Arboricultural Assessment Report

Detailed Report on Trees

For:	**Client:**	Oriel Services Limited
	Insurer:	[redacted]
Site:	**Policyholder:**	[redacted]
	Risk Address:	100, Chalvington Road, Chandler's Ford, Hants, SO53 3EH
Refs:	**OCA Ref:**	45701
	Client Ref:	3718463
	Insurer Ref:	HDC021398084

Survey By:	Andrew Graham		
Title:	Senior Consulting Arborist	**Date:**	26 October 2010
Report By:	Andrew Graham		
Title:	Senior Consulting Arborist	**Date:**	19 May 2011

OCA UK Limited
Consulting Arboriculturists

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References

Reference	
1	Cunningham Lindsey 'Engineering Appraisal Report' dated 27/08/10
2	CET Safehouse Limited 'Factual Report of Investigation' dated 26/08/10
3	Level Monitoring for the period 24/08/10 – 05/05/11

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1.0 Introduction & Brief

1.1 OCA UK Limited has been instructed by Oriel Services Limited on behalf of the building insurers of 100, Chalvington Road, Chandler's Ford, Eastleigh, Hants, SO53 3EH (the Insured Property). We have been advised by Oriel Services Limited 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.

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.

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3.0 Evidential Assessment

Circumstances of discovery	The Engineer has advised that damage was discovered in July 2010.
Engineers brief description of main damage	The Engineer describes the main area of damage taking the form of tapering diagonal, horizontal and vertical cracks to 5mm width, sloping floors, leaning walls and sloping windows.
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 front right corner of the dwelling.
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 damage has occurred recently and 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 vegetation.
Foundations	Site investigations comprised of one trial pit and borehole that was excavated adjacent the front right corner of the Insured Property. The excavations revealed foundations at this point to be constructed at a depth of 330mm below ground level. A remote BH was located the left hand side of the dwelling.
Trial Pit / Borehole, soil characteristics description	Soils at the underside of the foundations are described as: very stiff silty Clay to a depth of 1.3m; stiff silty Clay to a depth of 4.3m; and firm silty Clay to a depth of 5m. The borehole ended at 5m.
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 front right corner of the Insured Property have modified plasticity indices ranging between 24% and 52%. This confirms that underlying soils have a moderate/very high 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 of up to 10mm in diameter were noted at the underside of foundations in Trial Pit 1. Roots of up to 10mm in diameter were noted to a depth of 530mm in Borehole 1.

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) – Quercus (Oak) or *Castanea* (Sweet Chestnut) 3 roots of up to 7mm in diameter.
Drainage	Engineers do not consider leaking or damaged drains to be a factor in current damage. The high shear vane readings appear to support this opinion.
Monitoring	A programme of precise level monitoring is currently being undertaken at the Insured Property. Readings are available for the period 24/08/10 – 05/05/11 and show a clear pattern of seasonal movement. The greatest amplitude of movement is recorded at points 2, 3 & 4 (front right corner). I note that these points are closest to Sweet Chestnut T1.
Estimated cost of superstructure and repair works if tree removed	£12,000
Estimated cost of works if trees retained	£75,000

4.0 Conclusions

From the evidence summarised above I consider that I 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 530mm in BH1.

Samples of these roots have been tested using light microscopy techniques and have been formally identified as either Quercus (Oak) or Castanea (Sweet Chestnut).

Given its size, species and proximity to the location of the trial pit/borehole I consider that these roots have emanated from Sweet Chestnut T1 (No source for Oak roots was observed).

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 Sweet Chestnut T1.

Shrinkable clay soils have been encountered beneath foundations at front right 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 I can only attribute to the influence of adjacent vegetation. I note that the greatest amplitude of movement is at pin locations 2, 3 & 4 (front right corner).

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 my opinion that sufficient information has been provided to demonstrate that, on the balance of probabilities, Sweet Chestnut T1 is the material cause of the current subsidence damage

I 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 I do not consider that undertaking pruning works to Sweet Chestnut 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 I recommend this tree be removed.

5.1 Recommended vegetation management to address the current subsidence:

Tree No:	Species	Works Required
T1	Sweet Chestnut	Fell to as close to ground level as is practicable and treat stump with an appropriate herbicide to prevent future growth

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6.0 Vegetation Survey

The vegetation growing adjacent the risk address has been surveyed in accordance with the Brief set out at s.1.0 of this report. All vegetation 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.

