

Arboricultural Consultancy for Direct Line Insurance

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

Insured	Mrs Elaine Potter	Address	25 Galaxie Road, Waterloooville, Hampshire, PO8 9AT		
Client	Infront Innovation	Contact	Paula Sheldon	Claim No.	IFS-DLG-SUB-13-0044404
MT Ref	LS/0710131219/JS-REV1	Consultant	Jonnie Setterfield	Contact No.	08702 416 180
Report Date	22/10/2013 Revised 04/03/2015				

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 based on results of recent site investigations and confirmation that works to T1 and T3 have been undertaken.

2. Property and Damage Description

The insured structure is a 2 storey semi-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 was also noted throughout the property. 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	☒
Engineers Report	☒	Borehole Log	☒	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	Havant Borough Council
TPO / Conservation Area / Planning Protection Searches	Insured: None 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 property extend to a depth of 750mm below ground level in TP/BH1 and 1300mm in TP/BH2.

Foundations bear onto subsoil described within the borehole log as greyish, reddish brown sandy, silty CLAY, thereby indicating the potential for the observed damage to be the result of clay shrinkage subsidence exacerbated by the influence of vegetation.

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NHBC 4.2 (2010) classifies these soils as being of medium - high plasticity i.e. capable of significant volumetric change potential in response to moisture content.

From our observations on site, the footings of the subject property fall within the anticipated rooting range of vegetation located on site, thereby indicating the potential for the observed damage to be the result of clay shrinkage subsidence exacerbated by the influence of vegetation.

Desiccation of the underlying clay strata is demonstrated by an abnormal soil moisture content profile (BRE 412).

Atterberg testing for soils recovered in TP/BH1 showed the soil moisture content to be close to, or below, plastic limit at 2800mm and 3800mm below ground level. Moisture contents were, however noted to be above plastic limit at 750mm and 1800mm below ground level.

Atterberg testing for TP/BH2 confirmed soil moisture contents to be noticeably lower in TP/BH2 than TP/BH1.

Desiccation and/or on-set desiccation has been confirmed within TP/BH2 for all depths tested (1500mm – 4000mm).

Moisture content comparison with plastic limit is a reliable indicator of desiccation, whilst moisture depletion at the depths identified are beyond that to which ambient soil drying can be influential and thereby indicate a vegetative influence in the movement / damage.

Site Investigations revealed the presence of roots in Trial Pit / Borehole 1 to a depth of 2500mm; this depth is in excess of foundations which extend to a depth of 750mm.

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 *Cupressaceae*, *Fraxinus* and *Quercus spp.*

Our survey of the site identified T1 (Cypress), T3 (Ash) and TG3 (Oak); given their position relative to the damage it is our opinion that the roots identified emanate from these trees.

Quercus spp roots were noted to 3700mm within TP/BH2; these roots will also derive from the Oaks (TG3).

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.

The role of vegetation is further supported by the results of level monitoring which has been undertaken since 27/02/2014 with 6 readings available through to 11/12/2014.

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.

If it is occurring soil drying by vegetation must be involved, unless the foundations are less than 300mm in depth, which in this case they are not.

The results of the above monitoring have confirmed that a 'seasonal' pattern of movement is evident affecting predominantly the front left corner of the property (peak amplitude of movement affecting LM stations 2 and 3).

Level monitoring has also confirmed soil recovery over the winter period (February – April and October to December); soil recovery serves to confirm that defective drainage is not a material cause of the subsidence.

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

Please note, T1 and T3 were removed by Apex Tree Surgery in February 2014, hence the lack of movement to the rear.

In assessing the potential drying influence of the vegetation on site TG3 (Oak) is considered the dominant feature and accordingly we have identified these trees as the principal cause of subsidence.

Based on their size, known species characteristics and proximity we also consider that, prior to their removal, T1 (Cypress) and T3 (Ash) were also exerting a contributory influence with respect to the current damage, albeit in a secondary capacity to that of TG3 (Oak).

