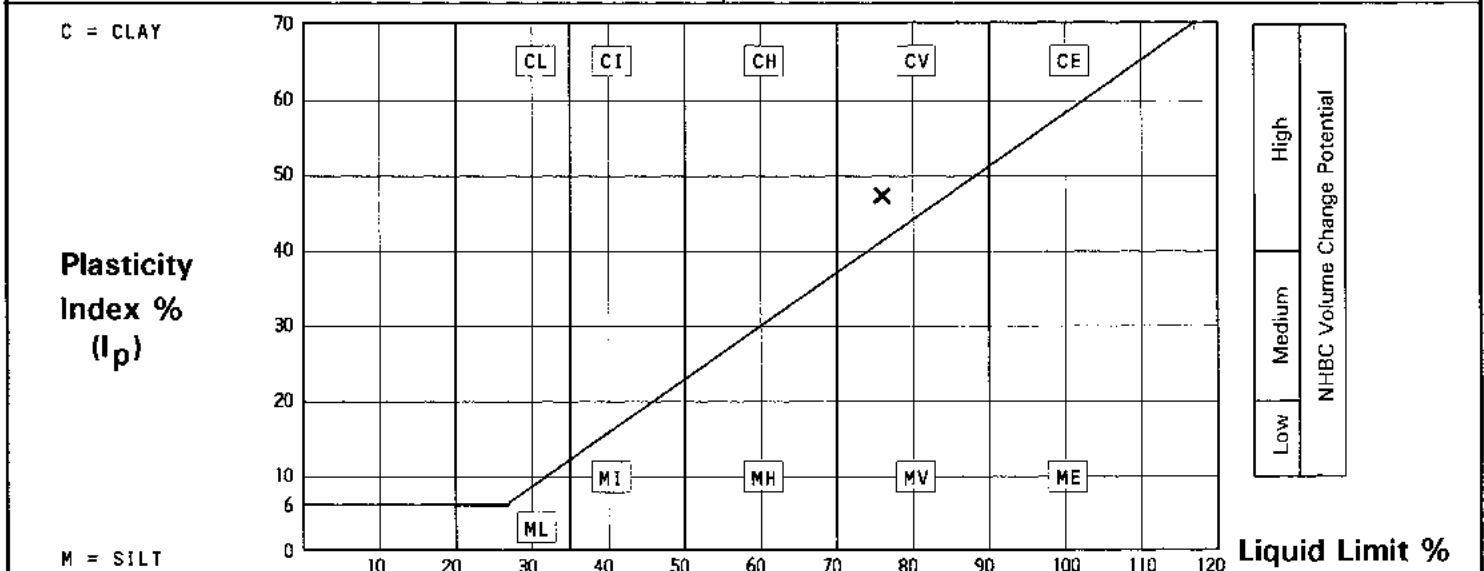
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DETERMINATION OF MOISTURE CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole/ Pit No.	Depth m.	Sample	Moisture Content %	Description	Remarks
BH01	6.00	D5	30	Stiff dark yellowish brown CLAY with rare bluish grey mottling, rare decayed roots and selenite crystals	Oven dried at a maximum of 80°C due to the presence of selenite

PREPARATION		Liquid Limit	76 %
Method of Preparation	Specimen from Natural Soil	Plastic Limit	29 %
Sample retained 0.425 sieve (Assumed)	0 %	Plasticity Index	47 %
Corrected moisture content for material passing 0.425mm	%	Liquidity Index	0.02
Curing Time	27 Hours	Clay Content	Not analysed. %
		Derived Activity (PI/CC)	Not analysed.



METHOD OF PREPARATION: BS 1377:PART 1:1990:7.4 & PART 2:1990:4.2

METHOD OF TEST : BS 1377:PART 2:1990:3.2, 4.3, 5.3, 5.4

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

COMMENTS : PLASTICITY CHART BS5930:1999:Figure 18
VOLUME CHANGE POTENTIAL: NHBC Standards Chapter 4.2 Unmodified Plasticity Index
NOTE: Modified Plasticity Index $I_p' = I_p \times (\% \text{ less than } 425 \text{ microns}/100)$



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DETERMINATION OF DENSITY, MOISTURE CONTENT AND UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION WITHOUT MEASUREMENT OF PORE PRESSURE

