Arboricultural Appraisal Report

Subsidence Damage Investigation at:

79 Pixmore Way
Letchworth Garden City
Hertfordshire
SG6 3TP



CLIENT:	Crawford & Company
CLIENT REF:	SU1702282
MWA REF:	SUB180118-2054
MWA CONSULTANT:	Andy Clark
REPORT DATE:	26/01/2018

SUMMARY

Statutory Controls			Mitigation (current claim works)	
TPO	No (current claim) No (future risk)		Insured	Yes
Cons. Area	Yes		3rd Party	No
Trusts schemes	Letchworth Garden City		Local Authority	Yes
Planning	N/A		Other	No
Local Authority: -	North Hertfordshire District Council			

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Introduction

Acting on instructions received from Crawford & Company, the insured property was visited on 24/01/2018 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 2 storey detached house of traditional construction built in C.1930.

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 relates to the front left-hand corner of the insured dwelling, where both internal and external cracking are indicative of downward movement.

We have not been made aware of any previous claims.

At the time of the engineers' inspection (04/08/2017) the structural significance of the damage was found to fall within Category 3 (Moderate) of Table 1 of BRE Digest 251.

Site investigations

Site investigations were carried out by CET on 06/12/2017, 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	Concrete	750

Soils:

Ref	Description	Plasticity Index (%)	Volume change potential (NHBC)
TP/BH1	Very Stiff brown silty sandy CLAY with occasional chalk nodules	24 - 25	Medium

Roots:

Ref	Roots Observed to depth of (mm)	Identification	Starch content
TP/BH1	1400	Populus spp. and Ailanthus spp.	Present

Drains: The drains have been surveyed and whilst several defects were identified, these are not considered to be pertinent to the damage suffered by the building.

Monitoring: Level monitoring is in progress, commencing on the 30/11/2017. At the time of writing, no other readings had been taken.

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 1.4m bgl in TP/BH1, and recovered samples have been positively identified (using anatomical analysis) as Populus spp. and Ailanthus spp.; the origins of which will be T1 Poplar, and T3 Tree of Heaven, confirming the influence of these trees 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 available information, it is our opinion that T3 Tree of Heaven is the principal cause of the current subsidence damage, with contribution to a lesser extent from T1 Poplar. 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 put in place, we recommend that T1 Poplar and T3 Tree of Heaven 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.

If movement persists the removal of T2 may be necessary.

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	Poplar	18.0	1000*	16.5	18.4	Younger than Property	Policy Holder
Management history		No past management noted					
Recommendation		Remove (fell) to near ground level and treat stump to inhibit regrowth					
T3	Tree of Heaven	13.5	520	13.0	12.8	Younger than Property	Local Authority
Management history		No recent management noted					
Recommendation		Remove (fell)					

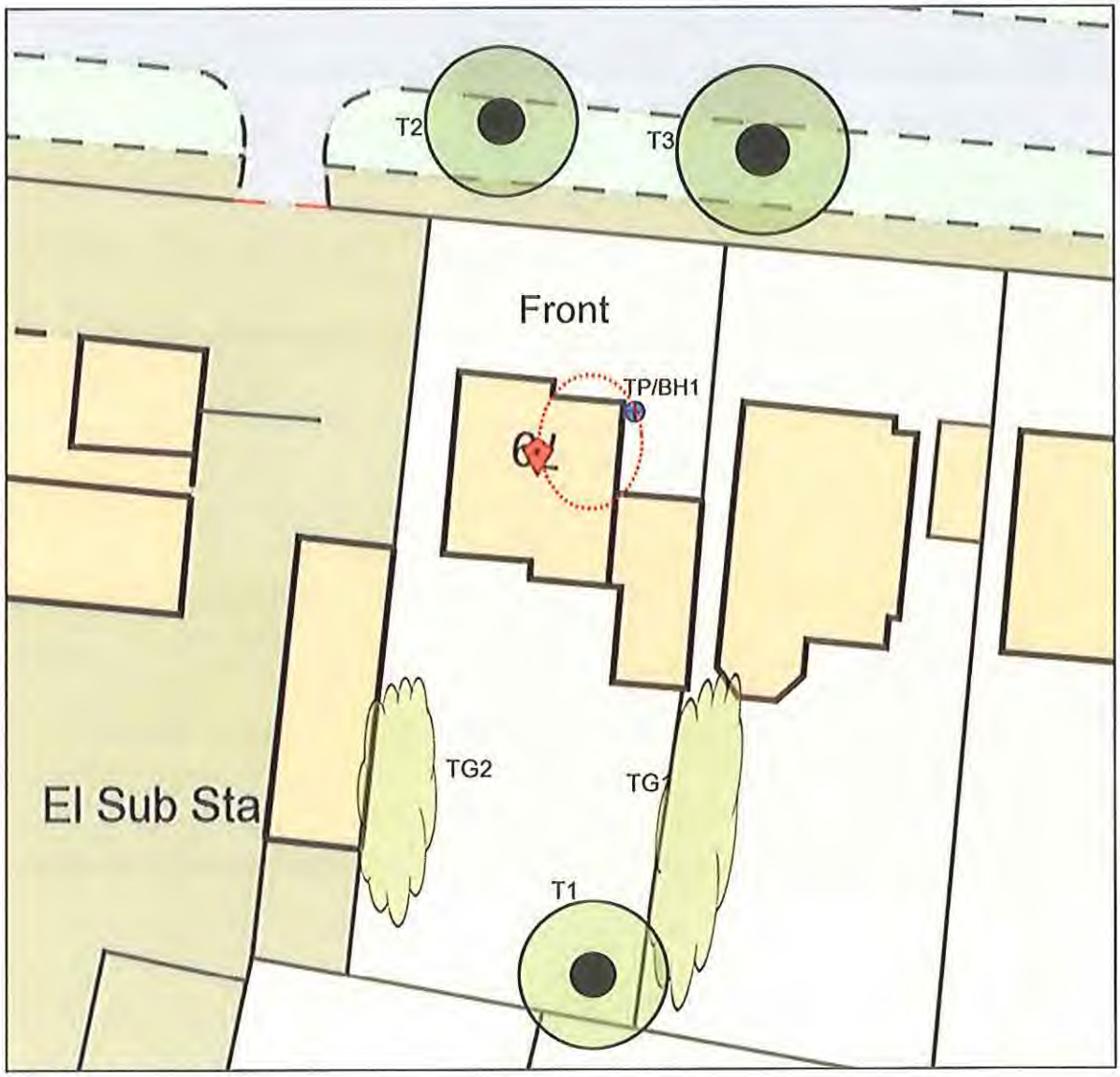
Ms: multi-stemmed * Estimated value

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	Tree of Heaven	11.0	340	8.0	9.9	Younger than Property	Local Authority
Management history		No recent management noted.					
Recommendation		Do not allow to exceed current dimensions					
TG1	Cypress group	12.0	250* Ms	6.0	7.3	Younger than Property	Third Party: 81 Pixmore Way, SG6
Management history		No recent management noted.					
Recommendation		Do not allow to exceed current dimensions					
TG2	Beech group	10.5	250 Ms	10.0	5.5	Younger than Property	Policy Holder
Management history		Subject to past management – topped in past as hedgerow at approx. 2m					
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 Poplar and TG1 Cypress group



View of T2 and T3 Tree of Heaven



View of TG2 Beech group