Addendum Arboricultural Report

Subsidence Damage Investigation at:

16 Steeles Road
London
NW3 4SH

CLIENT: Crawford & Company
CLIENT REF: [redacted]
MWA REF:
MWA CONSULTANT:
REPORT DATE: 07/05/2024

SUMMARY

Statutory Controls			Mitigation (Current claim tree works)	
TPO current claim	No		Policy Holder	Yes
TPO future risk	Yes – T8		Domestic 3rd Party	Yes
Cons. Area	Yes		Local Authority	Yes
Trusts schemes	No		Other	No
Local Authority: -	London Borough of Camden			

[redacted]

Introduction

This is an addendum to our initiall report dated 27/11/2023 following confirmation from Crawford & Company that the movement observed to the rear of the property is associated with clay shrinkage subsidence. Satellite level monitoring has also been made available and has been considered as supporting evidence.

The insured property was visited on 16/05/2023 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.

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 three-storey mid-terrace with a basement. The building is of traditional construction and appears to have been built in the late 1800's to early 1900's. We understand that the building is divided into several self-contained apartments.

External areas comprise gardens to the front and rear.

The site is generally level with no adverse topographical features.

Damage Description & History

Damage throughout the property been observed for at least the last 2 years and relates to the front elevation, the left-side party wall and the rear elevation of the garden room. 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.

[redacted]

Site Investigations

Site investigations were carried out by Auger on 18/01/2023, when a single trial pit was hand excavated in an attempt to reveal the foundations at the rear of the property. The foundation depth was undetermined, but appears to be at least 1600mm in depth. 2 remote boreholes were carried out to determine subsoil conditions (BH1 & BH2), one at the front of the property and the other to the rear in proximity to TH2.

Foundations:

Ref	Foundation type	Depth at Underside (mm)
TH2	Concrete (Rear extension)	>1600

Soils:

Ref	Description	Plasticity Index (%)	Volume change potential (NHBC)
BH1	Fine to medium gravelly silty CLAY	44 - 46	High
BH2	Fine to medium gravelly silty CLAY	34 - 44	Medium - High

Roots:

Ref	Roots Observed to depth of (mm)	Identification	Starch content
BH1	1500	*Acer* & Herbaceous (non-woody)	Present
BH2	1600	*Acer*	Present

Acer is a genus which includes sycamore, Norway maple, field maple and Japanese maple.

Drains: No information available at the time of writing.

Monitoring: Satellite monitoring data has been provided with readings available from 13/05/2021 to 23/05/2023.

We understand that level monitoring is scheduled to be installed on the property, with a deep datum being used to generate the level readings. We await further information in this regard.

[redacted]

Discussion

Opinion and recommendations in this report are made on the understanding that Crawford & Company are satisfied that the current building movement and the associated damage may be the result of clay shrinkage subsidence.

Site investigations and soil test results have confirmed the presence of a plastic clay subsoil susceptible to undergoing volumetric change in relation to changes in soil moisture contents. The tested soil samples were taken from boreholes offset from the building (BH1 & BH2).

Roots were observed to a depth of 1.5m bgl in BH1 and 1.6m bgl in BH2 and recovered samples have been positively identified (using anatomical analysis) as *Acer*. Those found in BH1 will originate from T4 sycamore, with those taken from BH2 pertaining to T9 Japanese maple. The herbaceous roots found in BH1 are not considered relevant. It should be noted that these samples were also taken from boreholes remote from the foundations of the building.

Satellite level monitoring data has recorded a cyclical pattern of movement consistent with seasonal volumetric change in a clay subsoil.

Based on the information currently available, engineering opinion and our own site assessment we conclude there is damage consistent with shrinkage of the clay fraction which is likely being exacerbated by the soil drying effects of vegetation.

If an arboricultural solution is to be implemented to mitigate the influence of the trees/vegetation considered to be responsible for the movement/damage, works set out at Table 1 below are recommended.

Where other vegetation recorded presents a potential future risk to building stability, management is recommended (see Table 2).

Consideration has been given to pruning alone as a means of mitigating vegetation influence, however in this case, this is not considered to offer a viable long-term solution due to the species characteristics, size and proximity of the responsible vegetation to the area of damage.

