Arboricultural Appraisal Report

Subsidence Damage Investigation at:

32 Heath Hurst Road
London
NW3 2RX

CLIENT:	Crawford & Company
CLIENT REF:	SU1204069
POLICYHOLDER:	Mr Andre & Mrs Myra Polya
MWA REF:	NW070113.01DW-REV1
MWA CONSULTANT:	David Williams (N.D.Arb MArborA)
REPORT DATE:	02 September 2013

SUMMARY

Statutory Controls			Mitigation	
TPO	No		Insured	Yes
Cons. Area	Yes		3rd Party	No
Trusts schemes	No		Local Authority	Yes
Planning	No		Other	No
Local Authority: -	London Borough of Camden			

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Introduction

Acting on instructions received from Crawford and Company, the insured property was visited on 14 January 2013 for the purpose of assessing the potential role of vegetation in respect of clay-shrinkage subsidence damage. Access was not possible to the rear of the insured property during our survey.

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 given 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.

This is a revision of our original report and reflects level monitoring data collected over the summer.

Property Description

The property comprises a four storey semi detached property with a two storey front bay window construction dating back to c.1900.

Externally there is an open front garden area abutting the highway. The property occupies a plot that slopes downhill slightly from left to right.

Damage Description & History

The current damage is focused around the front elevation including the porch and bay window where engineers have recorded internal and external cracking thought indicative of downward movement of the insured property.

A previous claim for subsidence was repudiated in 2003 after further investigations.

At the time of the engineers' inspection during October 2012 the structural significance of the damage was found to fall within Category 2 (slight) of BRE Digest 251.

Site investigations

Site investigations were carried out on 12th December 2012 when two trial pits were excavated to reveal the foundations, with a borehole being sunk through the base of each trial pit to determine subsoil conditions.

Foundations:

Ref	Foundation type	Depth at Underside (mm)
EH1	Concrete (underpinning)	1200
EH2	Clinker	800

Soils:

Ref	Description	Plasticity Index (%)	Volume change potential (NHBC)
EH1	Firm to stiff brown CLAY	54.0	High
EH2	Firm to stiff brown CLAY	56.0	High

Roots:

Ref	Roots Observed to (mm)	Identification	Starch content
EH1	1500	Platanus spp	Present
EH1	1500	Hydrangea spp.	Present
EH2	1500	Euonymus spp.	Present

Drains: The drains have been tested and no significant defects identified.

Monitoring: Level monitoring between February 2013 and July 2013 records downward movement between May and July.

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.

The current damage is focused around the front bay and porch and we have recorded vegetation with the ability to influence soil volumes beneath this area of the insured property.

Site investigations and soil test results have confirmed a plastic clay subsoil of high volume change potential (NHBC Classification) susceptible to undergoing volumetric change in relation to changes in soil moisture. The results of in-situ penetrometer testing records compressive soil strengths above those expected for London CLAY and along with the results of Oedometer stain testing indicates a zone of desiccation between 2000mm and 2250mm.

The desiccation in both boreholes is at depths beyond normal ambient soil drying processes such as evaporation and is indicative of the soil drying effects of a large deciduous tree like the plane, T1.

Roots were observed to 1500mm in EH1 and confirm the trespass of roots originating from T1. Other roots recovered were from shrubs forming SG1.

The local authority plane tree, T1, was pollarded during early 2013 and despite these works level monitoring has recorded significant downward movement during the period May 2013 to July 2013. Further movement can be expected into September 2013 based on recent weather patterns.

Based on the technical reports currently available, engineering opinion and our own site assessment we conclude the damage is indicative of shrinkage of the clay subsoil the dominant cause of which is the drying action of roots originating from T1. However, the secondary role of the policyholders vegetation cannot be ruled out and hence removal of C1, T2 and part of SG1 is recommended to ensure a timely return to stability once local authority mitigation works have been fully completed.

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.

- Removal of tree T1 is recommended together removal of policy holder's vegetation. The current damage underlines that pruning to control the moisture demands of large trees close to buildings is unreliable and ineffective.

