

Arboricultural Consultancy for Aviva

Note: This report is intended for use between the client, Environmental Services 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	Mr Mark Campling	Address	The Yews, Jarvis Gate, Spalding, Lincolnshire, PE12 0EP		
Client	Subsidence Management Services	Contact	Cliff Sithole	Claim No.	IFS-AVI-SUB-17-0068560
ES Ref	SA-240938	Consultant	Will Rickerby	Contact No.	0330 380 1036
Report Date	30/08/2018				

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.

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 is noted throughout the property. Please refer to the engineers report for a full description of the claim history and damage.

3. Technical Reports

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

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

4. Action Plan

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

Treeworks	
Local Authority	South Holland District Council
TPO / Conservation Area / Planning Protection Searches	Insured: TPO Adjacent & Adjoining properties: TPO
Additional Comments	
Awaiting Further Instructions.	

5. Technical Synopsis

This report is based upon our understanding at the time of visiting the property that Subsidence Management Services's engineers are satisfied that damage is due to clay shrinkage subsidence exacerbated by vegetation.

A CCTV (Closed Circuit Television) survey of the drainage system on the property was undertaken, the drainage layout mapped and a report prepared on the system structure, condition and functionality together with any recommendations for remedial works.

We note that drain investigations found no damage in the immediate vicinity of the area of damage.

Foundations are noted to extend to a depth of 500mm in Trial Pit/Borehole 1 (TP/BH1) and 300mm in TP/BH2 and bear onto subsoil described within the borehole log as containing clay, thereby indicating the potential for the observed damage to be the result of clay shrinkage subsidence exacerbated by the influence of vegetation.

The supporting subsoil has been analysed by a UKAS accredited Laboratory (to relevant BS, EN and ISO standards).

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NHBC chapter 4.2 (2017) categorises the supporting subsoil as being of LOW – MEDIUM plasticity, i.e. capable of moderate volumetric change potential in response to moisture content.

Moisture depletion has been demonstrated by way of Atterberg testing; Atterberg tests demonstrate that the load bearing capacity of the soil has not been compromised by excessive water content due to leaking drains and is therefore capable of bearing the imposed load.

The role of vegetation is further supported by the results of level monitoring.

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 available monitoring have confirmed a pattern of movement consistent with the known influence of vegetation.

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

Site Investigations revealed the presence of roots in TP/BH1 and TP/BH2 to a maximum depth of 2500mm; 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 probably *Quercus* spp. (Oak) but possibly *Castanea* spp. (Sweet Chestnut).

Our survey of the site identified the Oak (T1), given its position relative to the damage (and the absence of any Sweet Chestnuts on/near site) it is our opinion that the roots identified within TP/BH1 are *Quercus* and will therefore emanate from this tree.

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.

However, whilst not positively implicated, given its size and proximity the Yew (T2) 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 contributory influence, albeit in a secondary capacity when compared to T1.

The size and proximity of this vegetation is consistent with the location of damage and advised mechanism of movement.

Considering engineers conclusions, results of site investigations and our observations on site, vegetation is judged to retain the capacity to be causal.

A programme of vegetation management is therefore considered appropriate in this instance 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 management as listed by this report.

Vegetation management in the form of removal and appropriate stump treatment will help to promote the restoration of long-term stability to the insured property; pruning should not be considered as representing an effective or reliable long-term alternative solution given the size and proximity of the vegetation.

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 Oak (T1) and Yew (T2) will offer the most certain and reliable arboricultural solution likely to restore long-term stability.

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The extent of vegetation management required to restore and maintain long-term stability at this property is high and its impact acknowledged. However, we consider the impact on the wider public amenity from the proposed tree works is mitigated by the presence of further trees and the scope for replacement planting.

Whilst replacement planting is considered appropriate, 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.

Please note that the footing of the insured property fall within the anticipated rooting distance of additional vegetation which we believe presents a foreseeable risk of future damage and accordingly we have made recommendations in respect of this.

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?	Yes
Would DNA profiling be of assistance in this case?	No

6.0 Recommendations

6.1 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	17.3	5.4	C - Insured	Remove	Remove close to ground level; do not treat stump due to translocation risk. Where such a risk exists, we advise that any emergent regrowth is removed annually.
T2	Yew (Common)	3	14.2	3.6	C - Insured	Remove	Remove close to ground level; do not treat stump due to translocation risk. Where such a risk exists, we advise that any emergent regrowth is removed annually.

