

Arboricultural Appraisal Report

Subsidence Damage Investigation at:

151 Gloucester Avenue
London
NW1 8LA



CLIENT:	Crawford & Company
CLIENT REF:	[REDACTED]
MWA REF:	[REDACTED]
MWA CONSULTANT:	Giles Mercer (BSc Hons)
REPORT DATE:	11/02/2020

SUMMARY

Statutory Controls		Mitigation (Current claim tree works)	
TPO current claim	Yes T1	Policy Holder	Yes
TPO future risk	No	Domestic 3 rd Party	Yes
Cons. Area	Yes	Local Authority	Yes
Trusts schemes	No	Other	No
Local Authority: -	London Borough of Camden		



Introduction

Acting on instructions from Crawford & Company, the insured property was visited on the 27th January 2020 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.

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 5 storey mid-terrace house built circa 1850. External areas comprise gardens to the front and rear.

The property occupies a site that slopes gently downhill from right to left.

Damage Description & History

Damage is noted throughout the property with internal cracks on several levels and external cracking to the front and rear elevations.

At the time of the engineer's inspection (01/11/2018) the structural significance of the damage was found to fall within Category 3 (moderate) of Table 1 of BRE Digest 251. For a more detailed synopsis of the damage please refer to the surveyor's technical report.

The property was the subject of previous subsidence damage around 2008/9. A limited scheme of localised underpinning was completed to the rear of the property at that time.



Site Investigations

Site investigations were carried out by CET on 18/11/2019, when boreholes were excavated to the front and rear of the affected property.

Soils:

Ref	Description	Plasticity Index (%)	Volume change potential (NHBC)
BH1	Made ground over a Firm-Stiff brown grey veined silty CLAY	44-51	High
BH2	Made ground over a Stiff brown grey veined silty CLAY	38-50	Medium-High

Roots:

Ref	Roots Observed to depth of (mm)	Identification	Starch content
BH1	To 1600mm	Platanus spp.	Positive
BH2	To 3100mm	Monocotyledon spp.	Positive
BH2	To 3100mm	Platanus spp.	Positive

Platanus spp. include London plane and Oriental plane.

Monocotyledon spp. include palms, grasses, bamboos and lilies.

Drains: No information available at the time of writing.

Monitoring: Level monitoring was commenced on the 10th July 2019. The latest available reading (19/11/19) demonstrates cyclical movement to both the front and the rear of the property.



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 susceptible to undergoing volumetric change in relation to changes in soil moisture.

Notwithstanding the date of sampling (during seasonal rehydration of the soils as demonstrated by the level monitoring), a comparison between moisture content and the plastic and liquid limits suggests moisture depletion at the time of sampling in BH2 at depths beyond normal ambient soil drying processes such as evaporation indicative of the soil drying effects of vegetation.

Roots were observed to a depth of 1.6m bgl in BH1 and to a depth of 3.1m in BH2 and recovered samples have been positively identified (using anatomical analysis) as *Platanus* spp. (BH1 & BH2) and *Monocotyledon* spp. (BH2), the origin of which will be the Plane trees (T1 & T4) and the Bamboo (S1) confirming their influence on the soils below the foundations.

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 information currently available, it is our opinion that the Plane trees (T1 & T4) are the principal cause of or are materially contributing to the current subsidence damage with a secondary influence from the bamboo (S1).

If an arboricultural solution is to be implemented to mitigate the influence of the implicated trees/vegetation we recommend that the Plane trees (T1 & T4) and the Bamboo (S1) are removed. Other vegetation recorded presents a potential future risk to building stability and management is therefore recommended.

Consideration has been given to pruning alone 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.

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



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



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	Plane (London)	25.3	1500 *	16.5 *	10.8	Similar Age to Property	Third Party 153 Gloucester Road NW1 8LA
Management history		Subject to past management/pruning.					
Recommendation		Remove (fell) to near ground level and treat stump to inhibit regrowth.					
T4	Plane (London)	12.4	560	8	11.1	Younger than Property	Local Authority
Management history		Recently reduced/pruned.					
Recommendation		Remove (fell) to near ground level and treat stump to inhibit regrowth.					
S1	Bamboo	2.3	15 Ms	0.7 *	2.1	Younger than Property	Policy Holder
Management history		No recent management noted.					
Recommendation		Remove (fell) to near ground level and treat stump to inhibit regrowth.					