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

Table 1 **Current Claim** - Tree Details & Recommendations

Tree No.	Species	Ht (m)	Dia (mm)	Crown Spread (m)	Dist. to building (m)	Age Classification	Ownership
T4	Sycamore	15 *	350	7 *	9	Younger than Property	Local Authority
Management history		Subject to past management/pruning.					
Recommendation		Remove (fell) to near ground level and treat stump to inhibit regrowth.					
T6	Lilac	5	140	5	4.8	Younger than Property	Policy Holder
Management history		Ivy infested. No recent management noted.					
Recommendation		Remove (fell) to near ground level and treat stump to inhibit regrowth.					
T7	Cherry	7 *	160	5	4.8	Younger than Property	Third Party 15 Steeles Road NW3 4SH
Management history		No recent management noted.					
Recommendation		Remove (fell) to near ground level and treat stump to inhibit regrowth.					
G1	Including viburnum, tree fern, rose, pyracantha, jasmine, fatsia, solanum, ivy	Up to 4	Up to 70 *	Up to 3	1.6	Younger than Property	Policy Holder
Management history		No recent management noted.					
Recommendation		Remove all woody vegetation growing within 6m of building to near ground level. Maintain retained elements at broadly no more than current dimensions by periodic pruning.					
G2	Including viburnum, lilac, choisya, ceanothus	Up to 3 *	Up to 70 Ms *	Up to 3	3	Younger than Property	Third Party 17 Steeles Road NW3 4SH
Management history		No recent management noted.					
Recommendation		Remove all woody vegetation growing within 5m of building to near ground level. Maintain retained elements at broadly no more than current dimensions by periodic pruning.					

Ms: multi-stemmed * Estimated value

T - Tree; TG - Tree group; G – Group; H - Hedge; S - Shrub; SG - Shrub group; C - Climber; W – Woodland; ST - Stump

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	Plane (London)	18	620	8	8	Younger than Property	Local Authority
Management history		Subject to past management/pruning.					
Recommendation		No works at present. Subject to review upon the receipt of supporting evidence.					
T2	Plane (London)	17	650 *	9 *	18	Younger than Property	Local Authority
Management history		Subject to past management/pruning.					
Recommendation		No works at present.					
T3	Cotoneaster	6	170 *	5.5 *	4 *	Younger than Property	Third Party 17 Steeles Road NW3 4SH
Management history		No recent management noted.					
Recommendation		No works at present.					
T5	Plane (London)	18.5 *	700 *	9 *	20	Younger than Property	Local Authority
Management history		Subject to past management/pruning.					
Recommendation		No works at present. Subject to review upon the receipt of supporting evidence.					
T8	Aesculus flava	16 *	500 Ms *	8 *	11	Younger than Property	Third Party 20 Eton Villas NW3 4SG
Management history		Subject to past management/pruning.					
Recommendation		Do not allow to exceed current dimensions. Subject to review upon the receipt of supporting evidence.					

Ms: multi-stemmed * Estimated value

T - Tree; TG - Tree group; G – Group; H - Hedge; S - Shrub; SG - Shrub group; C - Climber; W – Woodland; ST - Stump

Table 2 **Future Risk** - Tree Details & Recommendations Cont'd

Tree No.	Species	Ht (m)	Dia (mm)	Crown Spread (m)	Dist. to building (m)	Age Classification	Ownership
T9	Maple (Japanese)	7 *	220 Ms *	5	7 *	Younger than Property	Third Party 18 Steeles Road NW3 4SH
Management history		No recent management noted.					
Recommendation		Do not allow to exceed current dimensions. Subject to review upon the receipt of supporting evidence.					
T10	Magnolia (tentative - limited view)	9 *	400 *	7 *	14 *	Younger than Property	Third Party 19 Steeles Road NW3 4SH
Management history		Recently reduced/pruned.					
Recommendation		No works at present. Subject to review upon the receipt of supporting evidence.					
T11	Plane (London)	7 *	165	7	11	Younger than Property	Local Authority
Management history		No recent management noted.					
Recommendation		No works at present.					
T12	Plane (London)	13	240	8	7 *	Younger than Property	Local Authority
Management history		Regularly pruned.					
Recommendation		No works at present.					
G3	Including lilac, viburnum, privet, Elaeagnus, cotoneaster	Up to 5 *	Up to 70 Ms *	Up to 4 *	1 *	Younger than Property	Third Party 15 Steeles Road NW3 4SH
Management history		Subject to past management/pruning.					
Recommendation		Remove viburnum and cotoneaster. Reduce privet to 2.0m max height and prune back sides and maintain at reduced dimensions.					

Ms: multi-stemmed * Estimated value

T - Tree; TG - Tree group; G – Group; H - Hedge; S - Shrub; SG - Shrub group; C - Climber; W – Woodland; ST - Stump

Table 2 **Future Risk** - Tree Details & Recommendations Cont'd

Tree No.	Species	Ht (m)	Dia (mm)	Crown Spread (m)	Dist. to building (m)	Age Classification	Ownership
G4	Including kiwi, rose, jasmine, wisteria, vine, prunus, elder, ash	Up to 7 *	Up to 100 Ms *	Up to 3	13 *	Younger than Property	Third Party 15 Steeles Road NW3 4SH
Management history		No recent management noted.					
Recommendation		No works at present.					

