

Arboricultural Appraisal Report

Subsidence Damage Investigation at:

1 Donovan Avenue
London
N10 2JU



CLIENT:	Crawford & Company
CLIENT REF:	SU2202472
MWA REF:	SUB220928-10589
MWA CONSULTANT:	Andy Clark
REPORT DATE:	14/11/2022

SUMMARY

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

Introduction

Acting on instructions from Crawford & Company, the insured property was visited on 05/10/2022 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 2 storey end-terrace house of traditional construction, built C.1908 and since extended 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 front bay window where cracking indicates downward movement. Damage is reported to have first been observed during August 2022.

At the time of the engineer's inspection (01/09/2022) 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.

We have not been made aware of any previous claims.

Site Investigations

Site investigations were carried out by Auger on 13/10/2022, when two trial pits were hand excavated to reveal the foundations, with a borehole sunk through the base of the trial pit to determine subsoil conditions

Foundations:

Ref	Foundation type	Depth at Underside (mm)
TP/BH1	Concrete	650
TP/BH2	Concrete	650

Soils:

Ref	Description	Plasticity Index (%)	Volume change potential (NHBC)
TP/BH1	Brown fine to medium gravelly silty CLAY	41 – 52	High
TP/BH2	Brown fine to medium gravelly silty CLAY	51 – 57	High

Roots:

Ref	Roots Observed to depth of (mm)	Identification	Starch content
TP/BH1	1150	Acer spp.	Present
		Samples too immature to identify	Absent
TP/BH2	2150	Either Pomoideae gp. or [the related] Prunus spp.	Absent

Acer spp. are Maples and Sycamores

Pomoideae gp. are Apple, Pear, Hawthorn, Rowan, Whitebeam, Service tree and Medlar, and shrubs Pyracantha, Chaenomeles, Quince, Amelanchier and Cotoneaster

Prunus spp. are Cherries, Plums and Damsons, Almonds, Peaches and Apricots and Blackthorn/Sloe, as well as the shrubby Cherry laurel and Portuguese-laurel

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.

Roots were observed to a depth of 1.15m bgl in TP/BH1 at the property frontage, and recovered samples have been positively identified (using anatomical analysis) as Acer spp.; the origin of which will be either the Japanese Maple of SG2 group, or the Sycamore T2.

Dead roots (negative Starch test) were also retrieved from TP/BH2 at the rear of the property, however given the absence of damage at the rear these are not considered relevant to the damage affecting the front bay.

Irrespective of the identification of recovered root samples, the roots of the nearby trees and shrubs T1, SG1, CG1 and CG2 are also likely to be present below foundation level in proximity to the area of movement/damage and contributing to the influence of soil moisture and volumes.

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. Having considered the information currently available, it is our opinion that the T2 Sycamore is the likely principal cause of the current subsidence damage, combined with a significant contributory influence from the smaller but more proximal trees and shrubs.

If an arboricultural solution is to be implemented to mitigate the influence of the implicated trees/vegetation we recommend that T2 Sycamore, CG1 Ivy, CG2 Wisteria and the Japanese maple of SG2 are removed, combined with selective removal of shrubs from SG1 group. Given the presence of the Japanese Maple which may also pose a source of the Acer spp. roots as well as the T2 Sycamore, the Local Authority may require confirmation of ongoing movement once the Japanese Maple has been 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
T2	Sycamore	8.5	230	6.0	6.8	Younger than Property	Local Authority
Management history		No significant past management noted.					
Recommendation		Remove (fell) to near ground level and treat stump to inhibit regrowth.					
CG1	Ivy	2.0	30 Ms *	5.5	0.9	Younger than Property	Policy Holder
Management history		Subject to past management/pruning - appears regularly trimmed.					
Recommendation		Remove (fell) to near ground level and treat stump to inhibit regrowth.					
CG2	Wisteria	3.5	40 Ms *	4.5	1.1	Younger than Property	Third Party 1 & 2 Donovan Court N10 2JY
Management history		No significant recent management noted.					
Recommendation		Remove (fell) to near ground level and treat stump to inhibit regrowth.					
SG1	Mixed spp. shrub group of mostly Photinia, Viburnum and Pyracantha	3.0	80 *	2.5	3.4	Younger than Property	Policy Holder
Management history		Subject to past management/pruning - appears regularly pruned.					
Recommendation		Remove (fell) Viburnum and Pyracantha elements to near ground level and treat stumps to inhibit regrowth.					
SG2	Mixed spp. shrub group of mostly Pittosporum, Choisya, Jasmine and Japanese maple	3.0	110	5.0	0.2	Younger than Property	Policy Holder
Management history		Subject to past management/pruning - appears regularly pruned.					
Recommendation		Remove (fell) Japanese Maple to near ground level and treat stump to inhibit regrowth.					