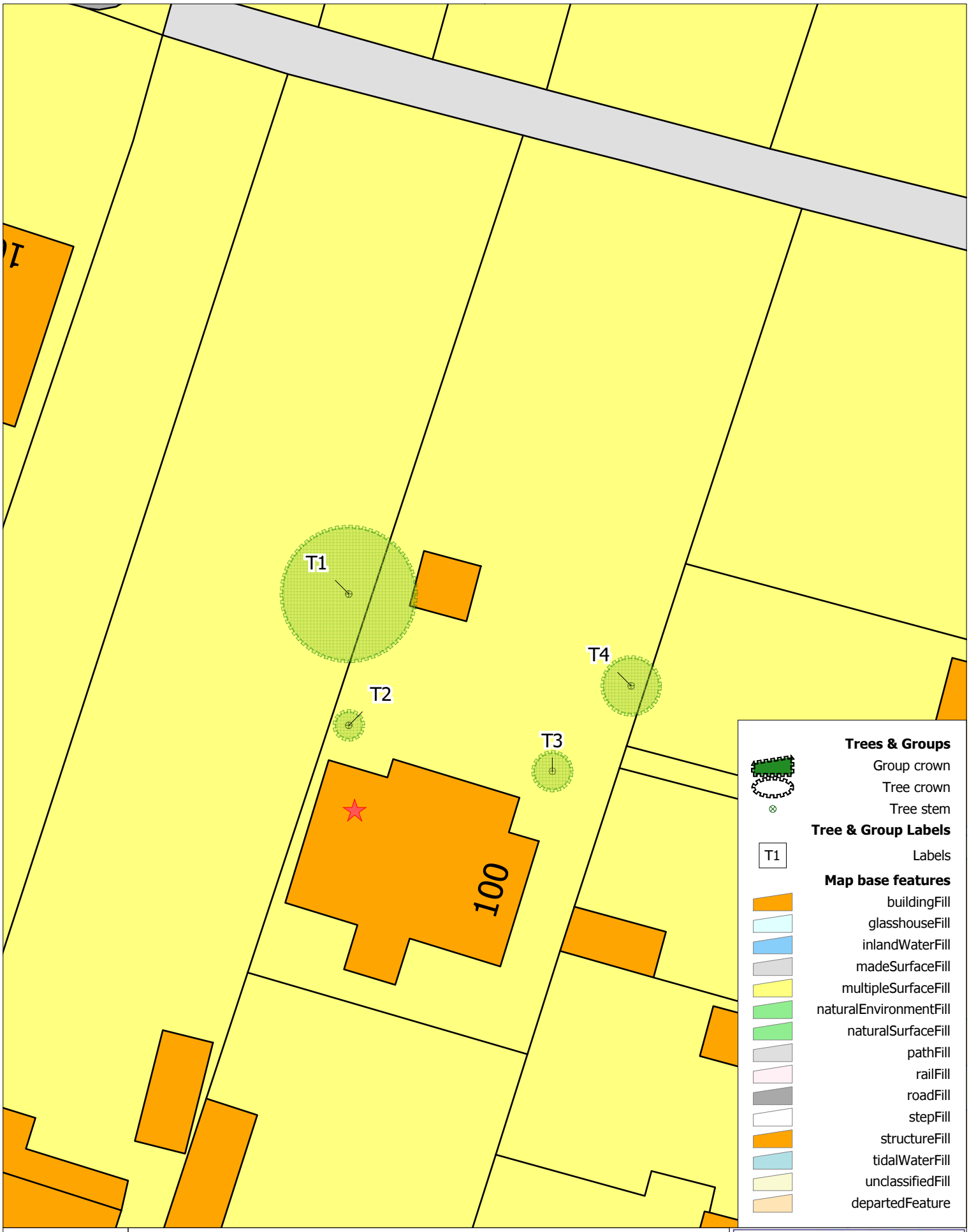
Key to Abbreviations

Age Class	**YO** – Young. **SM** – Semi-Mature. **EM** - Early Mature. **M** – Mature. **FM** - Fully Mature. **OM** - Over Mature
Condition	**G** – Good. **F** – Fair. **P** – Poor. **D** – Dead, Dying or Dangerous
Stem Diameter	**MS** - Multi-stemmed tree
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.

Tree Survey at
100 CHALVINGTON ROAD, CHANDLER'S FORD, EASTLEIGH, SO533EH
Date of Survey: 26 October 2010

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Tree No	COMMON	Age Class	COND	Height (m)	Crown Spread (m)	Stem diam. (mm)	Dist to bldg (m)	Pruning history	Recommendation	Tree work constraints	NOTES	Owner
T1	Sweet Chestnut	MA	G	11.1	7	500	8.3	Pollard. 15 years' regrowth.	Fell and treat stump.	BBQ area beneath tree canopy	Situated in 49 Shaftesbury Avenue	3P
T2	Yew	YO	G	2.5	1.5	100	1.8	No significant past tree works	No work required.			PH
T3	Dwarf Lawsons Cypress	YO	G	3	2	150	1.5	No significant past tree works	No work required.			PH
T4	Scots Pine	MA	G	9.8	3	350	9.2	No significant past tree works	No work required.			PH



Location:	100 CHALVINGTON ROAD, CHANDLER'S FORD, EASTLEIGH, SO533EH
Job Ref.:	45701
Survey Date:	26/10/2010
Scale:	1:250 @ A4

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