Considering engineers conclusions, results of site investigations and our observations on site, vegetation management is considered appropriate with a view to restoring stability.

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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 recommended that TG3 (Oak) is removed.

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.

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

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

The extent of vegetation management required to restore and maintain long-term stability at this property is high and its impact acknowledged.

At the time of our survey it was not possible to ascertain the exact ownership of all vegetation. Further consultation with those involved and/or Land Registry searches may therefore be required to identify exact ownership.

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?	No

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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	Cypress	2	6	1.2	C - Insured	Remove	Removed Feb 2014.
T3	Ash	3	12.5	6.5	C - Insured	Remove	Removed Feb 2014.
TG3	Oak x3	3	19.6	6.4	A - Third Party 22 Fairmead Walk Hampshire PO8 9AL	Remove	Remove. Remove regrowth annually due to translocation risk.
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
H1	Laurel	1	5.6	2*	C - Insured	Action to avoid future risk	Reduce to 1.5m height and maintain at reduced dimensions.
H2	Thuja	1	1.3	0.3	A - Third Party 27 Galaxie Road Waterlooville Hampshire PO8 9AT	Action to avoid future risk	Remove section of hedge to achieve a minimum clearance of 2m to property.
T2	Cypress	1	3.4	2.5	C - Insured	Action to avoid future risk	Remove.
T4	Yew	1	7.8	11	C - Insured	Action to avoid future risk	Do not allow to exceed current dimensions by way of regular pruning.
T5	Ash	1	7.6	10.6	A - Third Party 22 Fairmead Walk Hampshire PO8 9AL	Action to avoid future risk	Remove and treat stump to inhibit regrowth.
T6	Cypress	1	3	2.7	C - Insured	Action to avoid future risk	Reduce to 2m height and maintain at reduced dimensions.
T7	Ash	1	6.5	7*	A - Third Party 22 Fairmead Walk Hampshire PO8 9AL	Action to avoid future risk	Remove and treat stump to inhibit regrowth.
TG1	Cypress	1	5	6.6	A - Third Party 22 Fairmead Walk Hampshire PO8 9AL	Action to avoid future risk	Do not allow to exceed current dimensions by way of regular pruning.
TG2	Hornbeam x4	2	9.6	8	C - Insured	Action to avoid future risk	Reduce to 6m in height and maintain at reduced dimensions.
TG4	Oak x2	3	19	15.4	A - Third Party 22 Fairmead Walk Hampshire PO8 9AL	Action to avoid future risk	Reduce to 15m in height and maintain at reduced dimensions.
TG5	Oak x4	3	19.5	15	A - Third Party 22 Fairmead Walk Hampshire PO8 9AL	Action to avoid future risk	Reduce to 15m in height and maintain at reduced dimensions.

