



Revisit Report

Our Reference	IFS-RBS-ROF-11-0027216
Claim Reference	62910030/02
Prepared for	Nationwide Building Society

Claim Details:

Report Date	20 April 2012
Policyholder	Mrs Karen Pouralli
Claim address	22 Oakmont Drive, Waterlooville, Hampshire, PO8 8TH

REASON FOR REVISIT AND BACKGROUND

The property was re-visited in order to undertake a full case review.

The risk address is a two storey detached house of cavity masonry construction under a pitched tiled roof and believed to have been built in the 1970's with a later single storey extension added to the rear of the garage. The property was purchased by the policyholder in 2004 and the claim notified in July 2010 following discovery of damage earlier in the same year.

In the policyholders rear garden there is a large Oak tree perhaps some 20m in height and 8m remote from the property. Previous investigations have established that the damage to the house has been caused by (Oak) tree related clay shrinkage subsidence.

DESCRIPTION OF DAMAGE

The damage takes the form of internal and external cracking at both ground and first floor levels and predominantly located close to the rear right hand corner of the building. The cracking is relatively superficial at first floor with cracking in the rear right hand bedroom on the rear and right hand elevations and in the bathroom along the coving of the rear wall. The most significant damage is at ground floor level in the rear dining room where cracks not exceeding 5mm are present in both the rear and right hand elevations. The window frames are slightly distorted and the serviceability is affected. In the kitchen there is hairline cracking around the wall ceiling junctions.

DISCUSSION

The foundations of the building are at a depth of 1.1m and underlain by highly shrinkable clay with Oak roots identified to a depth of 2.5m. It is likely that damage occurred during previous event years given the size and proximity of the Oak tree and has been repaired as a matter of maintenance.

Crack and level monitoring have been carried out over a period of twelve months and a clear pattern of cyclical movement established with a maximum movement of 22mm being recorded on the rear right hand corner of the building but with almost full recovery at the end of the growing season. If the tree is removed the heave prediction is around 28mm and this is consistent with the level monitoring results to date.

There are two possible scenarios to resolve this claim which are based on either the Oak tree remaining or the Oak tree being removed. If the tree remains, a substructure solution (including piling) would be required to accommodate the effects of the tree primarily along part of the rear and right hand elevations. This would be a partial scheme and differential movement of the remaining currently undamaged section of the building may result unless designed movement joints are incorporated.

However, the nature and extent of the damage together with the pattern of movement indicate that removal of the Oak tree is also a viable proposition. We would estimate that the costs associated with superstructure repairs are around £5K whereas a partial underpinning scheme is likely to be in the region of £20 - £30K.

RECOMMENDATIONS

We have discussed the options with your policyholder who, whilst appreciating the limited heave risk, would still much prefer to have the tree removed. It is therefore recommended that an application is made to the Local Authority to have this tree felled and agreement reached on more suitable replacement planting in lieu of the Oak.

NEXT ACTIONS

Assuming insurers are in agreement we will now pursue the removal of the Oak tree with the Local Authority.

Adrian Cook

**Technical Specialist Engineer
Subsidence Management Services**

Subsidence Report

On

**22 Oakmont Drive
Waterlooville
Hampshire
PO8 8TH**



Date: 2nd August 2010

Our ref: NA100336RL/EPL

PRELIMINARY REPORT

Introduction:

This report has been prepared under the instructions of Nationwide Insurance, for their sole use in connection with the notification of a claim under the subsidence section of their policy.

Our following comments are limited observations upon the nature and suspected cause of the damage notified, and we have not widened our brief to consider other structural matters. We have been asked to comment on the cause of the damage and the scope of any repairs that may ultimately be required.

Our report does not consider questions of timber or damp, services installations or the general condition of the property. We have not inspected woodwork or other parts of the structure which are covered, unexposed or inaccessible and we are therefore unable to report that any such part of the property is free from defect.

Our comments on causation of the damage are based only on the investigations, which, have been carried out at this stage and would be subject to review in the light of further investigations.

This report has been prepared on behalf of Riley Larkin Ltd and by receiving the report and acting on it, the client – or any third party relying on it – accepts that no individual is personally liable in contract, tort or breach of Statutory duty.

Discovery of Damage:

Mr and Mrs Pouralli have owned the property for six years. They purchased the property without a survey report.

They noted cracking to the rear right corner of the property earlier this year, which appeared to progress rapidly in recent weeks and therefore they notified their Insurers of a claim.

