



# **Urban Tree Experts**

**BS5837 – Pre Planning – Ecological Consulting**

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## **ARBORICULTURAL REPORT AND SITE INVESTIGATION AT SOUTH LODGE**



**Prepared for:**



**South Lodge  
Wellington Court  
Spencers Wood  
Berkshire  
RG7 1BN**

**30<sup>th</sup> June 2015**

**Ref: AS/BL/TS-01/30.06**



# **Urban Tree Experts**

**BS5837 – Pre Planning – Ecological Consulting**

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Unit H Bridge Farm  
Reading Road  
Arborfield  
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Berkshire  
RG2 9HT  
Tel: 0118 976 2902

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## 1. Introduction

### 1.1 Instructions

- 1.1.1 Urban Tree Experts are instructed by [REDACTED] to visit and assess the trees situated within influencing distance of South Lodge, Wellington Court, Spencers Wood, RG7 1BN.

### 1.2 Background Information

- 1.2.1 We are in possession of the following documents:
- a site investigation dated October 1994
  - a tree related subsidence investigation at South Lodge (The Engineers Report) dated January 2006 and
  - a letter from OCA UK Ltd, dated March 2006.

Copies of these documents are included at Appendix 2.

- 1.2.2 The principle reason for this investigation is to provide arboricultural advice when establishing the likelihood of direct structural damage to the property from tree root action and to formulate management recommendations in accordance with our findings.

### 1.3 Plans and Documents

- 1.3.1 To aid in the location of the trees and site features we have included an extract of the Ordnance Survey (OS) map, provided under licence from GoView. We have plotted the approximate position of the trees onto it and a copy of the plan ref: AS/BL-01/30.06 is included at Appendix 1.
- 1.3.2 We have no connections with any of the parties involved in this site that could influence the opinions expressed in this report.

## 2. The Site

### 2.1 The Site Visit

- 2.1.1 Ben Lightfoot, Tech Cert (Arbor A) inspected the site on Tuesday 30<sup>th</sup> June 2015; weather conditions were sunny with good visibility and we had unrestricted access to the site.
- 2.1.2 The information contained in this report covers the trees that were inspected and reflects the site and condition of the trees at the time of inspection.
- 2.1.3 The trees were inspected from ground level only, no climbing inspections were undertaken.
- 2.1.4 Care has been taken to obtain all information from reliable sources, and all data has been verified where possible. However no guarantee can be given of the accuracy of information provided by others.



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## 2.2 Site Description

- 2.2.1 The detached property is situated on the south side of Wellington Court at the junction with the Basingstoke Road. The gardens are laid mostly to lawn with a gravel drive and parking area surrounded by sections of brick walling with post and rail fencing. The topography gently slopes upwards to the west and the lawn area is retained by a 1 metre high brick wall.
- 2.2.2 We received anecdotal information that the dwelling has a history of alleged tree related subsidence and that a root barrier had been installed. During our site visit we were unable to establish the presence or location of a root barrier.
- 2.2.3 Of particular interest are two trees, a mature horse chestnut situated within the front parking area and a mature Wellingtonia situated outside of the property boundary. Their details are set out in section 3.

## 2.3 Soils

- 2.3.1 As part of our background study we examined the British Geological Survey (BGS) data base, this revealed the site is centre over a bedrock of London Clay Formation of clay silt and sand with superficial River Terrace Deposits of sand and gravel.

### Bedrock and Superficial Geology:

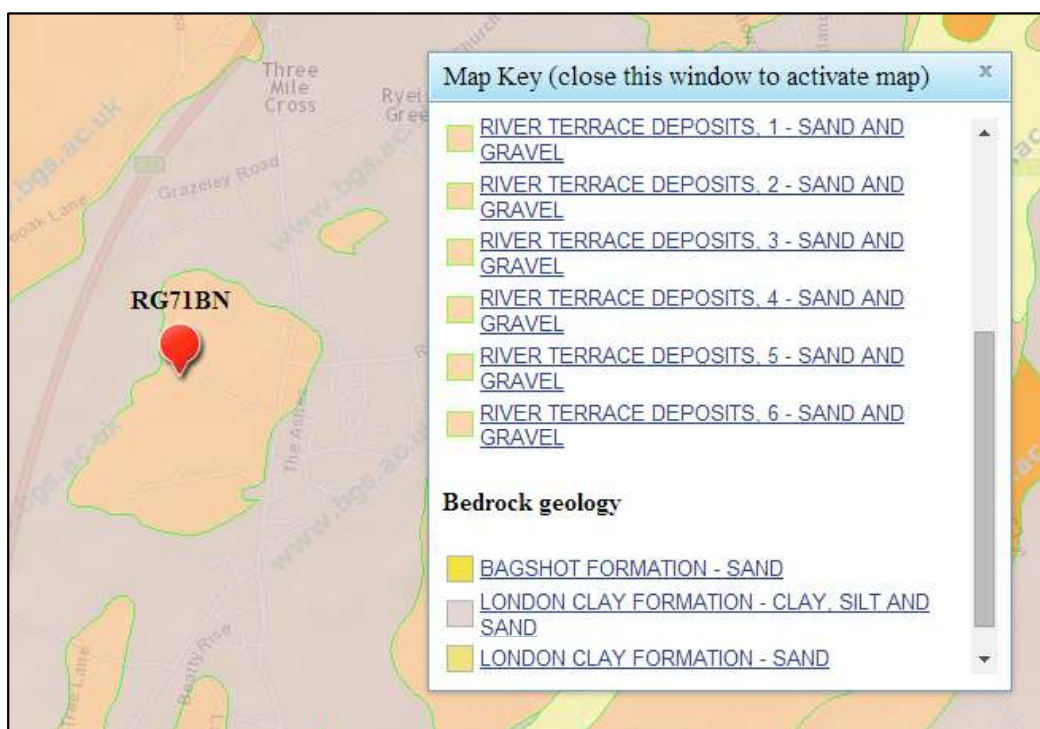


Image courtesy of BGS Website accessed 02/07/2015. British Geological Survey materials © NERC [2015].



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## 3. The Trees

- 3.1 The trees were assessed on site and the dimensions recorded with the aid of a TruPulse™ laser hypsometer and a rounded down diameter tape. The technical details were entered into Table 1 below. The technical dimensions have been used in the preparation of our conclusions in section 5 and recommendations in section 6.

Table 1: Tree Data recorded at South Lodge, Spencers Wood, RG7 1BN, on 30.06.15.

| Tree No | Tree Species   | Height (m) | Crown Spread Radius (m) | Age Class | Work required               | Priority  |
|---------|----------------|------------|-------------------------|-----------|-----------------------------|-----------|
| T1      | Horse chestnut | 11         | 5 average               | Mature    | Reduce canopy and sever ivy | 3-5 years |
| T2      | Wellingtonia   | 34         | 7 average               | Mature    | Remove deadwood             | 3-5 years |

## 4. Discussion and Opinion

- 4.1 Tree T1 is a mature horse chestnut (*Aesculus hippocastanum*) situated 4.5 metres from the front of the property and 2.5 metres from the highway. The stem leans towards the north and then self corrects at 1.5 metres, where the crown sub-divides into two stems. The union between the stems is included and there is evidence of a previous stem failure at this location. The main stem is partially ivy clad from ground level extending into the upper canopy and this constrained the thorough visual assessment. The canopy is symmetrical with an average canopy height of 1.5 metres and extending to within 1 metre of the dwelling. We observed horse chestnut leaf miner (*Cameraria ohridella*) on the foliage. The foliage size and distribution is typical of the species.
- 4.2 Tree T2 is a mature Wellingtonia (*Sequoiadendron giganteum*) situated 8.5 metres from the western flank wall of the dwelling and 8 metres from the garden retaining wall. The main trunk is unremarkable and partially clad in ivy. The canopy is symmetrical with an over-extended limb at 7 metres above ground level (AGL) on the south east side approximately 600 millimetres in diameter and extending 9 metres in length. The canopy height is an average of 2 metres AGL and minor deadwood was observed throughout. The foliage condition and density is normal for the age and species.
- 4.3 The retaining wall adjacent to Tree 2 is distressed and cracking was observed close to ground level and in a vertical axis.

See photographs 1 to the right and 2 on the next page.

Photograph 1:  
Cracking at base of wall,  
South Lodge. 30.6.2015.





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Photograph 2: Vertical crack, north west side, South Lodge, 30.6.2015.



### 5. Conclusions

- 5.1 The site investigations of 1994 revealed that the trees are located over London clay and this was reconfirmed in the January 2006 site investigation. Where shrinkable clay exists in proximity to vegetation, the risk of soil volume change due to desiccation increases. When clay soils become desiccated they shrink and this may result in distress to buildings situated over it.
- 5.2 Both trees are in good physiological condition.
- 5.3 Tree T1: the included stem union (codominant fork) is a frequently documented structural weakness responsible for over 80% of above ground tree failures however predicting this failure is very difficult. The horse chestnut leaf miner (*Cameraria ohridella*) is responsible for declining vitality and reduced fertility in the seed (conkers), it may be chemically treated and various formulations are available.
- 5.4 Trees T1 and T2 are within influencing distance of the property but no physical damage was observed to the dwelling.
- 5.5 Any advice provided on the structural condition of the wall is provided in lay man's terms. The distress and cracking in the retaining wall is, in our opinion, likely to be a combination of events, including direct root action (pressure from roots swelling and influencing the soil). This may be alleviated by the use of root barriers however, we have anecdotal advice that suggests a root barrier has been installed and may have failed.



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## 6. Recommendations

- 6.1 Tree T1 should be reduced to a height of 8 metres with an average crown spread 5 metres (+/- 0.5m). The ivy should be severed at ground level and allowed to die off.
- 6.2 Tree T2 should have the deadwood greater than 50mm in diameter removed and the ivy severed at the base. As the tree may be subject to a Tree Preservation Order (TPO) consent will be required from the Local Planning Authority. The owner's consent will also be required prior to carrying out the works.
- 6.3 All tree works recommended should be done in accordance with British Standard BS 3998:2010. *Tree work-Recommendations*, and should be undertaken by a properly qualified and experienced tree contracting company. It is advised that they should carry public and products liability insurance of £5 million cover.
- 6.4 Climbing irons (spikes) should only be used on trees that are being removed. They should only be used on living trees in the event of an emergency and if no other means of access are available.
- 6.5 Trees are dynamic structures and therefore subject to many changes. Wind loading, if sufficiently high enough, can blow over the healthiest of trees. Where decay or root structure is compromised there is an increased risk of failure and therefore regular inspection is recommended.
- 6.6 The trees should be re-inspected in December 2018.

Should you require any further information or should you have any queries in relation to the technical advice relating to this report please do not hesitate to contact us.

Andrew Small OND  
Consulting Arboriculturist  
Urban Tree Experts

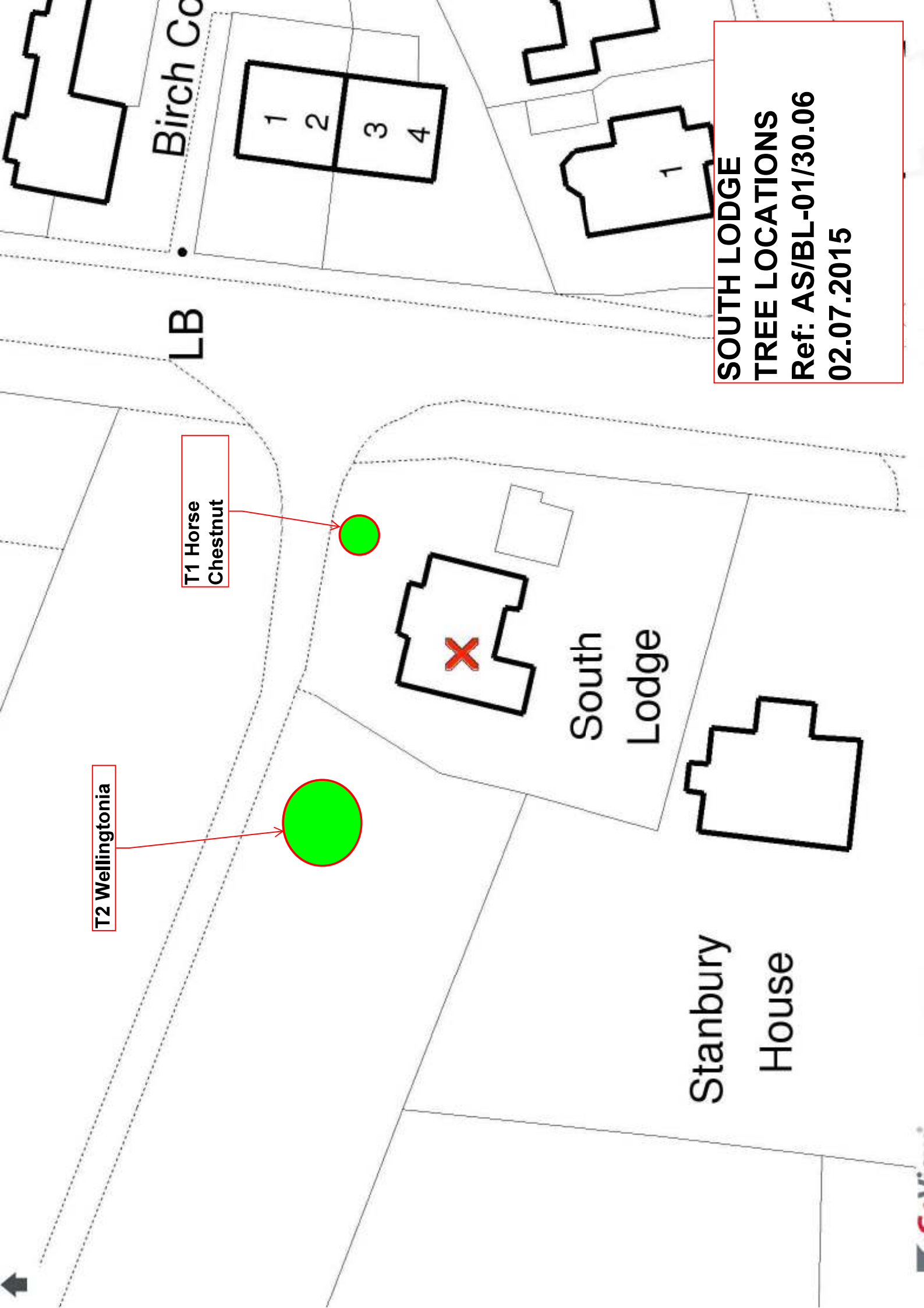


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# APPENDIX 1

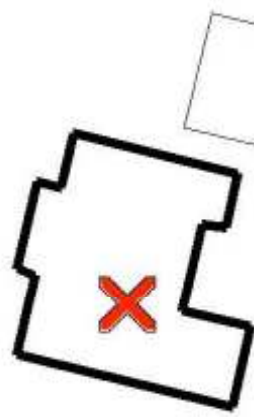


Birch Co

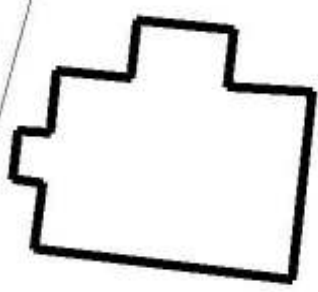
LB

T1 Horse  
Chestnut

T2 Wellingtonia

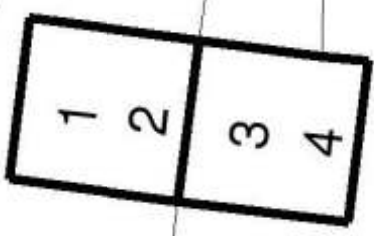


South  
Lodge



Stanbury  
House

SOUTH LODGE  
TREE LOCATIONS  
Ref: AS/BL-01/30.06  
02.07.2015





**Urban Tree Experts**

BS5837 – Tree Surveys – Ecological Consulting

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## **APPENDIX 2**

# HARRISON & COMPANY

(Soils and Foundation Engineers) Limited,  
117 Beulah Road, Thornton Heath, Surrey CR7 8JJ.  
Telephone 081 653 9168 Fax 081 768 0628

