

Arboricultural Appraisal Report

Subsidence Damage Investigation at:

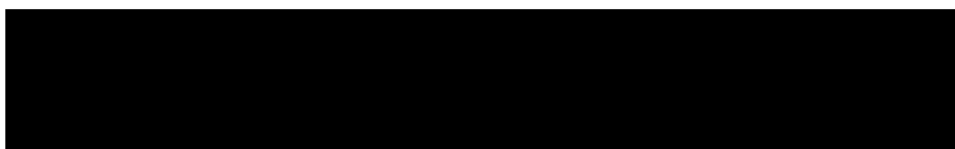
1C Spencer Rise
London
NW5 1AR



CLIENT: Crawford & Company
CLIENT REF: [REDACTED]
MWA REF: [REDACTED]
MWA CONSULTANT: Andy Clark
REPORT DATE: 02/09/2020

SUMMARY

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



Introduction

Acting on instructions from Crawford & Company, the insured property was visited on 27/08/2020 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 3 storey mid-terrace house with a two-storey rear projection of traditional construction, built C.1900.

External areas comprise gardens to the front and rear.

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

Damage Description & History

Damage relates to the central sections of the house primarily around the area where the rear projection abuts the main building. Damage is reported to have first been observed during the summer of 2018 which worsened during 2019 prompting a claim to insurers.

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 surveyor's technical report.

We have not been made aware of any previous claims.



Site Investigations

Site investigations were carried out by CET on 10/06/2020, 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	Crushed brick	625
TP/BH2	Crushed brick	950

Soils:

Ref	Description	Plasticity Index (%)	Volume change potential (NHBC)
TP/BH1	MADEGROUND: soft becoming medium compact brown silty sandy clay with gravel and brick fragments to 1200mm, becoming stiff orange-brown silty CLAY	40 - 46	High
TP/BH2	Firm mid-brown/orange to stiff orange-brown silty CLAY with claystone nodules	41 - 43	High

Roots:

Ref	Roots Observed to depth of (mm)	Identification	Starch content
TP/BH1	1000	Vitaceae spp.	Present
TP/BH2	1600	broadleaved species, too juvenile for positive identification [small sample]	Present
		Probably Prunus spp. [juvenile and decayed sample] and probably Cupressaceae spp. but possibly Taxodiaceae spp. [decayed and small sample]	Absent

Vitaceae spp. include creepers such as Parthenocissus (Virginia creeper), Vitis (grape vine) and Ampelopsis.
Cupressaceae spp. include Lawson cypress, western red cedar, Monterey cypress, Leyland cypress and junipers.
Taxodiaceae spp. include coast redwood, dawn redwood, Wellingtonia and Japanese red cedar.
Prunus spp. include blackthorn, cherry, cherry-laurel, Portuguese laurel, peach, plum, and related species.

Drains: The drains have been surveyed and although defects have been identified, 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.

Roots were observed to a depth of 1.0m bgl in TP/BH1 at the rear of the building and to 1.6m bgl in TP/BH2 at the building frontage, and recovered live samples (positive Starch test) have been positively identified (using anatomical analysis) as Vitaceae spp. and broadleaved species, too juvenile for positive identification.

Dead roots (negative Starch test) were also retrieved and identified as being Probably Prunus spp. [juvenile and decayed sample] and probably Cupressaceae spp. but possibly Taxodiaceae spp. [decayed and small sample].

The origin of the Vitaceae spp. roots retrieved at the rear will be the CG1 grape vine. Although testing negative for Starch, the probably Prunus spp. roots retrieved at the property frontage will likely originate from the policy holders T3 Bird Cherry, but may also originate from the Local Authority T4 Bird Cherry. No Cupressaceae spp. or Taxodiaceae spp. vegetation were observed.

Irrespective of the identification of recovered root samples, the roots of the T1 Ceanothus and the SG1 shrub group at the rear will also be present below the foundations of the rear projection and influencing 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 CG1, T1 and SG1 at the rear and T3 and SG3 at the property frontage will all be contributory factors in the current damage to varying degrees. The T4 Local Authority tree may also be involved, but at present this is equivocal.



If an arboricultural solution is to be implemented to mitigate the influence of the implicated trees/vegetation we recommend that CG1, T1 and SG1 at the rear and T3 and SG3 at the property frontage are all removed in the first instance. If movement persists however then attention will need to turn to the Local Authority T4. Other vegetation recorded presents a potential future risk to building stability and management is therefore recommended.