Description of Property:

Date :	1970
Accommodation :	The property is a four bedroom, two-storey detached house with a double attached garage and side extensions.
Construction :	The property is of traditional construction with brick walls, part-solid / part-suspended floors and a pitched, tiled roof.
Basement :	None
Extension :	There is a single-storey extension to the rear of the garage at the left hand sided.
Garage :	2 No. integral.
Other comments :	None

History:

Date of Construction	1970
Purchased	2004
Policy Inception Date	1 st March 2009
Damage First Noticed	March 2010
Claim Notified to Insurers	13 th July 2010
Date of Inspection	26 th July 2010

Geology of Site:

Reference to the 1:50,000 scale British Geological Survey Map ref 316 Fareham, (solid and drift edition) suggests the underlying geology to be London clay.

Terrain:

The property is located on a relatively flat site which backs on to a main road.

Vegetation of Interest:

See sketch plan for locations. The following vegetation is of particular interest:

Species	Height (m)	Distance (m)	Ownership
Oak	25	8.5	Insured

Roots from trees and other vegetation can be troublesome in cohesive (clay) soils because they can induce volumetric change. They are rarely troublesome in non-cohesive soils (sands and gravel etc.) other than when they enter drains, in which case blockages can ensue.

Oak trees (*Quercus*) are deciduous and native to Europe. They can reach heights in excess of 35m, but more typically grow to between 18 - 25m, depending on health, environment and soil conditions. They have a medium growth rate of around 250mm per year and strong root activity¹.

Maximum tree-to-damage distance recorded in the Kew survey was 30mtrs, with 50% of all cases occurring within 9.5mtrs². Life expectancy > 100 years, although they are vulnerable to insect and fungal attack. Old and young trees are tolerant of quite heavy pruning and crown reduction, although re-growth can be an ongoing problem.

Description of Damage:

We give, below, a brief description of the damage with photographs.
The damage is restricted to the rear right corner of the property.

Externally, there is cracking around the rear right hand bay and the right hand corner of the property at high and low level, with cracks up to 5mm. The damage is indicative of a downward movement to the rear right corner of the property.



Crack to side of bay at high level



Crack below bay

¹ Richardson & Gale (1994) *"Tree Recognition"* Richardson's Botanical Identifications

² Cutler & Richardson (1991) *"Tree Roots & Buildings"* Longman Scientific

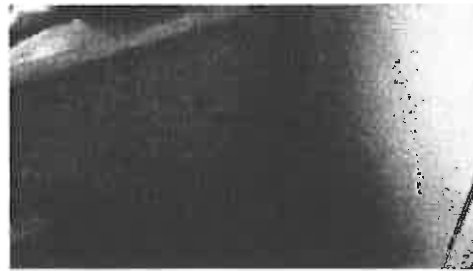


Crack on left hand flank,
below window

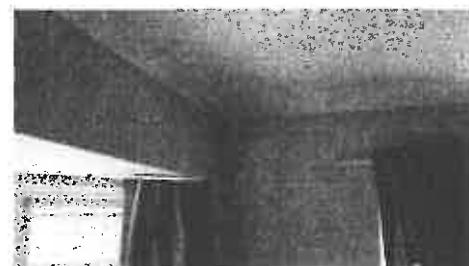


Crack at rear right hand corner

Internally at first floor level, the damage is restricted to the rear right hand bedroom where there is cracking to the rear right corner, in particular above and below the rear window.



At ground floor level, the damage is again to the rear right corner of the property in the dining room, where there is cracking on the rear elevation wall of the bay and on the right hand flank, particularly towards the corner



Crack at window, right hand flank wall

Category of Damage:

It is common practice to categorise the structural significance of the damage in accordance with the classification given in Table 1 of Digest 251 produced by the Building Research Establishment. In this instance, the damage falls into Category 2 ("moderate").

Category 0	"negligible"	< 0.1mm
Category 1	"very slight"	0.1 - 1mm
Category 2	"slight"	>1 but < 5mm
Category 3	"moderate"	>5 but < 15mm
Category 4	"severe"	>15 but < 25mm
Category 5	"very severe"	>25 mm

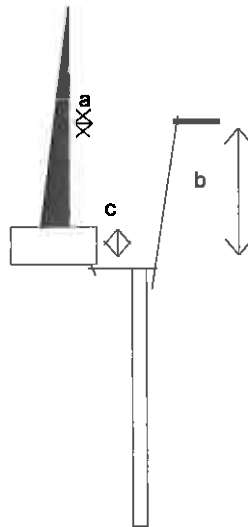
Classification of damage based on crack widths.

Investigations:

The following investigations were undertaken to identify the cause of movement.

Trial Holes

A trial hole was excavated to expose the foundations. The trial hole revealed a concrete foundation at a depth of 1.1metres.



Foundation Details

a = 200mm, b = 1100mm, c = 300mm

Augered Boreholes

A borehole by hand auger was sunk to a depth of 4.0metres below ground level. The borehole revealed a stiff, dry, grey-veined, brown clay containing numerous roots which continued to 2.5metres. Between 2.5 and 4.0metres, the substrata was firm and dry, although no roots were noted.