Borehole/ Pit No.	Depth m.	Sample	Moisture Content (%)	Bulk Density (Mg/m ³)	Dry Density (Mg/m ³)	Lateral Pressure (kPa)	Deviator Stress (kPa)	Shear Stress (kPa)	MOHR'S CIRCLE ANALYSIS		Description
									Cu (kPa)	φ (degrees)	
BH01	7.50	UT1	30	1.97	1.52	149	205	103			Stiff (High strength) fissured yellowish brown CLAY with occasional greyish brown and grey mottling and selenite crystals
BH01	10.50	UT2	28	1.99	1.55	209	287	144			Stiff (High strength) fissured yellowish brown and brown CLAY with occasional dark grey mottling and selenite crystals
BH01	13.50	UT3	29	1.98	1.53	272	291	145			Stiff (High strength) fissured dark greyish brown CLAY with occasional dark grey mottling and rare orange staining
BH01	16.50	UT4	29	1.99	1.54	332	249	125			Stiff (High strength) fissured dark greyish brown CLAY with occasional dark grey mottling
BH01	19.50	UT5	28	1.98	1.55	392	323	161			Very stiff (Very high strength) fissured dark greyish brown CLAY with occasional dark grey mottling and rare shell fragments
BH01	22.50	UT6	28	2.00	1.56	452	522	261			Very stiff (Very high strength) fissured dark greyish brown CLAY with occasional dark grey mottling
BH01	25.00	UT7	27	2.00	1.57	500	509	255			Very stiff (Very high strength) fissured dark greyish brown CLAY with occasional dark grey mottling

METHOD OF PREPARATION : BS 1377:PART 1:1990:7.4.2 & 8 PART 2:1990:7.2 PART 7:1990:8.3

METHOD OF TEST : BS 1377:PART 2:1990:3 Determination of Moisture Content 1990:7 Determination of Density
:PART 7:1990:8 Undrained Shear Strength 1990:9 Multi-stage test
Note Multi-stage test used when specimen has granular content / behaviour and length of specimen precludes the taking of 3 x 100mm dia by 200mm long specimens.

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample,
C = Core Cutter

COMMENTS :

REMARKS TO INCLUDE : Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample. Oven drying temperature if not 105-110 deg C.



TEST REPORT.

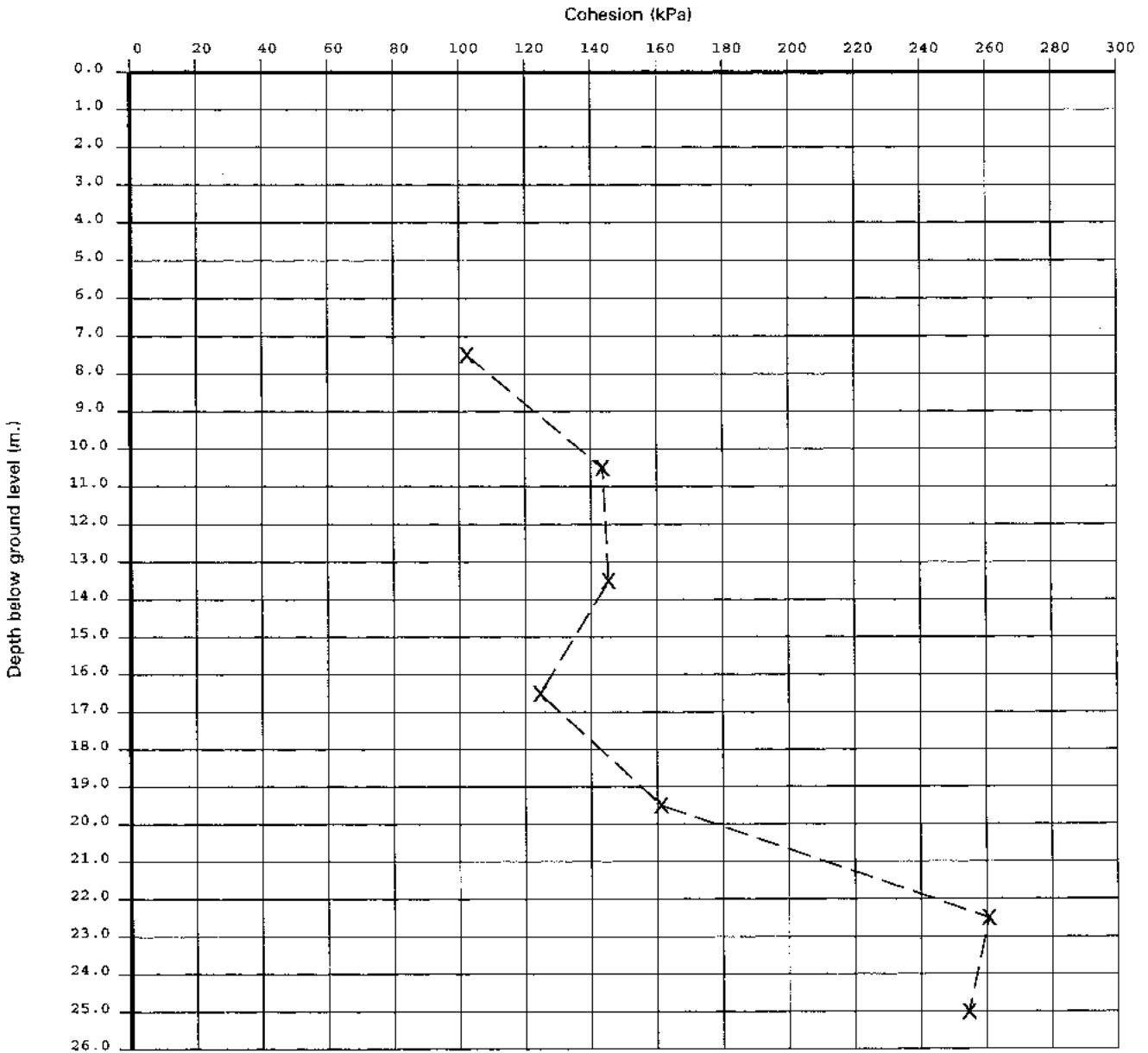
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Cohesion (kPa) vs Depth below ground level (m.).



