Arboricultural Appraisal Report

Subsidence Damage Investigation at:

31 Heath Hurst Road
London
NW3 2RU

CLIENT:	Crawford & Company
CLIENT REF:	1308651
MWA REF:	SUB161104-830
MWA CONSULTANT:	David Williams (N.D.Arb MArborA)
REPORT DATE:	17-11-2016

SUMMARY

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

MWA Arboriculture Ltd
Bloxham Mill Business Centre
Barford Rd, Bloxham
Banbury
OX15 4FF

Tel: 0191 432 9560
Email: office@mwaarboriculture.co.uk

Introduction

Acting on instructions received from Crawford & Company, the insured property was visited on 09/11/2016 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 semi-detached three storey dwelling with a two storey front bay window construction.

External areas comprise gardens to the front and rear occupying a predominantly level plot.

Damage Description & History

The current damage affects the front of the insured dwelling where internal damage is focused around the entrance porch, ground/first floor rooms and bay window. External cracking has been observed to the two storey bay window.

Damage was first observed during July 2016 and after visibly worsening, reported to insurers during August.

At the time of the engineers' inspection during September 2016, 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 CET on 27th September 2016 when a single trial pit was excavated to reveal the foundations, with a borehole being sunk through the base of the trial pit to determine subsoil conditions.

Foundations:

Ref	Foundation type	Depth at Underside (mm)
TH1	Crushed brick-rubble	475

Soils:

Ref	Description	Plasticity Index (%)	Volume change potential (NHBC)
BH1	Very stiff orange-brown silty CLAY	51-57	High – Very-high

Roots:

Ref	Roots Observed to depth of (mm)	Identification	Starch content
BH1	U/S/F	*Fraxinus spp. & Viburnum spp.*	Present
BH1	1300	Cupressaceae spp.	Absent

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

Monitoring: Level 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 of high to very-high volume change potential (NHBC Classification) susceptible to undergoing volumetric change in relation to changes in soil moisture. A comparison between moisture content and the liquid limits suggests desiccation in TP/BH1 peaking between 1000mm and 15000mm depth.

There is desiccation at depths beyond normal ambient soil drying processes such as evaporation 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 below the foundation underside confirming the drying action of TG1 below the front elevation. No roots were recovered from T2 which should not be relied upon to discount the causative role of this tree. *Cupressaceae spp* roots are assumed to originate from tree(s) removed some time in the past.

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, the cause of which will be the combined drying impact of T2 and TG1 on soil volumes below the front elevation. We are confident of the causal role of T2; however, the LPA may insist on evidence of root trespass despite the trees close proximity to the dwelling.

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.

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 (T2 and TG1) 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 the policy holder's vegetation. On balance, it is highly probable the roots of T2 will also extend to depth below the area of focal movement.

- Level monitoring should remain in place until the mitigation process has reached a conclusion.

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

Tree No.	Species	Ht (m)	Dia (cm)	Crown Spread (m)	Dist. to building (m)	Age Classification	Ownership
T2	Whitebeam	7.8	25	6.0	<5.0	Younger than property	Local Authority
Management history		No significant recent management					
Recommendation		Remove and treat stump by mechanical means to inhibit regrowth					
TG1	Ash, Sycamore, Viburnum	2.0-6.0	M/S Av7*	4.0	<2.0	Younger than property	Policy Holder
Recommendation		Remove and treat stumps to inhibit re growth					