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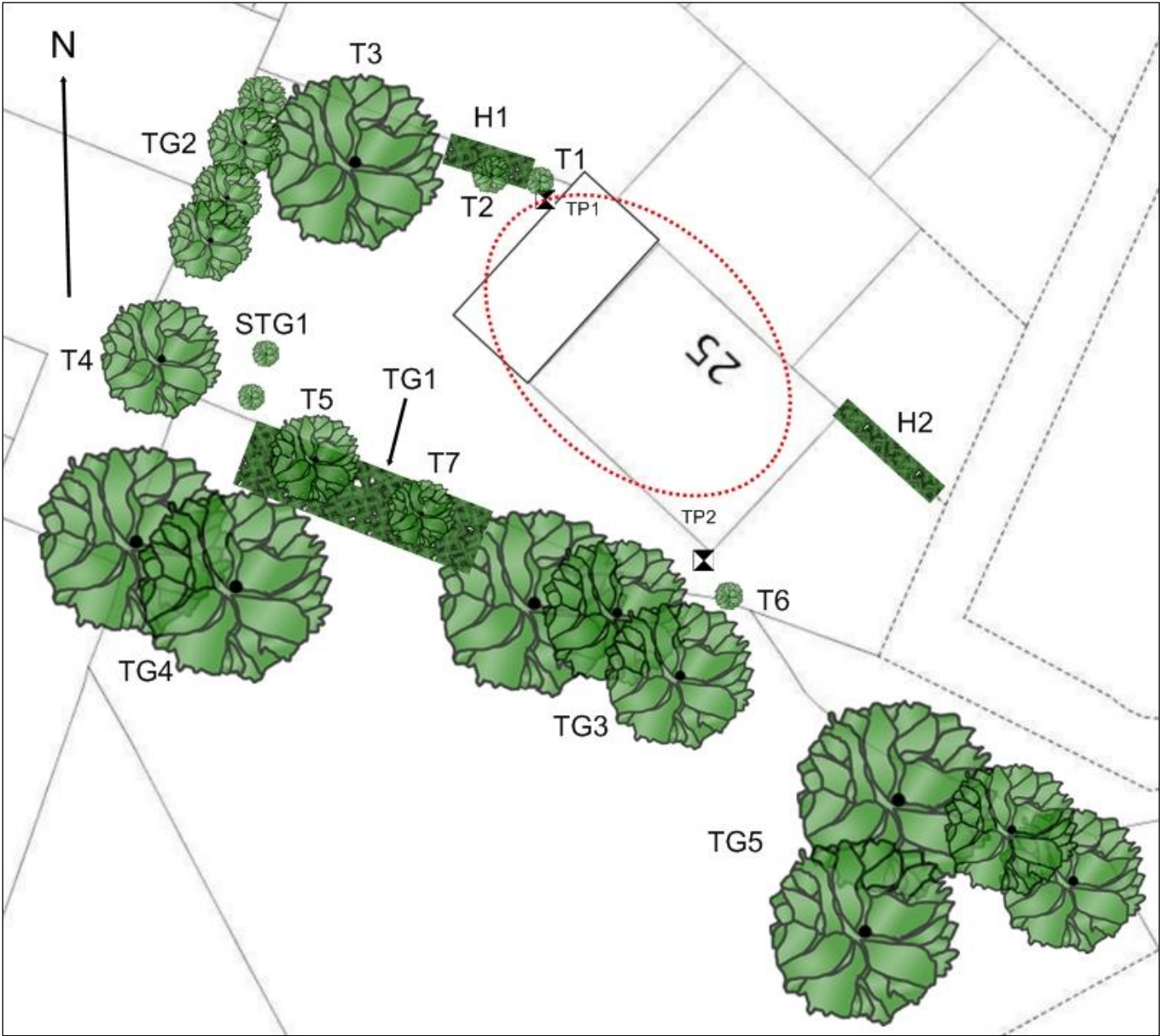
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STG1	Other	3	0.3	8.5*	C - Insured	No Action	No works.
Age Cat: 1 = Younger than property; 2 = Similar age to the property; 3 = Significantly older than property							

* 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



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

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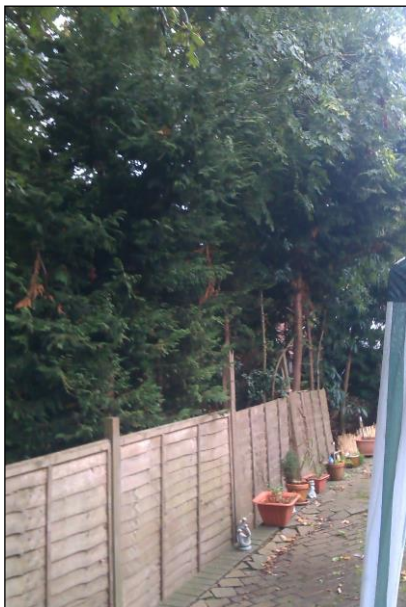
8. Photographs



Yew



TG3 Oak



TG1 Cypress



T3 Ash

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TG2 Hornbeam

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Date: 04/03/2015

Property: 25 Galaxie Road, Waterlooville, Hampshire, PO8 9AT

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

Insured Property Tree Works	£0
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".

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