Key to
Data Points

X : BH01



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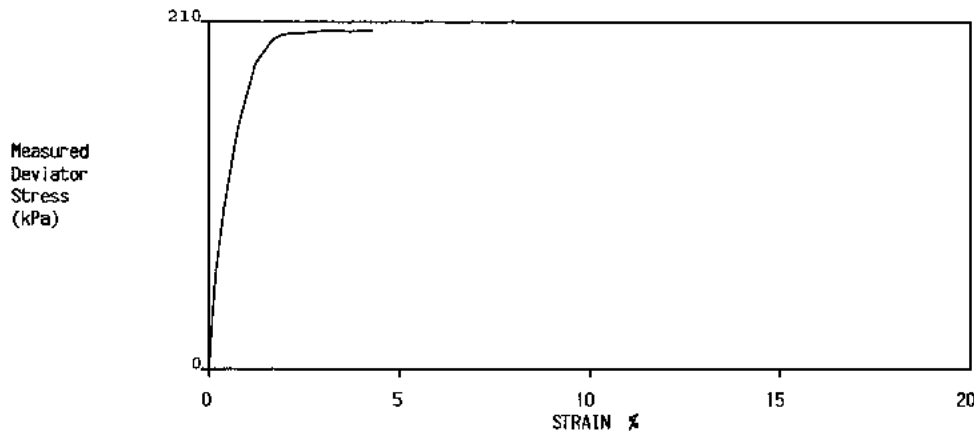
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DETERMINATION OF UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION WITHOUT MEASUREMENT OF PORE PRESSURE

Borehole/ Pit No.	Depth m.	Sample	Description	Remarks		
BH01	7.50	UT1	Stiff (High strength) fissured yellowish brown CLAY with occasional greyish brown and grey mottling and selenite crystals	Strong solvent/hydrocarbon odour. Oven dried at a maximum of 80°C due to the presence of selenite		
Initial Specimen						
 Depth of Top of Specimen (m)	Height mm	Diameter mm	Weight g	Moisture Content %	Wet Density Mg/m ³	Dry Density Mg/m ³
	7.54	199.9	103.6	3317	30	1.97

TEST INFORMATION Rate of Strain 1.0 % per Min Rubber Membrane Thickness 0.3 mm



Specimen at Failure	Measured Cell Pressure σ_3 (kPa)	Strain at Failure (%)	Stress Corrections (kPa)		Corrected Max. Deviator Stress $\sigma_1 - \sigma_3$ (kPa)	Shear Stress $C_u = \frac{1}{2}(\sigma_1 - \sigma_3)_c$ (kPa)	Mohr's Circle Analysis	
			Rubber Membrane	Piston Friction			C_u (kPa)	ϕ_{HI}°
	149	3.3	0.2	/	205	103		

METHOD OF PREPARATION: BS 1377:PART 1:1990:

METHOD OF TEST : BS 1377:PART 7:1990:8 Definitive Method. 1990:9 Multi-stage loading

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

COMMENTS : Tested in Vertical Orientation.
UKAS Calibration - loads from 0.2 to 10kN.

REMARKS TO INCLUDE : Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample. Oven drying temperature if not 105-110 deg C.



