Arboricultural Consultancy for Aviva

Note[(1)]: This report is intended for use between the client, Marishal Thompson Group and any parties detailed within the report. It is based on the understanding at the time of visiting the property that Engineers are satisfied that damage is attributable to clay shrinkage subsidence exacerbated by vegetation.

1. Case Details (REVISED)

Insured	Mr E Tichborne	**Address**	7 Hemdean Gardens, West End, Southampton, Hampshire, SO30 3BB		
Client	Infront Innovation	**Contact**	Paula Sheldon	**Claim No.**	IFS-AVI-SUB-13-0046241
MT Ref	LS/0810131118/JS-REV2	**Consultant**	Jonnie Setterfield	**Contact No.**	08702 416 180
Report Date	25/10/2013 Revised 28/01/2015				

Scope of Report: To survey the property and determine significant vegetation contributing to subsidence damage, make recommendation for remedial action and assess initial mitigation and recovery prospects. The survey does not make an assessment for decay or hazard evaluation.

Please note: this is a revised report in light of new site investigation and monitoring results.

2. Property and Damage Description

The insured structure is a 2 storey detached house. It has been extended with a conservatory addition to the rear. The property occupies a level site with no adverse topographical features.

Damage relates to the front left-hand corner and the rear left-hand corner of the insured dwelling. Please refer to the engineers report for a full description of the claim history and damage.

3. Technical Reports (REVISED)

In preparing our revised report we have had the benefit of the following technical investigations:

Soil Analysis	☒	Foundation Detail	☒	Root Analysis	☒
Borehole Log	☒	Engineers Report	☒	Level Monitoring	☒

4. Action Plan

Mitigation	
Insured Involved?	Yes
Local Authority involved?	No
Other third party Mitigation involved?	Yes
Recovery	
Is there a potential recovery action?	Yes

Tree Works	
Local Authority	Eastleigh Borough Council
TPO / Conservation Area / Planning Protection Searches	Insured: TPO Third Party: TPO

Additional Comments

Awaiting Further Instructions.

A potential recovery action has been identified.

5. Technical Synopsis (Revised)

This report is based upon our understanding at the time of visiting the property that Infront Innovation engineers are satisfied that damage is due to clay shrinkage subsidence exacerbated by vegetation.

We have been instructed to advise on the causal vegetation and to deliver management proposals which will provide on-going and long term stability allowing repairs to be undertaken.

Site Investigations indicate that the foundations to the rear left hand corner extend to a depth of 800mm below ground level in TP/BH1.

Foundations to the front left hand corner of the property are noted to extend to a depth 850mm below ground level in TP/BH2.

Foundations bear onto subsoil described within the borehole log as Stiff – Brown – Sandy – Gravelly - CLAY, thereby indicating the potential for the observed damage to be the result of clay shrinkage subsidence exacerbated by the influence of vegetation.

NHBC 4.2 (2010) classifies the supporting subsoil as being of Medium -High plasticity i.e. capable of significant volumetric change potential in response to moisture content.

Site Investigations revealed the presence of roots in Trial Pit / Borehole 1 between the depths of 800mm to 2400mm; this depth is in excess of foundations which extend to a depth of 800mm (TP/BH1).

Samples of these roots were recovered from underside of foundations and throughout the borehole; these roots were identified (using anatomical analysis) as having emanated from the genus *Quercus spp*. (Oak).

Given their size and proximity it is our opinion that the most likely origin of the roots is the Oaks (T1 & T2); such circumstances confirm the potential for T1 & T2 to be influencing soil volumes and thereby contributing to the damage observed.

Sample trial pits are generally small in size and the recovery of roots from such a small excavation leads us to conclude that these will not be isolated examples; there is significant potential for further root proliferation below the insured structure.

DNA testing of the roots recovered is not deemed necessary as both T1 and T2 retain the capacity to be extending root proximate to the area of damage; management of one tree in isolation to the other is unlikely to restore long-term stability.