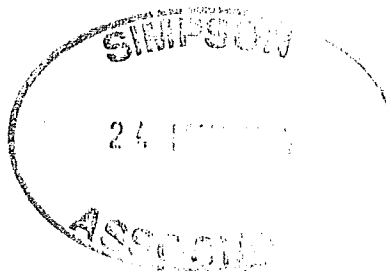
Directors: David Harrison B.Sc.(Eng), F.G.S., Allen Davis M.Sc., Ph.D., D.Sc., Malcolm Price M.Sc., C.Eng., M.I.C.E., F.G.S.,  
Pauline Clarke (Secretary), Associate: Michael Hour B.Sc., C.Geol., F.G.S.  
Consultant: Eric Steger B.Sc., C.Eng., F.I.C.E., F.I. Struct.E., F.G.S.  
Registered in England No. 1306165. Registered Office: 50 Unthank Road, Norwich.

23rd May 1994

Our Ref. : MSP/C2938

Simpson Associates  
1 Market Place Mews  
Henley-on-Thames  
Oxon  
RG9 2AH

For the attention of [REDACTED]



Dear Sirs,

**SOUTH LODGE, BASINGSTOKE ROAD, SPENCERS WOOD, READING.**

We thank-you for your invitation to tender for a site investigation at the above noted site and have pleasure in enclosing herewith our bill of quantities for carrying out the required work.

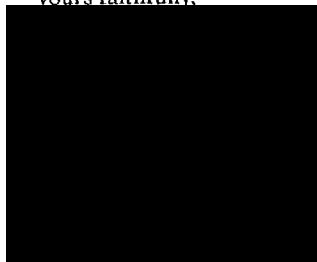
Our estimated price comes to £926.00 plus VAT and currently we would be able to mobilise within one week of receiving your written order to go-ahead. Site works would take 1 day with laboratory testing taking some two weeks after scheduling and a report some 3/4 weeks from the completion date of site works.

We have not visited the site at this stage and assume that access is suitable for our small works equipment.

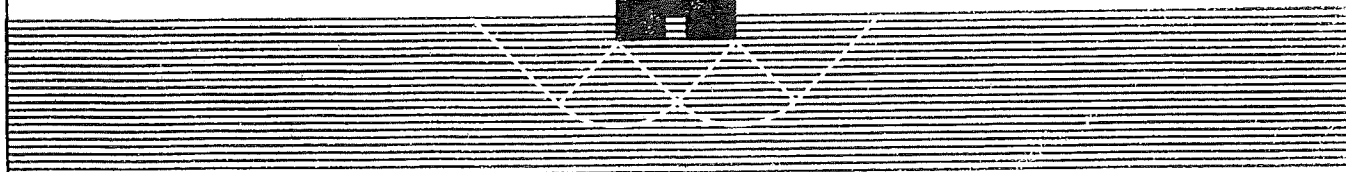
Please note the attached standard conditions which form an integral part of our quotation.

We trust that you will find our price of interest and look forward to hearing from you in due course, in the meantime, should you have any further queries, please do not hesitate to contact the writer at our Croydon office.

yours faithfully,



MPANY



## **HARRISON & COMPANY (SOILS AND FOUNDATION ENGINEERS) LIMITED.**

117 Beulah Road, Thornton Heath, Surrey, CR7 8JJ.

### **STANDARD CONDITIONS OF CONTRACT FOR BOREHOLES & TRIAL PITS.**

1. All quantities are subject to remeasurement. In this context we reserve the right to amend the amount of work in the light of findings as the contract progresses, and to pass on any consequential costs. Naturally any additional charges would be incurred only with your prior approval.
2. The boreholes or trial pits will be set out at positions to be mutually agreed, but providing O.D. levels is the responsibility of others unless specifically allowed for in our quote.
3. It is assumed that access is clear and that the site is reasonably firm and level.
4. Please note that there may be rutting, marking, etc. from our drilling or excavating plant. We have not allowed in our quote for making good any such ruts caused during normal operation of our equipment.
5. No allowance has been made for clearing in excess of half an hour.
6. All reasonable care will be taken to avoid damage to any buried cables, drains or underground services, but the Contractor shall not be liable for damage to any such pipes, cables, drains or underground services unless the location of these cables has been correctly notified to the Contractor by the Client. It is the responsibility of the Client to accurately locate any such underground services before drilling, probing or digging commences.
7. In addition, we require that all service plans are submitted to us prior to site works commencing. Should these not be available it is a requirement of our insurance cover that we make our own enquiries of the statutory authorities. This sometimes takes a period of time and would be charged for on an hourly Engineers rate. Should no drawings be available and there be no time allowed to obtain statutory authority plans then it should be clear that our Insurance will not cover any damage and that this would be down to the Clients insurance.
8. All samples will be kept for a period of one calendar month after the date of submission of the final report. Should longer retention be required, this should be requested during this one month period.
9. Our terms of payment are strictly net within 14 days of the date of an invoice being submitted. Please note that this work is subject to Value Added Tax at the current rate.
10. We require to be advised to whom our invoice should be addressed when more than one party is concerned, in order to avoid confusion and resubmission at a later date.
11. For Clients who do not have a credit account with us, we respectfully would point out that we shall require a bank and two trade references prior to commencement of the project. As currently we have no direct access to the Client, it is assumed that you will be responsible for obtaining these references.
12. Unless otherwise agreed, we reserve the right to issue interim invoices at monthly intervals on projects running for a period of more than one month. Alternatively, an interim account may be rendered upon completion of fieldworks.

Harrison and Company (Soils & Foundation Engineers) Limited.

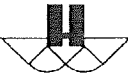
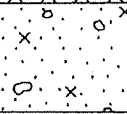
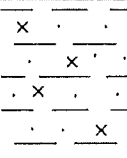
|                                            |                             |
|--------------------------------------------|-----------------------------|
| Job Name : Spencers Wood, Reading, RG7 1AZ | Date : 23rd May 1994        |
| Job No. : C2938                            | Client : Simpson Associates |

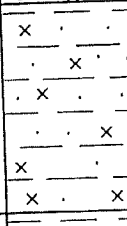
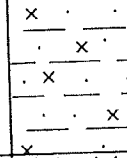
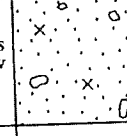
| Item | Description                                                                                                      | Qty | Unit | Rate   | Amount |
|------|------------------------------------------------------------------------------------------------------------------|-----|------|--------|--------|
| 1    | Provision of drive-in-sampler, crew & equipment to drill 2 No. boreholes and hand excavate 3 shallow trial pits. | 1   | day  | 350.00 | 350.00 |
| 2    | Engineer on site                                                                                                 | 0.5 | day  | 300.00 | 150.00 |
| 3    | <u>Laboratory soils testing</u>                                                                                  |     |      |        |        |
|      | Moisture Contents                                                                                                | 20  | No.  | 5.00   | 100.00 |
|      | Atterberg Limits                                                                                                 | 6   | No.  | 21.00  | 126.00 |
| 4    | Engineer time analysing results and preparing the report                                                         |     | sum  |        | 200.00 |

|                 |   |        |
|-----------------|---|--------|
| Estimated Total | £ | 926.00 |
| plus V.A.T.     |   |        |

**NOTES :**

1. Please note attached standard conditions which form an integral part of our quotation.
2. Ground conditions not known.
3. Quotation based on 2 boreholes and 3 hand excavated trial pits, as specified.

| <b>HARRISON &amp; COMPANY</b><br>                                                |                                                                                     | <b>Drive-in-Sampler Borehole Record</b>                     |               |                         | Report No.<br>C2938 | Borehole No.<br>DS1                                    |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------|---------------|-------------------------|---------------------|--------------------------------------------------------|
|                                                                                                                                                                   |                                                                                     | Location : Spencers Wood, Reading.                          |               |                         | Date : 20/10/94     |                                                        |
| Client : <span style="background-color: black; color: black;">XXXXXXXXXX</span>                                                                                   |                                                                                     | Plant : Drive-in-Sampler.                                   |               | Diameter :<br>80mm/50mm |                     | Sheet No.<br>1 of 1                                    |
| Description                                                                                                                                                       | Legend                                                                              | Depth<br>(m)                                                | O.D.<br>Level | Sample Test             |                     | Pocket Penetrometer<br>Readings (kg/cm <sup>2</sup> ). |
|                                                                                                                                                                   |                                                                                     |                                                             |               | type                    | depth               |                                                        |
|                                                                                                                                                                   |                                                                                     | G.L.                                                        |               |                         |                     |                                                        |
| Dark brown TOPSOIL with some fine roots and fine gravel.                                                                                                          |    | 0.50                                                        |               | D1                      | 0.50                |                                                        |
| Brown dry silty fine to medium SAND with occasional gravel becoming mottled grey below 0.70m.                                                                     |    | 1.00                                                        |               | D2                      | 1.00                | > 5.0                                                  |
| Firm to stiff mottled orange-grey desiccated very silty sandy CLAY with frequent roots and silt pockets with some sand pockets below 1.10m dying out below 1.40m. |    | 2.00                                                        |               | D3                      | 1.50                | 3.0                                                    |
| Firm to stiff light grey mottled brown sandy very silty CLAY with occasional roots.                                                                               |   | 2.50                                                        |               | D4                      | 2.00                | 4.0                                                    |
| Orange-brown slightly clayey very sandy GRAVEL with some very fine root ends. With orange brown SAND with frequent gravel at the base.                            |  | 3.00                                                        |               | D5                      | 2.50                |                                                        |
| Borehole completed at 3.00m depth.                                                                                                                                |                                                                                     |                                                             |               | D6                      | 3.00                |                                                        |
|                                                                                                                                                                   |                                                                                     | 5.00                                                        |               |                         |                     |                                                        |
| D Disturbed Sample<br>B Bulk Sample<br>U Undisturbed Sample (38mm Ø)<br>W Water Sample<br>V Vane Test<br>C Undrained Shear Strength                               |                                                                                     | Remarks :<br>1. Groundwater was encountered at 2.10m depth. |               |                         |                     |                                                        |

| HARRISON & COMPANY                                                                                                                                                |                                                                                                           | Drive-in-Sampler Borehole Record                                                    |              |                         | Report No.<br>C2938            | Borehole No.<br>DS2                                    |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--------------|-------------------------|--------------------------------|--------------------------------------------------------|
|                                                                                  |                                                                                                           | Location : Spencers Wood, Reading.                                                  |              |                         | Date : 20/10/94                |                                                        |
|                                                                                                                                                                   |                                                                                                           | Plant : Drive-in-Sampler.                                                           |              | Diameter :<br>80mm/50mm |                                | Sheet No.<br>1 of 1                                    |
| Client : <span style="background-color: black; color: black;">XXXXXXXXXX</span>                                                                                   | Description                                                                                               | Legend                                                                              | Depth<br>(m) | O.D.<br>Level           | Sample Test<br>type      depth | Pocket Penetrometer<br>Readings (kg/cm <sup>2</sup> ). |
|                                                                                                                                                                   |                                                                                                           |                                                                                     | G.L.         |                         |                                |                                                        |
|                                                                                                                                                                   | Dark brown TOPSOIL with some fine roots and occasional fine gravel.                                       |    | 0.20         |                         |                                |                                                        |
|                                                                                                                                                                   | Light brown silty SAND with frequent desiccated clay fragments and occasional gravel and roots.           |    | 0.70         |                         | D1      0.50                   |                                                        |
|                                                                                                                                                                   | Firm to stiff mottled orange-grey desiccated very silty sandy CLAY                                        |    | 1.70         |                         | D2      1.00                   |                                                        |
|                                                                                                                                                                   | Firm light grey slightly sandy very silty CLAY with occasional roots.                                     |   | 2.40         |                         | D3      1.50                   | 4.2                                                    |
|                                                                                                                                                                   |                                                                                                           |                                                                                     |              |                         | D4      2.00                   | > 5                                                    |
|                                                                                                                                                                   | Light brown silty SAND with occasional fine gravels becoming orange-brown with frequent gravel below 3.0m |  | 3.00         |                         | D5      2.50                   |                                                        |
|                                                                                                                                                                   |                                                                                                           |                                                                                     |              |                         | D6      3.00                   |                                                        |
|                                                                                                                                                                   | Borehole completed at 3.00m depth.                                                                        |                                                                                     | 5.00         |                         |                                |                                                        |
| D      Disturbed Sample<br>B      Bulk Sample<br>U      Undisturbed Sample (38mm Ø)<br>W      Water Sample<br>V      Vane Test<br>C      Undrained Shear Strength |                                                                                                           | Remarks :<br>1. Groundwater was encountered at 2.00m depth.                         |              |                         |                                |                                                        |

[illegible]

# HARRISON & COMPANY

(Soils and Foundation Engineers) Limited,  
117 Beulah Road, Thornton Heath, Surrey CR7 8JJ.  
Telephone 081 653 9168 Fax: 081 768 0628

Directors: David Harrison B.Sc.(Eng), F.G.S., Allen Davis M.Sc., Ph.D., D.Sc., Malcolm Price M.Sc., C.Eng., M.I.C.E., F.G.S.,  
David Harrison (Secretary), Associate: Michael Hoar B.Sc., C.Geol., F.G.S.  
Consultant: Eric Steger B.Sc., C.Eng., F.I.C.E., F.I.Struct.E., F.G.S.