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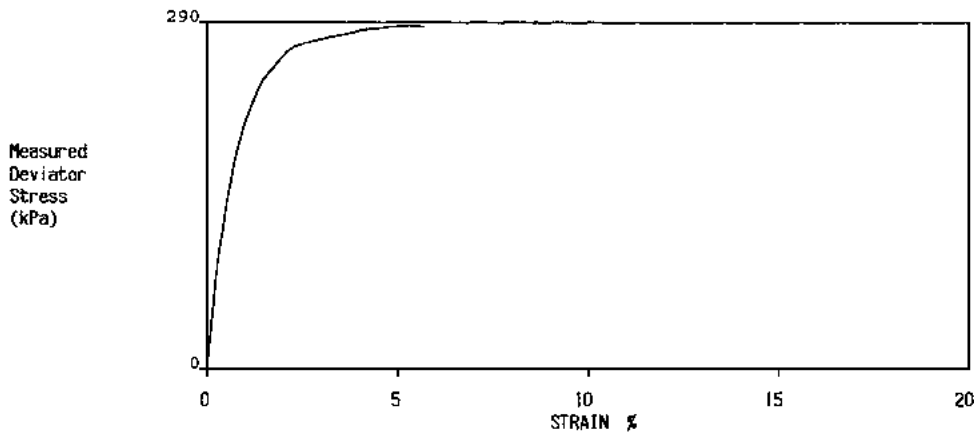
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DETERMINATION OF UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION WITHOUT MEASUREMENT OF PORE PRESSURE

Borehole/ Pit No.	Depth m.	Sample	Description	Remarks		
BH01	10.50	UT2	Stiff (High strength) fissured yellowish brown and brown CLAY with occasional dark grey mottling and selenite crystals	Oven dried at a maximum of 80°C due to the presence of selenite		
Initial Specimen						
 Depth of Top of Specimen (m)	Height mm	Diameter mm	Weight g	Moisture Content %	Wet Density Mg/m ³	Dry Density Mg/m ³
	10.54	184.6	103.6	3091	28	1.99

TEST INFORMATION Rate of Strain 0.9 % per Min Rubber Membrane Thickness 0.3 mm



Specimen at Failure	Measured Cell Pressure σ_3 (kPa)	Strain at Failure (%)	Stress Corrections (kPa)		Corrected Max Deviator Stress $\sigma_1 - \sigma_3$ (kPa)	Shear Stress C_u $\frac{1}{2}(\sigma_1 - \sigma_3)_c$ (kPa)	Mohr's Circle Analysis	
			Rubber Membrane	Piston Friction			C_u (kPa)	ϕ_{HI}°
	209	5.5	0.4	/	287	144		

METHOD OF PREPARATION: BS 1377:PART 1:1990:

METHOD OF TEST : BS 1377:PART 7:1990:8 Definitive Method. 1990:9 Multi-stage loading

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

COMMENTS : Tested in Vertical Orientation.
UKAS Calibration - loads from 0.2 to 10kN.

REMARKS TO INCLUDE : Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample. Oven drying temperature if not 105-110 deg C.



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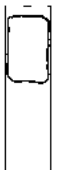
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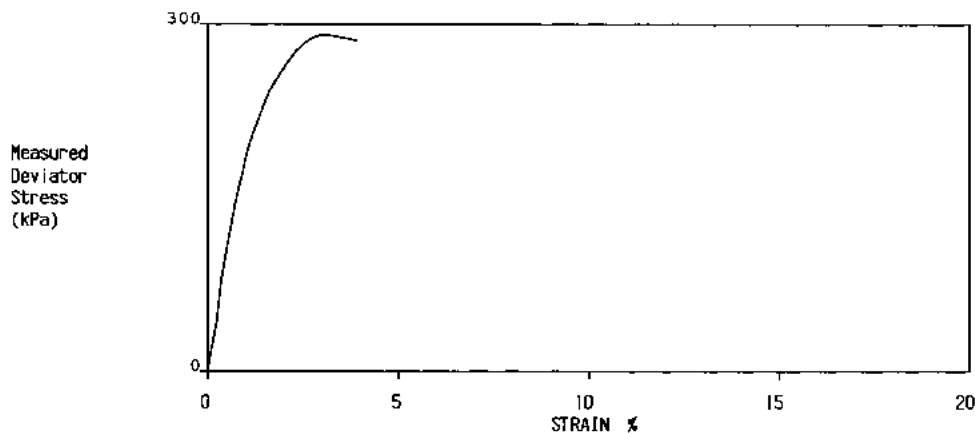
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DETERMINATION OF UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION WITHOUT MEASUREMENT OF PORE PRESSURE

Borehole/ Pit No.	Depth m.	Sample	Description	Remarks			
BH01	13.50	UT3	Stiff (High strength) fissured dark greyish brown CLAY with occasional dark grey mottling and rare orange staining				
Initial Specimen		Height mm	Diameter mm	Weight g	Moisture Content %	Wet Density Mg/m ³	Dry Density Mg/m ³
 Depth of Top of Specimen (m) 13.56		199.9	103.4	3330	29	1.98	1.53