Soil Samples

Soil samples were retrieved from the bore, wrapped in clingfilm before being bagged and deposited with a testing laboratory.

Roots

Roots have been submitted for identification. The results are attached. The roots have been identified as Oak.

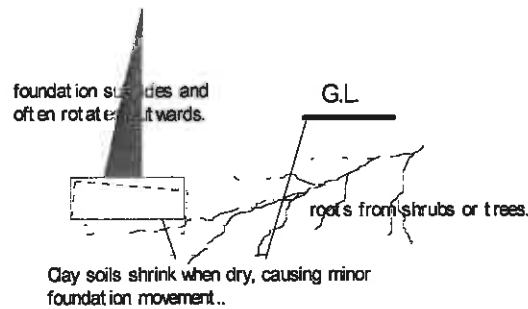
Drains

The drains are not in the area of damage and were not inspected. Whilst there is a rainwater gulley at the rear right corner of the building, there was no indication that any water is leaking from this.

Cause of Damage:

Properties in clay areas typically suffer from subsidence as a result of dry weather conditions compounded by moisture extraction from vegetation. During these conditions, clay will lose its moisture through evaporation. As the clay dries it shrinks. The degree of shrinkage from dry weather is generally not sufficient to cause structural damage unless the foundations are particularly shallow. Usually subsidence damage is the result of vegetation, especially trees, extracting even more moisture from deep within the ground within its' zone of influence.

Cont/...



There is a direct correlation between the moisture uptake of vegetation and its leaf canopy. Reducing the leaf canopy will reduce the water demand of the vegetation. If the vegetation is removed entirely, so the water demand is removed.

When removing vegetation, particularly established broad leaf trees, consideration must be given to heave. Heave occurs where the clay soil expands as the moisture returns. Structural damage can occur as the property suffers from extreme upward movement.

The most common way to adequately establish if movement has been arrested is to monitor the situation for a period of time. Typically this is conducted over twelve months to cover the four seasons. However, each case must be considered on its own merits.

In the majority of cases vegetation works will be sufficient to allow superstructure repairs alone. However, in exceptional cases this may not be sufficient and underpinning may have to be used in order to arrest the movement.

Subsidence can also occur to properties founded on a clay soil due to leaking drains. In such cases the liquid egress will cause over-softening of the clay and therefore a reduction in the clays bearing capacity. Once the leak has been repaired the damage is monitored and provided there is no deterioration superstructure repairs can be implemented.

Similarly, problems with leaking drains also can occur to properties founded on a more granular material such as sand or gravel. Liquid egress will cause the finer particles of the material to migrate downwards. This will result in a change in volume of the material. Again, reinstating the drains will allow the situation to stabilise.

Discussion:

The timing of the damage, together with the locality of the Oak tree, the presence of a highly shrinkage London clay and roots below the foundations confirm the cause to be subsidence due to desiccation of the clay substrata caused by moisture extraction by roots from the Oak tree.

In the circumstances, we consider that a significant reduction to the Oak tree should be undertaken and to that end, we have requested a quotation for these works. It is understood that there is a Tree Preservation Order on this tree, in which case the consent of the Council would be required prior to any works being undertaken. Insurers have agreed to meet the reasonable costs of this work.

Following tree works, we will need to monitor the property to establish whether this results in stability and to that end monitors have been attached and initial readings taken. We also consider it would be appropriate to provide levels around the property and compare the levels with a datum towards the front of the property in order to assess any further movement, in particular during the next dry spell of Summer 2011.

Cont/...

Monitoring is a useful diagnostic tool. Cracks that open and close are indicative of clay shrinkage problems, whilst cracks that open, without closing, are usually indicative of either excessive water (due to leaking drains, water services etc.) or poor ground.

Monitoring is carried out in accordance with the requirements of the Building Research Establishment.

Readings will be taken at two monthly intervals.

Recommendations/Action Plan:

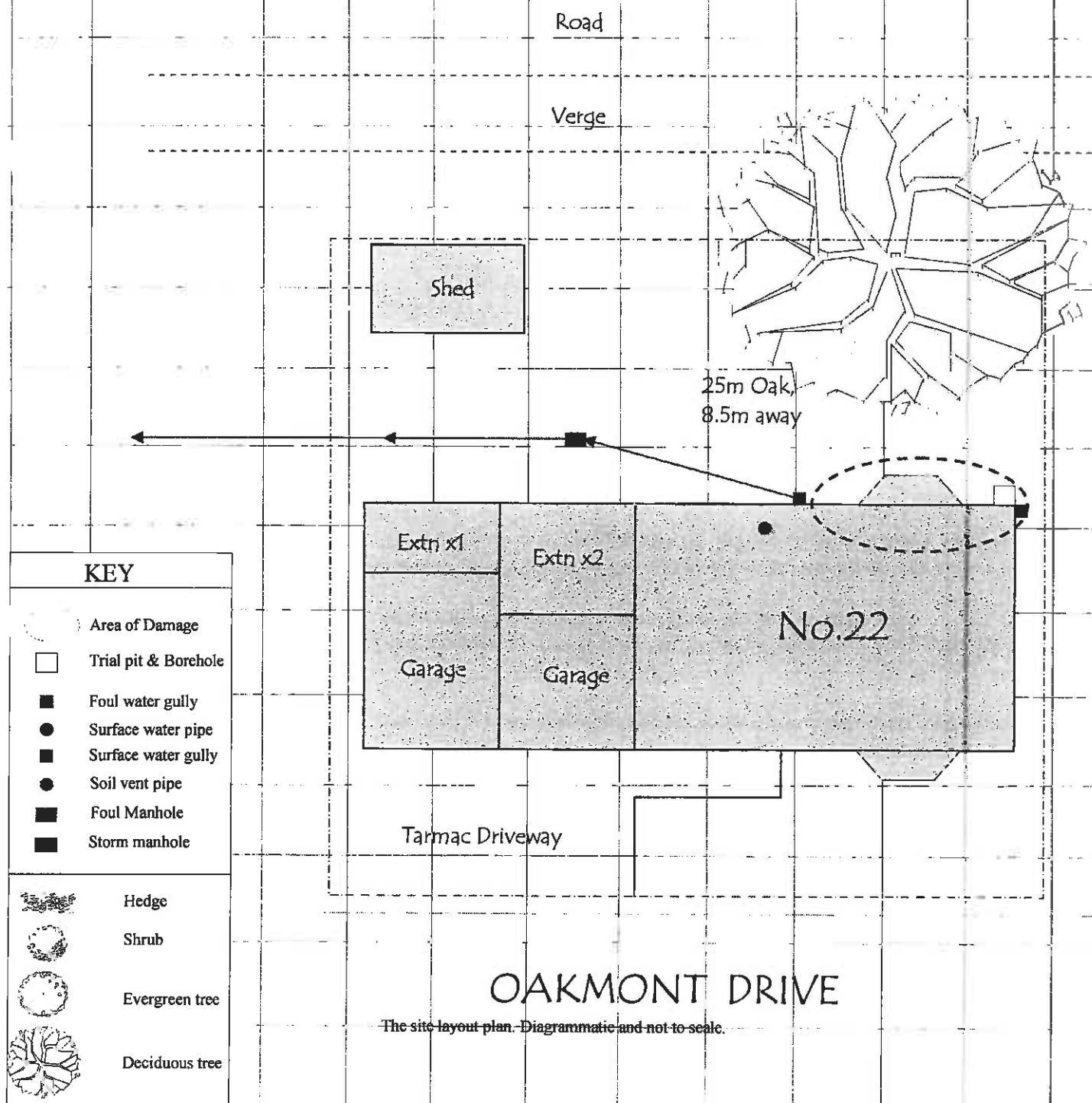
We will make an application to have the Oak tree reduced, following which it will be necessary to crack and level monitor the property to confirm whether this results in stability in the longer term.

Eamon P. Larkin BSc CEng MICE
Riley Larkin Limited

Site Plan

Not to Scale

This plan is diagrammatic only and has been prepared to illustrate the general position of the property and its relationship to nearby drains and trees etc. Tree heights and distances are approximate and tree species are not authenticated. The boundaries are not accurate, and do not infer or confer any rights of ownership or right-of-way.





LABORATORY REPORT

Client's Name: Pouralli

Address: 22 Oakmont Drive,
Waterlooville,
Hampshire,
PO8 8TH

Report Date: 10-Aug-10

Job No.: 45484

(If _R suffix appears after Job No.,
this indicates Revision Number)

Insurance Co.: The Site Investigation Company

Claim Ref. No.:

Project Engineer: E. Larkin

From: Riley Larkin Limited,

Engineers Ref.: N100336

Contents: Moisture Content
Atterberg Limits
Suction Tests

Address: Mat Lab Ltd
The Dell
Bickenhill Lane
Catherine-De-Barnes
Solihull B92 0DE
E-mail: post@mat-lab.com

Phone No.: 0121 704 3339 **Fax No.:** 0121 704 4675

Authorised By:

AB - Reports Technician

Date Authorised: 10/08/2010

Date Soil Samples Received in Laboratory: 29-Jul-10

Date Testing Requirements Approved: N/A

This Soils Report contains results for 1 borehole(s) on 1 page(s)

General

Soils were prepared in accordance with BS1377:Part 1:1990 Section 7

Laboratory soil sample descriptions in general accordance with BS5930:1999

Where samples are not tested on same date for a particular test type, Test Date quoted refers to the day of testing of final sample

All samples will be disposed of within 1 month of presentation of this report unless otherwise advised

Natural Moisture Content

Test Date: 30-Jul-10

Tested in accordance to BS1377:Part 2:1990 Section 3.2

A sample quantity of 100g is used for fine-grained soils, where available

Where sample quantity is critical, a minimum of 50g may be used, in accordance with BS1377:Part 2:1990

A sample quantity of 300g to 350g is used for medium-grained soils, 3kg is used for coarse-grained soils.