Registered in England No. 1306165. Registered Office: Kimberley Street, Norwich, NR2 2RJ.

**Report No.** : C2938

**Project** : Southlodge, Spencers Wood

**Date** : November 1994

**Instructed by** : Simpson Associates

**Client** :



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## **FOREWORD**

### **General Conditions Relating To Site Investigation**

The recommendations made and opinions expressed in this report are based on the ground conditions revealed by the site works, together with an assessment of the site and of laboratory test results. Whilst opinions may be expressed relating to sub-soil conditions in parts of the site not investigated, for example between borehole and/or trial pit positions, these are only for guidance and no liability can be accepted for their accuracy.

Unless otherwise stated in the report, drilling is undertaken using light percussive techniques. Whilst this method is regarded as being one of the most reliable, a certain amount of mixing of soils is inevitable.

The groundwater conditions entered on the boring and/or trial pit records are those observed at the time of investigation. The normal rate of boring usually does not permit the recording of an equilibrium water level for any one water strike. Moreover, groundwater levels are subject to seasonal variation or changes in local drainage conditions.

Boring and sampling procedures are generally undertaken in accordance with B.S. 5930 : 1981, 'Code of Practice for Site Investigations'. Likewise insitu and laboratory testing generally complies with B.S. 1377 : 1990, 'Methods of Test for Soils for Civil Engineering Purposes', unless otherwise stated in the text.

This report is produced for the benefit of the Client alone. No responsibility can be accepted for any consequences of this information being passed to a third party who may act upon its contents/recommendations.

**REPORT**  
**ON A**  
**GROUND INVESTIGATION**  
**AT**  
**SOUTH LODGE, SPENCERS WOOD,**  
**FOR**



**1. INTRODUCTION**

The work covered by this report was carried out by Harrison & Company (Soils and Foundation Engineers) Limited, to the instructions of Simpson Associates, Consulting Engineers, on behalf of their Client, [REDACTED]

The site under consideration comprises the plot of land occupied by "Southlodge" on the Basingstoke Road in Spencers Wood near Reading. The current work was required to provide information on the sub-soil characteristics of the site to assist the Engineer in assessing the cause of cracking that has occurred to the building.

This report presents the work carried out and discusses the findings.

## **2. FIELDWORK**

Fieldwork was carried out on the 20th October 1994, and comprised two Drive-in-Sampler boreholes each to a depth of 3.00m, three hand excavated trial pits and one Dynamic Probe.

The Drive-in-Sampler comprises a series of 1m and 2m long metal tubes varying in diameter between 35mm and 80mm that are driven into the ground using a mini-hydraulic breaker unit. The tubes are subsequently jacked out of the ground and side windows enable the tubes to be cleaned and small disturbed samples to be taken.

In addition, three trial pits were hand excavated to depths of between 0.80m and 0.95m below existing ground level. The purpose of the trial pits was to expose and record the foundation details of the existing property. Disturbed samples were taken of the strata encountered and include a sample from beneath the foundation.

One Dynamic Probe was carried out to a depth of 4.90m below existing ground level. The probe has a drop weight of 50kg and a drop height of 50cm. The disposable cones have an apex angle of 90 degrees and a surface area of 15cm<sup>2</sup>. Blow counts are recorded for each 100mm of penetration. The results are appended as plots of blow count versus depth.

The approximate locations of the boreholes, trial pits and Dynamic Probes are shown on the appended site plan, Drawing No. C2938/1 and details of the ground conditions encountered have been drawn up in the form of borehole and trial pit records, also appended to this report.

## **3. SITE DESCRIPTION**

The site is located near Spencers Wood opposite the junction of The Square and Basingstoke Road.

South Lodge, Basingstoke Road is a detached bungalow situated on a roughly level plot of land. Around the boundary of the property and occasionally nearer to it are several mature trees.

## **4. GROUND CONDITIONS**

### **4.1 Regional Geology**

An examination of the British Geological Survey Map, Sheet No.269, Reading, (Scale 1:50, 000), indicates the area of the site to be underlain by Plateau Gravel overlying London Clay of the Eocene Period. The current investigation has not confirmed the anticipated geology.

#### **4.2 Trial Pit Findings**

Beneath a thin paving slab at Trial Pit 1 and Trial Pit 2, TOPSOIL containing frequent fine roots was encountered to a depth of 0.25m. Beneath this in Trial Pit 1 there was 0.50m of mottled orange to grey desiccated very sandy silty CLAY with occasional gravel which extended to below the footing. In Trial Pit 2 below the topsoil a light brown silty fine and medium SAND with frequent roots was encountered to a depth of 0.65m. Below the footing in Trial Pit 2 there was a mottled orange to grey very sandy silty CLAY with some roots. The footing depths in Trial Pit 1 and Trial Pit 2 were 0.75m and 0.91m respectively and the widths out from the wall were 0.21m and 0.24m.

In Trial Pit 3 from ground level to the top of the footing at a depth of 0.58m FILL was encountered. The FILL was dark brown sandy topsoil with some roots and occasional brick fragments. Below the FILL and extending to below the footing there was stiff grey mottled orange slightly friable sandy silty CLAY with some roots. The footing depth was 0.78m and the width out from the wall 0.36m.

#### **4.3 Borehole Findings**

The ground conditions at both borehole locations were found to be similar.

TOPSOIL was encountered to depths of 0.50m and 0.20m in Boreholes DS1 and DS2 respectively.

Underlying the TOPSOIL in both boreholes was a thin stratum of brown silty SAND with occasional roots and gravel. Beneath this at depths of 0.70m and 1.00m, was a firm to stiff orange mottled grey very silty sandy CLAY

At depths of 1.70m and 2.00m, firm or firm to stiff grey sandy very silty CLAY with occasional roots was subsequently encountered.

Underlying the CLAY at depths of 2.50m and 2.40m were granular soils ranging from SAND to very sandy GRAVEL. The boreholes were both terminated in this stratum at 3.00m below existing ground level.

#### **4.4 Groundwater**

Groundwater was encountered at a depth of 2.10m in Borehole DS1 and 2.00m in Borehole DS2.

## **5. LABORATORY TESTING**

### **5.1 General**

The following laboratory tests have been carried out on samples obtained from the boreholes and trial pits and the results are presented in full in the appendix.

Unless otherwise stated the tests were carried out generally in accordance with the methods given in British Standard 1377, "Methods of Test for Soils for Civil Engineering Purposes" (1990).

### **5.2 Atterberg Limits and Natural Moisture Contents**

The Atterberg Limits have been determined for four samples of the clay soils encountered. The Liquid Limits were found to range between 37% and 52%, the Plastic Limits from 13% to 17% and the Plasticity Indices from 23% to 38%. The natural moisture content was determined for all twelve samples taken from the boreholes and were found to vary between 8% and 19%.

These results indicate that the samples tested would be classified as clays of 'intermediate to high' plasticity (CI-CH) in accordance with the Casagrande geotechnical classification system.

In addition to the test summary sheet, the results of the moisture content tests have been plotted against depth to help assess whether desiccation had occurred at the time of the investigation.

### **5.3 Particle Size Distribution Tests**

The particle size distribution has been determined for two samples of the granular soils encountered and the results have been presented as grading curves in the appendix.

### **5.4 Root Identification**

Two fine roots were taken from the soil samples and examined by our Consultant Plant Anatomist, Professor J. G. Duckett of Queen Mary and Westfield College. The root examined from Trial Pit 2 was about 4mm in diameter and most closely resembled a conifer, probably a Cypress. The root was, however, dead. The root from Trial Pit 3 again most closely resembled our type specimen for *Hypericum* commonly known as Tutsan or Rose of Sharon.

## 6. DISCUSSION

It should be noted that current work has only investigated the site at discreet locations and that the ground conditions may vary elsewhere within the site boundary which have not been revealed.

In the event that subsequent work reveals ground conditions differing significantly from those described in this report, we reserve the right to reassess our findings in the light of new information.

Further, it is beyond our scope of work to comment on the severity of the cracking that has occurred to the property. In addition, at the time of preparing this report no specific details of the history of the cracking were available.

In our opinion, the near surface natural soils at this site would be capable of supporting foundation loads typical for the existing building with an adequate factor of safety against bearing capacity failure and with tolerable settlement.

However, the results of the current investigation indicate that foundation movement due to shrinkage and swelling of the clay soils may occur unless footings are taken to sufficient depth.

The investigation has shown the building to be underlain by clay with Atterberg Limits falling into the "medium" shrinkage potential category of the National House Building Councils (NHBC) classification system given in Part 4 of their Standards. In clays with this category of shrinkage the NHBC recommend that footings are founded at a minimum depth of 0.90m. The building was located within the theoretical zone of moisture demand of several mature trees and roots were encountered in both the boreholes and trial pits. In addition, roots from the genus conifer have been identified, a "high" moisture demand tree. Therefore, footings would need to extend to depths greater than 0.90m to avoid movements due to shrinkage and swelling

Cracking occurs due to differential movement and in addition to that arising from increasing distance from trees the following factors can give rise to locally induced movements; i) variations in ground conditions underlying the footings of the building, ii) damaged and leaky water services and drains and iii) variations in footing depth.

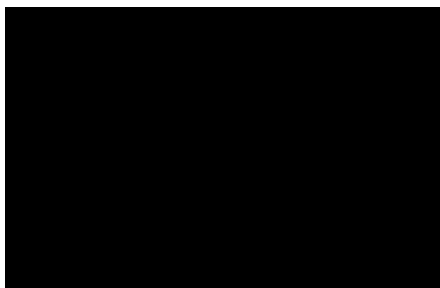
With reference to the plot of moisture content versus depth, neither of the two boreholes can be considered as a "control", that is beyond the zone of influence of nearby trees. However, over the depth interval over which clay soils are encountered moisture contents were lower in Borehole DS2 than in Borehole DS1. The lower moisture contents in Borehole DS2 maybe attributed to a slight desiccation of the clay soil. However, the soils encountered in the two boreholes were slightly different and this could be the reason for the different moisture contents.

If not already commenced, a systematic crack monitoring program should be instigated to establish the pattern of crack movement and verify that shrinkage and swelling of clay soils is responsible for the distress currently exhibited by the building occupying the site.

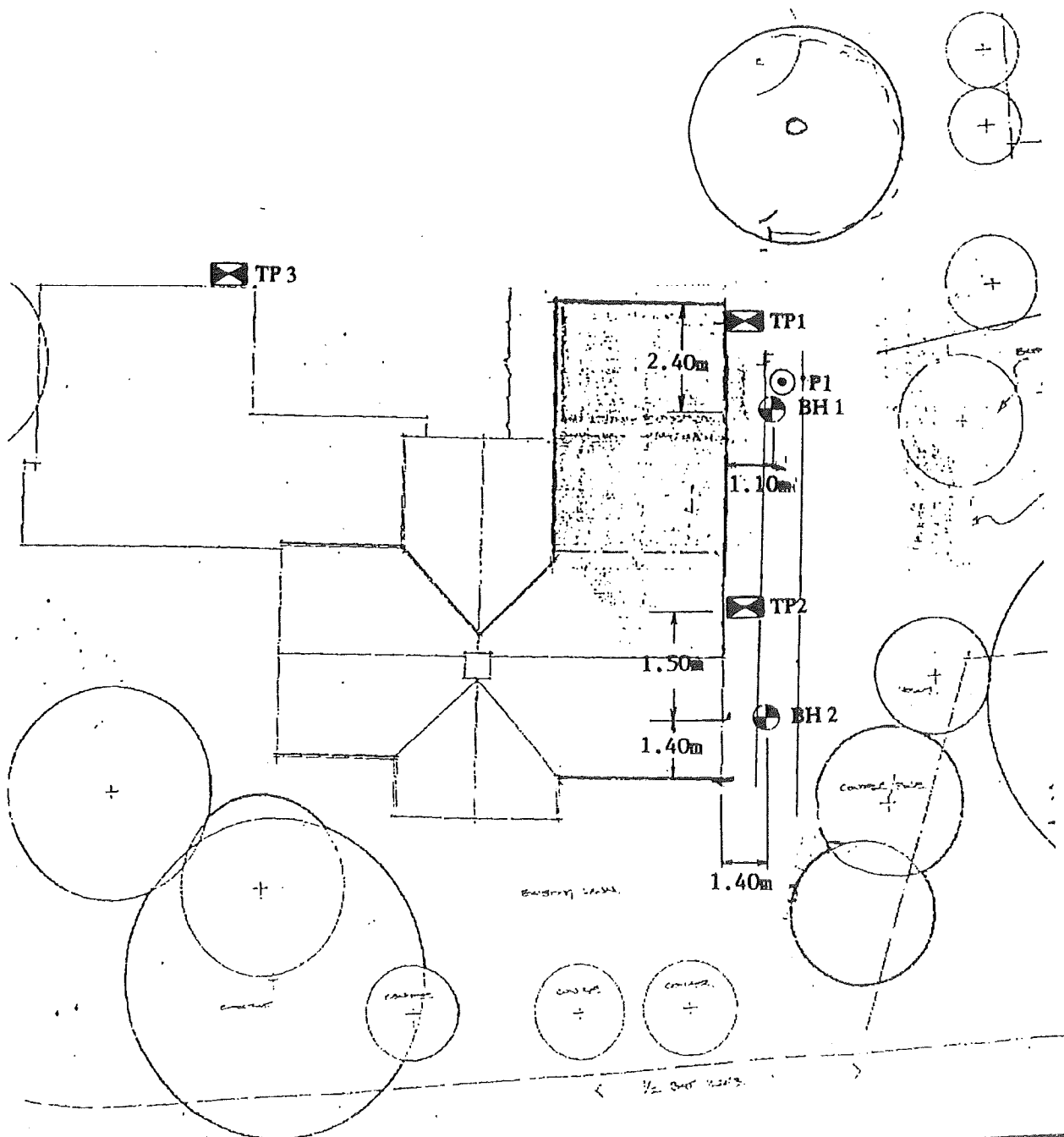
If the severity of cracking is such that underpinning is required, we recommend that the footing depths recommended by the NHBC are followed. However, footings need not extend into the granular soils encountered at 2.40m and 2.50m depths.



