Arboricultural Appraisal Report

Subsidence Damage Investigation at:

Milldale, South Street
Woodhurst
Huntingdon
PE28 3BW



CLIENT:	Crawford & Company
CLIENT REF:	SU2205096
MWA REF:	SUB240202-15007
MWA CONSULTANT:	Owen Hutchison
REPORT DATE:	07/02/2024

SUMMARY

Statutory Controls			Mitigation (Current claim tree works)	
TPO current claim	No		Policy Holder	Yes
TPO future risk	Yes – T4		Domestic 3rd Party	No
Cons. Area	Yes		Local Authority	No
Trusts schemes	No		Other	No
Local Authority: -	Huntingdonshire District Council			

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Introduction

Acting on instructions from Crawford & Company, the insured property was visited on 06/02/2024 to assess the potential role of vegetation in respect of subsidence damage.

We are instructed to provide opinion on whether moisture abstraction by vegetation is a causal factor in the damage to the property and give recommendations on what vegetation management, if any, may be carried out with a view to restoring stability to the property. The scope of our assessment includes opinion relating to mitigation of future risk. Vegetation not recorded is considered not to be significant to the current damage or pose a significant risk in the foreseeable future.

This is an initial appraisal report and recommendations are made with reference to the technical reports and information currently available and may be subject to review upon receipt of additional site investigation data, monitoring, engineering opinion or other information.

This report does not include a detailed assessment of tree condition or safety. Where indications of poor condition or health in accessible trees are observed, this will be indicated within the report. Assessment of the condition and safety of third-party trees is excluded and third-party owners are advised to seek their own advice on tree health and stability of trees under their control.

Property Description

The property comprises a 2-storey semi-detached house of traditional construction, extended with a single-storey addition to the rear.

External areas comprise gardens to the front and rear. The site is generally level with no adverse topographical features.

Damage Description & History

Damage relates to the rear extension and the rear left-and corner of the main building where cracking is affecting the kitchen, bathroom, landing, rear right bedroom and left-hand flank indicates downward movement.

For a more detailed synopsis of the damage please refer to the building surveyor's technical report.

We have not been made aware of any previous claims.

Site Investigations

Site investigations were carried out by CET on 24/02/2023, when a single trial pit was excavated to reveal the foundations, with a borehole sunk through the base of the trial pit to determine subsoil conditions. A drainage survey was also undertaken. Please refer to the Site Investigation report for further details.

Discussion

Opinion and recommendations in this report are made on the understanding that Crawford & Company have identified clay shrinkage subsidence as a cause of building movement and damage.

Site investigations and soil test results have confirmed a plastic clay subsoil susceptible to undergoing volumetric change in relation to changes in soil moisture. A comparison between moisture content and the plastic and liquid limits suggests moisture depletion at the time of sampling at depths beyond normal ambient soil drying processes, such as evaporation, which is indicative of the soil drying effects of vegetation.

Roots were observed to a depth of 1.5m bgl in TP/BH1 and recovered samples have been positively identified (using anatomical analysis) as Fraxinus spp.; the origins of which will likely be the Ash stems within TG1 group, however the large Ash T4 at the property frontage will also have a significant presence of roots below the property and may account for a degree of the retrieved samples.

Irrespective of the identification of recovered root samples, the roots of the Oak T2 will also be present below foundation level in proximity to the area of movement/damage and significantly influencing soil moisture and volumes. The Sycamore stems within TG1 group will also pose a significant influence, as will the understorey Cypresses of TG1 group.

Level monitoring is in progress, with initial readings taken between 21/09/2023 and 26/01/2024 showing a combination of uplift of up to 4.1mm and downward movement of the front of up to -2.2mm. Further readings as they become available, will confirm the extent of movement and any seasonal pattern.

Based on the technical reports currently available, engineering opinion and our own site assessment we conclude the damage is consistent with shrinkage of the clay subsoil related to moisture abstraction by vegetation.

If an arboricultural solution is to be implemented to mitigate the influence of the implicated trees/vegetation we recommend that T2 Oak and the Ash and Sycamore stems of TG1 group are removed in the first instance, combined with management of the TG1 Cypresses.

If movement persists, or if further evidence comes to light to confirm its involvement, then attention will need to turn to T4 Ash at the property frontage.

Other vegetation recorded presents a potential future risk to building stability and management is therefore recommended. Recommended tree works may however be subject to change upon receipt of additional information.

Consideration has been given to pruning alone as a means of mitigating the vegetative influence, however in this case, this is not considered to offer a viable long-term solution due to the proximity of the responsible vegetation.