TEST INFORMATION Rate of Strain 0.9 % per Min Rubber Membrane Thickness 0.3 mm



Specimen at Failure	Measured Cell Pressure σ_3 (kPa)	Strain at Failure (%)	Stress Corrections (kPa)		Corrected Max. Deviator Stress $\sigma_1 - \sigma_3$ (kPa)	Shear Stress C_u $\frac{1}{2}(\sigma_1 - \sigma_3)_c$ (kPa)	Mohr's Circle Analysis	
			Rubber Membrane	Piston Friction			C_u (kPa)	ϕ_{HI}°
	272	3.1	0.2	/	291	145		

METHOD OF PREPARATION: BS 1377:PART 1:1990:

METHOD OF TEST : BS 1377:PART 7:1990:8 Definitive Method. 1990:9 Multi-stage loading

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

COMMENTS : Tested in Vertical Orientation.
UKAS Calibration - loads from 0.2 to 10kN.

REMARKS TO INCLUDE : Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample. Oven drying temperature if not 105-110 deg C.



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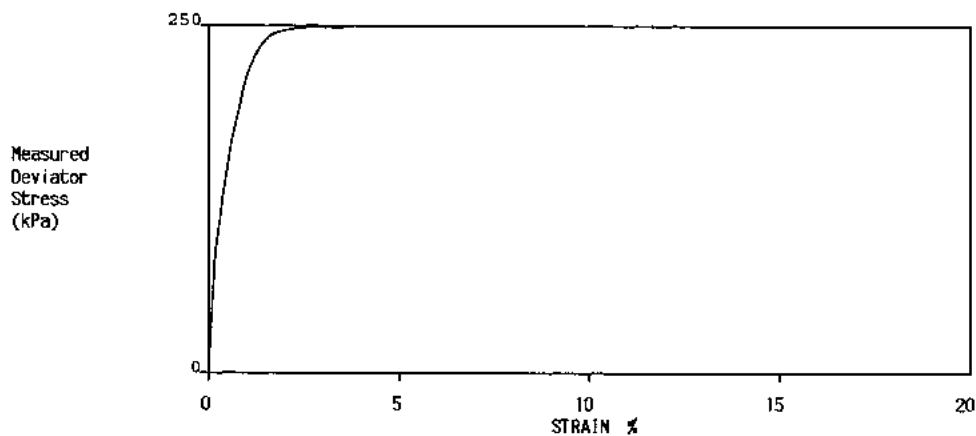


DETERMINATION OF UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION WITHOUT MEASUREMENT OF PORE PRESSURE

Borehole/ Pit No.	Depth m.	Sample	Description	Remarks
BH01	16.50	UT4	Stiff (High strength) fissured dark greyish brown CLAY with occasional dark grey mottling	

Initial Specimen		Height mm	Diameter mm	Weight g	Moisture Content %	Wet Density Mg/m ³	Dry Density Mg/m ³
Depth of Top of Specimen (m)							
16.56		170.2	103.6	2849	29	1.99	1.54

TEST INFORMATION	Rate of Strain	1.0	% per Min	Rubber Membrane Thickness	0.3	mm
------------------	----------------	-----	-----------	---------------------------	-----	----



Specimen at Failure	Measured Cell Pressure σ_3 (kPa)	Strain at Failure (%)	Stress Corrections (kPa)		Corrected Max. Deviator Stress $\sigma_1 - \sigma_3$ (kPa)	Shear Stress C_u $\frac{1}{2}(\sigma_1 - \sigma_3)_f$ (kPa)	Mohr's Circle Analysis	
			Rubber Membrane	Piston Friction			C_u (kPa)	ϕ_{HI}°
	332	2.5	0.2	/	249	125		

METHOD OF PREPARATION: BS 1377:PART 1:1990:

METHOD OF TEST : BS 1377:PART 7:1990:8 Definitive Method. 1990:9 Multi-stage loading

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

COMMENTS : Tested in Vertical Orientation.
UKAS Calibration - loads from 0.2 to 10kN.

REMARKS TO INCLUDE : Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample. Oven drying temperature if not 105-110 deg C.