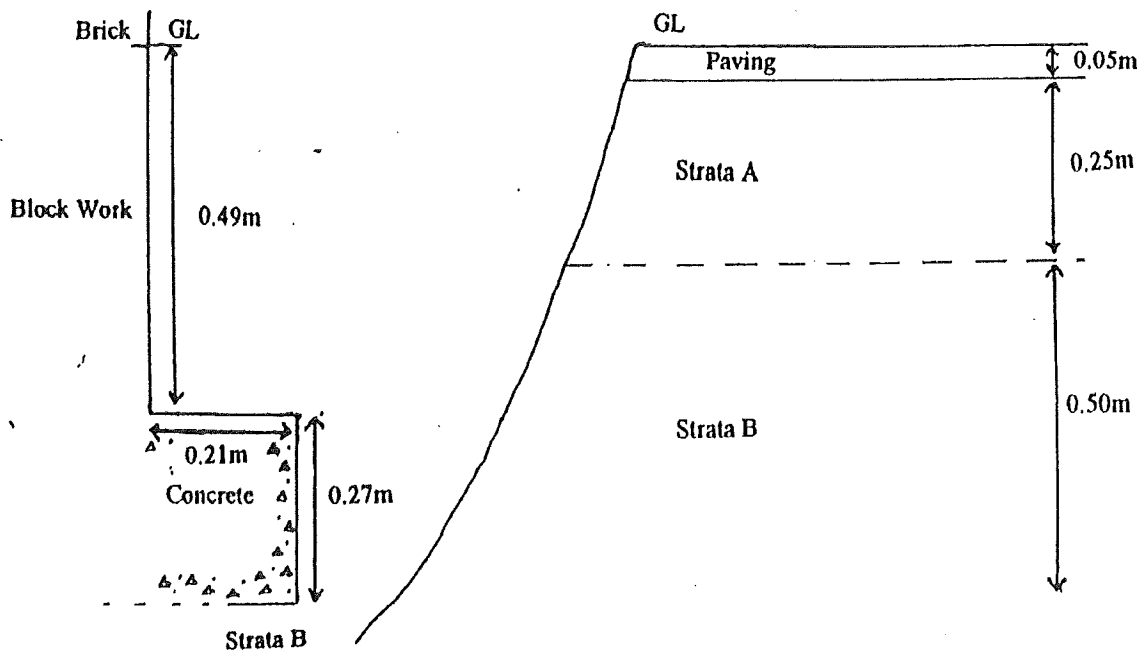
Jonathan M Tingley B.Eng.(Hons)  
Geotechnical Engineer



Michael J. Hoar B.Sc.(Hons), C.Geol., F.G.S.  
Principal Geotechnical Engineer



|                    |         |                                                         |         |
|--------------------|---------|---------------------------------------------------------|---------|
| Contract           |         | Spencers Wood, Reading                                  |         |
| Title              |         | Borehole, Trial Pit, and<br>Dynamic Probe Location Plan |         |
| Client             |         | Mr [REDACTED]                                           |         |
| Drawn By           | GW      | Scale                                                   | N.T.S   |
| Drawing No.        | C2938/1 | Date                                                    | Nov. 94 |
| HARRISON & COMPANY |         |                                                         |         |



#### Strata

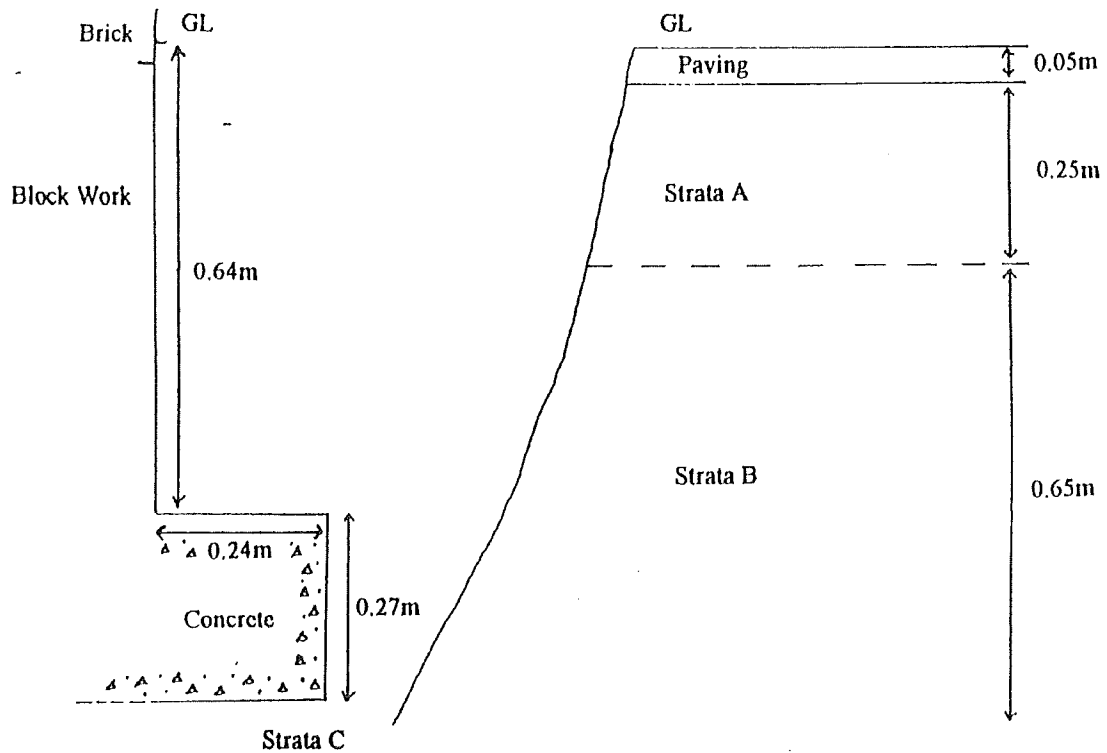
A - TOPSOIL with many small fine roots

B - Mottled orange to grey desiccated very sandy silty CLAY with many small fine roots and occasional gravel.

#### Remarks

Ground water was not encountered.

|                    |            |                         |         |
|--------------------|------------|-------------------------|---------|
| Contract           |            | Spencers Wood, Reading. |         |
| Title              |            | Trial Pit 1             |         |
| Client             |            | [REDACTED]              |         |
| Drawn By           | J. Tingley | Scale                   | 1:10    |
| Drawing No.        | C2938      | Date                    | Nov. 94 |
| HARRISON & COMPANY |            |                         |         |
| [REDACTED]         |            |                         |         |



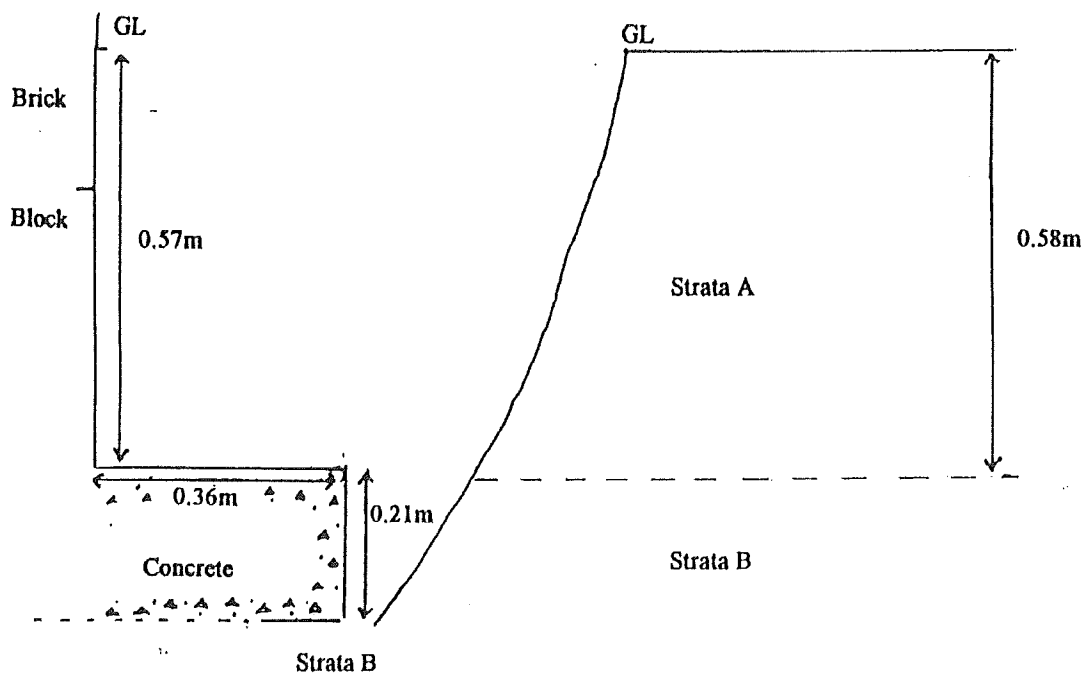
#### Strata

- A - TOPSOIL with frequent fine roots.  
 B - Light brown silty fine and medium SAND with frequent roots.  
 C - Mottled orange to grey very sandy silty CLAY with some roots.

#### Remarks

Ground water was not encountered.

|                                                                                                                        |            |                         |         |
|------------------------------------------------------------------------------------------------------------------------|------------|-------------------------|---------|
| Contract                                                                                                               |            | Spencers Wood, Reading. |         |
| Title                                                                                                                  |            | Trial Pit 2             |         |
| Client                                                                                                                 |            | [REDACTED]              |         |
| Drawn By                                                                                                               | J. Tingley | Scale                   | 1:10    |
| Drawing No.                                                                                                            | C2938      | Date                    | Nov. 94 |
| <b>HARRISON &amp; COMPANY</b><br> |            |                         |         |



#### Strata

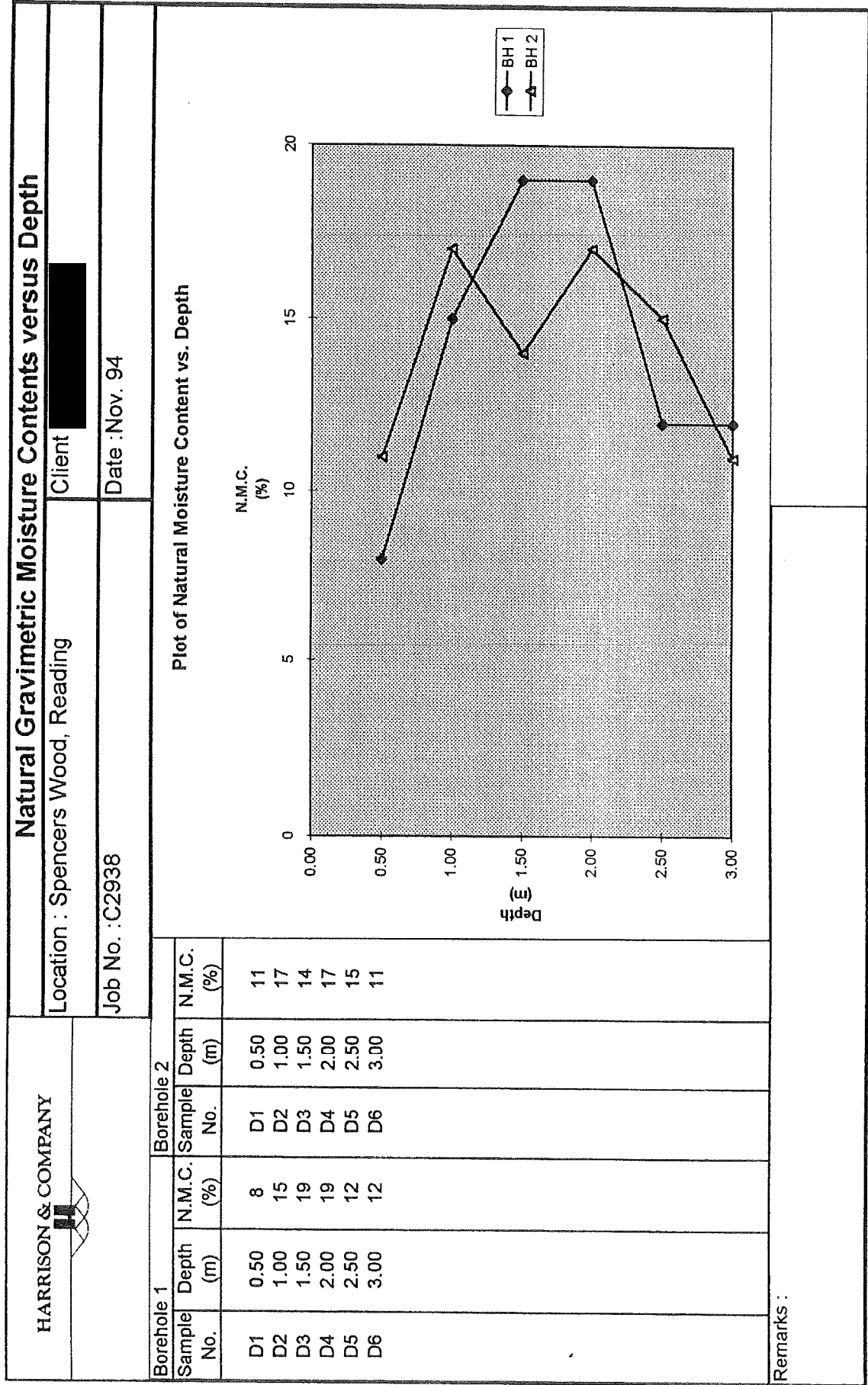
- A - FILL (dark brown sandy topsoil with some roots and occasional brick fragments).  
 B - Stiff slightly friable grey mottled orange sandy CLAY with some roots.