Ms: multi-stemmed

* Estimated value



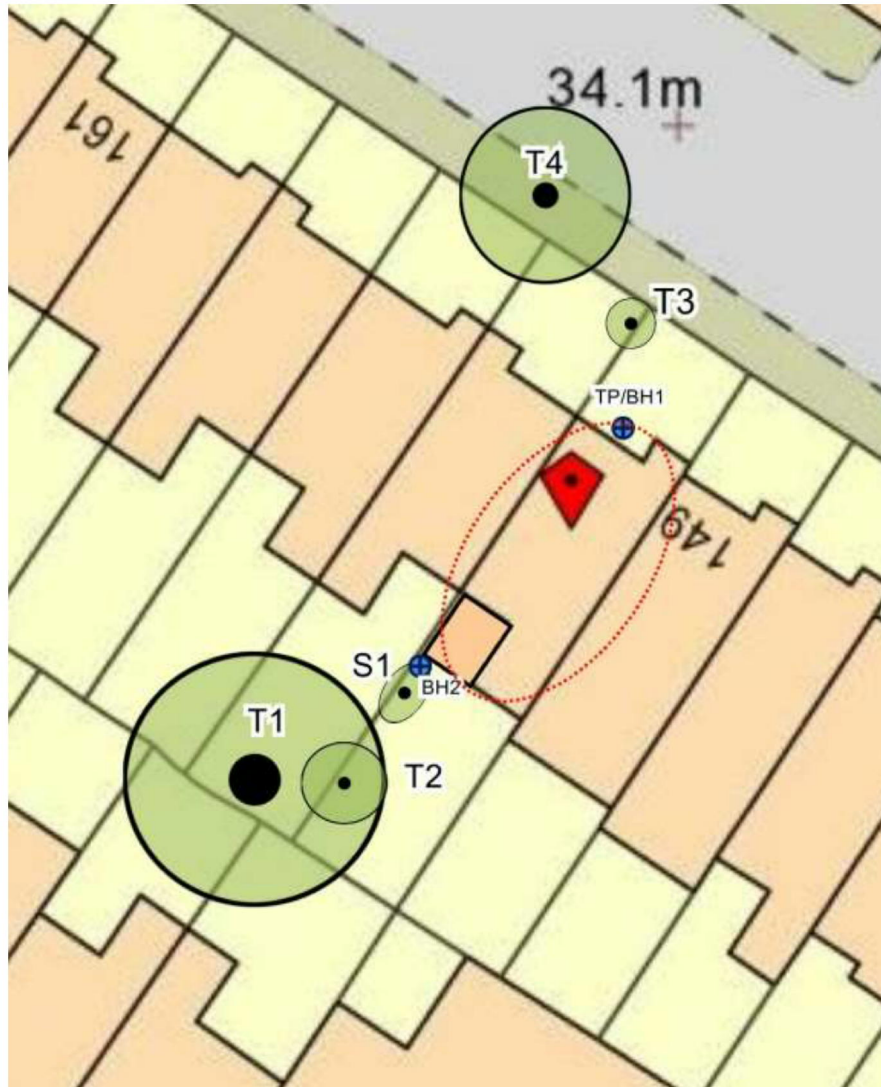
Table 2 **Future Risk - Tree Details & Recommendations**

Tree No.	Species	Ht (m)	Dia (mm)	Crown Spread (m)	Dist. to building (m)	Age Classification	Ownership
T2	Ginkgo	9	160	5	7.5	Younger than Property	Policy Holder
Management history		No recent management noted.					
Recommendation		Maintain broadly at no more than current dimensions by periodic pruning.					
T3	Tamarisk	2.9	80 Ms	3	5.3	Younger than Property	Third Party 153 Gloucester Road NW1 8LA
Management history		Very tentative identification.					
Recommendation		Maintain broadly at no more than current dimensions by periodic pruning.					

Ms: multi-stemmed * Estimated value



Site Plan



Plan not to scale – indicative only

 Approximate areas of damage

Images



View of S1



View of T2

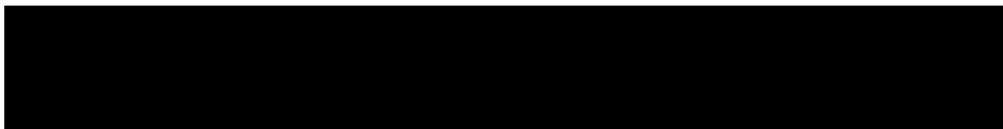




View of T1



View of T3





View of T4



View of Front elevation

Property: 151 Gloucester Avenue
London
NW1 8LA

Client Ref: SU1805601
MWA Ref: SUB200108-6511