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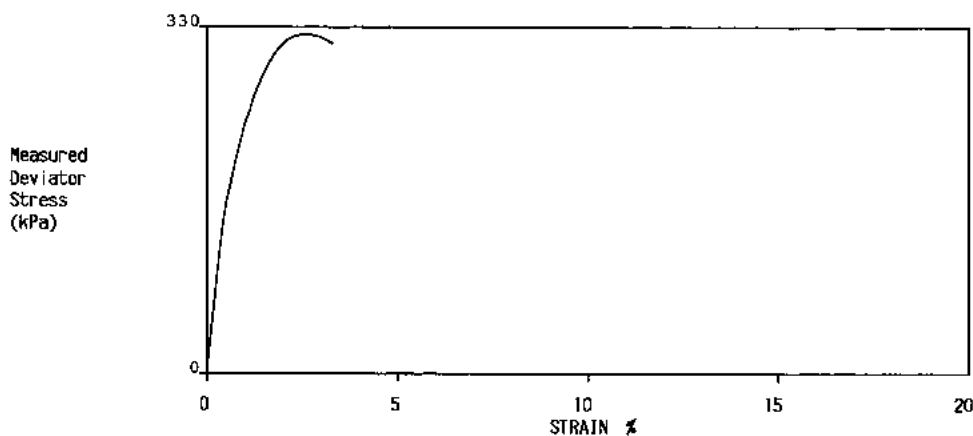



DETERMINATION OF UNDRAINED SHEAR STRENGTH

IN TRIAXIAL COMPRESSION WITHOUT MEASUREMENT OF PORE PRESSURE

Borehole/ Pit No.	Depth m.	Sample	Description	Remarks			
BH01	19.50	UT5	Very stiff (Very high strength) fissured dark greyish brown CLAY with occasional dark grey mottling and rare shell fragments				
Initial Specimen							
	Depth of Top of Specimen (m)	Height mm	Diameter mm	Weight g	Moisture Content %	Wet Density Mg/m ³	Dry Density Mg/m ³
	19.56	199.8	103.7	3347	28	1.98	1.55

TEST INFORMATION Rate of Strain 0.9 % per Min Rubber Membrane Thickness 0.3 mm



Specimen at Failure	Measured Cell Pressure σ_3 (kPa)	Strain at Failure (%)	Stress Corrections (kPa)		Corrected Max. Deviator Stress $\sigma_1 - \sigma_3$ (kPa)	Shear Stress C_u $\frac{1}{2}(\sigma_1 - \sigma_3)_f$ (kPa)	Mohr Circle Analysis	
			Rubber Membrane	Piston Friction			C_u (kPa)	ϕ_{HI}°
	392	2.7	0.2	/	323	161		

METHOD OF PREPARATION: BS 1377:PART 1:1990:

METHOD OF TEST : BS 1377:PART 7:1990:8 Definitive Method. 1990:9 Multi-stage loading

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

COMMENTS : Tested in Vertical Orientation.
URAS Calibration - loads from 0.2 to 10kN.

REMARKS TO INCLUDE : Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample. Oven drying temperature if not 105-110 deg C.



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Serial No.
S29994-3



DETERMINATION OF UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION WITHOUT MEASUREMENT OF PORE PRESSURE

Borehole/ Pit No.	Depth m.	Sample	Description	Remarks		
BH01	22.50	UT6	Very stiff (Very high strength) fissured dark greyish brown CLAY with occasional dark grey mottling			
Initial Specimen						
 Depth of Top of Specimen (m)	Height mm	Diameter mm	Weight g	Moisture Content %	Wet Density Mg/m ³	Dry Density Mg/m ³
	22.72	155.3	103.6	2618	28	2.00

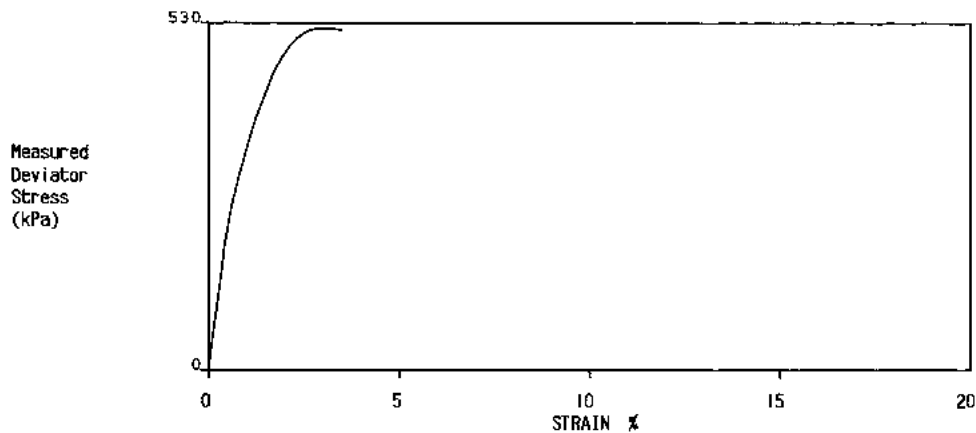
TEST INFORMATION


Rate of Strain 0.8

% per Min

Rubber Membrane Thickness

0.3 mm



Specimen at Failure	Measured Cell Pressure σ_3 (kPa)	Strain at Failure (%)	Stress Corrections (kPa)		Corrected Max. Deviator Stress $\sigma_1 - \sigma_3$ (kPa)	Shear Stress $\tau_c = \frac{1}{2}(\sigma_1 - \sigma_3)_f$ (kPa)	Mohr's Circle Analysis	
			Rubber Membrane	Piston Friction			τ_c (kPa)	ϕ_{int} °
	452	2.9	0.2	/	522	261		