#### Remarks

- Ground water was not encountered.

|                      |                         |         |
|----------------------|-------------------------|---------|
| Contract             | Spencers Wood, Reading. |         |
| Title                | Trial Pit 3             |         |
| Client               | [REDACTED]              |         |
| Drawn By 'J. Tingley | Scale                   | 1:10    |
| Drawing No. C2938    | Date                    | Nov. 94 |
| HARRISON & COMPANY   |                         |         |
|                      |                         |         |

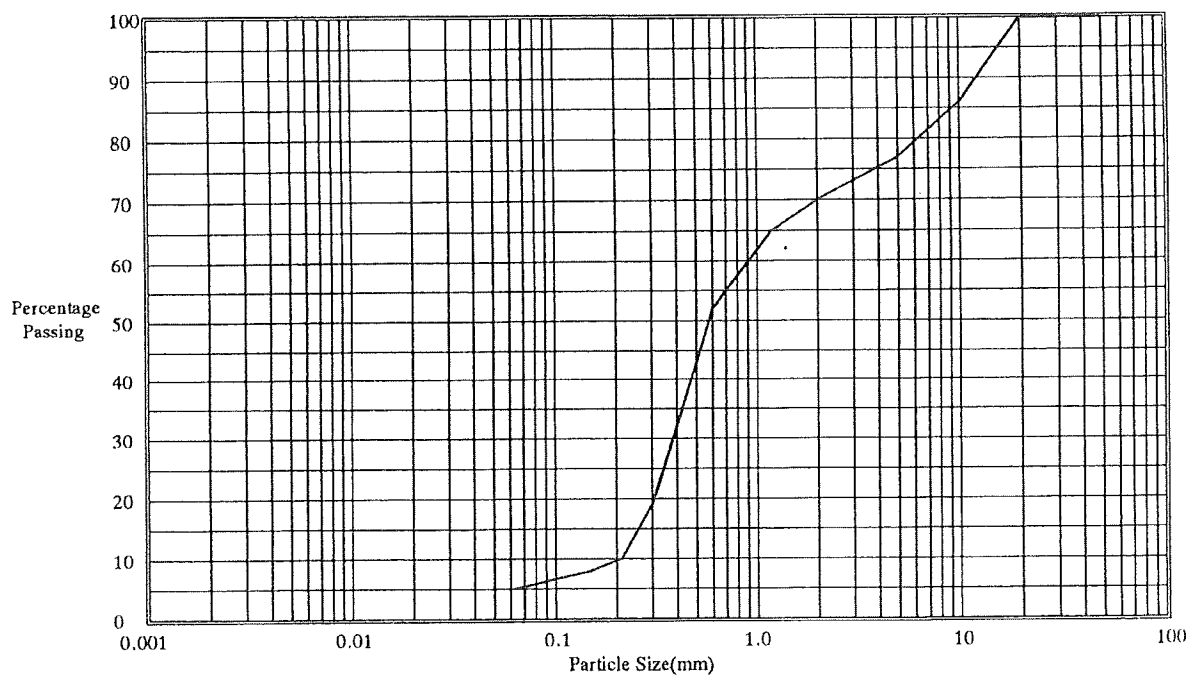
| HARRISON & COMPANY                                                                |                  |            |                      |                       |                        | Atterberg Limits and Natural Moisture Contents |                      |                     |                            |                              |
|-----------------------------------------------------------------------------------|------------------|------------|----------------------|-----------------------|------------------------|------------------------------------------------|----------------------|---------------------|----------------------------|------------------------------|
|  |                  |            |                      |                       |                        | Date : Nov. 94                                 |                      | Job No. : C2938     |                            |                              |
| Client : <span style="background-color: black; color: black;">XXXXXXXXXX</span>   |                  |            |                      |                       |                        | Location : Spencers Wood, Reading.             |                      |                     |                            |                              |
| Borehole No.                                                                      | Sample Depth (m) | Sample No. | Moisture Content (%) | Liquid Limit L.L. (%) | Plastic Limit P.L. (%) | Plasticity Index P.I.                          | Liquidity Index L.I. | Soil Classification | Fraction < 425 $\mu$ m (%) | Sample Description / Remarks |
| 1                                                                                 | 0.50             |            | 8                    |                       |                        |                                                |                      |                     |                            |                              |
| 1                                                                                 | 1.00             |            | 15                   | 52                    | 17                     | 35                                             | -0.06                | CH                  | > 95                       |                              |
| 1                                                                                 | 1.50             |            | 19                   |                       |                        |                                                |                      |                     |                            |                              |
| 1                                                                                 | 2.00             |            | 19                   | 37                    | 14                     | 23                                             | 0.22                 | CI                  |                            |                              |
| 1                                                                                 | 2.50             |            | 12                   |                       |                        |                                                |                      |                     |                            |                              |
| 1                                                                                 | 3.00             |            | 12                   |                       |                        |                                                |                      |                     |                            |                              |
| 2                                                                                 | 0.50             |            | 11                   |                       |                        |                                                |                      |                     |                            |                              |
| 2                                                                                 | 1.00             |            | 17                   | 53                    | 15                     | 38                                             | 0.05                 | CH                  | > 95                       |                              |
| 2                                                                                 | 1.50             |            | 14                   |                       |                        |                                                |                      |                     |                            |                              |
| 2                                                                                 | 2.00             |            | 17                   | 42                    | 13                     | 29                                             | 0.14                 | CI                  |                            |                              |
| 2                                                                                 | 2.50             |            | 15                   |                       |                        |                                                |                      |                     |                            |                              |
| 2                                                                                 | 3.00             |            | 11                   |                       |                        |                                                |                      |                     |                            |                              |



|                                                                                                         |                                   |                     |                   |
|---------------------------------------------------------------------------------------------------------|-----------------------------------|---------------------|-------------------|
| HARRISON & COMPANY<br> | <b>Particle Size Analysis</b>     | Report No:<br>C2938 | Borehole No:<br>1 |
|                                                                                                         | Location: Spencers Wood, Reading. | Sample No:<br>D6    | Depth(m):<br>3.00 |
| Client: <span style="background-color: black; color: black;">XXXXXXXXXX</span>                          | Method: Wet Sieve                 | Date: 11.11.94      |                   |

Sample Description / Remarks:

| Particle Size (mm) | Percentage Passing |  | Particle Size(mm) | Percentage Passing |
|--------------------|--------------------|--|-------------------|--------------------|
| 50                 | 100                |  | 0.150             | 8                  |
| 20                 | 100                |  | 0.063             | 5                  |
| 10                 | 86                 |  |                   |                    |
| 5                  | 77                 |  |                   |                    |
| 2                  | 70                 |  |                   |                    |
| 1.18               | 65                 |  |                   |                    |
| 0.600              | 52                 |  |                   |                    |
| 0.425              | 35                 |  |                   |                    |
| 0.300              | 19                 |  |                   |                    |
| 0.212              | 10                 |  |                   |                    |

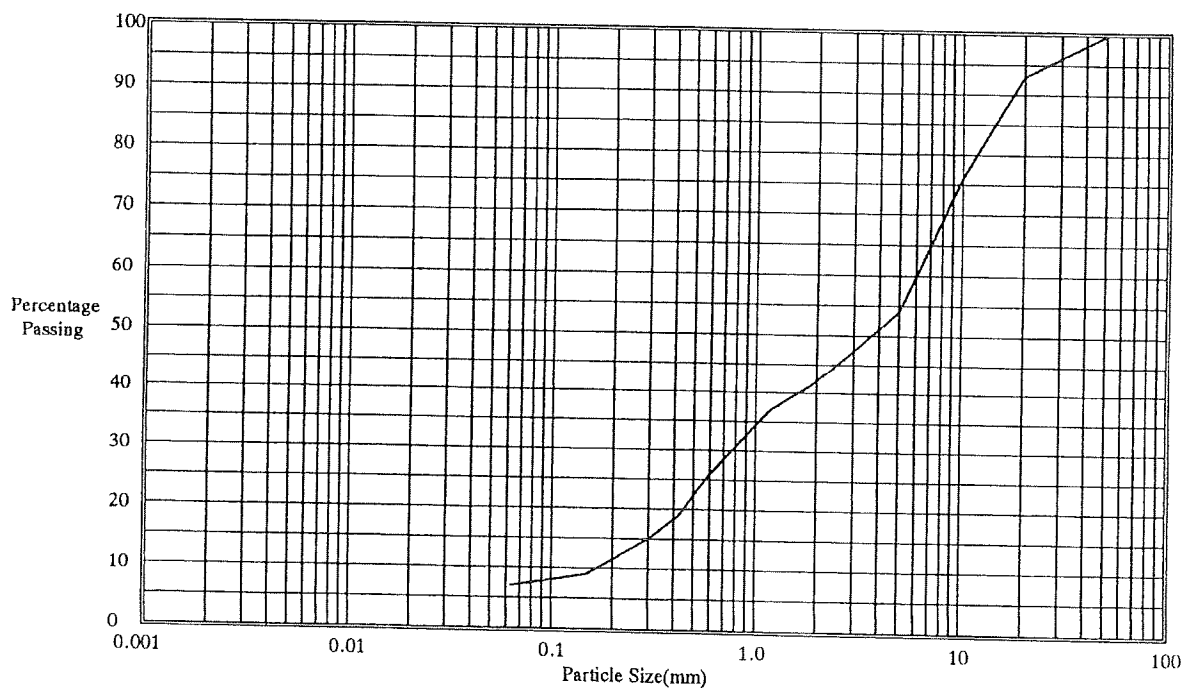


|      |      |        |        |      |        |        |        |        |        |         |
|------|------|--------|--------|------|--------|--------|--------|--------|--------|---------|
| CLAY | FINE | MEDIUM | COARSE | FINE | MEDIUM | COARSE | FINE   | MEDIUM | COARSE | COBBLES |
|      | SILT |        |        | SAND |        |        | GRAVEL |        |        |         |

|                                                                                                                    |  |                                   |  |                     |                   |
|--------------------------------------------------------------------------------------------------------------------|--|-----------------------------------|--|---------------------|-------------------|
| <b>HARRISON &amp; COMPANY</b><br> |  | <b>Particle Size Analysis</b>     |  | Report No:<br>C2938 | Borehole No:<br>2 |
|                                                                                                                    |  | Location: Spencers Wood, Reading. |  | Sample No:<br>D6    | Depth(m):<br>3.00 |
| Client: <span style="background-color: black; color: black;">XXXXXXXXXX</span>                                     |  | Method: Wet Sieve                 |  | Date: 11.11.94      |                   |

Sample Description / Remarks:

| Particle Size (mm) | Percentage Passing |  | Particle Size(mm) | Percentage Passing |
|--------------------|--------------------|--|-------------------|--------------------|
| 50                 | 100                |  | 0.150             | 9                  |
| 20                 | 93                 |  | 0.063             | 7                  |
| 10                 | 76                 |  |                   |                    |
| 5                  | 54                 |  |                   |                    |
| 2                  | 42                 |  |                   |                    |
| 1.18               | 37                 |  |                   |                    |
| 0.600              | 26                 |  |                   |                    |
| 0.425              | 19                 |  |                   |                    |
| 0.300              | 15                 |  |                   |                    |
| 0.212              | 12                 |  |                   |                    |



| CLAY | FINE | MEDIUM | COARSE | FINE | MEDIUM | COARSE | FINE   | MEDIUM | COARSE | COBBLES |
|------|------|--------|--------|------|--------|--------|--------|--------|--------|---------|
|      | SILT |        |        | SAND |        |        | GRAVEL |        |        |         |

| HARRISON & COMPANY<br> |               |                                | Tree Root Identification                |                  | Job No. : C2938 |                                                                                                                                                                                                                                                           |
|---------------------------------------------------------------------------------------------------------|---------------|--------------------------------|-----------------------------------------|------------------|-----------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                                         |               |                                | Date : November 1994                    |                  | Lab No. : R377  |                                                                                                                                                                                                                                                           |
| Client                 |               |                                | Location : Spencers Wood, Reading       |                  |                 |                                                                                                                                                                                                                                                           |
| Borehole/<br>Trial Pit<br>No.                                                                           | Sample<br>No. | Genus                          | Common Name                             | Alive or<br>Dead | Approximate Age | Comments                                                                                                                                                                                                                                                  |
| TP2                                                                                                     | -             | Conifer, probably Cupressaceae | Cypress                                 | Dead             | 4 years         | 1 root, 4mm in diameter. Most of the bark decayed. Cupressoid pitting. No tertiary spirals, or resin canals in xylem.                                                                                                                                     |
| TP3                                                                                                     | -             | <u>Hypericum</u>               | Tutsan, Rose of Sharon, St. John's Wort | Alive            | 2-3 years       | 1 root, 2mm in diameter. Not a tree species. Secretory canals and absence of crystals, diagnostic of <u>Hypericum</u> . Other genera with secretory canals (e.g. <u>Pittosporum</u> , <u>Rhus</u> , <u>Cotinus</u> ) have crystals and different pitting. |

# **FACTUAL REPORT**

**OF**

# **INVESTIGATION**

AT:- South Lodge, Stanbury Park, Wellington Court, Spencers Wood

ON:- 26 January 2006

FOR:- Norwich Union  
c/o Cunningham Lindsey - Solent

REF:-



JOB NO:- 5821

**SPECIALIST CONTRACTING DIVISION**

**CET GROUP LIMITED**

Lawness Barns, Mountnessing Road, Billericay, Essex CM12 0TS

[WWW.CETGROUP.COM](http://WWW.CETGROUP.COM)