The role of vegetation is further supported by the results of level monitoring which has been undertaken since 13/11/2013 with 7 readings available through to 5/11/14.

Where vegetation is involved it produces a characteristic 'seasonal' pattern of foundation movement (subsidence through the summer, recovery through the winter); no other cause produces a similar pattern.

The results of the above monitoring have confirmed that a ‘seasonal’ pattern of movement is evidently affecting the property, with the focal areas being stations 3, 4, 5 and 6 which are located along the rear elevation / left flank of the property (proximate to the Oaks T1 & T2).

The pattern of movement exhibited in this instance is consistent with the known influence of vegetation.

In assessing the extent of damage, and the potential drying influence of the vegetation on site, T1 (Oak) is judged to be the dominant feature(s) and accordingly we have identified it as the principal cause of the subsidence.

T2 (Oak) cannot be discounted as contributing to the overall level of soil drying proximate to the area of damage and is therefore also considered to retain a significant contributory influence.

Considering engineer’s conclusions, results of site investigations / level monitoring and our observations on site, vegetation management is considered appropriate with a view to restoring stability.

Please refer to Section 6 for management prescriptions.

In order to mitigate the current damage, and allow soils beneath the property to recover to a position such that an effective engineering repair solution can be implemented, we recommend a program of removals as listed by this report.

Whilst we have given consideration to pruning as a means of mitigating the vegetative influence of the above, this has been discounted.

Pruning is generally ineffective and in the context of the current claim we consider the above vegetation is simply too large and/or close for pruning to be effective.

Removal of the above vegetation will offer the most certain and reliable arboricultural solution likely to restore long-term stability.

Replacement planting is considered appropriate however due consideration must be given to the ultimate size of the replacement and future management requirements.

Species selection should be appropriate for the chosen site and ultimate tree height should not exceed 75% of the available distance to built structures.

We recommend the efficacy of the management recommendations be qualified by means of further monitoring to confirm stability.

Is vegetation likely to be a contributory factor in the current damage?	Yes
Is vegetation management likely to contribute to the future stability of the property?	Yes
Is replacement planting considered appropriate?	See Above
Would DNA profiling be of assistance in this case?	Yes

6.0 Recommendations

6.1 Table 1 - Current Claim Requirements

These recommendations may be subject to review following additional site investigations

Tree No.	Species	Age Cat	Approx. Height (m)	Distance to Building (m)	Ownership	Action	Requirement
T1	Oak	3	16.4	14.6	C - Insured	Remove	Remove.
T2	Oak	3	17.2	16.6	A - Third Party 6 Hemdean Gardens West End Southampton SO30 3BB	Remove	Remove.
Age Cat: 1 = Younger than property; 2 = Similar age to the property; 3 = Significantly older than property							

