

Arboricultural Appraisal Report

Subsidence Damage Investigation at:

97 Sutton Road
Waterlooville
PO8 8PT



CLIENT:

Crawford & Company

CLIENT REF:

MWA REF:

MWA CONSULTANT:

Mark Bisley (BSc Hons)

REPORT DATE:

28/10/2022

SUMMARY

Statutory Controls		Mitigation (Current claim tree works)	
TPO current claim	Yes – T2, T3	Policy Holder	Yes
TPO future risk	No	Domestic 3 rd Party	Yes
Cons. Area	No	Local Authority	No
Trusts schemes	No	Other	No
Local Authority: -	Havant Borough Council		

Introduction

Acting on instructions from Crawford & Company, the insured property was visited on 27/10/2022 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 two-storey, semi-detached house, built c. 1970. There is a single storey extension 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

The property was the subject of a previous claim in 2012 when recommendations were made for the removal of 3 oak trees. 2 were removed from the rear right but the tree to the rear left was subject to a TPO and so retained. Permission was granted for a reduction which was done, with only one repetition of the works since.

The current damage affects the rear extension and adjacent areas with internal and external cracking present. It was first noticed in September 2022. At the time of the engineer's inspection (13/09/2022) the structural significance of the damage was found to fall within Category 2 (slight) of Table 1 of BRE Digest 251. For a more detailed synopsis of the damage please refer to the building surveyor's technical report.

Geology / Soils

The online 1:50 000 scale British Geological Survey map records the bedrock geology as Lambeth Group (clay, silt, sand). These soils contain a clay element susceptible to undergoing volumetric change (shrink/swell) under the soil drying effects of vegetation.

No superficial deposits are recorded.

Discussion

Opinion and recommendations are made on the understanding that Crawford & Company are satisfied that the current building movement and the associated damage is the result of clay shrinkage subsidence and that other possible causal factors have been discounted.

Published soil maps indicate the underlying soils include or are likely to include a clay component susceptible to undergoing volumetric change with changes in soil moisture. Moisture abstraction by vegetation has the potential to cause soil shrinkage and consequent subsidence of the building.

Our survey has identified vegetation within influencing distance of the building with a current potential to influence soil volumes below foundation level. The vegetation considered to be most significant in relation to the current damage is T2, with a potential contribution from T3.

Based on the information currently available, engineering opinion and our own site assessment we conclude the damage appears consistent with shrinkage of the clay fraction due to the soil drying effects of vegetation.

If an arboricultural solution is to be implemented to mitigate the influence of the trees/shrubs considered to be responsible for the damage, we recommend that T2 be removed and T3 reduced. We did consider removing both current claim oaks although the amplitude of damage (BRE Digest 251 slight) indicates that it may be possible to restore stability with T3 retained but subject to crown reduction and regular repeat pruning.

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

Conclusions

- Conditions necessary for clay shrinkage subsidence to occur related to moisture abstraction by vegetation have been confirmed by reference to published soil maps.
- Engineering opinion is that the damage is related to clay shrinkage subsidence.
- There is significant vegetation present with the potential to influence soil moisture and volumes below foundation level.
- Replacement planting may be considered subject to species choice and planting location.

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	English Oak	16 *	730	12 *	11	Older than Property	Joint Policy Holder & 95 Sutton Road PO8 8PT
Management history		Subject to periodic reduction as part of an ongoing management regime.					
Recommendation		Remove to ground level removing any regrowth annually.					
T3	English Oak	16 *	740 *	14 *	12	Older than Property	Third Party 95 Sutton Road PO8 8PT
Management history		Subject to periodic reduction as part of an ongoing management regime.					
Recommendation		Reduce height to 9m and crown spread to 8m leaving balanced crown. Prune on a biennial cycle to maintain at broadly reduced dimensions.					

