

## Revised Arboricultural Appraisal Report

### Subsidence Damage Investigation at:

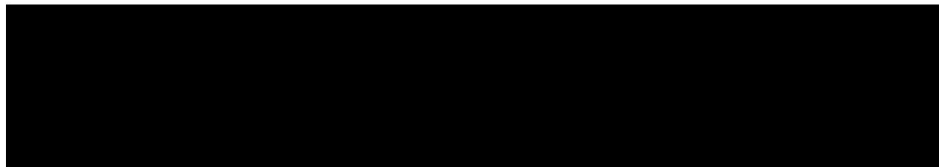
22a Harley Road  
Hampstead  
London  
NW3 3BN



CLIENT: Crawford & Company  
 CLIENT REF: [REDACTED]  
 MWA REF: [REDACTED]  
 MWA CONSULTANT: Andy Clark  
 REPORT DATE: 02/10/2023

### SUMMARY

Statutory Controls		Mitigation (Current claim tree works)	
TPO current claim	Yes – T2	Policy Holder	No
TPO future risk	Yes – T3, T4	Domestic 3 <sup>rd</sup> Party	Yes
Cons. Area	Yes	Local Authority	No
Trusts schemes	No	Other	No
Local Authority: -	London Borough of Camden		



## Introduction

**This is a revision of our report dated 09/08/2023 to amend the Statutory Control Table to show T2 is covered by a TPO.**

Acting on instructions from Crawford & Company, the insured property was visited on 06/04/2023 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.

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 basement flat within a 4-storey semi-detached house of traditional construction, built c.1900 and since extended with a conservatory to the rear. External areas comprise gardens to the front and rear.

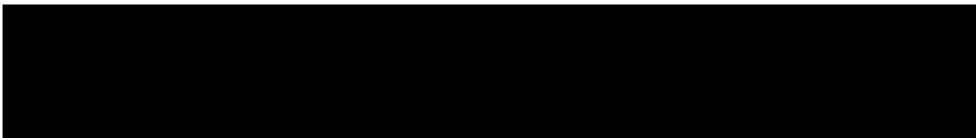
The property occupies a site that slopes gently downhill from front to rear.

## Damage Description & History

Damage relates to the single storey rear bay and conservatory, with cracking reported to have first been observed during September 2020.

At the time of the engineer's inspection the structural significance of the damage was found to fall within Category 3 (Moderate) of Table 1 of BRE Digest 251. 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 03/05/2022, when 2 trial pits were hand excavated to reveal the foundations, with a borehole sunk through the base of the trial pit to determine subsoil conditions. A drains survey was also undertaken. Please refer to the Site Investigation report for further details.

### 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.

Site investigations and soil test results have confirmed a plastic clay subsoil susceptible to undergoing volumetric change in relation to changes in soil moisture.

Roots were observed to a depth of 2.2m bgl in TP/BH1 and to 3.0m bgl in TP/BH2, and recovered samples have been positively identified (using anatomical analysis) as Vitaceae spp., Leguminosae spp., either Quercus spp. or Castanea spp. and Ailanthus spp.

The origin of the Vitaceae spp. roots will be the grape of SG1 and are not considered significant to the current damage. The source of the Leguminosae spp. roots will be T2 False Acacia, the either Quercus spp. or [the related] Castanea spp. roots will emanate from T3 Oak, and the Ailanthus spp. roots will originate from T1 Tree of Heaven.

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 T1 Tree of Heaven and T2 False Acacia are removed at this stage. If movement persists the removal of the oak may become necessary.

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.