6.2 Table 2 - Future Risk Recommendations

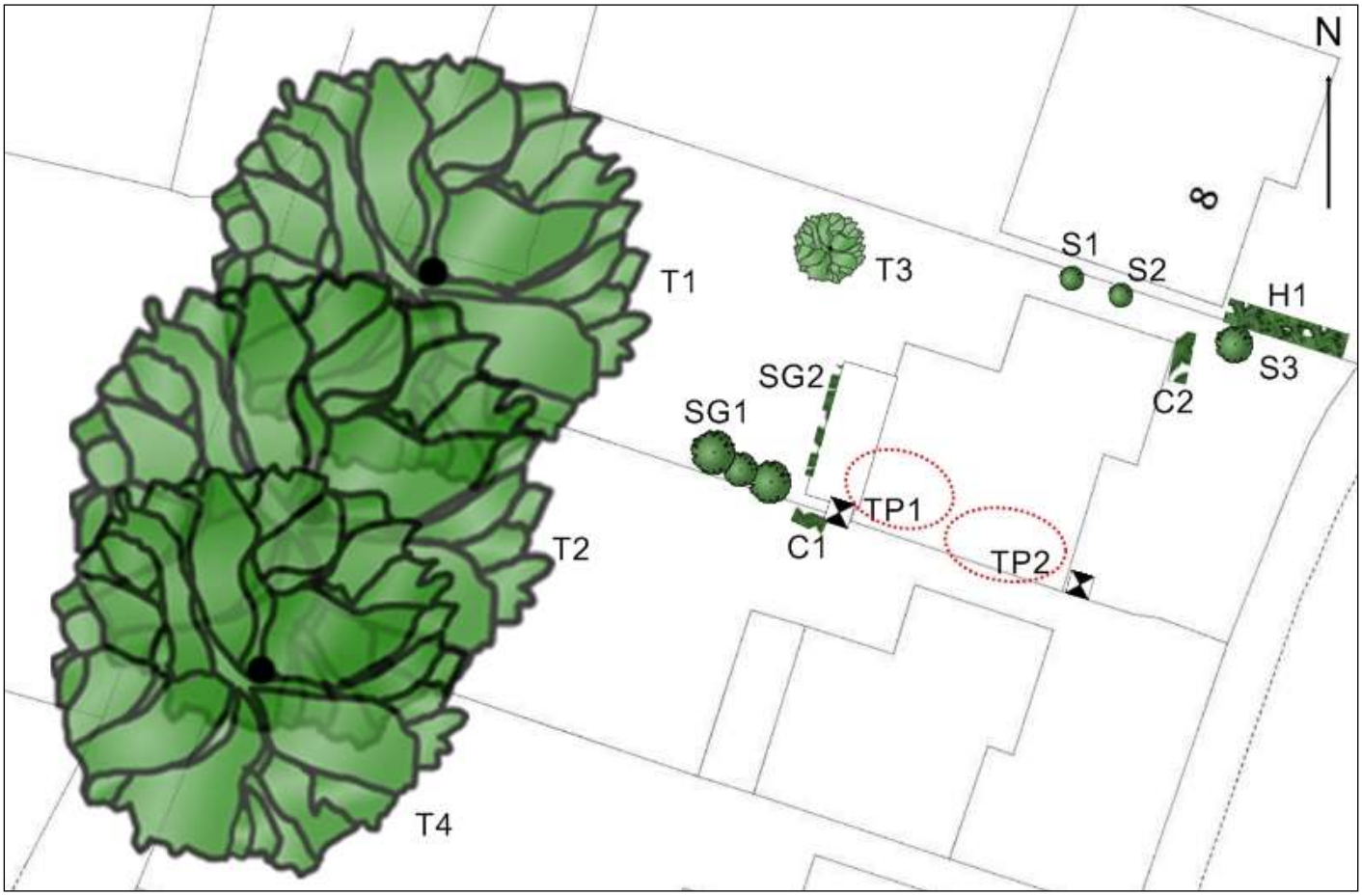
Tree No.	Species	Age Cat	Approx. Height (m)	Distance to Building (m)	Ownership	Action	Requirement
C1	Clematis	1	2	1	A - Third Party 6 Hemdean Gardens West End Southampton SO30 3BB	Action to avoid future risk	Remove.
C2	Clematis	1	1.7	0.1	C - Insured	Action to avoid future risk	Do not allow to exceed current dimensions by way of regular pruning.
H1	Cypress	1	1.8	1.5	A - Third Party 8 Hemdean Gardens West End Southampton SO30 3BB	Action to avoid future risk	Reduce to 1m height and maintain at reduced dimensions.
S1	Laurel (Portuguese)	1	2.2	1.6	C - Insured	Action to avoid future risk	Reduce to 1.5m height and maintain at reduced dimensions.
S2	Euonymus	1	1.6	1	C - Insured	Action to avoid future risk	Do not allow to exceed current dimensions by way of regular pruning.
S3	Camellia spp.	1	1.2	1.4	C - Insured	Action to avoid future risk	Do not allow to exceed current dimensions by way of regular pruning.
SG1	Mixed species shrubs Including Euonymus, Elaeagnus and Pittosporum.	1	2.3	1.2	C - Insured	Action to avoid future risk	Remove and treat stump to inhibit regrowth.