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. Recommended tree works may however be subject to change upon receipt of additional information.

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
T1	Ceanothus	4.0	130	4.5	2.8	Younger than Property	Policy Holder
Management history		No significant past management noted.					
Recommendation		Remove (fell) to near ground level and treat stump to inhibit regrowth.					
T3	Bird Cherry	5.0	110 Ms	3.0	2.0	Younger than Property	Policy Holder
Management history		Subject to past management/pruning - previously crown reduced.					
Recommendation		Remove (fell) to near ground level and treat stump to inhibit regrowth.					
SG1	Mixed spp. shrubs with Honeysuckle	3.0	20 Ms *	4.5	2.6	Younger than Property	Policy Holder
Management history		No significant past management noted.					
Recommendation		Remove (fell) all to near ground level and treat stump to inhibit regrowth.					
CG1	Grape vine	3.0	45 Ms *	6.5	4.3	Younger than Property	Policy Holder
Management history		Subject to past management/pruning - appears regularly pruned and trained over pergola.					
Recommendation		Remove (fell) all to near ground level and treat stumps to inhibit regrowth.					
SG3	Mixed spp. shrub group of mostly Euonymus, Fuchsia and Rose	2.5	10 Ms *	2.5	1.8	Younger than Property	Policy Holder
Management history		Subject to past management/pruning - appears regularly trimmed.					
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
T2	Cherry with Magnolia	2.5	60	3.0	4.1	Younger than Property	Policy Holder
Management history		No significant past management noted.					
Recommendation		Maintain broadly at no more than current dimensions by periodic pruning.					
T4	Bird Cherry	11.5	300	9.0	3.9	Younger than Property	Local Authority
Management history		Subject to past management/pruning - previously crown reduced.					
Recommendation		No works required at present (subject to review if movement persists).					
T5	Bird Cherry	9.5	250	6.5	6.5	Younger than Property	Local Authority
Management history		Subject to past management/pruning - previously crown reduced.					
Recommendation		No works required at present (subject to review if movement persists).					
TG1	Third party trees - no visibility to identify	7.0	100 Ms *	5.0 *	5.0 *	Younger than Property	Third Party 1 Spencer Rise NW5 1AR
Management history		No significant past management noted.					
Recommendation		No works required at present (subject to review if movement persists).					
SG2	Mixed spp. shrub group of mostly Wisteria, Cotoneaster, Rose and Pyracantha	3.0	30 Ms *	4.0 *	6.0	Younger than Property	Third Party 1B Spencer Rise NW5 1AR
Management history		Subject to past management/pruning - appears regularly pruned.					
Recommendation		Maintain broadly at no more than current dimensions by periodic pruning.					