Age Cat: 1 = Younger than property; 2 = Similar age to the property; 3 = Significantly older than property

* Estimated

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6.2 Future Risk Recommendations

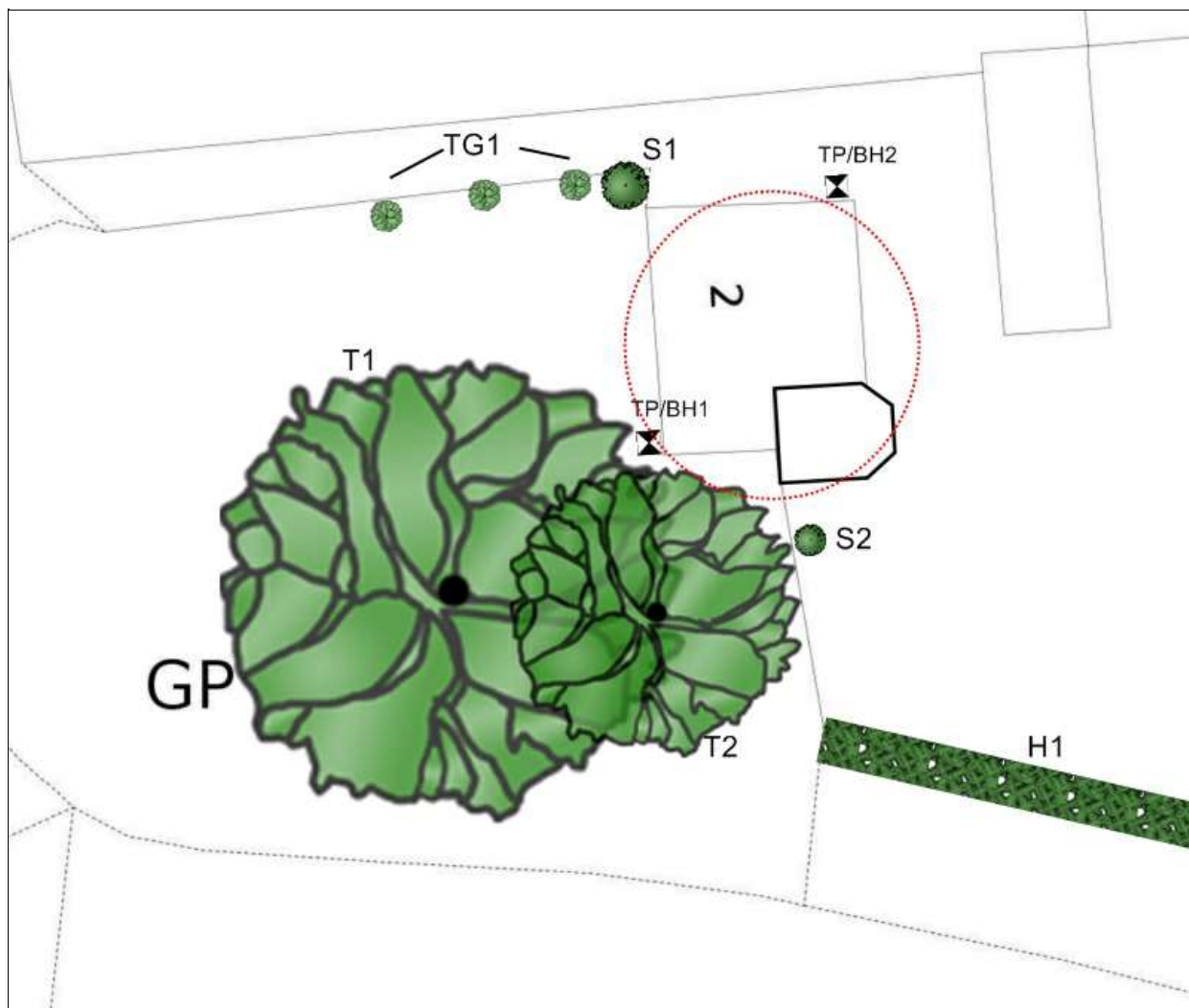
These recommendations may be subject to review following additional site investigations.

Tree No.	Species	Age Cat	Approx. Height (m)	Distance to Building (m) *	Ownership	Action	Requirement
H1	Cypress	1	6.3	10.5	C - Insured	Action to avoid future risk	Do not allow to exceed current dimensions by way of regular pruning.
S1	Mahonia	1	1.2	0.5	C - Insured	Action to avoid future risk	Do not allow to exceed current dimensions by way of regular pruning.
S2	Buddleia	1	2	2	C - Insured	Action to avoid future risk	Do not allow to exceed xm height / spread by way of regular pruning.
TG1	Cherry	1	6	2.3	C - Insured	Action to avoid future risk	Do not allow to exceed current dimensions by way of regular pruning.
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 Environmental Services 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



S1



T1 - Oak



T2 - Yew (Common)



Insured Garden - Front



Insured Garden - Back



S2 - Buddleia

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TG1 - Cherry



H1 - Cypress

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Date: 30/08/2018

Property: The Yews, Jarvis Gate, Spalding, Lincolnshire, PE12 0EP

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

Insured Property Tree Works	£3700.00
Third Party Tree Works	£0.00
Provisional Sum	£0.00

- 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 tree works 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 regrowth. 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 statutory tree protection status as notified by the Local Authority was correct at the time of reporting. It should be noted however that this may be subject to change and we therefore advise that further checks with the Local Authority MUST be carried out prior to implementation of any tree works. 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".