Atterberg Limits

Test Date: 06-Aug-10

Tested in accordance to BS1377:Part 2:1990; Section 4.4 for the Liquid Limit, Section 5 for the determination of the Plastic Limit and Plasticity Index

Suction Tests

Test Date: 07-Aug-10 (Q)*

Suction Test carried out in accordance to the accredited In-house Procedure MTLB001 with reference to the BRE paper IP4/93 (Corrected) 'A Method of Determining the State of Desiccation in Clay Soils'

(Unless otherwise stated the filter paper moisture content was determined after 5 to 10 days contact and the test was prepared from a remoulded disturbed sample in accordance with in-house procedures)

** Where denoted by '(Q)' following Test Date above, the test has been performed using 2 soil discs and quartered filter papers.*

The filter paper tests are conducted in a controlled environment within a temperature range of 16oC to 24oC.

Average Suction values (in kPa) calculated using the BRE paper IP4/93 calibration are quoted with the maximum and minimum suction obtained, as indicated by error bars either side of plotted point.

Where possible, suction values should be compared with remote borehole values, to determine relative desiccation.

Each new batch of filter papers used for testing is checked for its consistency against the standard BRE calibration curve using a pressure membrane extractor. The current filter paper batch, J113976969, shows good consistency against the BRE curve, more information is available upon request. Studies on in-house calibrations using a pressure membrane extractor continue.

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2063

Address: 22 Oakmont Drive, Waterlooville, Hampshire, PO8 8TH

Job No. 45484

SOILS LABORATORY RESULTS.**MATLAB LTD.**

0121 704 3339

Opinions and Interpolations expressed herein are outside the scope of UKAS accreditation.

JOB No.:- 45484**INSURANCE COMPANY** The Site Investigation Company **REF:-****DATE SAMPLES REC'D:-** 29 Jul 10**ENGINEER:-** E. Larkin **REF:-** N100336**CLIENT/INSURED NAME:-** Pouralli**FROM :-** Riley Larkin Limited,**ADDRESS:-** 22 Oakmont Drive,**B.H. No. :-** 1