SG2	Mixed species shrubs Including Euonymus and Clematis x2.	1	0.5	0.1	C - Insured	Action to avoid future risk	Do not allow to exceed current dimensions by way of regular pruning.
T3	Apple	3	2.4	3.1	C - Insured	Action to avoid future risk	Do not allow to exceed current dimensions by way of regular pruning.
T4	Oak	3	17.5	18	A - Third Party 5 Hemdean Gardens West End Southampton	Action to avoid future risk	Crown reduce to 14m in height and maintain below 17m max height by means of regular re-pruning (3-year max).
Age Cat: 1 = Younger than property; 2 = Similar age to the property; 3 = Significantly older than property							

* Estimated

Third party property addresses should be treated as indicative only, should precise detail be required then Marishal Thompson can undertake Land Registry Searches

7. Site Plan (Revised)



Please note that this plan is not to scale. OS Licence No. 100043218

8. Photographs



SG1 - Mixed species shrubs



S2 - Euonymus



Insured Garden - Front



H1 - Cypress



T1 - Oak



T2 - Oak



T4 - Oak



C1 - Clematis



T3 - Apple



SG2 - Mixed species shrubs



Insured Garden - Back



S1 - Laurel (Portuguese)

9. Tree Works Reserve - Does not include recommendations for future risk.

Insured Property Tree Works	£1800
Third Party Tree Works	£3600
Provisional Sum	£900

- The above prices are based on works being performed as separate operations.
- The above is a reserve estimate only.
- Ownerships are assumed to be correct and as per Section 6.
- A fixed charge is made for Tree Preservation Order/Conservation Area searches unless charged by the Local Authority in which case it is cost plus 25%.
- Should treeworks be prevented due to statutory protection then we will automatically proceed to seek consent for the works and Appeal to the Secretary of State if appropriate.
- All prices will be subject to V.A.T., which will be charged at the rate applying when the invoice is raised.
- Trees are removed as near as possible to ground level, stump and associated roots are not removed or included in the price.
- Where chemical application is made to stumps it cannot always be guaranteed that this will prevent future re-growth. Should this occur we would be pleased to provide advice to the insured on the best course of action available to them at that time. Where there is a risk to other trees of the same species due to root fusion, chemical control may not be appropriate.

10. Limitations

This report is an appraisal of vegetation influence on the property and is made on the understanding that that engineers suspect or have confirmed that vegetation is contributing to clay shrinkage subsidence, which is impacting upon the building. Recommendations for remedial tree works and future management are made to meet the primary objective of assisting in the restoration of stability to the property. In achieving this, it should be appreciated that recommendations may in some cases be contrary to best Arboricultural practice for tree pruning/management and is a necessary compromise between competing objectives.

Following tree surgery we recommended that the building be monitored to establish the effectiveness of the works in restoring stability.

The influence of trees on soils and building is dynamic and vegetation in close proximity to vulnerable structure should be inspected annually.

The presence of Tree Preservation Orders (TPO) or Conservation Area status must be determined prior to any tree works being implemented, failure to do so can result in fines in excess of £20,000.

Our flagging of a possible recovery action is based on a broad approach that assume all third parties with vegetation contributing to the current claim have the potential for a recovery action (including domestic third parties). This way opportunities do not “fall through the net”; it is understood that domestic third parties with no prior knowledge may be difficult to recover against but that decision will be fully determined by the client.

A legal Duty of Care requires that all works specified in this report should be performed by qualified, arboricultural contractors who have been competency tested to determine their suitability for such works in line with Health & Safety Executive Guidelines. Additionally all works should be carried out according to British Standard 3998:2010 *"Tree Work. Recommendations".*