Tel: 01277 655377

Fax: 01277 655977

# Investigation Layout Plan

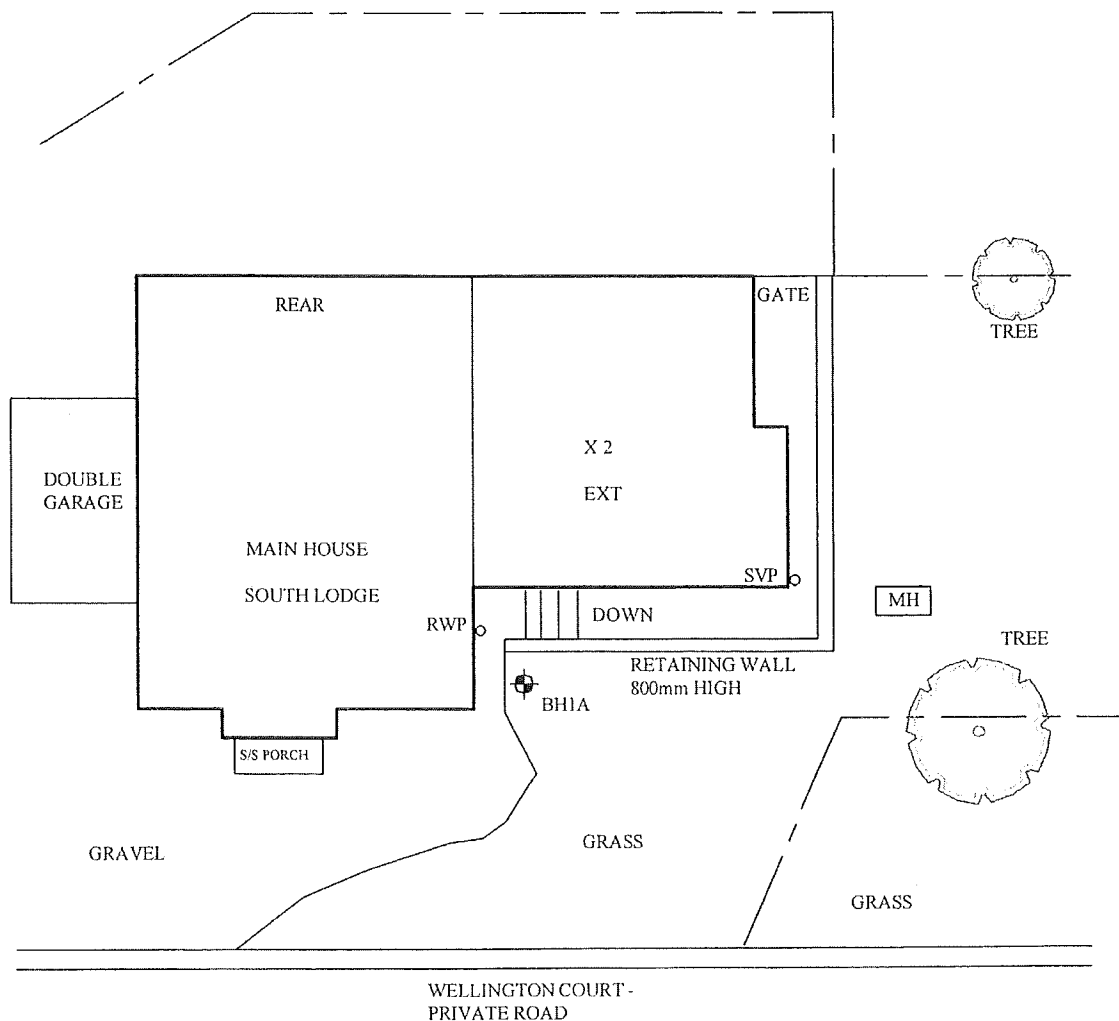
Sheet: 1 of 1  
Job No: 5821  
Date: 26/01/06

Site: South Lodge, Stanbury Park

Drawn: LBI (SI) KEL (Drawn By)

Checked: NC

Work carried out for: Cunningham Lindsey



ON SITE TREE IDENTIFICATION FOR GUIDANCE ONLY, NOT AUTHENTICATED.

Remarks:

Key:

|                  |      |                     |                   |
|------------------|------|---------------------|-------------------|
| Combined Gully   | RWVG | Surface Water Drain | ---               |
| Manhole          | MH   | Foul Water Drain    | ---               |
| Rain Water Pipe  | RWP  | Tree / Bush         | (approx. ht in m) |
| Rain Water Gully | RWG  | Trial Pit           | ⊠                 |
| Soil Vent Pipe   | SVP  | Borehole            | ⊙                 |
| Waste Gully      | WG   |                     |                   |
| Waste Pipe       | WP   |                     |                   |

Scale: N.T.S.

Trial Pit No: 1

Sheet: 1 of 1

Job No 5821

Date: 09/01/06

Site:

South Lodge, Stanbury Park,  
Wellington Court

Work carried  
out for:

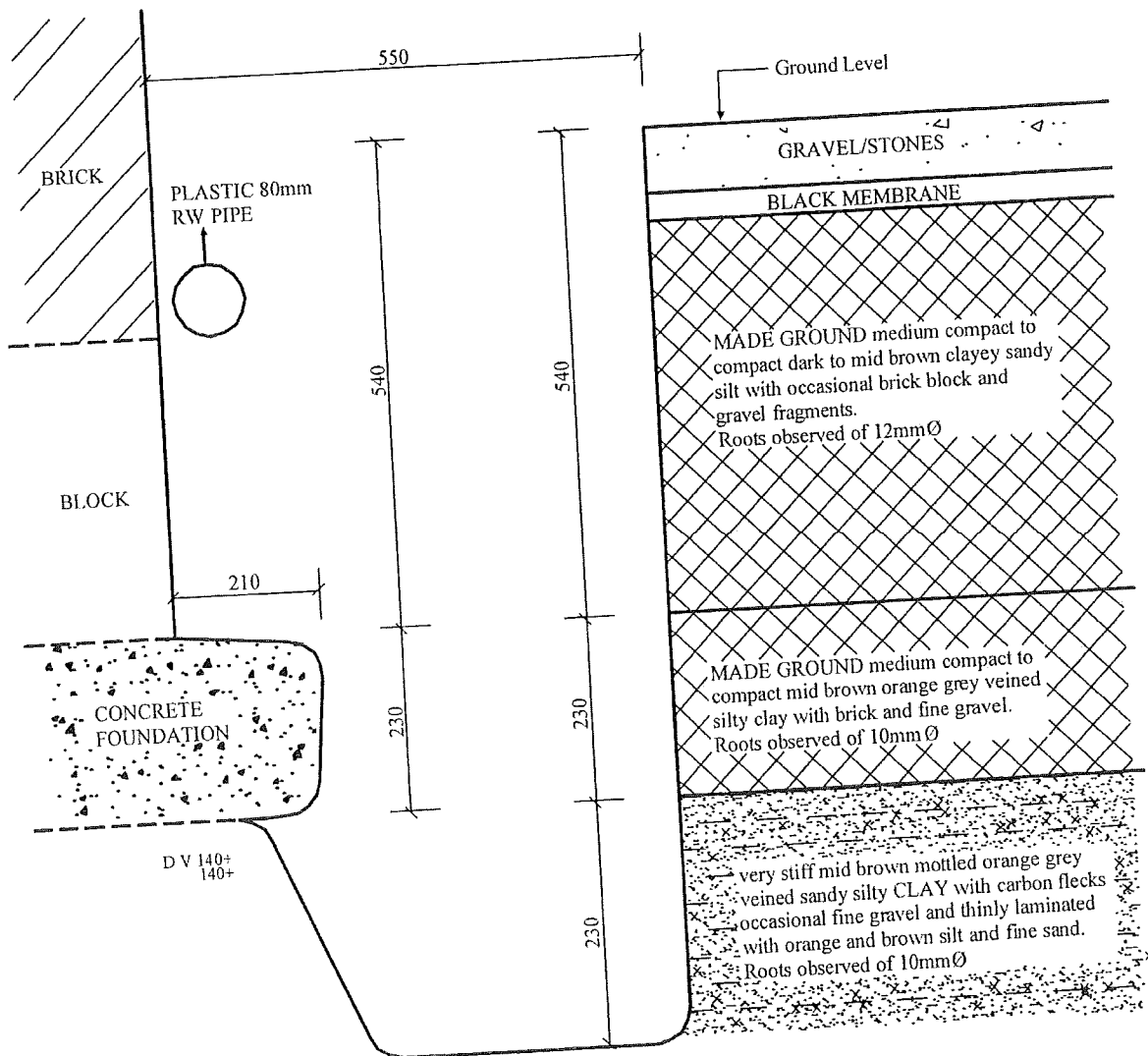
Cunningham Lindsey

Excavation Method: Hand Tools

Drawn by: Jackie

Ground Level  
mOD:

Weather: Dry



Remarks: All measurements in millimetres.

Key: D Small disturbed sample J Jar sample  
B Bulk disturbed sample V Pilcon Vane (kPa)  
W Water sample M Mackintosh probe  
TDTD Too dense to drive

Logged: MR

Checked: SE

Approved:

Scale: N.T.S.

| Borehole No: 1                             |                                                                                                                                                              |                | Sheet: 1 of 1                   |        |                                                                                                                                                               | Site: South Lodge, Stanbury Park         |           |                                                                           |                    |
|--------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|---------------------------------|--------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------|-----------|---------------------------------------------------------------------------|--------------------|
| Boring Method: Hand Auger                  |                                                                                                                                                              |                | Job No: 5821                    |        |                                                                                                                                                               |                                          |           |                                                                           |                    |
| Diameter: 70mm                             |                                                                                                                                                              |                | Date: 09/01/06                  |        |                                                                                                                                                               |                                          |           |                                                                           |                    |
| Coordinates:                               |                                                                                                                                                              |                | Ground Level mOD:               |        |                                                                                                                                                               | Work Carried out for: Cunningham Lindsey |           |                                                                           |                    |
| Depth (m)                                  | Description of Strata                                                                                                                                        | Thick-ness (m) | Legend                          | Sample | Type                                                                                                                                                          | Test Result                              | Depth (m) | Field Records/Comments                                                    | Depth to water (m) |
| 1.00                                       | As Trial Pit 1                                                                                                                                               | 1.00           |                                 | D      | M                                                                                                                                                             | 38<br>40<br>42<br>42<br>50(40)<br>50(10) | 1.00      | Roots of live appearance to 10mm diameter to 1.1m & 4mm diameter to 1.35m |                    |
| 1.40                                       | Very stiff mid brown mottled orange grey veined sandy very silty CLAY with carbon flecks & fine gravel thinly laminated with orange & brown silt & fine sand | 0.40           | X. _ X<br>_ _<br>X _ X<br>_ X _ |        | V                                                                                                                                                             | 140+<br>140+                             |           |                                                                           |                    |
|                                            | Borehole ends at 1.4m.<br>Too dense to hand auger                                                                                                            |                |                                 |        |                                                                                                                                                               |                                          |           |                                                                           |                    |
| Remarks: Borehole dry & open on completion |                                                                                                                                                              |                |                                 |        | Key: T.D.T.D. Too Dense to Drive<br>D Small disturbed sample J Jar sample<br>B Bulk disturbed sample V Pilcon Vane (kPa)<br>W Water sample M Mackintosh Probe |                                          |           |                                                                           |                    |
| Logged: MR                                 | Checked: SE                                                                                                                                                  | Approved:      |                                 |        | Scale: NTS                                                                                                                                                    |                                          | Weather:  |                                                                           |                    |