Ms: multi-stemmed

* Estimated value

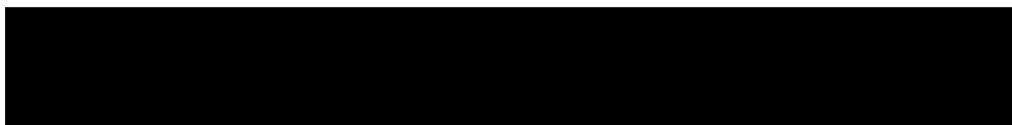


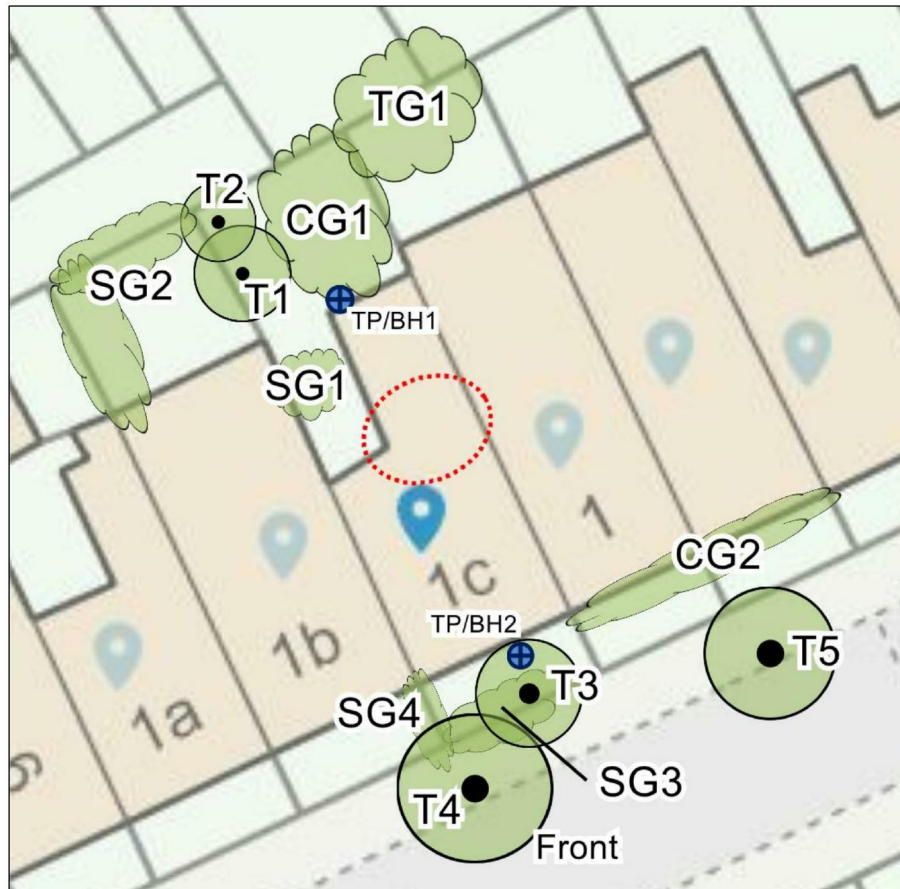
Table 2 **Future Risk - Tree Details & Recommendations (contd.)**

Tree No.	Species	Ht (m)	Dia (mm)	Crown Spread (m)	Dist. to building (m)	Age Classification	Ownership
SG4	Rose group	3.0	50 Ms *	3.0	2.1	Younger than Property	Third Party 1B Spencer Rise NW5 1AR
Management history		Subject to past management/pruning - appears regularly pruned.					
Recommendation		Maintain broadly at no more than current dimensions by periodic pruning.					
CG2	Wisteria group	5.0 *	50 Ms *	8.5 *	5.1	Younger than Property	Joint Third Party 1 Spencer Rise & 3 Spencer Rise NW5 1AR
Management history		No significant past management noted.					
Recommendation		No works required at present (subject to review if movement persists).					


Ms: multi-stemmed * Estimated value



Site Plan



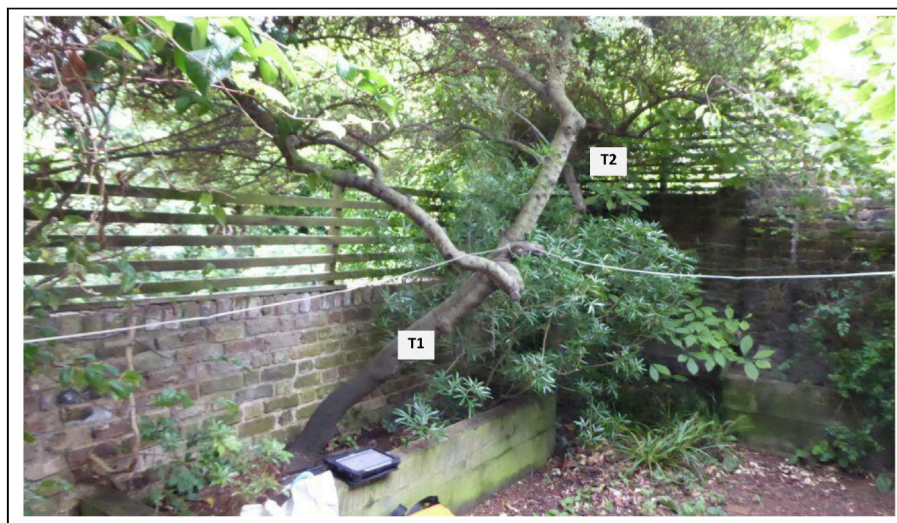
Plan not to scale – indicative only

 Approximate areas of damage

Images



View of CG1 grape vine trained over rear pergola



View of T1 Ceanothus and T2 Cherry with Magnolia



Overview of T3 and T4 Bird Cherry and SG3 mixed spp. shrub group