Table 1 **Current Claim** - Tree Details & Recommendations

Tree No.	Species	Ht (m)	Dia (mm)	Crown Spread (m)	Dist. to building (m)	Age Classification	Ownership
T2	Oak	11.5	620	14.0	12.6	Older than extension(s)	Policy Holder
Management history		No significant past management noted.					
Recommendation		Remove (fell) to near ground level and treat stump to inhibit regrowth.					
TG1	Ash and Sycamore with Cypress understorey	14.0	320	14.0	14.1	Younger than Property	Policy Holder
Management history		Lower sides of Cypresses appear trimmed. No significant past management noted to remainder. Sycamore stems landlocked between duplicated fence-lines – only accessible from Subject Property garden.					
Recommendation		Remove (fell) Ash and Sycamore stems to near ground level and treat stumps to inhibit regrowth. Reduce height of Cypresses to 4.0m and trim all round as hard as possible without breaching foliage layer. Trim thereafter on an annual cycle to maintain at broadly reduced dimensions.					

Ms: multi-stemmed * Estimated value

Table 2 **Future Risk** - Tree Details & Recommendations

Tree No.	Species	Ht (m)	Dia (mm)	Crown Spread (m)	Dist. to building (m)	Age Classification	Ownership
T1	Laurel	6.5	140	6.0	11.8	Younger than Property	Policy Holder
Management history		No significant recent management noted.					
Recommendation		Maintain broadly at no larger than current dimensions by periodic pruning.					
T3	Apple	6.5	309	6.0	13.0	Younger than Property	Policy Holder
Management history		No significant recent management noted.					
Recommendation		Maintain broadly at no larger than current dimensions by periodic pruning.					
T4	Ash	19.0	1000 *	20.5	14.4	Older than extension(s)	Nor Registrations
Management history		No significant past management noted. **ABC power-line through crown.**					
Recommendation		No works required at present (subject to review if movement persists).					
T5	Goat Willow	8.0	300 *	8.0	18.5 *	Younger than Property	Third Party Pinglefield Cottage PE28 3BW
Management history		No significant recent management noted.					
Recommendation		Remove (fell) to near ground level and treat stump to inhibit regrowth.					
TG2	Group of Ash, Sycamore and Birch	14.0	350 Ms *	10.5 *	13.0 *	Younger than Property	Third Party Pinglefield Cottage PE28 3BW
Management history		No significant recent management noted.					
Recommendation		Maintain broadly at no larger than current dimensions by periodic pruning.					