| <b>Borehole No:</b>                                                                                                                  |                                                                                                                                 |                       | <b>1A</b>                                                                    |           |                                                                                                                                                               | <b>Sheet:</b> 1 of 1               |              |                                                  |                                         |  |  |  |  |  |
|--------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------|-----------------------|------------------------------------------------------------------------------|-----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------|--------------|--------------------------------------------------|-----------------------------------------|--|--|--|--|--|
| <b>Boring Method:</b>                                                                                                                |                                                                                                                                 |                       | <b>CFA</b>                                                                   |           |                                                                                                                                                               | <b>Job No:</b> 5821                |              |                                                  | <b>Site:</b> South Lodge, Stanbury Park |  |  |  |  |  |
| <b>Diameter:</b> 100mm                                                                                                               |                                                                                                                                 |                       | <b>Coordinates:</b>                                                          |           |                                                                                                                                                               | <b>Date:</b> 09/01/06              |              |                                                  |                                         |  |  |  |  |  |
| <b>Ground Level</b><br>mOD:                                                                                                          |                                                                                                                                 |                       |                                                                              |           |                                                                                                                                                               | <b>Work Carried out for:</b>       |              |                                                  | <b>Cunningham Lindsey</b>               |  |  |  |  |  |
| Depth<br>(m)                                                                                                                         | Description of Strata                                                                                                           | Thick-<br>ness<br>(m) | Legend                                                                       | Sample    | Type                                                                                                                                                          | Test Result                        | Depth<br>(m) | Field Records/Comments                           | Depth<br>to water<br>(m)                |  |  |  |  |  |
| G/L                                                                                                                                  | Grass over MADE GROUND medium compact dark brown sandy silty clay with carbon deposits & gravel brick fragments                 | 0.60                  |                                                                              |           |                                                                                                                                                               |                                    |              | Roots of live appearance to 10mm diameter        |                                         |  |  |  |  |  |
| 0.60                                                                                                                                 |                                                                                                                                 |                       |                                                                              |           |                                                                                                                                                               |                                    |              | Roots of live appearance to 6mm diameter to 1.0m |                                         |  |  |  |  |  |
|                                                                                                                                      | Very stiff mid brown orange grey veined sandy very silty CLAY thinly laminated with orange/brown silt & fine sand carbon flecks | 1.30                  | X _ X<br>X _ X<br>_ X<br>X _ X<br>_ X<br>_ X                                 | D         | V                                                                                                                                                             | 140+<br>140+                       | 1.00         | Roots of live appearance to 2mm diameter to 2.3m |                                         |  |  |  |  |  |
| 1.90                                                                                                                                 |                                                                                                                                 |                       |                                                                              | D         |                                                                                                                                                               |                                    | 1.50         |                                                  |                                         |  |  |  |  |  |
|                                                                                                                                      | Very stiff light grey sandy silty CLAY with carbon flecks thinly laminated with orange/yellow silt & fine sand                  | 0.60                  | _ X<br>_ _<br>_ _<br>X _                                                     | D         | V                                                                                                                                                             | 140+<br>140+                       | 2.00         | Standing water on completion                     | 1.69                                    |  |  |  |  |  |
| 2.50                                                                                                                                 |                                                                                                                                 |                       |                                                                              | D         |                                                                                                                                                               |                                    | 2.50         | Hair & fibrous roots to 2.6m                     |                                         |  |  |  |  |  |
| 2.80                                                                                                                                 | Medium dense moist light grey gravelly clayey very silty SAND                                                                   | 0.30                  | x x x<br>x x                                                                 |           |                                                                                                                                                               |                                    |              | No roots observed below 2.6m                     |                                         |  |  |  |  |  |
|                                                                                                                                      | Medium dense to dense light grey as above                                                                                       | 2.20                  | x x x<br>x x<br>x x x<br>x x<br>x x x<br>x x<br>x x x<br>x x<br>x x x<br>x x | D         | M                                                                                                                                                             | 50(60)<br>50(50)<br>50(20)<br>TDTD | 3.00         | Water strike                                     | 2.80                                    |  |  |  |  |  |
|                                                                                                                                      |                                                                                                                                 |                       |                                                                              | D         |                                                                                                                                                               |                                    | 3.50         |                                                  |                                         |  |  |  |  |  |
|                                                                                                                                      |                                                                                                                                 |                       |                                                                              | D         |                                                                                                                                                               |                                    | 4.00         |                                                  |                                         |  |  |  |  |  |
| 5.00                                                                                                                                 |                                                                                                                                 |                       |                                                                              | D         |                                                                                                                                                               |                                    | 5.00         |                                                  |                                         |  |  |  |  |  |
|                                                                                                                                      | Borehole ends at 5.0m.                                                                                                          |                       |                                                                              |           |                                                                                                                                                               |                                    |              |                                                  |                                         |  |  |  |  |  |
| Remarks: Borehole collapsing to 3.0m<br>Unable to carry out insitu testing below 3.0m or taking<br>4.5m samples due to BH collapsing |                                                                                                                                 |                       |                                                                              |           | Key: T.D.T.D. Too Dense to Drive<br>D Small disturbed sample J Jar sample<br>B Bulk disturbed sample V Pilcon Vane (kPa)<br>W Water sample M Mackintosh Probe |                                    |              |                                                  |                                         |  |  |  |  |  |
| Logged: LBI                                                                                                                          |                                                                                                                                 | Checked: NC           |                                                                              | Approved: |                                                                                                                                                               | Scale: NTS                         |              | Weather:                                         |                                         |  |  |  |  |  |

# Laboratory Testing Results

Our Ref: 5821 Date Sampled: 26/01/06  
 Location : South Lodge, Stanbury Park Date Received : 30/01/06  
 Work carried out for: Cunningham Liridsey - Solent Date Tested : 02/02/06  
 Date of Report : 02/02/06

| TP/BH No | Sample Ref |      | Moisture Content (%) [1] | Soil Fraction > 0.425mm (%) [2] | Liquid Limit (%) [3] | Plastic Limit (%) [4] | Plasticity Index (%) [5] | Liquidity Index [5] | Modified Plasticity Index (%) [6] | Soil Class [7] | Filter Paper Contact Time (h) [8] | Soil Sample Suction (kPa) | In situ Shear Vane Strength (kPa) [9] | Organic Content (%) [10] | pH Value [11] | Sulphate Content (g/l) |                      | Class [14] |
|----------|------------|------|--------------------------|---------------------------------|----------------------|-----------------------|--------------------------|---------------------|-----------------------------------|----------------|-----------------------------------|---------------------------|---------------------------------------|--------------------------|---------------|------------------------|----------------------|------------|
|          | Depth (m)  | Type |                          |                                 |                      |                       |                          |                     |                                   |                |                                   |                           |                                       |                          |               | SO <sub>3</sub> [12]   | SO <sub>4</sub> [13] |            |
| 1        | 0.77(U/S)  | D    | 21                       | <5                              | 59                   | 20                    | 40                       | 0.02                | 40                                | CH             |                                   |                           | > 140                                 |                          |               |                        |                      |            |
|          | 1.0        | D    | 14                       | <5                              |                      |                       |                          |                     |                                   |                |                                   |                           | > 140                                 |                          |               |                        |                      |            |

## Test Methods / Notes

- [1] BS 1377: Part 2: 1990, Test No 3.2  
 [2] Estimated if <5%, otherwise measured  
 [3] BS 1377: Part 2: 1990, Test No 4.4  
 [4] BS 1377: Part 2: 1990, Test No 5.3  
 [5] BS 1377: Part 2: 1990, Test No 5.4  
 [6] BRE Digest 240: 1993  
 [7] BS 5930: 1981: Figure 31 - Plasticity Chart for the classification of fine soils  
 [8] In-house method S9a adapted from BRE IP 4/93

[9] Values of shear strength were determined in situ by CET Group using

- a Pileon hand vane or Geonor vane (GV).  
 [10] BS 1377: Part 3: 1990, Test No 4  
 [11] BS 1377: Part 2: 1990, Test No 9  
 [12] BS 1377: Part 3: 1990, Test No 5.6  
 [13] SO<sub>3</sub> = 1.2 x SO<sub>4</sub>  
 [14] BRE Special Digest One (Concrete in Aggressive Ground) August 2001

Note that if the SO<sub>4</sub> content falls into the DS-4 or DS-5 class, it would be prudent to consider the sample as falling into the DS-4m or DS-5m class respectively unless water soluble magnesium testing is undertaken to prove otherwise

## Key

- D Disturbed sample (small)  
 B Disturbed sample (bulk)  
 U Undisturbed sample  
 W Groundwater sample  
 ENP Essentially Non-Plastic by inspection  
 U/S Underside of Foundation

**Laboratory Testing Results**

|                       |                             |                  |          |
|-----------------------|-----------------------------|------------------|----------|
| Our Ref :             | 5821                        | Date Sampled :   | 26/01/06 |
| Location :            | South Lodge,Stanbury Park   | Date Received :  | 30/01/06 |
| Work carried out for: | Cunningham Lindsey - Solent | Date Tested :    | 02/02/06 |
|                       |                             | Date of Report : | 02/02/06 |

[illegible]

[9] Values of shear strength were determined in situ by CET Group using

Disturbed sample ( small )

|   | Disturbed sample (bulk) | Disturbed sample (small) |
|---|-------------------------|--------------------------|
| B |                         |                          |
| D |                         |                          |

Disturbed sample (DBK)  
Undisturbed sample

Groundwater sample

W Groundwater sample  
ENP Essentially Non-Plastic by

|     |                                       |
|-----|---------------------------------------|
| ENP | Essentially Non-Plastic by inspection |
| U/S | Underside of Foundation               |

U/S  
Underside of Foundation

# Moisture Content and Shear Strength Profiles

Our Ref: 5821

Location: South Lodge, Stanbury Park

Work carried out for: Cunningham Lindsey - Solent

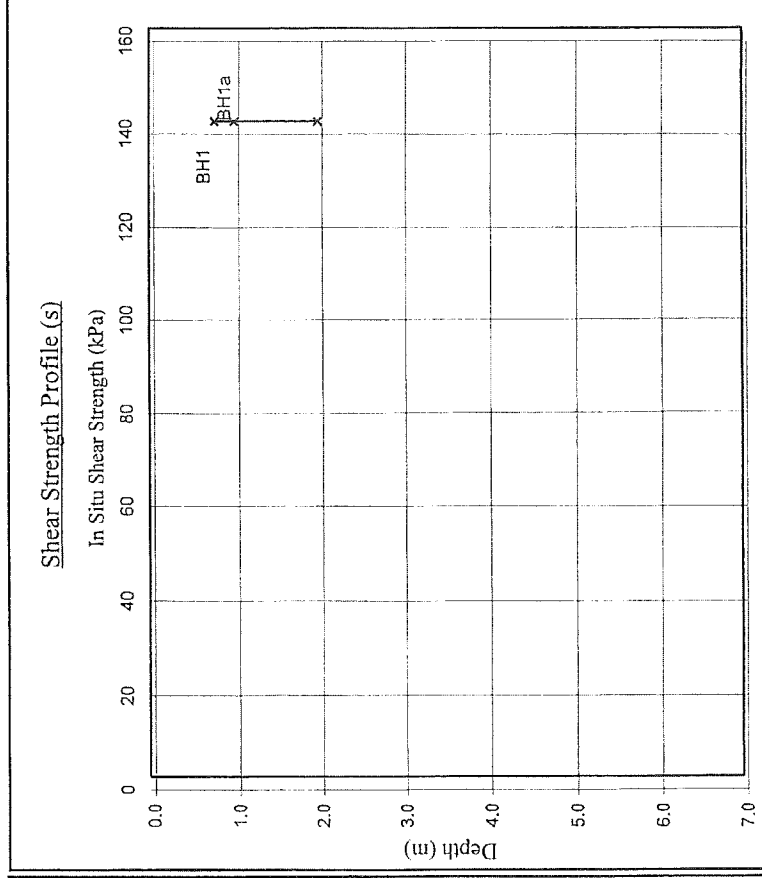
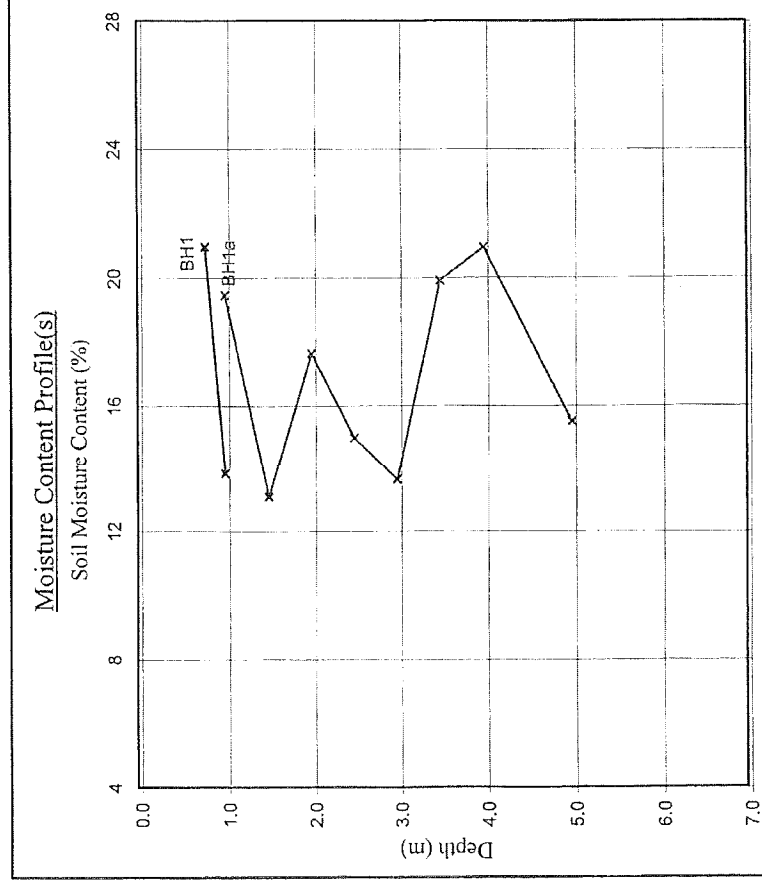
Date Sampled: 26/01/06

Date Received: 30/01/06

Date Tested: 02/02/06

Date of Report: 02/02/06

Note: Unless specifically noted the profiles have not been related to a site datum.



## Notes

1. If the Soil Fraction > 0.425mm exceeds 5% the Equivalent Moisture Content of the remainder (calculated in accordance with BS 1377: Part 2: 1990, cl 3.2.4 note 1) is also plotted and the alternative profile additionally shown as an appropriately coloured broken line.
2. If plotted, 0.4 LL and PL+2 (after Driscoll, 1983) should only be applied to London Clay (and similarly overconsolidated clays) at shallow depths.

## Note

Unless otherwise stated, values of Shear Strength were determined in situ by CET Group using a Picon Hand Vane the calibration of which is limited to a maximum reading of 140 kPa.

# Tree Root Investigation Ltd

Sheet: 1 of 1

Job No: 5821

Date: 12.01.06

Order No: 134604/E3

Site: South Lodge, Stanbury Park, Wellington Court,  
Spencers Wood, Reading

Work carried  
out for: Cunningham Lindsey

## Certificate of Analysis

The following work was commissioned by CET Group Limited on behalf of their client. Root samples were obtained in sealed packets from the above site with no reference given as to the types of tree or shrub from which they may have originated. The results were as follows -

| <u>Trial pit/<br/>Borehole<br/>number</u> | <u>Root diameter<br/>(mm)</u> | <u>Tree, shrub or climber<br/>from which root originates</u> | <u>Result of<br/>starch test#</u> |
|-------------------------------------------|-------------------------------|--------------------------------------------------------------|-----------------------------------|
| TP1 (underside)                           | 11.0                          | a conifer *<br>(4 roots)                                     | positive                          |
| BH1 (depth 1350mm)                        | 12.0                          | a conifer *<br>(4 roots)                                     | positive                          |

# The presence of starch indicates that the root was alive in the recent past.

\* Probably from a member of the family Cupressaceae [e.g. Lawson (*Chamaecyparis lawsoniana*) or Leyland (*Cuprocyparis leylandii*) cypress], although there are a few other possibilities, including the redwoods (*Sequoia* and *Sequoiadendron*).

DR RONALD D MACLEOD  
Managing Director

Address for correspondence: 3 Langley Drive, Kinnoull Hill, Perth, PH2 7XA.

