Arboricultural Consultancy for Aviva

Note(1): 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 & Mrs Kieron Johnson	**Address**	23 The Drove, Horton Heath, Eastleigh, Hants, SO50 7NX		
Client	Subsidence Management Services	**Contact**	Trish Chapman	Claim No.	IFS-AVI-SUB-15-0056124
ES Ref	S/1003150901/WA-REV2	**Consultant**	Will Argent	**Contact No.**	0330 380 1036
Report Date	17/03/2015 ***Revised 10/02/2016 & 04/04/2016***				

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.

This is a revised report to include the findings of recent Site Investigations and Level Monitoring. REV2 has been amended to reflect changes to the management prescriptions for T2 given that damage is a reoccurrence.

2. Property and Damage Description

The insured structure is a 2 storey detached house. The property occupies a site that slopes gently uphill from front to rear.

Damage relates to the front right-hand corner and the rear elevation 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	☒	Drain Report	☒	Foundation Detail	☒
Root Analysis	☒	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	Eastleigh Borough Council
TPO / Conservation Area / Planning Protection Searches	Insured: TPO Adjacent & Adjoining properties: 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 Subsidence Management Services' engineers are satisfied that damage is due to clay shrinkage subsidence exacerbated by vegetation.

We are aware of a previous Arboricultural Survey Report prepared by Marishal Thompson & Company under their reference LS/1911091541/KH as part of a previous claim for subsidence damage in 2009.

Vegetation management was undertaken at this time, however damage has subsequently returned. 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.

We note that drain investigations have been carried out and no damage has been found in the immediate vicinity of the area of damage.

Site Investigations indicate that the foundations to the property extend to a depth of 950mm below ground level in TP/BH1.

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Foundations 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.

Site Investigations revealed the presence of roots in Trial Pit / Borehole 1 to a depth of 1800mm; this depth is in excess of foundations which extend to a depth of 950mm.

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 *Betula spp.* (Birch).

Our survey of the site identified T1 & T2 (Silver Birch), given their position relative to the damage it is our opinion that the roots identified emanate from these trees. 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.

In assessing the potential drying influence of the vegetation on site, T1 (Silver Birch) is considered the dominant feature and accordingly we have identified it as the principal cause of the subsidence damage. T2 (Silver Birch) 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, albeit in a secondary capacity when compared to T1.

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 is isolation to the other is unlikely to restore long-term stability.

From our observations, the footings of the subject property also fall within the anticipated rooting range of further vegetation located on/near the site.

Whilst not directly implicated by positive root analysis, based on our site investigations, and taking account of vegetation location relative to the focal area of movement / damage, it is our opinion that TG2 (Cypress) also retains the capacity to be extending roots below the focal area of movement.

The role of vegetation is further supported by the results of level monitoring which has been undertaken since 09/04/2015 with 5 readings available through to 20/01/2016.

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 the front right corner of the property.

The pattern of movement exhibited in this instance is consistent with the known influence of vegetation, whilst soil recovery over the winter period also serves to confirm that defective drainage is not a material cause of the subsidence (as previously advised).

Considering engineer’s conclusions and the results of site investigations, the above vegetation (T1, T2 and TG2) are considered causal.

Given the above information, our observations on site and the advised mechanism of movement 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 recommended a program of removals as listed by this report.

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

Pruning is generally ineffective and in the context of the current claim, we consider the above trees are simply too large and close for pruning to be considered effective.

Given that this is a return of damage and the fact that T2 (Birch (Silver)) is also likely to be rooting below the insured property, we have amended our prescriptions to remove, as this will provide the most certain and reliable arboricultural solution with regards to restoring and maintain 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.

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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 Table 1 - Current Claim Requirements (Revised)

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	Birch (Silver)	3	12	6.2	C - Insured	Remove	Remove.
T2	Birch (Silver)	3	12.5	9.4	C - Insured	Remove	Remove.
TG2	Cypress x2	3	13	11.3	A - Third Party 28 The Drove, Horton Heath, Eastleigh, Hants SO50 7NX	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

