Arboricultural Appraisal Report

Subsidence Damage Investigation at:

23 Rochester Square
London
NW1 9SA

CLIENT:	Crawford & Company
CLIENT REF:	SU1703328
MWA REF:	SUB171121-1892
MWA CONSULTANT:	Andy Clark
REPORT DATE:	04/12/2017

SUMMARY

Statutory Controls			Mitigation (current claim works)	
TPO	No (current claim) No (future risk)		Insured	Yes
Cons. Area	Yes		3rd Party	Yes
Trusts schemes	N/A		Local Authority	No
Planning	N/A		Other	No
Local Authority: -	London Borough of Camden			

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Introduction

Acting on instructions received from Crawford & Company, the insured property was visited on 02/12/2017 for the purpose of assessing 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 semi-detached house of traditional construction built in C.1840. There is a single-storey extension to the rear which is believed to be part of the original structure.

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 elevation and the rear addition where cracking indicates downward movement. Damage is reported to have first been noted in July 2017, following a report by the left-hand neighbouring 24 Rochester Square that the property was suffering from crack damage.

We have not been made aware of any previous claims.

At the time of the engineers' inspection (03/10/2017) the structural significance of the damage was found to fall within Category 2 (Slight) of Table 1 of BRE Digest 251.

Site investigations

Site investigations were carried out by Auger Site Investigations Ltd. on 11/10/2017, when a single trial pit was 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)
TP1	Brick	250

Soils:

Ref	Description	Plasticity Index (%)	Volume change potential (NHBC)
TP/BH1	Brown slightly fine gravelly slightly sandy silty CLAY	38 - 39	Medium

Roots:

Ref	Roots Observed to depth of (mm)	Identification	Starch content
TP/BH1	1600	Salicaceae spp. [Salix (Willows) and Populus (Poplars)]. Tentative – Immature sample.	Absent

Drains: Site Investigations did not reveal any suggestion that leakage from drainage is adversely affecting the property and so a drainage investigation was considered unnecessary.

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 of medium volume change potential (NHBC Classification) susceptible to undergoing volumetric change in relation to changes in soil moisture. A comparison between moisture content and the plastic and liquid limits suggests that at the time of sampling the soil was desiccated in TP/BH1 at depths beyond normal ambient soil drying processes, such as evaporation, which is indicative of the soil drying effects of vegetation.

Shear vane testing of the substrate indicates that it is sufficiently consolidated to bear the imposed load and as such the damage cannot be attributed to consolidation settlement. This is borne out by the relative age of the building and the recent appearance of damage.

Roots were observed to a depth of 1.6m bgl in TP/BH1 and recovered samples have been tentatively identified (using anatomical analysis) as Salicaceae spp.; the origin of which will be T3 Weeping Willow as the only Salicaceae spp. nearby, suggesting the influence of this tree on the soils below the foundations to the rear of the property.

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 available information, it is our opinion that T3 Weeping Willow is the principle cause of the current subsidence damage to the rear of the property, with contribution from T1 Bay and S1 Ivy.

If an arboricultural solution is to be implemented to mitigate the current damage and allow the soils beneath the rear of the property to recover to a position such that an effective repair solution can be put in place, we recommend that T1 Bay, S1 Ivy and T3 Weeping Willow are removed.

With regards to the damage to the front of the property, the magnolia T4 and eucalyptus within TG1 are potential influences on soil moisture and volumes. We also note a substantial climber (possibly wisteria) has been removed from the front elevation of the neighbouring property to the left which may also have been influencing the soils.

There is however currently no evidence to confirm this opinion and further site investigations to the front of the property would be beneficial.

Nevertheless, the removal of both T4 and the eucalyptus offers the most predictable arboricultural solution.

Consideration has been given to pruning 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.

Replacement planting may be considered subject to species choice and planting location.

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	Laurel (Bay)	6.5	270	5.0	3.9	Younger than Property	Policy Holder
Management history		Subject to past management – appears regularly trimmed					
Recommendation		Fell to ground level and treat stumps to inhibit regrowth					
T3	Willow (Weeping)	15.0	600	12.0	18.0 *	Younger than Property	Third Party:- 25 Rochester Square
Management history		No past management noted					
Recommendation		Fell to ground level and treat stumps to inhibit regrowth					
T4	Magnolia	6.0	120	2.6	1.4	Younger than Property	Policy Holder
Management history		Subject to past management – appears recently crown reduced					
Recommendation		Remove to near ground level					
S1	Ivy	2.5	20 Ms	1.5	1.0	Younger than Property	Policy Holder
Management history		No past management noted. Trained over party wall and addition roof					
Recommendation		Fell to ground level and treat stumps to inhibit regrowth					
TG1	Eucalyptus and Leyland Cypress group	14.0	500	14.0	14.0	Younger than Property	Third Party:- 1 Rochester Square
Management history		Subject to past management – Eucalyptus recently heavily crown reduced <1yr					
Recommendation		Fell Eucalyptus to ground level and treat stumps to inhibit regrowth Leyland Cypress - Do not allow to exceed current dimensions					

