

Arboricultural Assessment Report

Detailed Report on Trees

For:	Client:	Infront Innovation (Leicester)
	Insurer:	Nationwide Building Society
Site:	Policyholder:	Mrs Pouralli
	Risk Address:	22 Oakmont Drive, Waterloooville PO8 8TH
Refs:	OCA Ref:	49581
	Client Ref:	IFS-RBS-ROF-11-0027216
	Insurer Ref:	62910030/02

Survey By:	Gemma Holmes		
Title:	Arboricultural Technician	Date:	19 January 2012
Report By:	John Hall		
Title:	Senior Consulting Arborist	Date:	25 March 2012



Consulting Arboriculturists

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References

Reference

- 1** Riley Larkin 'Engineer's Report' dated 02 August 2010.
- 2** MAT LAB Limited 'Laboratory Report' dated 10 August 2010.
- 3** Precise level monitoring results for the period 17 August 2010 to 22 February 2012.
- 4** Richards Botanical Root Identification Certificate dated 02 August 2010.
- 5** Infront Innovation 'Revisit Report' dated 20 April 2012

1.0 Introduction & Brief

- 1.1** OCA UK Limited has been instructed by Infront Innovation on behalf of the building insurers of 22 Oakmont Drive, Waterloooville, PO8 8TH (the insured property). We have been advised by Infront Innovation that the insured property has suffered differential movement and damage which is considered to have been caused by trees growing adjacent the property influencing soils beneath its foundations.
- 1.2** We have been instructed to undertake a survey of the vegetation growing adjacent the insured property, to provide our opinion as to whether, based on the available information any of this vegetation is likely to be influencing soil moisture levels beneath the foundations of the property and if so to provide recommendations as to what tree management could be implemented to effectively prevent damage continuing.
- 1.3** The vegetation growing adjacent the risk address has been surveyed from the ground using digital measuring devices and/or standard tape measures. All distances are measured to the nearest point of the risk address unless otherwise stated.

2.0 Limitations

- 2.1** Recommendations, with respect to tree management, are associated with the risk address following consultation with Engineers. In relation to the possibility of heave damage, the owners of any trees in third party control must obtain their own advice in respect of the possibility of any damage to their own or other structures outside of the control of the insured.
- 2.2** Recommendations do not take account of any necessary permission (statutory or otherwise) that must be obtained before proceeding with any tree works.

3.0 Evidential Assessment

Circumstances of discovery	The Engineer has advised that damage was discovered in March 2010 and damage progressed rapidly towards the completion of the Engineers Report (August 2010).
Engineers brief description of main damage	The Engineer describes the main area of damage is to the rear right hand corner. The Engineer states that this damage takes the form of cracking.
Engineers brief description of the mechanism of movement	The Engineer has advised that the pattern of movement indicates a mechanism of downwards movement to the rear right hand corner.
Engineers BRE 251 numerical category	The Engineer has classified the damage as category 2 (slight) in accordance with the BRE Digest 251 – Assessment of damage in low-rise buildings.
Engineers conclusion as to cause of damage	The Engineer has concluded that the damage has resulted from clay shrinkage subsidence. This has been caused by moisture extraction from the nearby tree.
Foundations	Site investigations comprised of one trial pit and borehole that was excavated adjacent the rear right hand corner of the insured property. The excavations revealed foundations at this point to be constructed at a depth of 1100mm below ground level.
Trial Pit / Borehole, soil characteristics description	Soils at the underside of the foundations are described as: stiff Clay to a depth of 2.25m and firm/stiff Clay to a depth of 4m. The borehole ended at 4m.
Soil plasticity	Soil samples were taken from the trial pit and borehole and were subjected to laboratory testing. The results of these tests indicate that soils beneath the rear right hand corner of the insured property have plasticity indices ranging between 48% and 53%. This confirms that underlying soils have a high potential for volume change due to their moisture content.
Desiccation	The Soil Suction Profile is indicative of desiccation at around a depth of 1.7m. This is demonstrated by the suction values increasing from 400 kPa at a depth of 1.3m to 440 kPa at 1.7m. Suction values then decrease beneath this depth. High soil suctions such as these recorded at shallow depths are a result of a reduction of pore water pressure caused by the process of soil drying (desiccation) this is only possible at depth by either, an increased load imposed upon the soil or, as a result of the removal of moisture from the clay subsoil by large vegetation. In this instance I consider that the increase in suction values has resulted from the influence of the adjacent tree (T1).
Heave Potential	The Engineer has stated that the building is able to tolerate the amount of recovery expected.

