

Arboricultural Assessment Report

Detailed Report on Trees

For:	Client:	Crawford National Subsidence Unit
	Insurer:	Chubb Insurance Company of Europe S.A
Site:	Policyholder:	Mr K Firth
	Risk Address:	Stonecroft, Hall Royd Lane, Barnsley, South Yorks, S75 4PP
Refs:	OCA Ref:	52145
	Client Ref:	SU1200023
	Insurer Ref:	32647655/3

Survey By:	Margaret MacQueen		
Title:	Arboricultural Consultant	Date:	07 June 2012
Report By:	Margaret MacQueen		
Title:	Arboricultural Consultant	Date:	07 November 2013



Consulting Arboriculturists

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References

Reference

- 1 Crawford Technical Report dated 18 January 2012
- 2 Auger Site Investigation Report dated 10 February 2012
- 3 Level Monitoring for the period February 2012 to October 2013
- 4 OCA site survey dated 07 June 2012

1.0 Introduction & Brief

- 1.1** OCA UK Limited has been instructed by Crawford and Company on behalf of the building insurers of Stonecroft Hall, Royd Lane, Barnsley, South Yorkshire, S75 4PP (the insured property). We have been advised by Crawford and Co 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.
- 2.3** The Oak trees subject of this detailed report are subject to W1 of TPO 6 / 1997

3.0 Evidential Assessment

Circumstances of discovery	The Engineer has advised that damage was discovered possibly in 2010 but only notified after further deterioration in 2012
Engineers brief description of main damage	The Engineer describes the main area of damage to the interior and exterior in his Technical Report January 2012. The Engineer states that this damage takes the form of stepped tapering cracks
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 foundations
Engineers BRE 251 numerical category	The Engineer has classified the damage as category 3 (moderate) in accordance with the BRE Digest 251 – Assessment of damage in low-rise buildings.
Engineers assessment of onset and progression of damage	The Engineer considers that it is likely that movement will be of a cyclical nature with cracks opening in the summer and closing in the winter.
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 tree root related moisture extraction from the sub soil
Foundations	Site investigations comprised of two trial pit and boreholes that were excavated adjacent the western elevations of the insured property. The excavations revealed foundations at this point to be constructed at a depth of 1150mm in TP/1 and 1050mm in TP/2 mm below ground level.
Trial Pit / Borehole, soil characteristics description	Soils at the underside of the foundations in TP/1 are described as: moist very stiff light brown sandy Clay to a depth of 1.6m and dry very stiff light brown sandy Clay to a depth of 3m; The borehole ended at 3m. Soils at the underside of the foundations in TP/2 are described as: moist very stiff light brown sandy Clay to a depth of 1.4m and dry very stiff light brown sandy Clay to a depth of 3m; The borehole ended at 3m.
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 location of trial pit one of the Insured Property has plasticity indices ranging between 16% and 19%. The results of these tests indicate that soils beneath the location of trial pit two of the Insured Property have plasticity indices ranging between 17% and 20%. This confirms that underlying soils have a low/moderate potential for volume change due to their moisture content.
Desiccation	The soils analysis data is inconclusive in relation to whether underlying soils are in a desiccated condition or not. .
Heave Potential	The Engineer does not consider heave to be a consideration should the adjacent vegetation be removed.

Roots as described in Trial Pit / Borehole Log	Roots were noted at the underside of foundations in Trial Pits 1 and 2.
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 (to 1.7m) – Oak or Sweet Chestnut. TP2 (to 1.7m) – Oak or Sweet Chestnut.
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 February 2012 to October 2013 and show a clear pattern of seasonal movement in 2013. The greatest amplitude of movement (11mm) is recorded at points 9 and 10. I note that these points are closest to Oaks T4 and T5.
Estimated cost of superstructure and repair works if tree removed	£20,000
Estimated cost of works if trees retained	£60,000

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 2 to a maximum depth of 1.7m.

Oaks trees on the west lawn have already been removed but movement simply continued in 2013 at points 9 and 10

Samples of these roots have been tested using light microscopy techniques and have been formally identified as Oak or Sweet Chestnut. This is because in cross section the distribution of vascular bundles is very similar. But there are no nearby Sweet Chestnut

Given size, species and proximity to the location of the trial pit/boreholes we consider that these roots have emanated from T4 and T5

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 at or reaching their peak.

The mechanism of movement as described by the Engineer is entirely consistent with the location of Oaks T4 and T5.

Shrinkable clay soils have been encountered beneath foundations at location of trial pits one and two. These soils will be subject to volumetric changes due to fluctuations in their moisture content.

Level monitoring demonstrates a seasonal pattern of movement at points 9 and 10 that we can only attribute to the influence of adjacent vegetation (Oaks T4 and T5). We note that the greatest amplitude of movement is 11mm in 2013

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, Oaks T4 and T5 are 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 Oaks T4 and T5 will provide either an effective or sustainable means of controlling water use. Therefore and in order to provide a long-term solution to the current subsidence damage we recommend these trees are removed.

5.1 Recommended vegetation management to address the current subsidence:

Tree No:	Species	Works Required
T4	Oak	Fell and grind out stumps
T5	Oak	Fell and grind out stumps

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	Sessile Oak	EM	G	19.7	10	490	15	No significant past tree works	Fell and grind stump.	Service cables fixed to trunk		Stonecroft, Hall Royd Lane, Silkstone Common, Barnsley, S75 4PP	PH
T2	Sessile Oak	EM	F	19	15	320	17	No significant past tree works	Fell and grind stump.	Service cables fixed to trunk		Stonecroft, Hall Royd Lane, Silkstone Common, Barnsley, S75 4PP	PH
T3	Sessile Oak	EM	G	18.5	15	600	20	No significant past tree works	Fell and grind stump.	Service cables fixed to trunk		Stonecroft, Hall Royd Lane, Silkstone Common, Barnsley, S75 4PP	PH
T4	Sessile Oak	EM	G	18	12	540	15	No significant past tree works	Fell and grind stump.	Located on a bank on far side of lawn		Stonecroft, Hall Royd Lane, Silkstone Common, Barnsley, S75 4PP	PH
T5	Sessile Oak	SM	F	17	12	520	8	No significant past tree works	Fell and grind stump.	Located on a bank on far side of lawn		Stonecroft, Hall Royd Lane, Silkstone Common, Barnsley, S75 4PP	PH



Location:	STONECROFT, HALL ROYD LANE, SILKSTONE COMMON, BARNLEY, S75 4PP
Job Ref.:	52145
Survey Date:	07/06/2012
Scale:	1:300 @ A4

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