Ms: multi-stemmed *** Estimated or approximate value**

T - Tree; TG - Tree group; G – Group; H - Hedge; S - Shrub; SG - Shrub group; C - Climber; W – Woodland; ST - stump

Distance to building measurements are to the nearest point of the building unless otherwise stated.
Tree dimensions may be estimated or approximate based on accessibility.
Crown spread values are normally an estimate of the maximum spread but note tree crowns may be asymmetrical.

[redacted]

Site Plan

Plan not to scale – indicative only

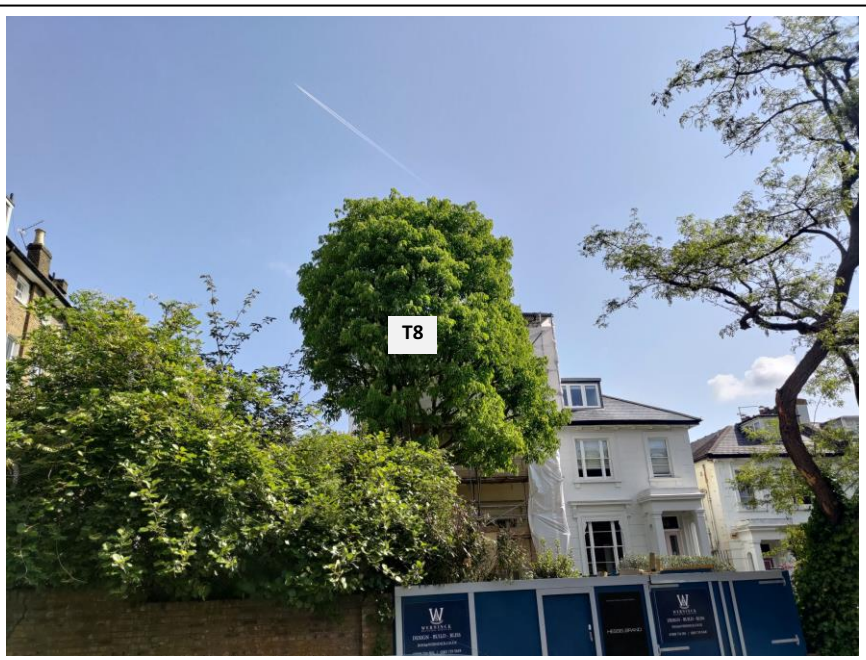
Approximate areas of damage

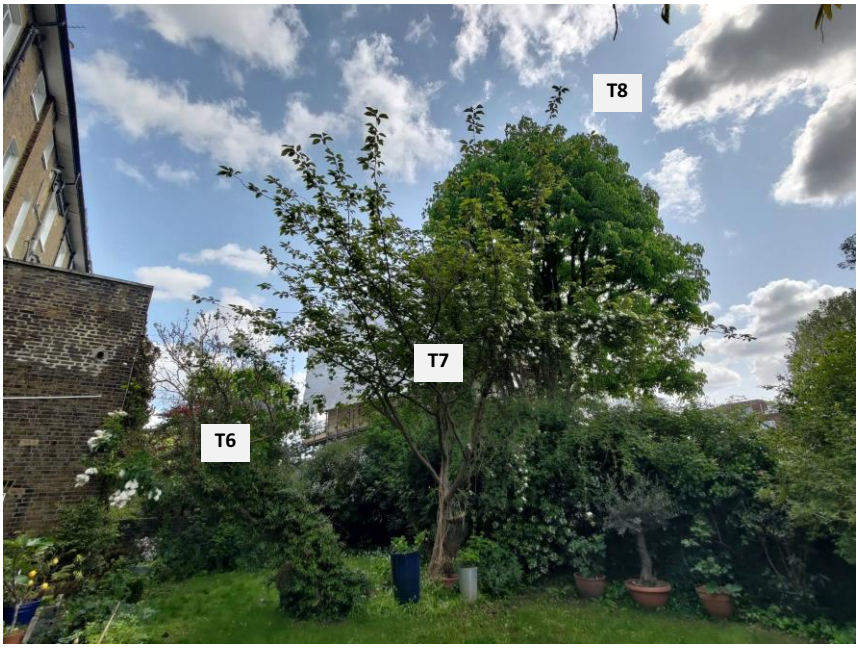
Images


G3
T1


T2
T4
T1
T5
G3


T12
G4


T8


T8
T7
T6


T9
T10


T6
G1


T4
T3
T5

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.