Waterlooville,

LOCATION:- N/A

Hampshire,

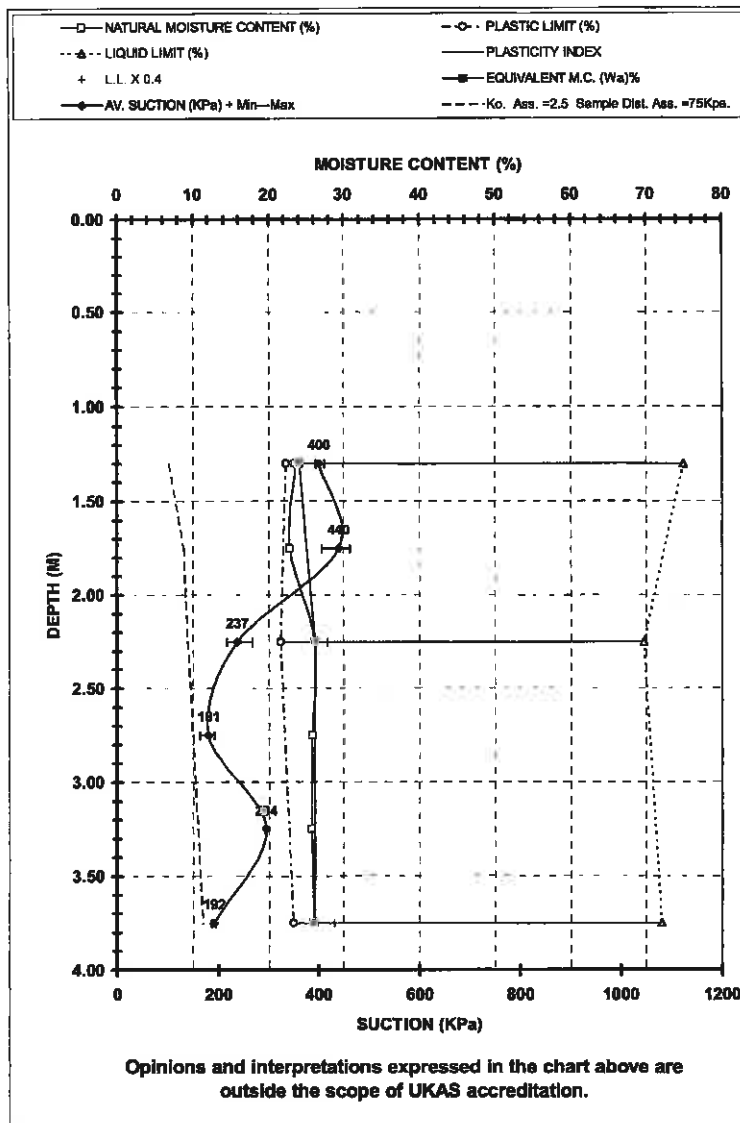
REPORT DATE:- 10 Aug 10

2093

PO8 8TH**ATTERBERG LIMITS.**

NOTE :- Column "dh" below is outside of UKAS accreditation and is an inference based on the heave analysis [dh (Blue) extrapolated]. "N.P." in the plastic limit column = "Non-Plastic"

DEPTH.	M.C.	L.L.	P.L.	P.I.	425um	AV. Filter Paper	dh	BRIEF SOIL DESCRIPTION
M.	(%)	(%)	(%)	(%)	(%)	M.C.(%) & No.	(mm)	
1.30	24	75	22	53	100	35.9746 (3)	9.5	Stiff brown CLAY with occasional grey bandings, rare sand & fine gravel.
1.75	23	-	-	-	-	35.3253 (3)	6.6	Stiff brown CLAY with occasional grey bandings, rare sand & fine gravel.
2.25	26	70	22	48	99	39.6477 (3)	5.0	Firm/stiff brown CLAY with occasional grey bandings, rare sand & fine gravel.
2.75	26	-	-	-	-	41.5424 (3)	2.1	Firm/stiff brown CLAY with occasional grey bandings, rare sand & fine gravel.
3.25	26	-	-	-	-	38.1214 (3)	2.4	Firm/stiff brown CLAY with rare sand & fine gravel.
3.75	26	72	23	49	100	41.1106 (3)	2.2	Firm/stiff brown CLAY with occasional light grey veinings, rare sand & fine gravel.



The interpretations below are outside of UKAS accreditation.

Heave Potential Analysis :-**Total of Column dh (potential heave increment per layer)**

Is Approx. :

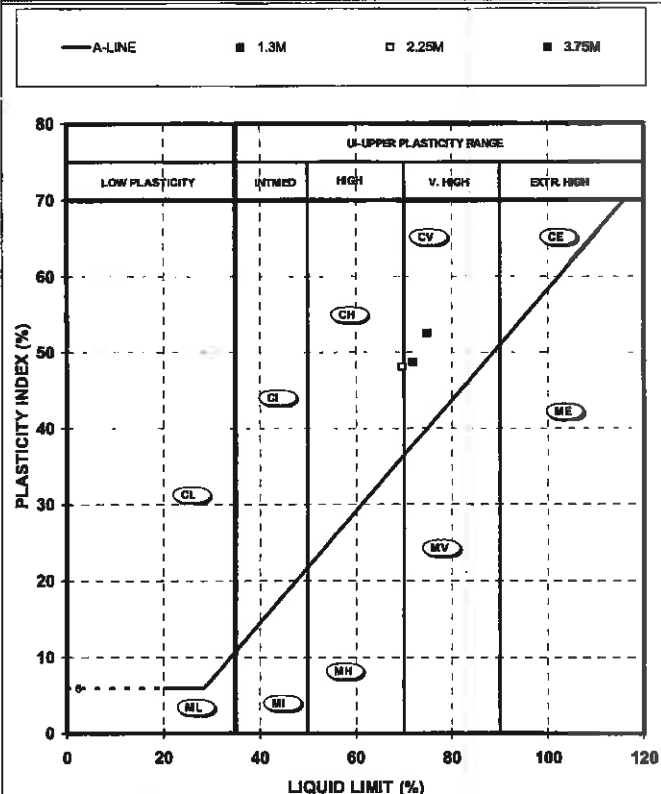
28 mm.

Therefore the Total Surface Heave Potential over the B/H depth is about :-

1cm. to 4cm.

