

Arboricultural Assessment Report

Detailed Report on Trees

For:	Client:	Oriel Services Limited
	Insurer:	
Site:	Policyholder:	
	Risk Address:	43 Hollybank Lane, Emsworth, Hants PO10 7UE
Refs:	OCA Ref:	45770
	Client Ref:	3725637
	Insurer Ref:	190/17/1127088

Survey By:	Andrew Graham		
Title:	Senior Consulting Arboriculturist	Date:	02 November 2010
Report By:	Paul Cook		
Title:	Senior Consulting Arboriculturist	Date:	15 December 2011



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Contents

Section

- 1** Introduction & Brief
- 2** Limitations
- 3** Evidential Assessment
- 4** Conclusions
- 5** Recommendations for Vegetation Management
- 6** Vegetation Survey
- 7** Site Plan

References

Reference

- 1** Cunningham Lindsey 'Engineering Appraisal Report' dated 02 February 2011
- 2** CET Safehouse Limited 'Factual Reports of Investigation' dated 04 January 2010
- 3** CET Safehouse Limited 'Factual Reports of Investigation' dated 17 October 2011
- 4** CET Safehouse Limited 'Factual Reports of Investigation' dated 16 November 2011
- 5** Level Monitoring for the period 09 November 2010 to 07 November 2011

1.0 Introduction & Brief

- 1.1** OCA UK Limited has been instructed by Oriel Services Limited on behalf of the building insurers of 43 Hollybank Lane, Emsworth, Hants PO10 7UE (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 are aware that the Insured Property was subject to an earlier claim for similar movement and damage in 2009 and that following investigation superstructure repairs were undertaken in 2010. However, damage returned shortly after the completion of these repairs and forms the basis of the current claim.
- 1.3** 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.

3.0 Evidential Assessment

Circumstances of discovery	The Engineer has advised that current damage was discovered in the August 2010.
Engineers brief description of main damage	The Engineer describes the main area of damage as throughout the kitchen, hall, front left hand bedroom and lounge. The Engineer states that this damage takes the form of tapering diagonal and vertical cracks, sloping floors, rucking of wallpaper and gaps between the floor and skirting boards.
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 of the property.
Engineers BRE 251 numerical category	The Engineer has classified the damage as category 2 - 3 (slight - 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 moisture abstraction by roots altering the moisture content of the clay subsoil resulting in volume changes, which in turn have affected the foundations.
Foundations	Three separate site investigations have been undertaken at the Insured Property and these are referred to in the 'Factual Report of Investigation' dated 04 January 2010, 17 October 2011 and 16 November 2011. 04 January 2010 This site investigation comprised of one internal trial pit and borehole that was excavated adjacent the wall between the lounge and bedroom of the Insured Property. These excavations revealed foundations at this point to be constructed at a depth of 700mm below ground level. 17 October 2011 This site investigation comprised of one trial pit and borehole that was excavated adjacent the front left corner of the Insured Property. These excavations revealed foundations at this point to be constructed at a depth of 800mm below ground level. 16 November 2011 This site investigation comprised of one trial pit that was excavated adjacent the front left corner of the Insured Property, in a similar location to the previous trial pit / borehole. These excavations revealed foundations at this point to be constructed at a depth of 900mm below ground level.

Trial Pit / Borehole, soil characteristics description	04 January 2010 Soils at the underside of the foundations are described as: Made Ground to a depth of 1m; Stiff silty Clay to a depth of 1.5m; and Stiff, very silty Clay to a depth of 3m. The borehole ended at a depth of 3m. 17 October 2011 Soils at the underside of the foundations are described as: Stiff, silty Clay to a depth of 1m; Stiff, very silty Clay to a depth of 1.05m; Medium dense to dense clayey Gravel to a depth of 1.3m; Stiff silty Clay to a depth of 5m. The borehole ended at a depth of 5m. 16 November 2011 Soils at the underside of the foundations are described as very stiff, sandy silty Clay to a depth of 1.05m where the trial pit ended.
Soil plasticity	17 October 2011 Soil samples were taken from this trial pit and borehole and were subjected to laboratory testing. The results of these tests indicate that soils beneath the front left corner of the Insured Property have modified plasticity indices ranging between 11% and 40%. This confirms that underlying soils have a low to 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	04 January 2010 Roots of up to 2mm in diameter were noted at the underside of foundations in Trial Pit 1. Roots of up to 1mm in diameter were noted to a depth of 2.5m in Borehole 1 and dead and decomposing root fragments were noted to a depth of 3m. 17 October 2011 Roots of up to 1mm in diameter were noted at the underside of foundations in Trial Pit 1. Roots of up to 1mm in diameter were noted to a depth of 1.5m in Borehole 1. 16 November 2011 Roots of up to 3mm in diameter were noted at the underside of foundations in Trial Pit 1.