#### **Technical Summary**

- Conditions necessary for clay shrinkage subsidence to occur related to moisture abstraction by vegetation have been confirmed by site investigations and the testing of soil and root samples.
- 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.
- Roots have been observed underside of foundations and identified samples correspond to vegetation identified on site.
- 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
T1	Tree of Heaven	16.5 *	700 *	15.0	7.8	Older than extension(s)	Third Party 22b Harley Road NW3 3BN
Management history		Crown reduced and historically crown lifted.					
Recommendation		Remove (fell) to near ground level and treat stump to inhibit regrowth.					
T2	False Acacia	16.0 *	500 *	16.0	15.0	Older than extension(s)	Third Party 22b Harley Road NW3 3BN
Management history		No significant past management noted.					
Recommendation		Remove (fell) to near ground level and treat stump to inhibit regrowth.					

Ms:    multi-stemmed                      \* Estimated value



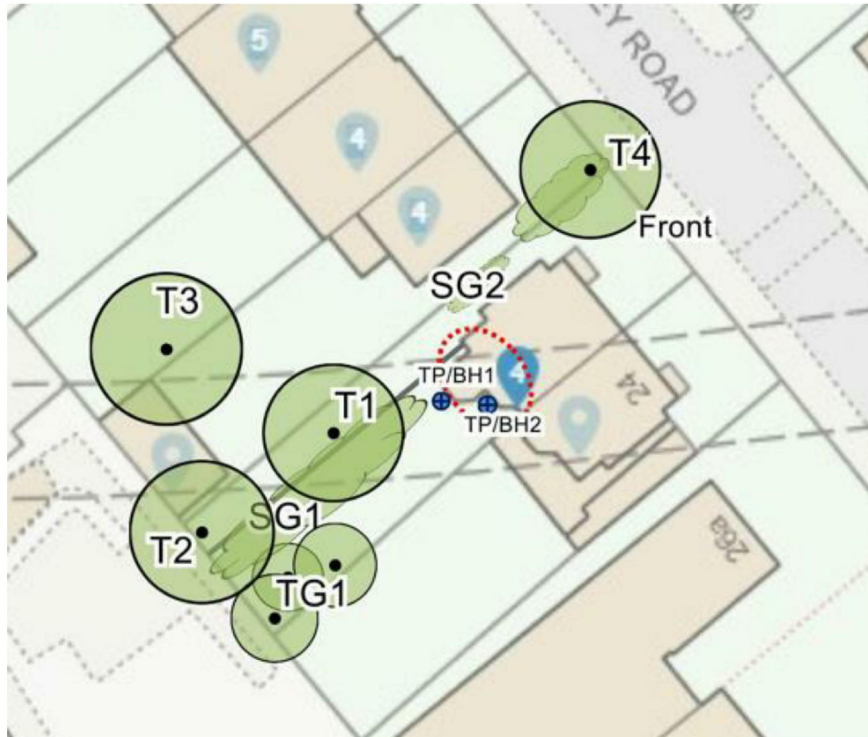
**Table 2 Future Risk - Tree Details & Recommendations**

Tree No.	Species	Ht (m)	Dia (mm)	Crown Spread (m)	Dist. to building (m)	Age Classification	Ownership
T3	Oak	17.5 *	800 *	16.0 *	18.0	Older than extension(s)	Third Party 18 Harley Road NW3 3BN
Management history		Subject to past management/pruning - recently crown reduced.					
Recommendation		No remedial works at present. Periodic management to maintain broadly at current dimensions. To be reviewed if movement persists.					
T4	Tree of Heaven	18.0 *	750 *	13.5	4.0	Younger than Property	Third Party 20 Harley Road NW3 3BN
Management history		Subject to past management/pruning - previously crown reduced.					
Recommendation		No works required at present (subject to review if movement persists).					
TG1	Mixed spp. group of mostly Japanese Maple and Fir	11.5	190	6.0	6.2	Younger than Property	Policy Holder
Management history		No significant past management noted.					
Recommendation		Maintain broadly at no more than current dimensions by periodic pruning.					
SG1	Mixed spp. hedgerow group of mostly Grape, Elder, Pyracantha and Ivy	4.5	70 Ms *	5.0	0.7	Younger than Property	Policy Holder
Management history		No significant recent management noted.					
Recommendation		Reduce height to 2.0m and cut back width to 1.0m to restore to suitably managed hedge. Re-prune thereafter on an annual cycle to maintain at broadly reduced dimensions.					
SG2	Fatsia and Viburnum group	3.0	40 Ms *	4.5	1.9	Younger than Property	Policy Holder
Management history		Subject to past management/pruning - appears regularly trimmed.					
Recommendation		Maintain broadly at no more than current dimensions by periodic pruning.					