Roots as described in Trial Pit / Borehole Log	Roots were noted to a depth of 2.5m in the borehole.
Laboratory analysis of roots	Root samples were taken from the trial pit and borehole and have been subject to laboratory testing using light microscopy techniques. The results of these tests are as follows: TP1 (underside) – <i>Quercus</i> (Oak) 19 roots
Drainage	Engineers do not consider leaking or damaged drains to be a factor in current damage.
Monitoring	A programme of precise level monitoring is currently being undertaken at the insured property. Readings are available for the period 17 August 2010 to 22 February 2012 and show a clear pattern of seasonal movement. The greatest amplitude of movement is recorded at points 9, 10, 11 and 12. I note that these points are closest to Oak T1
Estimated cost of superstructure and repair works if tree removed	£5,000.00
Estimated cost of works if trees retained	£30,000.00

4.0 Conclusions

From the evidence summarised above we consider that we have demonstrated that on the balance of probabilities:

4.1 Tree Roots have extended beneath the foundations of the risk address

Roots have been noted throughout TP1 and to a maximum depth of 2.5m in BH1.

Samples of these roots have been tested using light microscopy techniques and have been formally identified as *Quercus* (Oak).

Given its size, species and proximity to the location of the trial pit/borehole, we consider that these roots have emanated from Oak T1.

4.2 Damage to the risk address has resulted due to the presence of these roots

The timing of damage is consistent with a time of year when soil moisture deficits due to the influence of adjacent vegetation would be on the increase.

The mechanism of movement as described by the Engineer is entirely consistent with the location of Oak T1.

Shrinkable clay soils have been encountered beneath foundations at the rear right hand corner. These soils will be subject to volumetric changes due to fluctuations in their moisture content.

The soils analysis results indicate that underlying soils are in a desiccated condition.

Level monitoring demonstrates a seasonal pattern of movement that we can only attribute to the influence of adjacent vegetation. We note that the greatest amplitude of movement is at points 9, 10, 11 and 12. These points are consistent with the location of Oak T1.

Engineers have confirmed that other potential causes of damage such as leaking or damaged drains have been discounted as a cause of the current damage.

Therefore it is our opinion that sufficient information has been provided to demonstrate that, on the balance of probabilities, Oak T1 is the material cause of the current subsidence damage

We do not consider that there is any other vegetation growing adjacent the Insured Property that could be considered to be a factor in current damage.

5.0 Recommendations

Given its close proximity to the insured property we do not consider that undertaking pruning works to Oak T1 will provide either an effective or sustainable means of controlling its water use. Therefore and in order to provide a long-term solution to the current subsidence damage we recommend this tree be removed.

5.1 Recommended vegetation management to address the current subsidence:

Tree No:	Species	Works Required
T1	Oak	Fell to ground level as close as practicable and treat the stump with an appropriate herbicide.

Age Class	YO – Young. SM – Semi-Mature. EM – Early Mature. MA – Mature. FM – Fully Mature. OM – Over Mature	Ownership	PH – Within boundary of risk address. P3P – Within boundary of third party properties. LA – Within land owned by a Local Authority. C3P – Commercial third party. U – Within land of indeterminable ownership.
Condition	G – Good. F – Fair. P – Poor. D – Dead, Dying or Dangerous		
Stem Diameter	MS – Multi-stemmed tree		

Tree No	Common Name	Age Class	Condition	Height (m)	Crown Spread (m)	Stem diam. (mm)	Dist to bldg (m)	Pruning history	Recommendation	Tree work constraints	Notes	Owner address	Owner
T1	Oak	MA	F	22	13	1130	9	No significant past tree works.	Fell and treat stump.	None.		22 Oakmont Drive, Waterlooville, PO8 8TH.	PH



Trees & Groups

- Group crown
- Tree crown
- Tree stem

Tree & Group Labels

- Labels

Map base features

- buildingFill
- glasshouseFill
- inlandWaterFill
- madeSurfaceFill
- multipleSurfaceFill
- naturalEnvironmentFill
- naturalSurfaceFill
- pathFill
- railFill
- roadFill
- stepFill
- structureFill
- tidalWaterFill
- unclassifiedFill
- departedFeature

Location: 22 OAKMONT DRIVE, WATERLOOVILLE, PO8 8TH
 Job Ref.: 49581
 Survey Date: 19/01/2012
 Scale: 1:200 @ A4

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