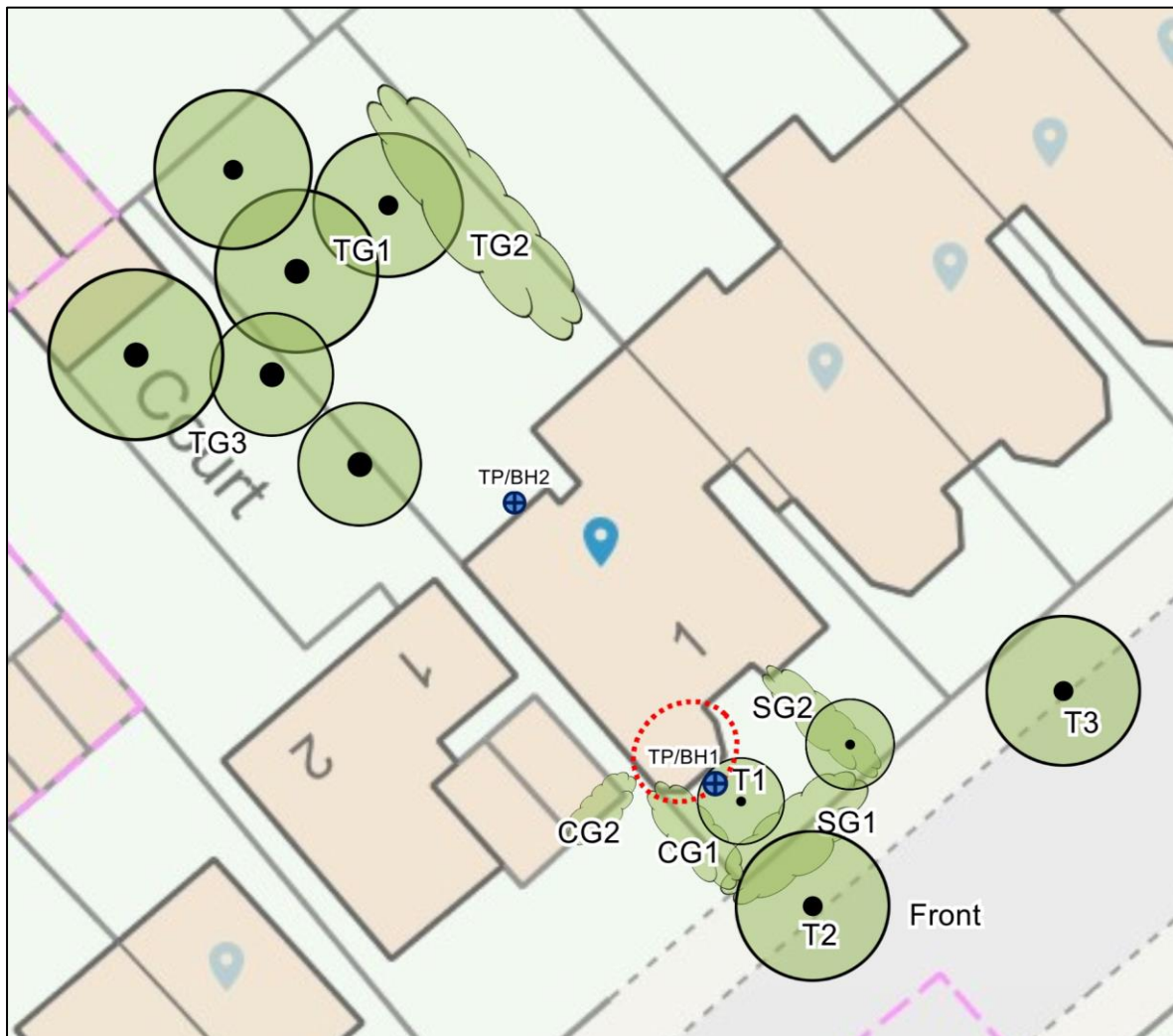
Ms: multi-stemmed * Estimated value

Table 2 Future Risk - Tree Details & Recommendations

Tree No.	Species	Ht (m)	Dia (mm)	Crown Spread (m)	Dist. to building (m)	Age Classification	Ownership
T1	Cercis	2.0	50	2.0	1.5	Younger than Property	Policy Holder
Management history		Subject to past management/pruning - appears regularly pruned.					
Recommendation		Maintain broadly at no more than current dimensions by periodic pruning.					
T3	Sycamore	9.0 *	330	6.5	11.9	Younger than Property	Local Authority
Management history		No significant past management noted.					
Recommendation		Maintain broadly at no more than current dimensions by periodic pruning.					
TG1	False Acacia group	13.5	560 Ms	10.5	14.2	Younger than Property	Policy Holder
Management history		No significant past management noted.					
Recommendation		Maintain broadly at no more than current dimensions by periodic pruning.					
TG2	Mixed spp. shrub group of mostly Apple, Rose, Cotinus, Viburnum and Bay	3.5	100	3.0	2.8	Younger than Property	Policy Holder
Management history		Subject to past management/pruning - appears regularly pruned.					
Recommendation		Maintain broadly at no more than current dimensions by periodic pruning.					
TG3	Mixed spp. shrub group of mostly Holly, Pear and False Acacia	16.5	580 Ms *	9.0	6.6	Younger than Property	Third Party 1 & 2 Donovan Court N10 2JY
Management history		No significant recent 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



Overview of property frontage, with T2 Sycamore to foreground



View of T1 Cercis, with SG1 group and CG1 Ivy and T2 Sycamore visible beyond



View of SG2 group

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.