

Arboricultural Appraisal Report

Subsidence Damage Investigation at:

27 Woodfield Way
London
N11 2NP



CLIENT:	Crawford & Company
CLIENT REF:	SU2003608
MWA REF:	SUB210514-8959
MWA CONSULTANT:	Andy Clark
REPORT DATE:	09/06/2021

SUMMARY

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

Introduction

Acting on instructions from Crawford & Company, the insured property was visited on 28/05/2021 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, built c. 1930's and since extended with a part single storey / part two-storey addition to the right-flank.

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 right-hand side extension where cracking indicates downward movement.

At the time of the engineer's inspection (01/10/2020) 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.

The property was the subject of a previous subsidence claim during 2004. A nearby Oak tree was determined as the cause of movement, and a claim lodged against the owners, The Scout Association.

We understand that the original claim against the Scout Association resulted in pruning of the tree and repairs/decorations to the property, however, the damage re-appeared in Summer 2009 which prompted the property to be underpinned. The house has remained stable until the Summer of 2019 when slight cracks were found to be recurring. The policy holder decided to wait and see if the damage returned in Summer 2020 – which it did – which prompted submission of a claim.

Site Investigations

Site investigations were carried out by CET on 07/04/2021, when a single trial pit was hand excavated to reveal the foundations. Two remote boreholes were also sunk to determine subsoil conditions.

Foundations:

Ref	Foundation type	Depth at Underside (mm)
TP1	Concrete - underpin	USF not found – TP abandoned at 1350mm

Soils:

Ref	Description	Plasticity Index (%)	Volume change potential (NHBC)
BH1	Stiff brown-grey veined CLAY to 1500mm, becoming very stiff brown-grey veined silty CLAY with claystone nodules	46 – 47	High
BH2 [remote to rear]	Firm to stiff brown-grey veined silty CLAY, becoming stiff to very stiff wet brown-grey veined silty CLAY with claystone nodules with depth	46 – 48	High

Roots:

Ref	Roots Observed to depth of (mm)	Identification	Starch content
BH1	2700	Quercus spp.	Present
BH2 [remote to rear]	No Roots Observed	N/A	N/A

Quercus spp. are oaks (both deciduous and evergreen)

Drains: No information available at the time of writing.

Monitoring: No information available at the time of writing.

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. A comparison between moisture content and the plastic and liquid limits suggests moisture depletion 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 2.7m bgl in TP/BH1, and recovered samples have been positively identified (using anatomical analysis) as *Quercus* spp.; the origin of which will be the nearby T3 Oak.

Irrespective of the identification of recovered root samples, the roots of other nearby elements of vegetation within the understorey TG2 group will also be influencing the soils in proximity to the area of movement/damage.

Having considered the information currently available, it is our opinion that ongoing presence of the T3 Oak, is the principal cause of the current subsidence damage. The tree will have exerted an ongoing drying influence on the soils below the property and the previous pruning of the tree also appears to have lapsed, which will have resulted in its moisture uptake increasing over recent years.

Given the history of damage and previous attempts to stabilise the property, if an arboricultural solution is to be implemented to mitigate the influence of the oak recommend its removal along with elements of TG2.

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.

Conclusions

- 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
T3	Oak	16.5	1100 *	18.0	18.5	Older than Property	Third Party Scout Park
Management history		Subject to past management/pruning - previously crown reduced.					
Recommendation		Remove (fell) to near ground level and treat stump to inhibit regrowth.					
TG2	Mixed spp. group of mostly Goat Willow, Sycamore and Ash,	9.0	150 Ms *	6.0	3.0	Younger than Property	Third Party Scout Park
Management history		No significant past management noted.					
Recommendation		Remove (fell) all within 8.0m of the building to near ground level and remove regrowth as it emerges [Herbicide translocation risk to remaining Sycamores and Ash] Treat stump of Goat Willow to inhibit further 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
T1	Ash	17.5	750 *	11.0	16.2	Younger than Property	Third Party Scout Park
Management history		Subject to past management/pruning - previously pollarded at approx. 14.0m.					
Recommendation		Re-pollard to previous points and thereafter re-pollard on a triennial cycle to maintain at broadly reduced dimensions.					
T2	Oak	11.9	400 *	9.5	19.0	Similar Age to Property	Third Party Scout Park
Management history		No significant past management noted.					
Recommendation		Maintain broadly at no more than current dimensions by periodic pruning.					
TG1	Mixed spp. group of mostly Sycamore, Ash and Hawthorn,	18.0	700 Ms *	12.0	20.0	Older than extension(s)	Third Party Scout Park
Management history		Subject to past management/pruning – several larger stems recently pollarded at current dimensions.					
Recommendation		Maintain broadly at no more than current dimensions by periodic pruning.					