The Above Heave Analysis is based upon :-

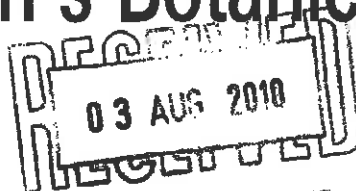
BRE Digest 412 Feb 1996 'Using Suction Profiles'

**Authorised by :-**



Richardson's Botanical Identifications

Root identification
Vegetation surveys
Tree/Building investigations
Plant taxonomy



Dr Ian B K Richardson
BSc, PhD, CBiol, MIBiol, MIHort, FLS
James Richardson
BSc (Hons. Biology)

Riley Larkin Ltd.
Hadleigh House
96 High Street
Bushey, HERTS
WD23 3HB

Enterprise House
49-51 Whiteknights Road
Reading
RG6 7BB

Tel: (0118) 986 9552 (*Direct line*)
E-mail: richardsons@botanical.net
Web: www.botanical.net

02/08/2010

Your ref: E. Larkin 100336

Our ref: 69/8207

Dear Sirs

22 Oakmont Drive, Waterlooville, Hampshire, PO8 8TA

The samples you sent in relation to the above on 26/07/2010 have been examined.[^]
The structure was referable as follows:

TP, u/s, 1.1-2.5m

1 root: QUERCUS (Oak). 18 further roots, not examined in detail appeared similar under low magnification.

1 root: - microscopic examination shows insufficient cells for recognition. 15 further roots, not examined in detail appeared similar under low magnification.

I trust this is of help. Please call us if you have any queries; our invoice is enclosed.

Yours faithfully

Dr Ian B K Richardson

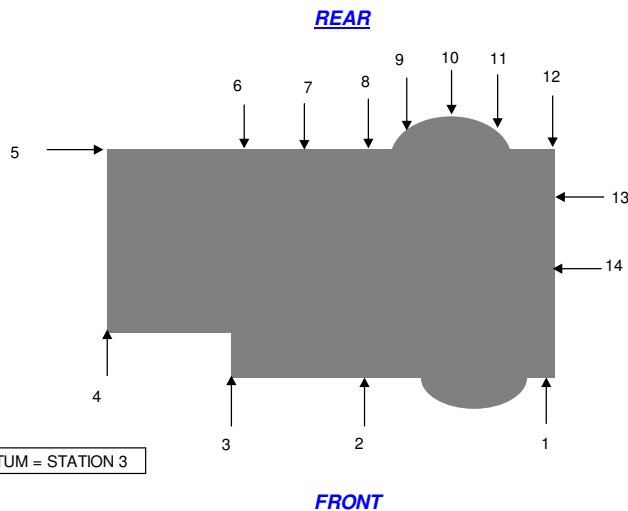
** Try out our web site on www.botanical.net **

[^] Identified with no information on vegetation, on or off site.

LEVEL MONITORING - DISTORTION SURVEY READINGS

Provider Details		Client Details		Risk Address	
Name:	MHN Ltd	Insurance Co.:	Nationwide	Occupier:	Mrs K Pouralli
		Client Name:	Infront Innovation	Address:	22 Oakmont Drive
Date of Issue:	24/2/12	Contact:		Address:	Waterlooville
		Email:		Town:	
		Client Ref:	RBS-11-0026818	County:	Hampshire
		Address:	3 Smith Way	Post Code:	PO8 8TH
		Address:	Grove Park, Enderby	Tel Home:	
		Town:	Leicester	Tel Work:	
		County:	Leicestershire	Mobile:	
		Post Code:	LE19 1SX	Other:	
		Other Email:		Other:	
Monitoring Details					
Instruction Date:	4/8/10				
First Reading Date:	17/08/2010				
Maximum No Visits:	TBC				
Anticipated Expiry Date:	TBC				
Monitoring Int (Wks):	8 weekly				