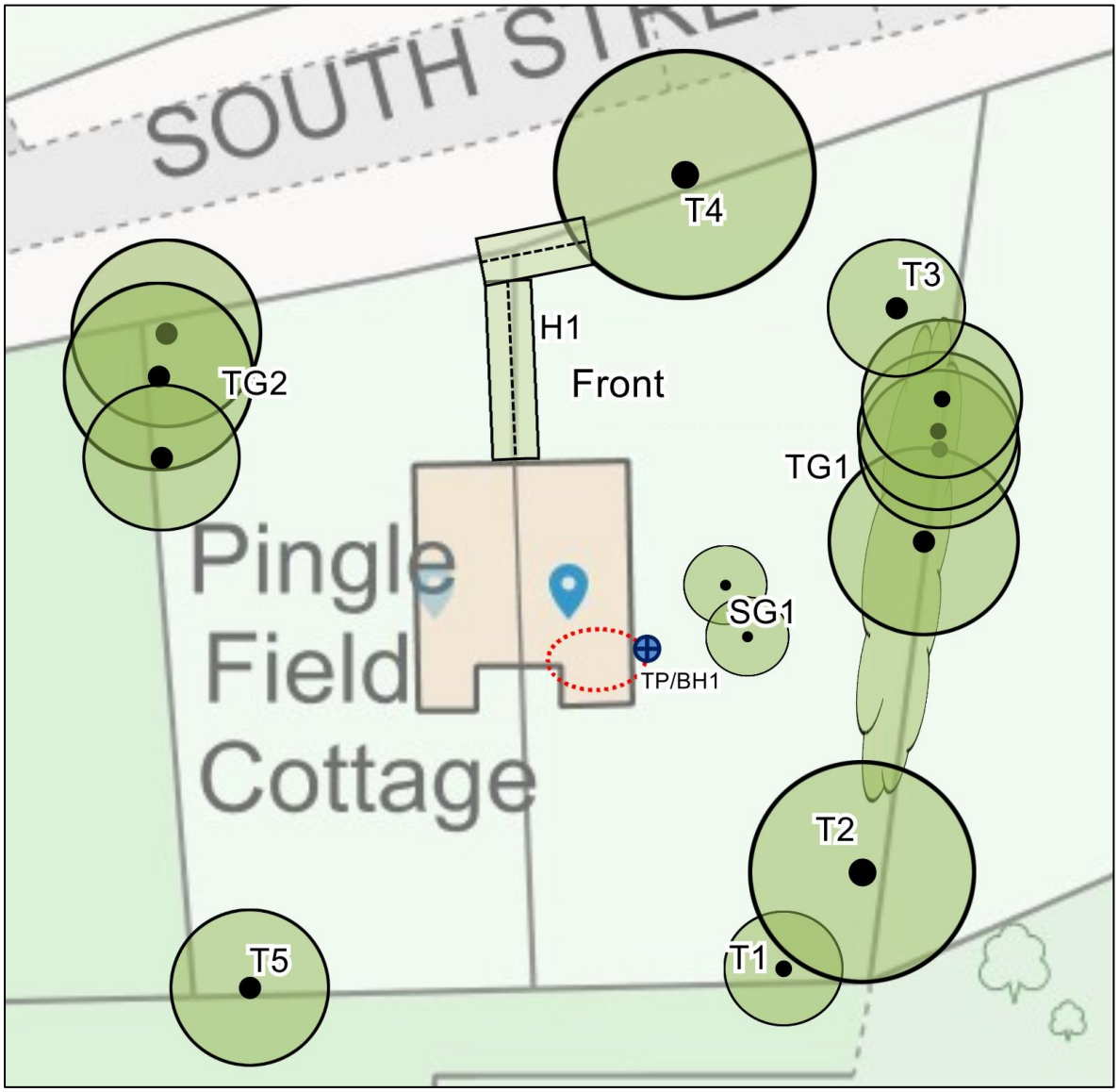
Ms: multi-stemmed * Estimated value

Table 2 **Future Risk** - Tree Details & Recommendations Cont'd

Tree No.	Species	Ht (m)	Dia (mm)	Crown Spread (m)	Dist. to building (m)	Age Classification	Ownership
SG1	Sumac and Buddleia group	4.0 *	70 Ms	3.0	5.7	Younger than Property	Policy Holder
Management history		No significant recent management noted.					
Recommendation		Maintain broadly at no larger than current dimensions by periodic pruning.					
H1	Privet hedge	2.5	10 Ms *	1.2	1.1	Younger than Property	Boundary Policy Holder &/or Pinglefield Cottage PE28 3BW
Management history		Subject to past management/pruning - appears regularly trimmed.					
Recommendation		Reduce height to 1.5m and cut back sides to leave hedge no thicker than 0.5m. Trim thereafter on an annual cycle to maintain at broadly reduced dimensions.					

Ms: multi-stemmed * Estimated value

Site Plan



Plan not to scale – indicative only

Approximate areas of damage

Images



View from left-hand flank of T1 Laurel, T2 Oak, SG1 and TG1 group



View from rear of TG1 group, SG1 group and T4 Ash



View of H1 Privet hedge and TG2 group



View of T5 Goat Willow

Management of vegetation to alleviate clay shrinkage subsidence.

All vegetation requires water to survive which is accessed from the soil. Clay soils shrink when water abstracted by vegetation exceeds inputs from rainfall, which typically occurs during the summer months. When deciduous vegetation enters dormancy and loses its leaves and rainfall increases during the winter months, soil moisture increases and the clay swells. (Evergreen trees and shrubs use minimal/negligible amounts of soil water during the winter).

Buildings founded on clay are susceptible to movement as the clay shrinks and swells which can result in cracking or other damage.

Where damage does occur, pruning (reducing leaf area) can in some circumstances be effective in restoring stability however, removal of the influencing vegetation (trees, shrubs, climbers) causing the ground movement offers the most predictable and quickest solution in stabilising the clay and hence the building and for this reason is frequently initially recommended as the most appropriate solution.

Often this is unavoidable due to the size or number of influencing trees, shrubs etc and their proximity to the building. Very heavy pruning of some species to a level required to effectively control its water use can result in the trees decline and ultimately death and is one factor considered when making recommendations for remedial tree works. Pruning alone, whilst reducing soil moisture uptake is often an unpredictable management option in restoring building stability either in the short or long term.

In some circumstances however, where vegetation initially recommended for removal is subsequently pruned and monitoring indicates the building has stabilised, removal becomes unnecessary with decisions based on best evidence available at the time.