

## Addendum Arboricultural Report

### Subsidence Damage Investigation at:

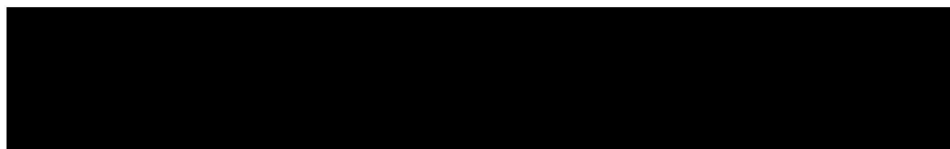
37 Lancaster Grove  
London  
NW3 4HB



CLIENT: Crawford & Company  
 CLIENT REF: [REDACTED]  
 MWA REF: [REDACTED]  
 MWA CONSULTANT: George Peters BSc. (Hons), M.Arbor.A  
 REPORT DATE: 17/12/2020

### SUMMARY

Statutory Controls		Mitigation (Current claim tree works)	
TPO current claim	Yes – T1	Policy Holder	Yes
TPO future risk	No	Domestic 3 <sup>rd</sup> Party	No
Cons. Area	Yes	Local Authority	No
Trusts schemes	No	Other	No
Local Authority: -	London Borough of Camden		



## Introduction

**This is an addendum to our initial report dated 18/07/2019 following receipt of additional site investigation information and level monitoring data.**

Acting on instructions from Crawford & Company, the insured property was visited on 13/07/2019 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 4-storey detached house with partial basement built in circa 1880. External areas comprise gardens to the front and rear.

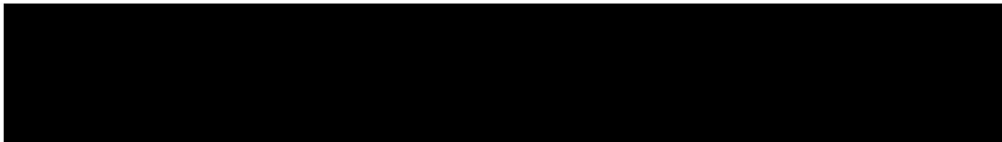
The site is generally level with no adverse topographical features.

## Damage Description & History

Damage relates to the front porch, steps and retaining boundary walls where cracking indicates downward movement. Cracking has been noted to the exterior brickwork and was first noticed October 2018.

At the time of the engineer's inspection (05/02/2019) the structural significance of the damage was found to fall within Category 3 (moderate) of Table 1 of BRE Digest 251.

We have not been made aware of any previous claims.



## Site Investigations

Site investigations were carried out by CET on 16/05/2019, 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. A further visit was made by CET on 26/05/2020 where a trial pit and a trial pit and borehole were excavated.

### Foundations:

SI Date	Ref	Foundation type	Depth at Underside (mm)
16/05/2019	TP/BH1	Clinker	800
16/05/2019	TP/BH2	Clinker	700
26/05/2020	TP1	Crushed brick	1200
26/05/2020	TP/BH2	Weak concrete clinker	930

### Soils:

SI Date	Ref	Description	Plasticity Index (%)	Volume change potential (NHBC)
16/05/2019	TP/BH1	Medium compact to compact orange-brown silty sand	N/A	N/A
16/05/2019	TP/BH2	Medium compact to compact orange-brown sandy silty clay with gravel and brick fragments	10	Low
26/05/2020	TP1	Medium compact dark brown orange sandy silty CLAY with gravel brick and concrete pieces	N/A	N/A
26/05/2020	TP/BH2	Medium compact to compact brown silty sandy with gravel brick and concrete fragments	34 – 48	Moderate - high

### Roots:

SI Date	Ref	Roots Observed to depth of (mm)	Identification	Starch content
16/05/2019	TP/BH1	900 1200 1200	Monocotyledon spp. Monocotyledon spp. Osmanthus/Phillyrea spp. or related shrub species	Positive Negative Positive
16/05/2019	TP/BH2	900 1200	Fagus spp. Fagus spp.	Positive Positive
26/05/2020	TP/BH2	1100 1500 - 4000	Fagus spp. Fagus spp.	Positive Positive

*Monocotyledon spp. include palms, grasses, bamboos and lilies. Osmanthus/Phillyrea spp. are evergreen shrubs with white or cream fragrant flowers. Fagus spp. include common beech and copper beech.*

**Drains:** The drains have been surveyed and no defects identified.

**Monitoring:** Level and crack monitoring is in progress.

## 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.

### 16/05/2019 Site Investigation:

Roots were observed to a maximum depth of 1200mm bgl in TP/BH2. Recovered samples have been positively identified (using anatomical analysis) as *Fagus* spp, the origin of which will be T1 (beech) confirming its influence on the soils below the foundations.

Roots recovered from 1200mm bgl in TP/BH1 also include *Monocotyledon* spp. (originating from T2 (cordyline) and *Osmanthus/Phillyrea* spp. or related shrub species (originating from non-significant vegetation). The recovery of these roots is not significant to the current claim and is not considered further.

### 26/05/2020 Site Investigation:

Roots were observed to a depth of 4000mm bgl in TP/BH2 and recovered samples have been positively identified (using anatomical analysis) as *Fagus* spp., the origin of which will be T1 confirming its influence on the soils below the foundations.