METHOD OF PREPARATION: BS 1377:PART 1:1990:

METHOD OF TEST : BS 1377:PART 7:1990:8 Definitive Method. 1990:9 Multi-stage loading

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

COMMENTS : Tested in Vertical Orientation.
UKAS Calibration - loads from 0.2 to 10kN.

REMARKS TO INCLUDE : Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample. Oven drying temperature if not 105-110 deg C.



TEST REPORT.

ISSUED BY : SOIL PROPERTY TESTING LTD.


DATE OF ISSUE : As page 1 PAGE 15 of 17

Contract
Greenwood Centre, Greenwood
Place, Camden, London

Serial No.
S29994-3



DETERMINATION OF UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION WITHOUT MEASUREMENT OF PORE PRESSURE

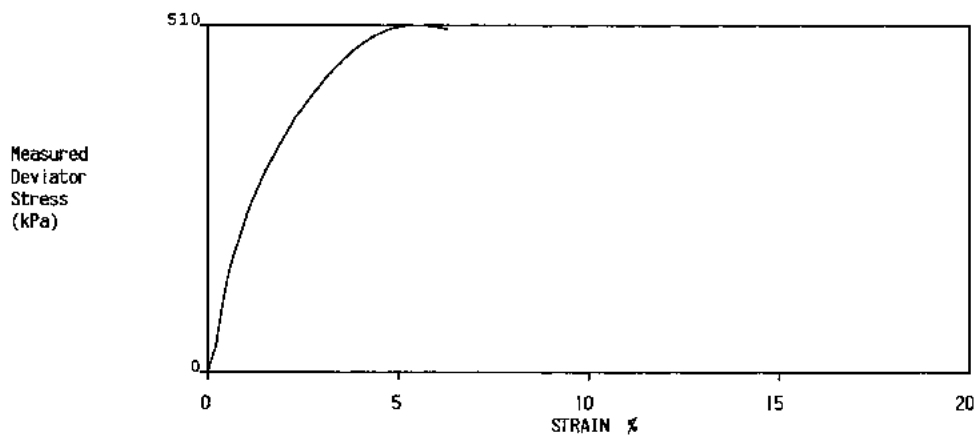
Borehole/ Pit No.	Depth m.	Sample	Description	Remarks		
BH01	25.00	UT7	Very stiff (Very high strength) fissured dark greyish brown CLAY with occasional dark grey mottling			
Initial Specimen						
 Depth of Top of Specimen (m)	Height mm	Diameter mm	Weight g	Moisture Content %	Wet Density Mg/m ³	Dry Density Mg/m ³
	25.02	199.6	103.6	3355	27	2.00


TEST INFORMATION

Rate of Strain 0.9 % per Min

Rubber Membrane Thickness

0.3 mm



Specimen at Failure	Measured Cell Pressure σ_3 (kPa)	Strain at Failure (%)	Stress Corrections (kPa)		Corrected Max. Deviator Stress $\sigma_1 - \sigma_3$ (kPa)	Shear Stress $\tau_c = \frac{1}{2}(\sigma_1 - \sigma_3)_f$ (kPa)	Mohr's Circle Analysis	
			Rubber Membrane	Piston Friction			c_u (kPa)	ϕ_{HI}°
	500	5.3	0.4	/	509	255		

METHOD OF PREPARATION: BS 1377:PART 1:1990:

METHOD OF TEST : BS 1377:PART 7:1990:8 Definitive Method. 1990:9 Multi-stage loading

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

COMMENTS : Tested in Vertical Orientation.
UKAS Calibration - loads from 0.2 to 10kN.

REMARKS TO INCLUDE : Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample. Oven drying temperature if not 105-110 deg C.



TEST REPORT.

ISSUED BY : SOIL PROPERTY TESTING LTD.

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Place, Camden, London

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DETERMINATION OF THE SULPHATE CONTENT OF SOIL AND GROUNDWATER

Borehole/ Pit No.	Depth m.	Sample	Concentration of Soluble Sulphate			% of sample passing 2mm sieve	Description	Remarks
			Soil		Groundwater g/l			
			Acid Soluble S13 %	Water Soluble 2:1 S23 g/l				
BH01	14.00	D13		0.72		100	Very stiff dark grey CLAY	

METHOD OF PREPARATION: BS 1377:PART 1:1990:7.5 BS1377:PART 3:1990:5.2 Acid Soluble, 5.3 Soil/Water Extract
:5.4 Groundwater

METHOD OF TEST : BS 1377:PART 3:1990:5.5

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample,
C = Core Cutter

COMMENTS : Test not UKAS accredited.