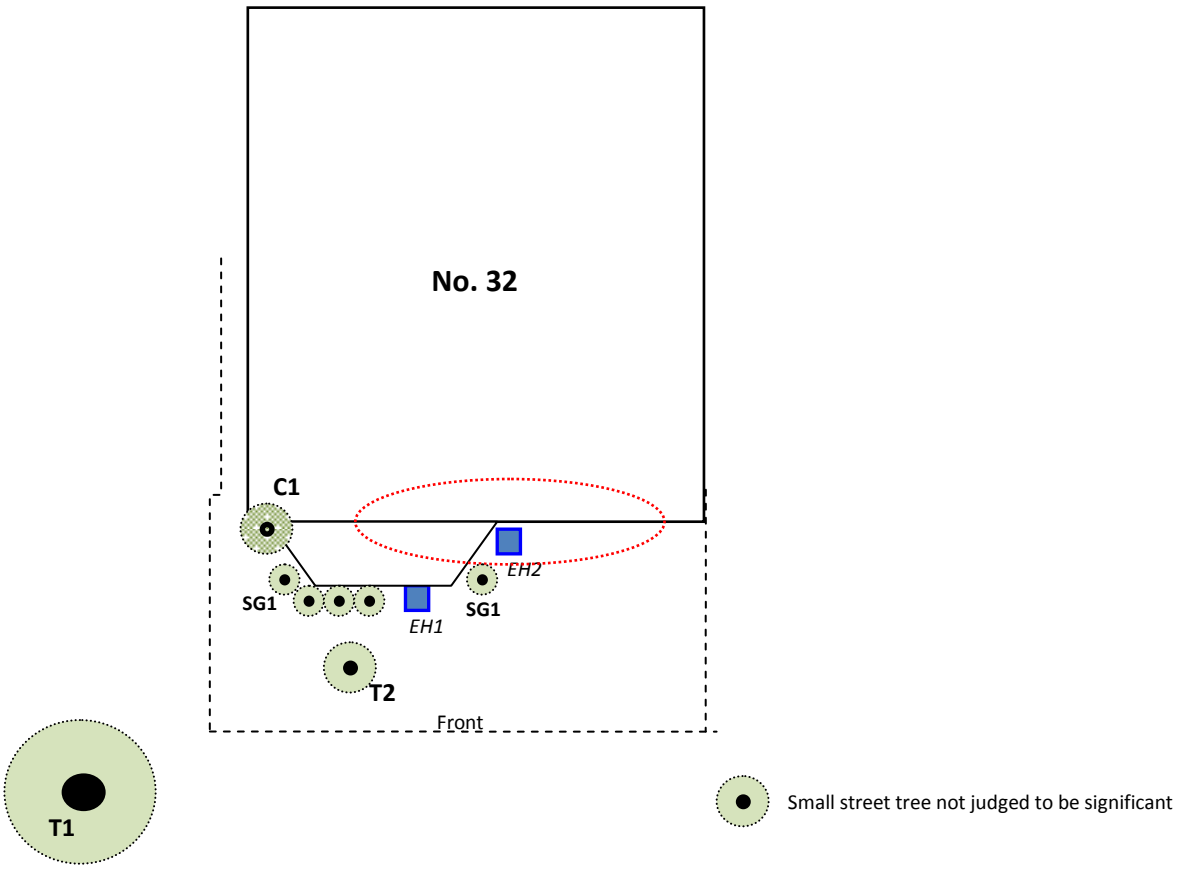
- Monitoring of building levels supports current claim recommendations.

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

Tree No.	Species	Ht (m)	Dia (cm)	Crown Spread (m)	Dist. to building (m)	Age Classification	Ownership
T1	Plane	9.0	65	5.0	6.0-7.0	Younger than property	Local Authority
Management history		Subject to recent high pollard removal works					
Recommendation		Remove and treat stump by appropriate means to prevent regrowth					
T2	Cherry	3.0-4.0	18	2.3	2.0	Younger than property	Policy Holder
Recommendation		Remove and treat stump to inhibit re growth					
C1	Wisteria	7.0	M/S	6.0	0.0	Younger than property	Policy Holder
Recommendation		Remove and treat stump(s) to inhibit re growth					
SG1	Camellia, Hydrangea, Viburnum, Euonymus	1.0+	M/S	2.5	0.3	Younger than property	Policy Holder
Recommendation		Remove and treat stump(s) to inhibit re growth all shrubs with the exception of the Camellia.					

Ms: multi-stemmed * Estimated value

SITE PLAN



Plan not to scale – indicative only

Approximate areas of damage

Images

View of front elevation and garden