Laboratory analysis of roots	04 January 2010 Root samples were taken from this 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) or <i>Castanea</i> (Sweet Chestnut) 2 roots of up to 1.5mm in diameter. BH1 (depth: 1m – 2.5m) – <i>Quercus</i> (Oak) or <i>Castanea</i> (Sweet Chestnut) 2 roots of <0.5mm in diameter. 17 October 2011 Root samples were taken from this 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>Platanus</i> (Plane) 1 root of up to 0.5mm in diameter. BH1 (depth: 1.5m) – too immature to identify; 1 root of <0.5mm in diameter. 16 November 2011 Root samples were taken from this 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>Fagus</i> (Beech) 4 roots of up to 3mm in diameter. TP1 (underside) – <i>Quercus</i> (Oak) 2 roots of up to 3mm in diameter.
Drainage	Engineers do not consider leaking or damaged drains to be a factor in current damage to the house as the drains are remote from the area of damage to the main house.
Monitoring	A programme of precise level monitoring is currently being undertaken at the Insured Property. Readings are available for the period 09 November 2011 to 07 November 2011 and show a clear pattern of seasonal movement. The greatest amplitude of movement has been recorded at points 7 and 8 (front left corner). I note that these points are closest to English Oak and Common Beech (G1).
Estimated cost of superstructure and repair works if tree removed	£4,000.00
Estimated cost of works if trees retained	£35,000.00

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 all three trial pits and to a maximum depth of 2.5m.

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

No Sweet Chestnut trees were noted during our survey. Therefore, given its size, species and proximity to the location of the trial pits/boreholes, I consider that the roots formally identified as *Quercus* have emanated from the English Oak tree within G1. I also consider that the roots formally identified as *Fagus* have emanated from the Beech tree within G1.

With regards to the *Platanus* root, no vegetation relating to this was noted growing within the vicinity of the Insured Property during our survey. I therefore consider that this root has emanated from vegetation that has previously been removed.

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 area of damage and the mechanism of movement as described by the Engineer are consistent with the location of the English Oak and Common Beech trees (G1).

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

Level monitoring demonstrates a seasonal pattern of movement that I can only attribute to the influence of adjacent vegetation. The greatest amplitude of movement has been recorded at points 7 and 8 (front left corner) and I note that these points are closest to the English Oak and Common Beech trees (G1).

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 to the main house.

Therefore it is my opinion that sufficient information has been provided to demonstrate that, on the balance of probabilities, English Oak and Common Beech (G1) are 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.

With regards to English Oak T1, given its distance to the area of damage and its proximity in relation to English Oak and Beech (G1) I do not consider this tree to be a factor of the current movement.

5.0 Recommendations

Given their close proximity to the Insured Property, I do not consider that undertaking pruning works to English Oak and Common Beech (G1) will provide either an effective or sustainable means of controlling their water use. Therefore and in order to provide a long-term solution to the current subsidence damage I recommend these trees be removed.