Crack monitoring at the property shows closing of cracks between 05/02/2019 and 14/05/2019. The timing of this movement is consistent with a vegetative influence on soil moisture (and therefore volumes) below foundation level.

Level monitoring at the property between 07/03/2019 and 28/10/2020 has recorded a pattern of movement consistent with the influence of the beech T1 on soil moisture and volumes below foundation level.

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 T1 is the principal cause of the current subsidence damage.



If an arboricultural solution is to be implemented to mitigate the influence of the implicated trees/vegetation we recommend that T1 is removed. 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 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.
- 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	Beech	18 *	1200 *	18	5	Younger than Property	Policy Holder
Management history		No recent management noted. Ganoderma at base.					
Recommendation		Remove (fell) to near ground level and treat stump to inhibit regrowth.					

Ms: multi-stemmed \* Estimated value

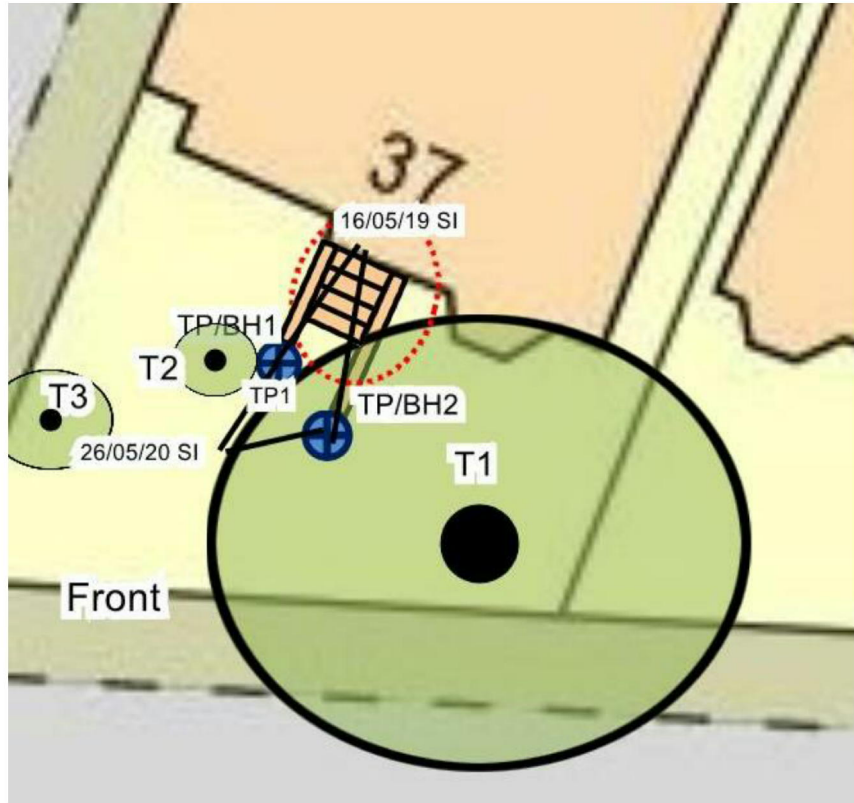
**Table 2 Future Risk - Tree Details & Recommendations**

Tree No.	Species	Ht (m)	Dia (mm)	Crown Spread (m)	Dist. to building (m)	Age Classification	Ownership
T2	Cordyline	4	150	2.5	1	Younger than Property	Policy Holder
Management history		No recent management noted.					
Recommendation		None.					
T3	Willow Leaved Pear	3	120 *	2.8	4.5	Younger than Property	Policy Holder
Management history		No 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



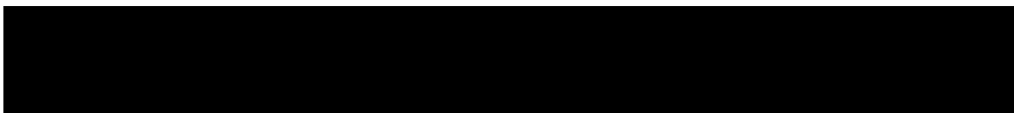
Images



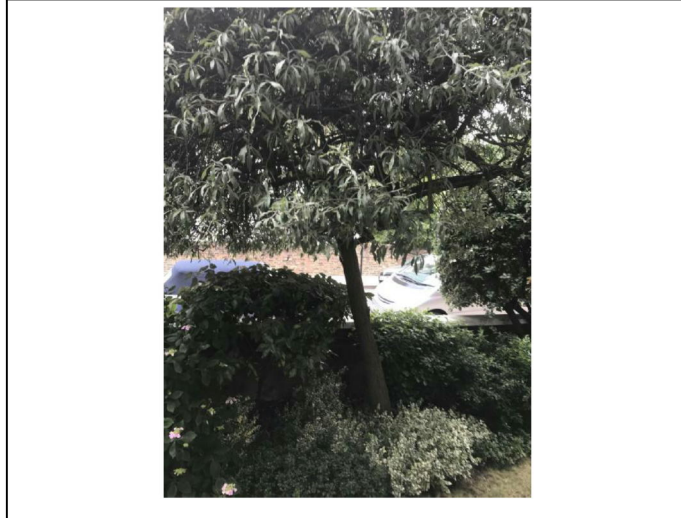
View of T1 Beech



View of T2 Cordyline







View of T2 Willow leaved pear