Target Date:															
Reading Date:		17/8/10	18/10/10	13/12/10	9/2/11	19/4/11	20/6/11	23/8/11	26/10/11	22/2/12					
Issue Date:		18/8/10	19/10/10	15/12/10	10/2/11	20/4/11	22/6/11	24/8/11	29/10/11	24/2/12					
Row No.	Point Name	X Co-ordinate	Y Co-ordinate	1	2	3	4	5	6	7	8	9	10	11	12
1	1	0.00	0.00	10.0170	10.0173	10.0168	10.0171	10.0166	10.0163	10.0164	10.0167	10.0175			
2	2	-3.20	0.00	10.0047	10.0048	10.0047	10.0050	10.0048	10.0046	10.0047	10.0047	10.0053			
3	3	-6.30	0.00	10.0000	10.0000	10.0000	10.0000	10.0000	10.0000	10.0000	10.0000	10.0000			
4		-6.30	1.20												
5	4	-12.00	1.20	10.0031	10.0040	10.0043	10.0041	10.0040	10.0037	10.0043	10.0036	10.0031			
6	5	-12.00	8.90	9.9785	9.9797	9.9800	9.9805	9.9802	9.9792	9.9782	9.9789	9.9802			
7	6	-9.00	8.90	9.9675	9.9687	9.9693	9.9695	9.9695	9.9681	9.9673	9.9676	9.9693			
8	7	-6.00	8.90	9.9629	9.9669	9.9697	9.9707	9.9709	9.9679	9.9653	9.9642	9.9700			
9	8	-3.60	8.90	9.9575	9.9628	9.9670	9.9687	9.9685	9.9646	9.9606	9.9579	9.9677			
10		-3.00	8.90												
11	9	-2.60	9.30	9.9570	9.9658	9.9719	9.9729	9.9730	9.9682	9.9626	9.9593	9.9723			
12	10	-1.80	9.80	9.9516	9.9633	9.9706	9.9731	9.9726	9.9662	9.9588	9.9547	9.9717			
13	11	-0.80	9.30	9.9539	9.9647	9.9727	9.9747	9.9745	9.9683	9.9607	9.9573	9.9733			
14		-0.40	8.90												
15	12	0.00	8.90	9.9499	9.9600	9.9660	9.9681	9.9677	9.9625	9.9554	9.9521	9.9666			
16	13	0.00	8.00	9.9636	9.9670	9.9708	9.9722	9.9721	9.9678	9.9629	9.9603	9.9708			
17	14	0.00	4.50	9.9835	9.9845	9.9856	9.9860	9.9859	9.9846	9.9836	9.9833	9.9856			
18		0.00	0.00												
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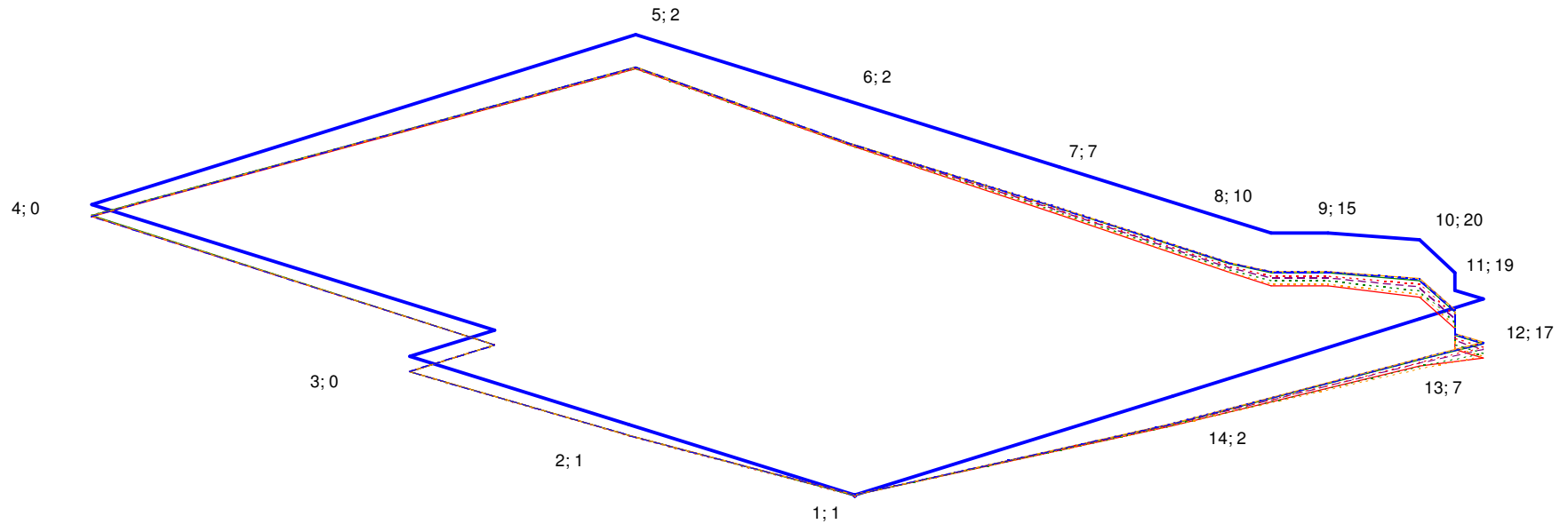


- 22/02/2012
The Occupier was not unduly worried
- All stations have been installed within the same brick course. There fore initial readings can be interpreted as Distortion Data
- Further readings will be taken in Apr '12

LEVEL MONITORING - DISTORTION MOVEMENT SKETCH

Client: Infront Innovation

Client Ref: RBS-11-0026818



— Datum Reading	— Reading 1 (17/8/10)	— Reading 2 (18/10/10)	— Reading 3 (13/12/10)	— Reading 4 (9/2/11)
— Reading 5 (19/4/11)	— Reading 6 (20/6/11)	— Reading 7 (23/8/11)	— Reading 8 (26/10/11)	— Reading 9 (22/2/12)
— Reading 10 (0/1/00)	— Reading 11 (0/1/00)	— Reading 12 (0/1/00)		

Notes:
Vertical distorted scale 1: 20

Point labels give level difference of last reading from original datum in mm.