Ms: multi-stemmed * Estimated value

Site Plan

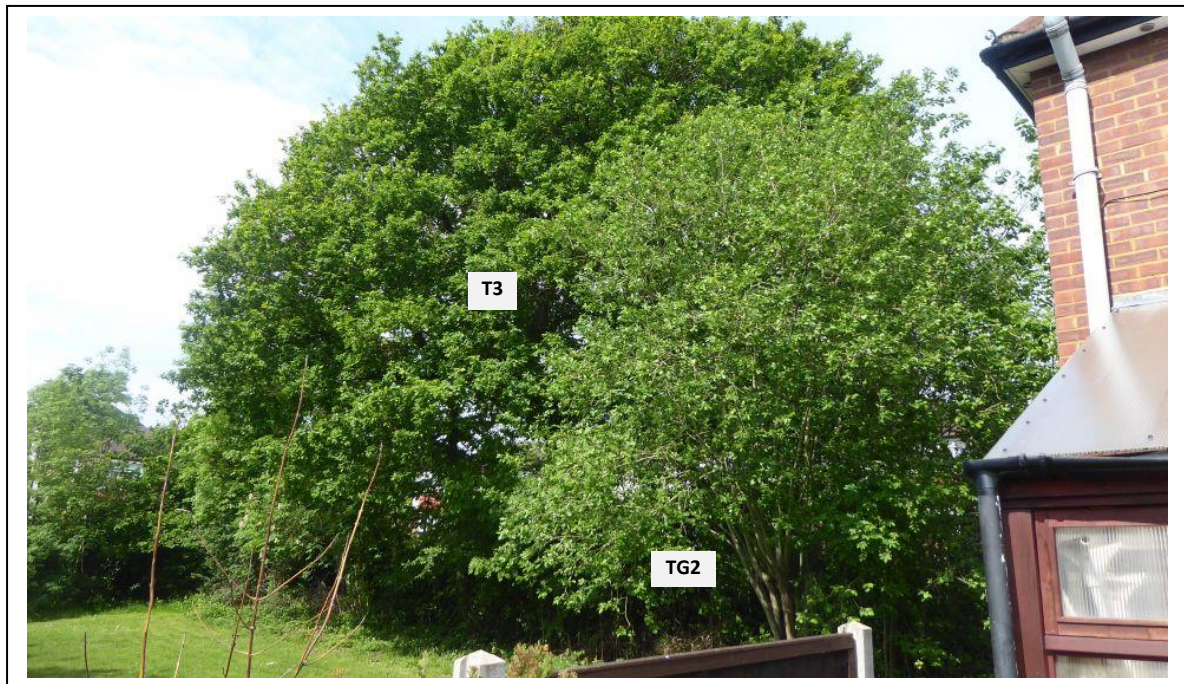


Plan not to scale – indicative only



Approximate areas of damage

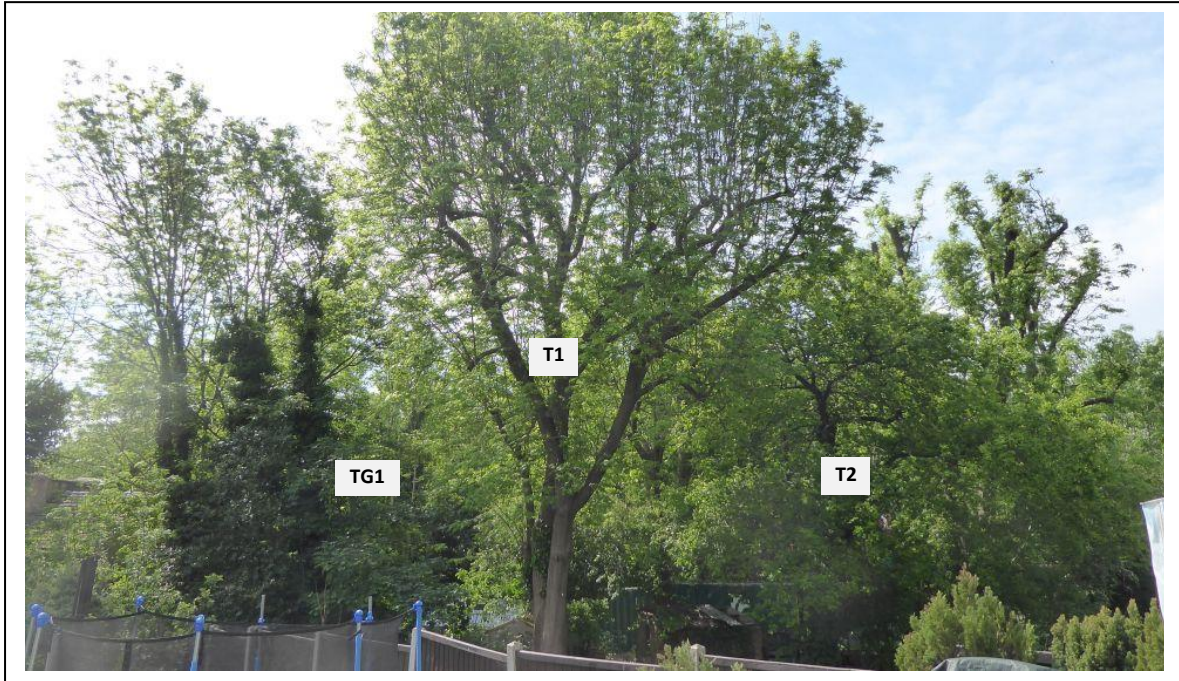
Images



View from property rear of T3 Oak with TG2 group understorey



View from property frontage of T3 Oak with TG2 group understorey



View of T1 Ash, T2 Oak and TG1 group



View of nearby Goat Willow within TG1 group – treat stump to inhibit regrowth

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.