Telephone: 01738 639113

Facsimile: 01738 639113

e-mail: rdm@macleod.btconnect.com

Directors: R D MacLeod, B.Sc, Ph.D., A W MacLeod

Accounts/Quality Manager: Fiona M Sinclair HNC (Management)

VAT Registration No 561 7593 18 Registered in Scotland, No 133721. Registered Office, 1 Charlotte Street, Perth, PH1 5LP



# Tree Root Investigation Ltd

Sheet. 1 of 1

Job No: 5821

Date: 30.01.06

Order No: 135184/E3

Site: South Lodge, Stanbury Park  
Wellington Court, Spencers Wood.

Work carried  
out for: Cunningham Lindsey

## Certificate of Analysis

The following work was commissioned by CET Group Limited on behalf of their client. Root samples were obtained in sealed packets from the above site with no reference given as to the types of tree or shrub from which they may have originated. The results were as follows -

| <u>Trial pit/<br/>Borehole<br/>number</u> | <u>Root diameter<br/>(mm)</u> | <u>Tree, shrub or climber<br/>from which root originates</u> | <u>Result of<br/>starch test#</u> |
|-------------------------------------------|-------------------------------|--------------------------------------------------------------|-----------------------------------|
| BH1 (depth 750mm to 1.0m)                 | 5.0                           | a conifer *<br>(4 roots)                                     | positive                          |
| BH1 (depth 1.0 to 1.5m)                   | 0.5 - 1.0                     | a conifer *<br>(4 roots)                                     | positive                          |
| BH1 (depth 1.5 to 2.3m)                   | 1.0                           | a conifer **<br>(2 roots)                                    | negative (root is decaying)       |

# The presence of starch indicates that the root was alive in the recent past.

\* Probably from a member of the family Cupressaceae [e.g. Lawson (*Chamaecyparis lawsoniana*) or Leyland (*Cuprocyparis leylandii*) cypress], although there are a few other possibilities, including the redwoods (*Sequoia* and *Sequoiadendron*).

\*\* Probably from a member of the family Cupressaceae [e.g. Lawson (*Chamaecyparis lawsoniana*) or Leyland (*Cuprocyparis leylandii*) cypress], although there are a few other possibilities, including the redwoods (*Sequoia* and *Sequoiadendron*). (bark is badly decayed)

DR RONALD D MACLEOD  
Managing Director

Address for correspondence: 3 Langley Drive, Kinnoull Hill, Perth, PH2 7XA.

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Directors: R.D. MacLeod, B.Sc., Ph.D., A.W. MacLeod.

Accounts/Quality Manager: Fiona M. Sinclair H.N.C. (Management)

VAT Registration No. 561 7593 18. Registered in Scotland, No. 133721. Registered Office: 1 Charlotte Street, Perth, PH1 5LP.



06 March 2006



Our Ref: [REDACTED]

UNIT 6  
PARKSIDE  
15 HEADLEY ROAD  
WOODLEY  
READING  
BERKSHIRE RG5 4JB  
Tel **0118 901 4646**  
Fax **0118 901 4458**  
Accounts **0151 485 7272**  
Email [info@oca-arb.co.uk](mailto:info@oca-arb.co.uk)  
Visit [www.oca-arb.co.uk](http://www.oca-arb.co.uk)

Dear [REDACTED]

**Tree related subsidence at**

South Lodge, Stanbury Park, Wellington Court, Reading, Berkshire RG7 1BN

As you may be aware, your neighbour at the above property has made an insurance claim for damage suffered at their property.

Engineers from Cunningham Lindsey (engineers and loss adjusters for the insurer of the above property) have investigated the claim and have reached the conclusion that the damage is a result of clay shrinkage subsidence caused by nearby vegetation.

Trees, climbers and large shrubs all take water from clay soils each day to live and grow. However as the water leaves the soil the clay shrinks and foundations may move.

We have been appointed as arboriculturists (tree specialists) to make vegetation management recommendations and to liaise with the owners of the vegetation.

The table below indicates the vegetation which we consider is the cause of the damage, and our recommendations.

| Tree No. | Species      | Recommendation       |
|----------|--------------|----------------------|
| T1       | Wellingtonia | Fell to ground level |

We understand that letters of this kind can sometimes cause distress and we wish to assure you that this is not our intention. We also would not want this matter to have any bearing on your relationship with your neighbour. However, we must advise that repairs to your neighbour's property cannot commence until the matter of tree removal has been resolved.

We appreciate that at this point you may have questions to ask and you may wish to view our web site, [www.oca-arb.co.uk](http://www.oca-arb.co.uk), for more information.

We often find that many of the technical issues and the reasons for our recommendations can be better explained to tree owners by one of our qualified arborists and would encourage you to contact us to discuss any concerns.

**ALSO AT**  
GOODLASS HOUSE, GOODLASS ROAD,  
SPEKE, LIVERPOOL L24 9HJ  
Tel 0151 485 7200  
Fax 0151 485 7171

4 THE COURTYARDS, PHOENIX SQUARE  
SEVERALLS PARK, WYNCOLLS ROAD  
COLCHESTER, ESSEX CO4 9PE  
Tel 01206 751626/751632  
Fax 01206 855751

  
We enclose the following for your attention:

The Engineer's Report, in which we would draw your attention to Cause of Damage.

The Factual Report of Investigation that was undertaken by CET, this shows roots have been analysed and identified as Conifer.

We have been advised by Wokingham District Council that statutory controls apply to Wellingtonia T1 by way of Tree Preservation Order and as such our client has requested that we make an application to the Council in accordance with our recommendations. Once the Council has registered our application they will have an eight-week period to make a decision as to whether or not they will give consent for the tree works. We will, of course, contact you again once the Council's decision has been received.

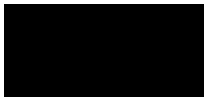
We would be grateful if you would consider the enclosed plan which shows the location of the vegetation in question and confirm ownership in the first instance and secondly, whether you would be willing to carry out the recommended removal of Wellingtonia T1.

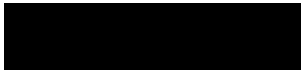
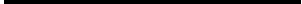
We would also suggest that you notify your own liability insurer of this matter, as this is likely to be a condition of your policy. For this reason, if you are not in agreement with the proposed tree works we ask that you provide us with your policy details, in order that we can contact them directly.

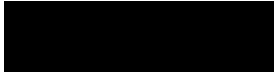
Given that it is necessary for the matter of the tree removal to be determined before the engineers can schedule the repairs, we are keen to hear from you as soon as possible so that the matter is swiftly progressed and we are able to report your response to our client.

We trust the above is of assistance and ask that you contact us at your earliest convenience to discuss any queries you may have, and confirm your position regarding this matter.

Yours sincerely

  
**Barbara Noble**  
**Claims Handler**  
**National Insurance Office**  
**OCA UK Limited**

Email:   
DDI: 

Copy: 

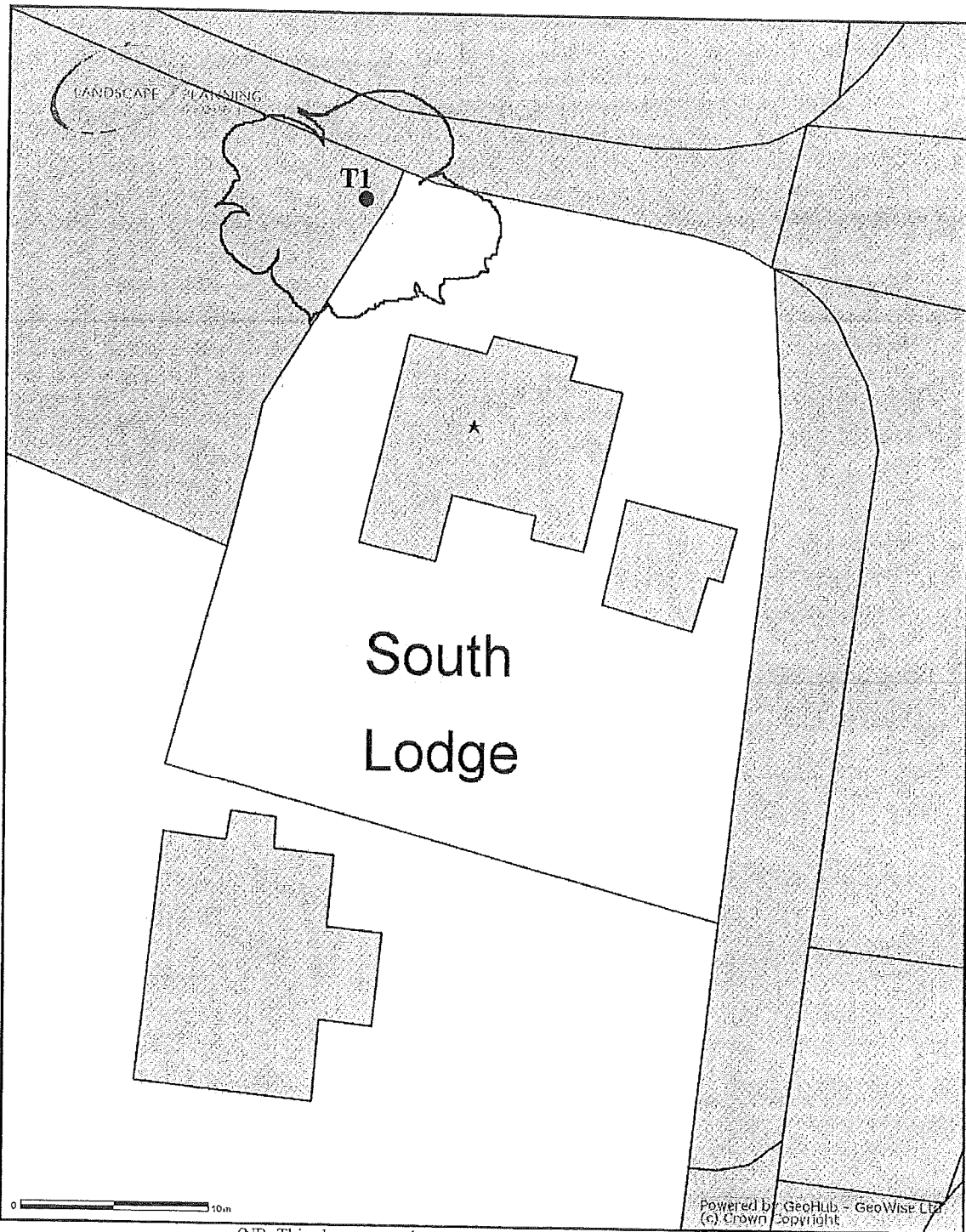
Encl: EAR, FSI, FAQ

# OCA UK Limited

## Tree Owners Guidance Notes

The following notes have been prepared in response to frequently asked questions from tree owners.

| Frequently Asked Question                                                                                           | Answer                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|---------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| What evidence is there to suggest that the vegetation indicated is causing damage?                                  | Chartered Engineers appointed by the Insurers of the property have visited and carried out a survey of the damage and looks for problems that may or may not cause or contribute to the damage. The Engineer is able to assess the most likely cause of the damage and discount potential problems such as drains. In this case, the Engineer has concluded that the only reasonable explanation as to why the damage has occurred relates to the nearby vegetation.                                                              |
| Are the foundations of the property adequate and/or in a reasonable condition?                                      | The depth and condition of foundations varies from property to property and may depend on when the property was constructed or extended. In recent years, Council Building Control would have ensured that foundations were provided in accordance with regulations current at that time. Again, the Chartered Engineer will have considered the foundations of the property and made a decision on what is the best course of action in order to stabilise the property.                                                         |
| My property, which is just as close to the vegetation in question, is not suffering damage. Why is this?            | As vegetation grows, the area, depth and volume of soil from which it takes moisture increases and not necessarily follows a uniform pattern. It may be that soil conditions beneath the damaged structure are slightly more favourable for root activity.                                                                                                                                                                                                                                                                        |
| The recent dry weather must have surely been the cause of the damage as the property was fine before the dry summer | Research from various bodies including the Meteorological Office and the Building Research Establishment (BRE), has shown that climate alone cannot dry soils to any significant depth. Whilst the surface layer of the ground can suffer during drought periods, the drying of soils beneath foundation level requires an accelerant. Vegetation, having the ability to root beneath foundations is the most common drying force that causes movement in the soils beneath the building.                                         |
| The vegetation in question existed before the property was built.                                                   | Unfortunately, tree owners are legally liable for any damage or nuisance caused by their trees to neighbouring properties, regardless of the age of the tree or the adjacent property and regardless of which existed first.                                                                                                                                                                                                                                                                                                      |
| I have maintained my vegetation regularly. Why must it now be removed?                                              | There is no research to show that pruning, regular or otherwise, offers a long-term solution to the problem. Some studies have actually shown that pruning leads to an increase in the level of moisture extracted from the soil. In all cases, pruning does not have any significant effect on the root system of the vegetation.                                                                                                                                                                                                |
| What about the other trees / vegetation close to the damaged property?                                              | Surveyors working for OCA UK Limited are trained to the highest standards possible and take all the vegetation in proximity to the property into consideration. Only those trees, shrubs or climbers that are considered to be causing or contributing to the damage will be considered for removal.                                                                                                                                                                                                                              |
| I have been told that if vegetation is removed then heave will occur.                                               | Heave is rarely considered to be an issue and would only normally apply if a tree or trees predate construction of a property. In such cases, engineers will have taken this potential into consideration and undertaken a "heave calculation".                                                                                                                                                                                                                                                                                   |
| Why not use a root barrier.                                                                                         | Any root barrier would need to extend below the likely depth to which roots will grow. We do not consider that the installation of such a barrier would be practicable or effective in many circumstances as the barrier needs to extend significantly deeper than the depth at which roots were recovered. Additionally, the terms of the Policy do not cover root barrier costs, as this is essentially preventative in nature. The Policy covers damage to the property and a cost effective, permanent remedy to such damage. |



(NB: This plan may not be a comprehensive record of site features.)

Title: South Lodge, Wellington Court, Reading, RG7 1BN

Client: Norwich Union

Scale: N T S

Drawn Date: 11/01/06

Job Ref: 22801

**OCA**  
UK Limited

Consulting Arboriculturists

Unit 6, Parkside, 15 Headley Road  
Woodley, Reading,  
Berkshire RG5 4JB

Tel.No: 0118 9014646 Fax No.0118 9014458