

Arboricultural Appraisal Report

Subsidence Damage Investigation at:

1 Daleham Gardens
London
NW3 5BY



CLIENT:	Crawford & Company
CLIENT REF:	SU1701605
MWA REF:	SUB170822-1684
MWA CONSULTANT:	Andy Clark
REPORT DATE:	11-09-2017

SUMMARY

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

Introduction

Acting on instructions received from Crawford & Company, the insured property was visited on 31/08/2017 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 detached 3 storey house of traditional construction built in 1900 and since converted into clinic rooms and administration offices. There are a number of single story extensions to the rear and right-hand side.

External areas comprise gardens to the front and left side with paved courtyard area to the right side and a small hardstanding car park area to the rear.

The site is generally level with no adverse topographical features.

Damage Description & History

The current damage affects the right-hand elevation and right-hand side of the rear extension and was first noticed in May 2015.

At the time of the engineers' inspection (12/05/2017) 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 CET on 14/07/2017, 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)
TP1	Concrete and brick rubble	900

Soils:

Ref	Description	Plasticity Index (%)	Volume change potential (NHBC)
TP/BH1	Very Stiff orange-brown silty CLAY with occasional gravel	32	Medium

Roots:

Ref	Roots Observed to depth of (mm)	Identification	Starch content
TP/BH1	1300	Acer spp.	Absent
TP/BH1	1300	Pomoideae gp.	Present

Drains: No information available at the time of writing.

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 desiccation 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 1.3m bgl in TP/BH1 and recovered samples have been positively identified (using anatomical analysis) as Pomoideae sp.; the origin of which will be T1 Hawthorn confirming the influence of T1 on the soils below the foundations. Irrespective of the root identification, given the size and relative proximity to the property of T2 to T4, the roots of these trees will also be present below the foundations and influencing the soil moisture content.

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 T1 Hawthorn is the principal cause of the current subsidence damage with T2 to T4, White Birch, also being contributory. If an arboricultural solution is to be implemented to mitigate the current damage and allow the soils beneath the property to recover to a position such that an effective repair solution can be implemented we recommend that T1, T2, T3 and T4 are removed.

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	Hawthorn	12.0	350*	8.0	3.4	Younger than property	Policy Holder
Management history		No signs of significant past management Extensive Ivy growth to main stem and throughout crown					
Recommendation		Fell to ground level and treat stump to inhibit regrowth					
T2	Himalayan White Birch	9.5	150	7.0	3.3	Younger than property	Policy Holder
Management history		No signs of significant past management Asymmetric crown growth habit					
Recommendation		Fell to ground level and treat stump to inhibit regrowth					
T3	Himalayan White Birch	12.5	260	9.0	5.1	Younger than property	Policy Holder
Management history		No signs of significant past management					
Recommendation		Fell to ground level and treat stump to inhibit regrowth					
T4	Himalayan White Birch	6.0	110	3.0	7.0	Younger than property	Policy Holder
Management history		No signs of significant past management					
Recommendation		Fell to 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
T5	Lime	15.0*	500*	10.0*	10.0	Younger than property	3rd Party:- Tavistock Centre, Belsize Lane, NW3
Management history		No signs of significant past management					
Recommendation		Do not allow to exceed current dimensions					
T6	Cherry	13.0*	250*	6.0*	10.0*	Younger than property	3rd Party:- Tavistock Centre, Belsize Lane, NW3
Management history		No signs of significant past management					
Recommendation		Do not allow to exceed current dimensions					
G1	Lime [x3]	16.5	500	10.0	6.0*	Younger than property	Policy Holder
Management history		Pollarded in past – regrowth appears <10yrs					
Recommendation		Re-pollard to previous points and retain at new dimension by a program of regular [triennial] re-pollarding					

Ms: multi-stemmed * Estimated value

SITE PLAN



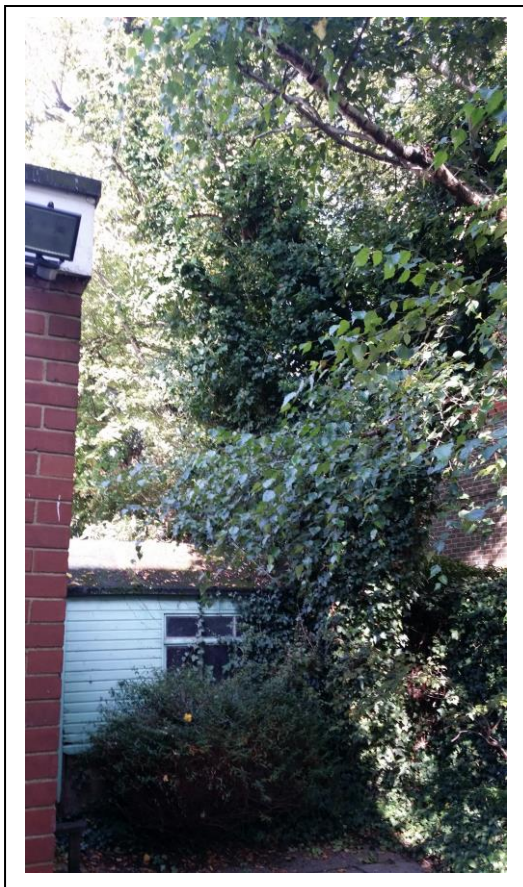
Plan not to scale – indicative only

 Approximate areas of damage

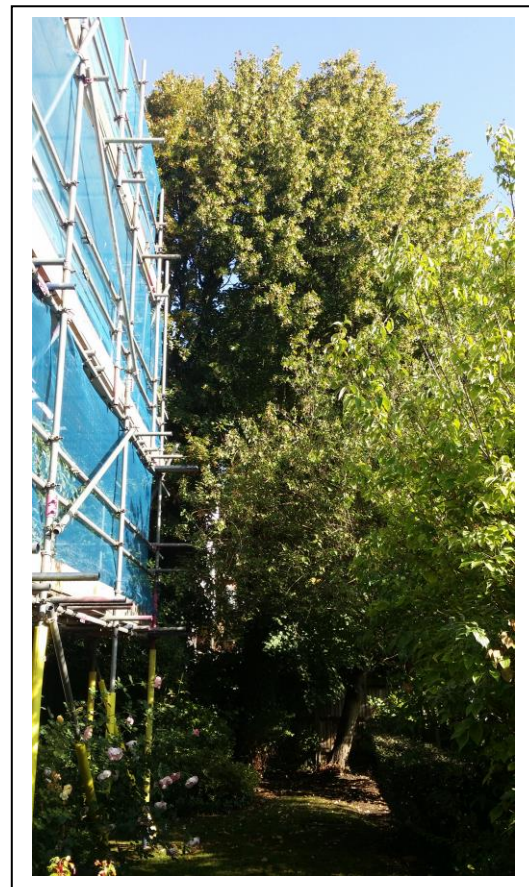
Images



View of T1 Hawthorn with T2 – T4 White Birch



View of T1 Hawthorn



View of G1 Lime