REMARKS TO INCLUDE : Sample disturbance, loss of moisture, variation from test procedure, location and origin
of test specimen within original sample. Oven drying temperature if not 105-110 deg C.



TEST REPORT.

ISSUED BY : SOIL PROPERTY TESTING LTD.

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DETERMINATION OF THE pH VALUE

Borehole/ Pit No.	Depth m.	Sample	pH Value	Description	Remarks
BH01	14.00	D13	8.0	Very stiff dark grey CLAY	

METHOD OF PREPARATION: BS 1377:PART 1:1990:7 BS 1377:PART 3:1990:9.4

METHOD OF TEST : BS 1377:PART 3:1990:9.5

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample,
C = Core Cutter

COMMENTS : Test not UKAS accredited.

REMARKS TO INCLUDE : Sample disturbance, loss of moisture, variation from test procedure, location and origin
of test specimen within original sample. Oven drying temperature if not 105-110 deg C.



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SPT Test Report No.: S29994-3
Appendix A

Chemtest
The right chemistry to deliver results

Chemtest Ltd.
Depot Road
Newmarket
CB8 0AL

Tel: 01638 606070

Email: info@chemtest.co.uk

Final Report

Report No.: 16-10383-1

Initial Date of Issue: 10-May-2016

Client: Soil Property Testing

Client Address: 18 Halycon Court
St Margarets Way
Stukeley Meadows
Huntingdon
Cambridgeshire
PE29 6DG

Contact(s): Jon Garner

Project: S29994-3 Greenwood Centre,
Greenwood Place

Quotation No.: Q16-06170 **Date Received:** 05-May-2016


Order No.: S29994-3 **Date Instructed:** 05-May-2016

No. of Samples: 3

Turnaround (Wkdays): 5 **Results Due:** 11-May-2016

Date Approved: 10-May-2016

Approved By:



Details: Martin Dyer, Laboratory Manager

Project: S29994-3 Greenwood Centre, Greenwood Place

Client: Soil Property Testing	Chemtest Job No.:	16-10333	16-10333	16-10333			
Quotation No.: Q16-06170	Chemtest Sample ID.:	289700	289701	289702			
Order No.: S29994-3	Client Sample Ref.:	BH01	BH01	BH01			
	Client Sample ID.:	D3	D4	D7			
	Sample Type:	SOIL	SOIL	SOIL			
	Top Depth (m):	4.00	5.00	8.00			
Parameter	Method	TOP	UNIT	LOD			
Moisture	N	2030	%	0.020	15	22	22
pH	U	2010		N/A	8.2	7.9	8.0
Sulphate (2:1 Water Soluble) as SO ₄	U	2120	g/t	0.010	0.35	1.4	0.51
Total Sulphur	U	2175	%	0.010	0.080	0.85	0.060
Sulphate (Acid Soluble)	U	2430	%	0.010	0.24	1.5	0.14
Organic Matter BS1377	N	2930	%	0.10	0.90		

Report Information

Key

- U UKAS accredited
- M MCERTS and UKAS accredited
- N Unaccredited
- S This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
- SN This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
- T This analysis has been subcontracted to an unaccredited laboratory
- I/S Insufficient Sample
- U/S Unsuitable Sample
- N/E not evaluated
- < "less than"
- > "greater than"

Comments or interpretations are beyond the scope of UKAS accreditation

The results relate only to the items tested

Uncertainty of measurement for the determinands tested are available upon request

None of the results in this report have been recovery corrected

All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis

All Asbestos testing is performed at our Coventry laboratory

Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

- A - Date of sampling not supplied
- B - Sample age exceeds stability time (sampling to extraction)
- C - Sample not received in appropriate containers
- D - Broken Container

Sample Retention and Disposal

All soil samples will be retained for a period of 45 days from the date of receipt

All water samples will be retained for 14 days from the date of receipt

Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:

customerservices@chemtest.co.uk



Photograph 7

Ground conditions encountered within WS101 (position CBR1)



Photograph 8

Ground conditions encountered within WS102



Photograph 9

Foundation Inspection Pit 1 (FIP1)



Photograph 10

Ground conditions within FIP1, continued backfill of material encountered



Photograph 11

Foundation Inspection Pit 2 (FIP2)



Photograph 12

Foundation Inspection Pit 3 (FIP3)