Ms: multi-stemmed * Estimated value

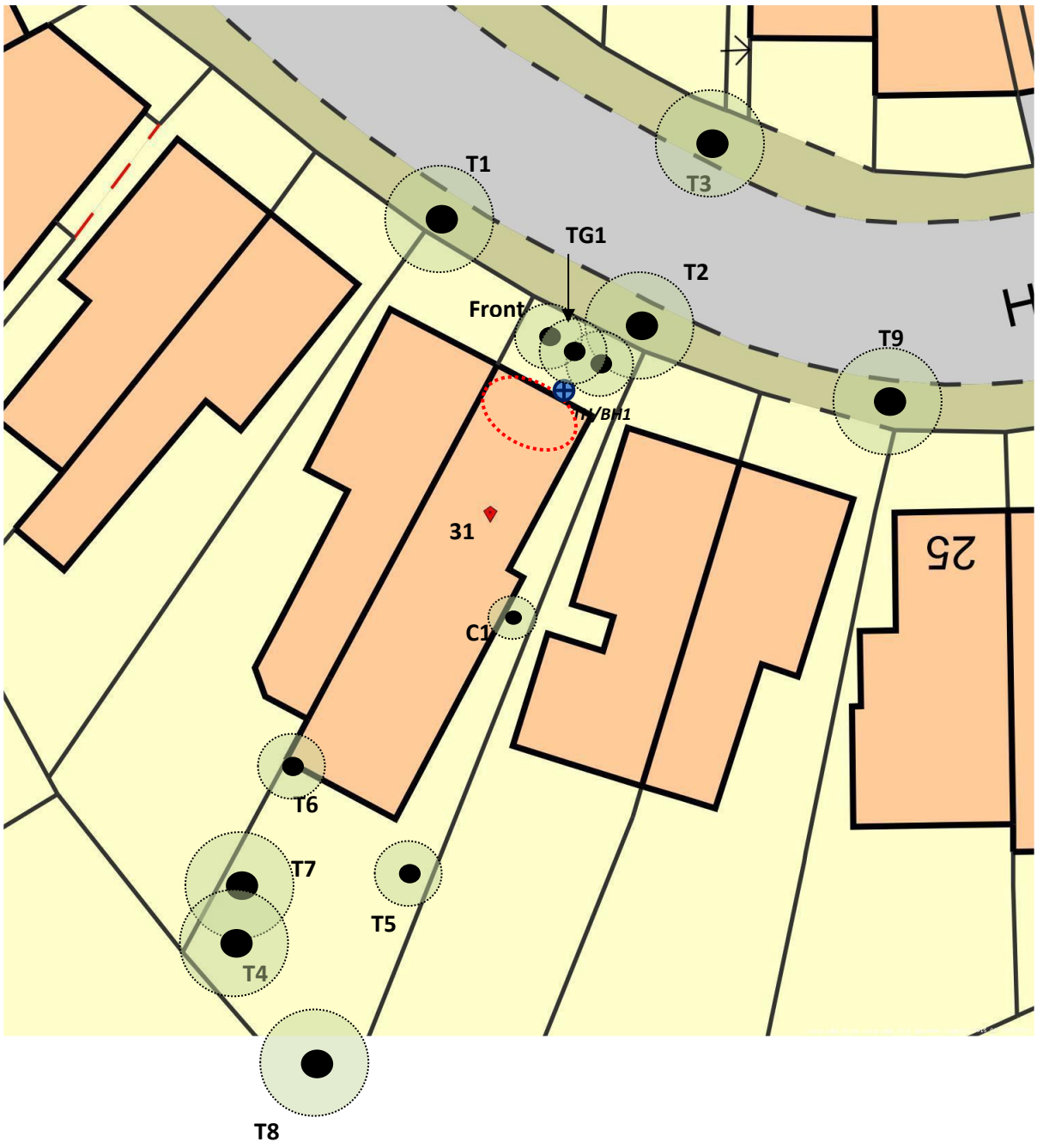
Table 2 **Future Risk** - Tree Details & Recommendations

Tree No.	Species	Ht (m)	Dia (cm)	Crown Spread (m)	Dist. to building (m)	Age Classification	Ownership
T1	Whitebeam	8.7	35	5.0	8.0	Younger than property	Local Authority
Recommendation		Do not allow to exceed current dimensions					
T3	London Plane	15.0	60	12.0	14.0	Younger than property	Local Authority
Recommendation		Evidence of high pollarding within 3 years. Remove re growth from pollard points and repeat every third year.					
T4	Willow (Weeping)	11.0	40	8.0	9.0	Younger than property	Policy Holder
Recommendation		Remove and treat stump to inhibit re growth					
T5	S Birch	12.0	26	7.0	5.0	Younger than property	Policy Holder
Recommendation		Do not allow to exceed current dimensions					
T6	Horse Chestnut	6.0	12	2.5	1.5	Younger than property	Policy Holder
Recommendation		Remove and treat stump to inhibit re growth					
T7	Oak (Fastigiate)	13.0*	40*	7.0	15.0	Younger than property	Policy Holder
Recommendation		Do not allow to exceed current dimensions					
T8	Sycamore	12.0	18	5.0	8.0	Younger than property	3rd Party: 23 Hampstead Hill Gardens
Recommendation		Do not allow to exceed current dimensions					
T9	London Plane	14.0	60	12.0	13.0	Younger than property	Local Authority
Recommendation		Evidence of high pollarding within 3 years. Remove re growth from pollard points and repeat every third year.					

C1	Vine & Elder	3.0	M/S	3.0	<3.0	Younger than property	Policy Holder
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 and T3

View of T2 and TG1

View of rear garden

View of rear garden