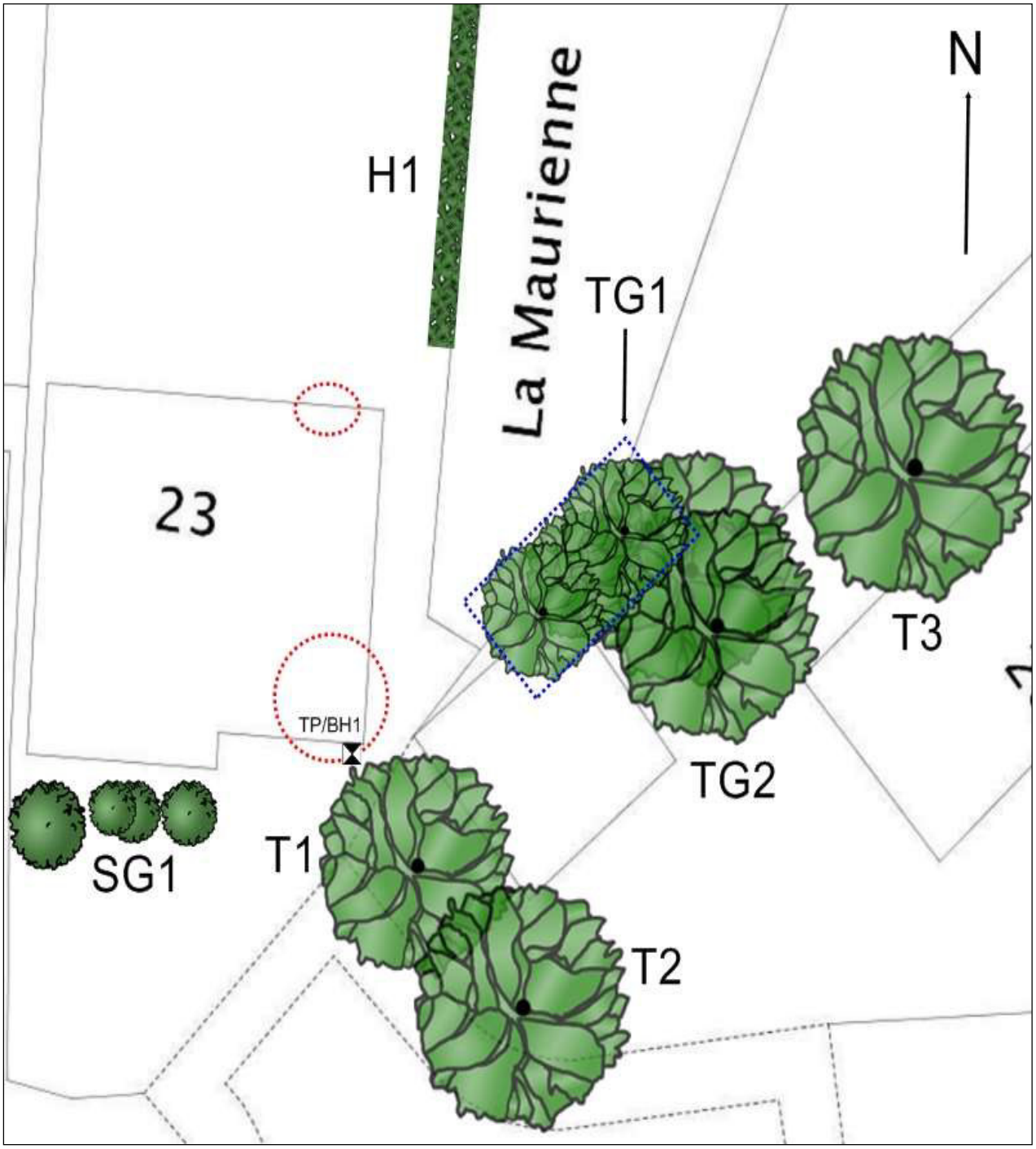
Tree No.	Species	Age Cat	Approx. Height (m)	Distance to Building (m)	Ownership	Action	Requirement
H1	Cypress	1	2.8	4.7	C - Insured	Action to avoid future risk	Do not allow to exceed current dimensions by way of regular pruning.
SG1	Mixed species shrubs includes; Phormium, Camellia and Euonymus.	1	1.7	0.5	C - Insured	Action to avoid future risk	Do not allow to exceed current dimensions by way of regular pruning.
T3	Acer	3	12.5	16*	A - Third Party 28 The Drove, Horton Heath, Eastleigh, Hants SO50 7NX	Action to avoid future risk	Do not allow to exceed current dimensions by way of regular pruning.
TG1	Cypress x4	1	5.5	7.7	A - Third Party 28 The Drove, Horton Heath, Eastleigh, Hants SO50 7NX	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

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7. Site Plan



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

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8. Photographs



T1 - Birch (Silver)



T2 - Birch (Silver)



T3 - Acer



TG2 - Cypress

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TG1 - Cypress



TG1 - Cypress



TG2 - Cypress



SG1 - Mixed species shrubs

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H1 - Cypress

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

Insured Property Tree Works	£1150
Third Party Tree Works	£720
Provisional Sum	£0

- 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 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 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".*

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