

Arboricultural Appraisal Report

Subsidence Damage Investigation at:

2 Lansdowne Road
London
N17 9XE



CLIENT:	Crawford & Company
CLIENT REF:	SU2201802
MWA REF:	SUB221221-11808
MWA CONSULTANT:	Andy Clark
REPORT DATE:	28/02/2023

SUMMARY

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

Introduction

Acting on instructions from Crawford & Company, the insured property was visited on 03/02/2023 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.

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 end-terrace house of traditional construction, built C.1920.

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 projection and is reported to have first been observed during June 2022.

At the time of the engineer's inspection (05/07/2022) 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.

We have not been made aware of any previous claims.

Site Investigations

Site investigations were carried out by Auger on 01/08/2022, 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.

Foundations:

Ref	Foundation type	Depth at Underside (mm)
TP/BH1	Brick corbel	350
TP/BH2	Brick corbel	200

Soils:

Ref	Description	Plasticity Index (%)	Volume change potential (NHBC)
TP/BH1	Brown fine to medium gravelly silty CLAY	26 – 49	Medium – High
TP/BH2	Brown fine to medium gravelly silty CLAY with occasional sand	19 – 37	Low – Medium

Roots:

Ref	Roots Observed to depth of (mm)	Identification	Starch content
TP/BH1	No Roots Observed	N/A	N/A
TP/BH2	1200	Acer spp.	Absent

Acer spp. includes Sycamore, Maples and Box Elder

Drains: The drains have been surveyed and defects have been identified, however leaking drains are concluded not to be a cause of the current damage.

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 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 1.2m bgl in TP/BH2, and recovered samples have been positively identified (using anatomical analysis) as *Acer* spp.; the origin of which will be the nearby Sycamore stems of TG1 group.

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 TG1 group is removed. 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.

Table 1 Current Claim - Tree Details & Recommendations

Tree No.	Species	Ht (m)	Dia (mm)	Crown Spread (m)	Dist. to building (m)	Age Classification	Ownership
TG1	Group of Sycamore, Sycamore, Elder and Buddleia	10.0	210 Ms *	6.5	1.0	Younger than Property	Third Party St Marys Vicarage N17 9XE
Management history		Subject to past management/pruning - previously crown reduced. Likely lapsed self-sown.					
Recommendation		Remove (fell) all to near ground level and treat stumps to inhibit regrowth.					

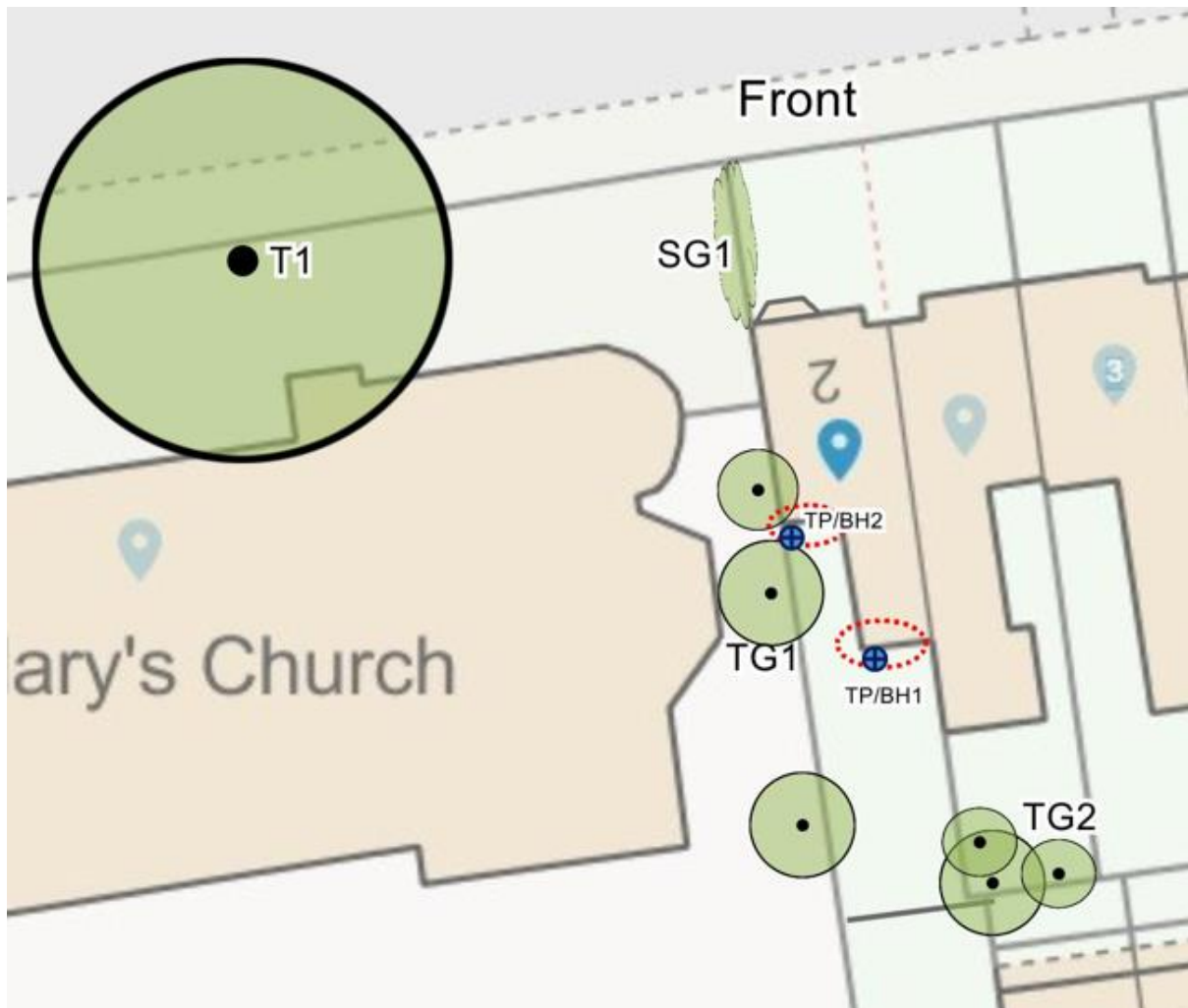
Ms: multi-stemmed * Estimated value

Table 2 Future Risk - Tree Details & Recommendations

Tree No.	Species	Ht (m)	Dia (mm)	Crown Spread (m)	Dist. to building (m)	Age Classification	Ownership
T1	London Plane	22.0	990 *	17.5	18.0 *	Similar Age to Property	Third Party St Marys Church N17 9XE
Management history		Subject to past management/pruning – previously heavily crown reduced/pollarded.					
Recommendation		No works required at present – subject to review if movement persists.					
TG2	Buddleia and Elder group	3.5	50 Ms *	3.0	7.5	Younger than Property	Third Party 4 Lansdowne Road N17 9XE
Management history		No significant past management noted.					
Recommendation		Remove (fell) to near ground level and treat stumps to inhibit regrowth.					
SG1	Laurel and Viburnum group	2.5	50 Ms *	2.5	1.1	Younger than Property	Third Party St Marys Church N17 9XE
Management history		No significant past management noted.					
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 TG1 group



View of SG1 and T1 London Plane

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.