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	Horse Chestnut	11.5	710	10.0	11.4	Younger than Property	Policy Holder
Management history		Subject to past management - pollarded in past at approx. 5.0m					
Recommendation		Re-pollard at previous pollard-heads and retain on a regular [quinquennial] re-pollarding cycle					
T5	Cherry	7.5	240	7.5	5.8	Younger than Property	Third Party:- 24 Rochester Square
Management history		Subject to past management – appears recently crown reduced					
Recommendation		Do not allow to exceed current dimensions					
H1	Privet	3.0	40 Ms	2.0	1.0 [closest stem]	Younger than Property	Policy Holder
Management history		Subject to past management – appears regularly trimmed					
Recommendation		Do not allow to exceed current dimensions					
H2	Privet	2.0	30 Ms	1.0	3.8	Younger than Property	Policy Holder
Management history		Subject to past management.					
Recommendation		Do not allow to exceed current dimensions.					

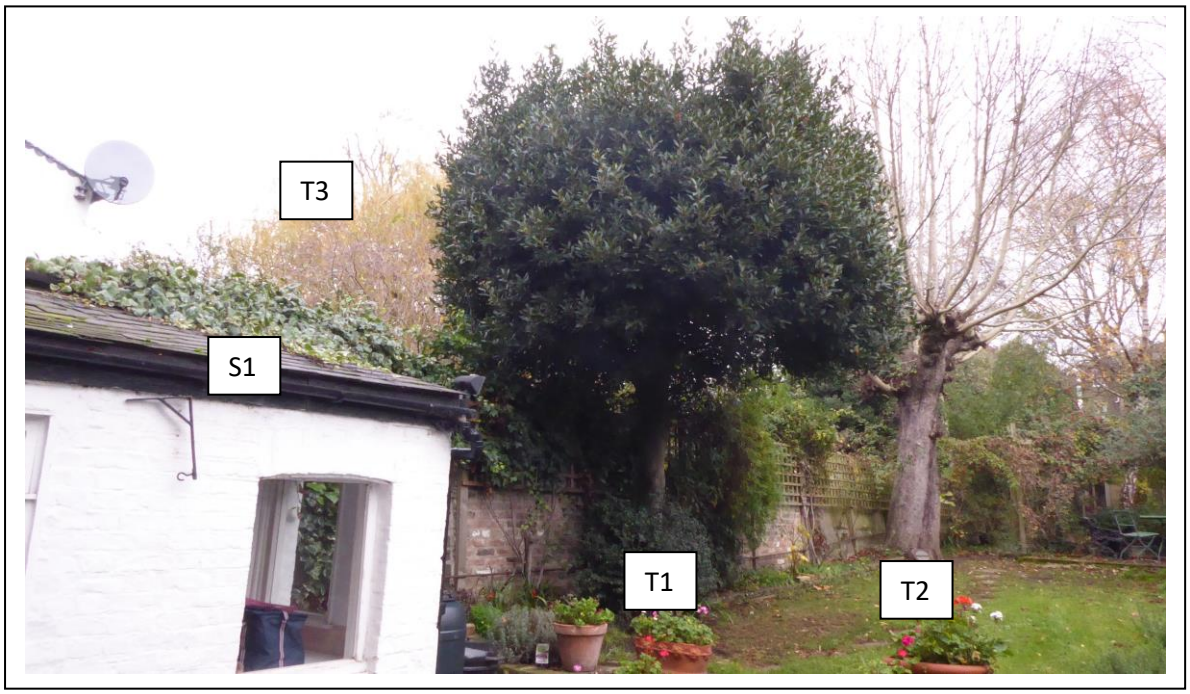
Ms: multi-stemmed * Estimated value

SITE PLAN

Plan not to scale – indicative only

Approximate areas of damage

Images



View of T1 Bay, T2 Horse Chestnut and S1 Ivy [T3 Weeping Willow also visible to rear of T1 Bay]

View of T3 Weeping Willow

View of T4 Magnolia, T5 Cherry and H1 and H2 Privt

Overview of TG1 Eucalyptus and Leyland Cypress group in relation to T4 Magnolia and T5 Cherry