Ms: multi-stemmed

* Estimated value

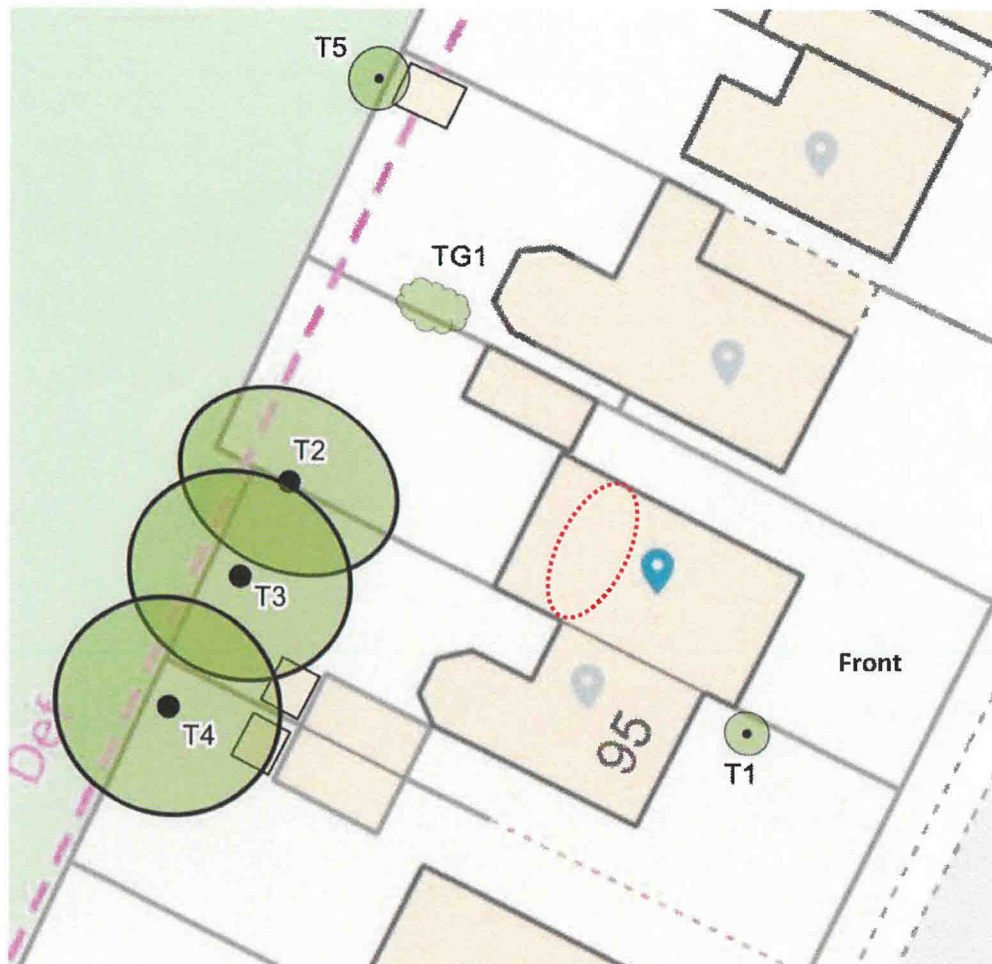
Table 2 **Future Risk - Tree Details & Recommendations**

Tree No.	Species	Ht. (m)	Dia. (mm)	Crown Spread (m)	Dist. to building (m)	Age Classification	Ownership
T1	Hazel	2	35 Ms *	2 *	1.5 *	Younger than Property	Third Party 95 Sutton Road PO8 8PT
Management history		Subject to past management/pruning - appears regularly pruned.					
Recommendation		Do not allow to exceed current dimensions.					
T4	English Oak	15 *	800 *	12 *	19	Older than Property	Third Party 93 Sutton Road PO8 8PT
Management history		Subject to periodic reduction as part of an ongoing management regime.					
Recommendation		Maintain broadly at no more than current dimensions by periodic pruning.					
T5	Sycamore	10 *	180 Ms *	5 *	16	Younger than Property	Third Party D E Walder of Clarendon House, Anmore Road PO7 6HW
Management history		No significant recent management noted.					
Recommendation		Do not allow to exceed current dimensions.					
TG1	Sycamore, Ash	3.5 *	35 *	2 *	10 *	Younger than Property	Third Party 99 Sutton Road PO8 8PT
Management history		No significant recent management noted.					
Recommendation		Remove (fell) to near ground level and grub out/grind out stump to inhibit regrowth.					

Ms: multi-stemmed

* Estimated value

Site Plan



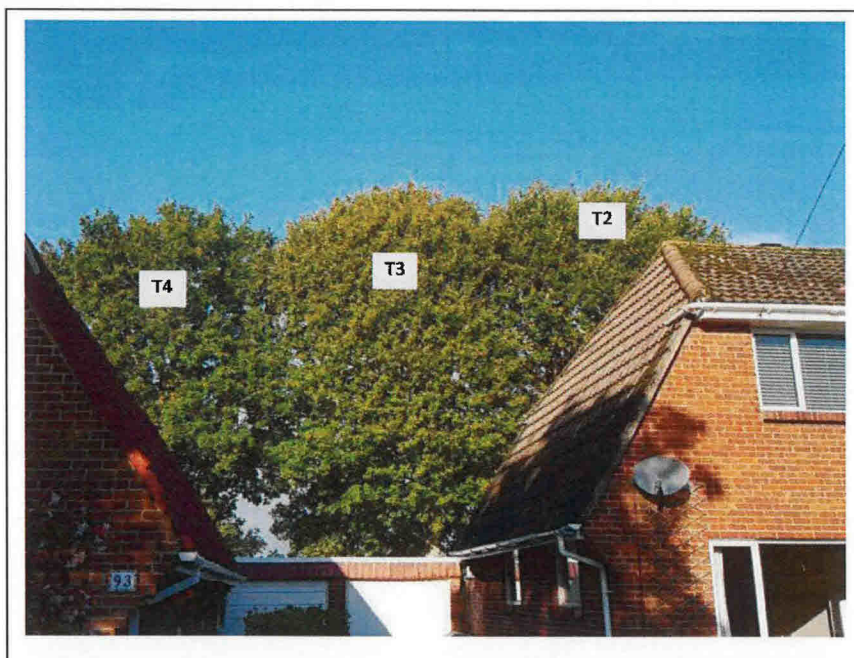
Plan not to scale – indicative only

 Approximate areas of damage

Images



View of property from front right



View of trees from front left



View of rear garden



View of T4, T3 and T2

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.