Ms: multi-stemmed \* Estimated value

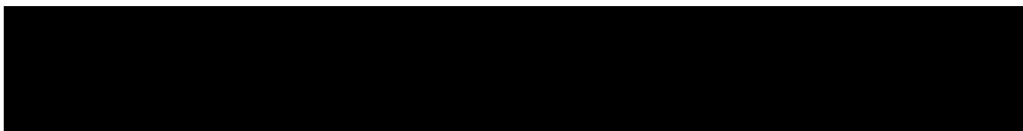


Site Plan



Plan not to scale – indicative only

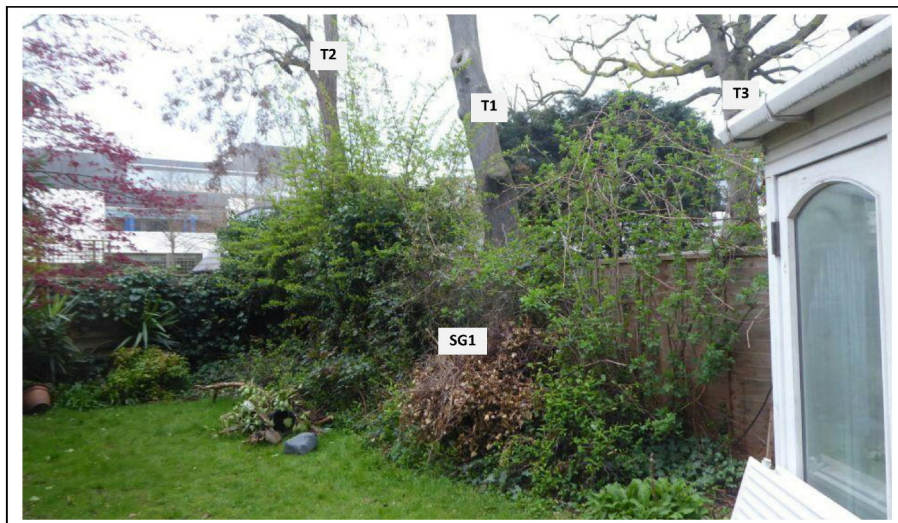
 Approximate areas of damage



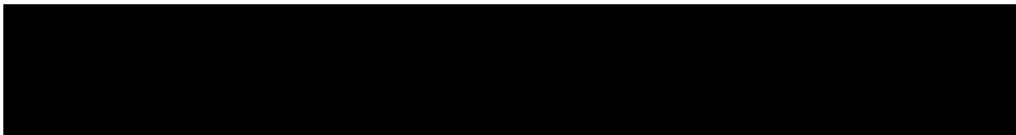
Images



View of T1 Tree of Heaven, T2 False Acacia and T3 Oak



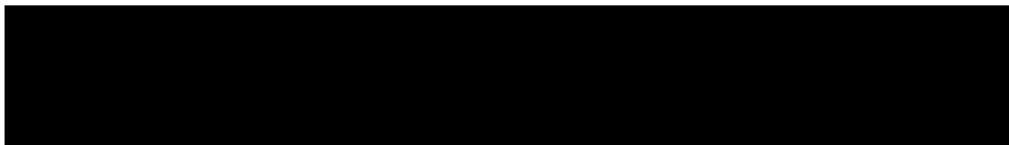
View of SG1 group with stems of T1, T2 and T3 visible beyond







View of TG1 group



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### **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.