5.1 Recommended vegetation management to address the current subsidence:

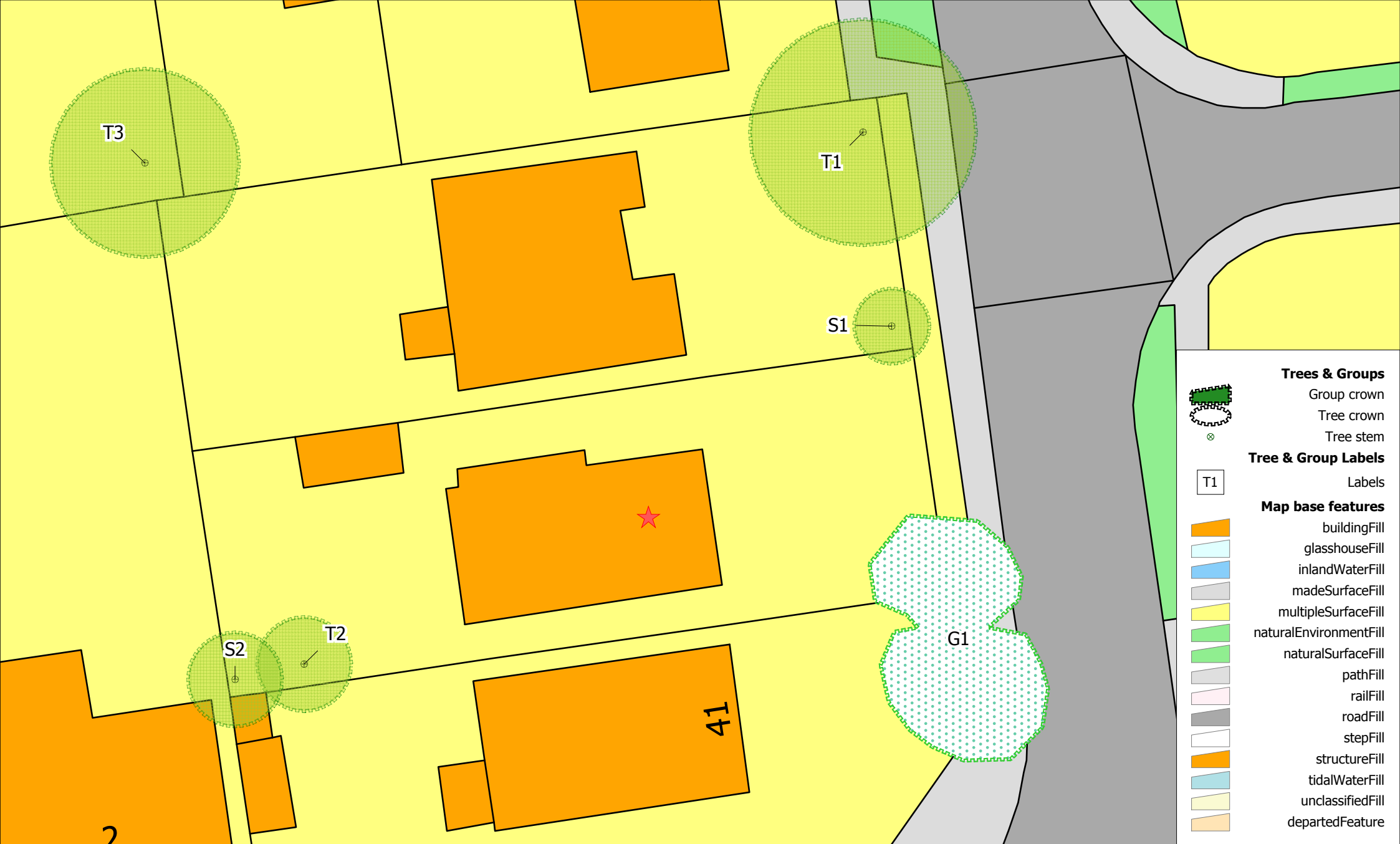
Tree No:	Species	Works Required
G1	English Oak & Common Beech	Fell to as close to ground level as is practicable and treat stumps with an appropriate herbicide to prevent future growth

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		



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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
S1	Hazel	MA	G	6	4	0	13	No significant past tree works	No work required.		Situated in 45 Hollybank Lane	P3P
T1	English Oak	MA	G	18.6	12	600	15	No significant past tree works	No work required.		Situated in 45 Hollybank Lane	P3P
T2	June Berry	MA	G	8	5	250	9	No significant past tree works	No work required.		Situated in 43 Hollybank Lane	PH
S2	Lilac	MA	G	5	5	0	9	No significant past tree works	No work required.		Situated in 43 Hollybank Lane	PH
T3	English Oak	MA	P	18	10	700	15	Pollard. 5 years' regrowth.	No work required.		Situated in 3 Oak tree Drive. All measurements estimated as tree inaccessible. This tree does not appear to have responded well to pollarding	P3P
G1	Oak & Beech	MA	G	13	12	600	12	No significant past tree works	Fell and treat stumps	Adjacent road and junction	Believed to be situated in 41 Hollybank Lane	P3P



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Location: 43 HOLLYBANK LANE, EMSWORTH, PO107UE
Job Ref.: 45770
Survey Date: 02/11/2007
Scale: 1:250 @ A4