Addendum Arboricultural Report

Subsidence Damage Investigation at:

42 Stonegate
Cowbit
Spalding
Lincolnshire
PE12 6AH



CLIENT:	Crawford & Company
CLIENT REF:	SU1807857
MWA REF:	SUB190206-3516Rev02
MWA CONSULTANT:	Andy Clark
REPORT DATE:	02/12/2020

SUMMARY

Statutory Controls			Mitigation (Current claim tree works)	
TPO current claim	Yes – T3		Policy Holder	Yes
TPO future risk	No		Domestic 3rd Party	No
Cons. Area	No		Local Authority	No
Trusts schemes	No		Other	No
Local Authority: -	South Holland District Council			

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Introduction

This is an addendum of our initial report [dated 05/04/2019] following receipt of site investigation information and up to date level monitoring results.

Acting on instructions from Crawford & Company, the insured property was visited on 12/03/2019 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.

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 c.1998. To the front right-hand corner of the plot stands a detached double garage of similar construction age. External areas comprise gardens to the front and rear.

The site is generally level with no adverse topographical features.

Damage Description & History

Damage is noted throughout the property, increasing in magnitude and severity towards the front of the property. Damage is reported to have first been observed during 2015.

We have not been made aware of any previous claims.

At the time of the engineer's inspection (06/12/2018) 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 23/08/2019 when two trial pits were hand 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	700
TP2	Concrete	750

Soils:

Ref	Description	Plasticity Index (%)	Volume change potential (NHBC)
TP/BH1	Medium dense brown-grey sandy SILT with sandstone nodules to 900mm, becoming stiff to very soft brown moist silty sandy CLAY with occasional sandstone nodules	8 – 29	Low – Medium
TP/BH2	Stiff brown sandy silty CLAY with sandstone nodules to 1000mm, becoming very soft moist brown silty sandy CLAY with sandstone nodules	9 – 22	Low - Medium

Roots:

Ref	Roots Observed to depth of (mm)	Identification	Starch content
TP/BH1	2000	Prunus spp., probably Quercus spp. but possibly Castanea spp. and broadleaved species, too juvenile for positive identification [Possibly Quercus/Castanea spp.]	Present
TP/BH2	No roots observed		-

Prunus spp. include blackthorn, cherry, cherry-laurel, Portuguese laurel, peach, plum, and related species. Quercus spp. are oaks. Castanea spp. include sweet chestnut and are related to oaks

Drains: No information available at the time of writing.

Monitoring: Level monitoring is in progress, commencing on 03/10/2019 and with six subsequent readings 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 susceptible to undergoing volumetric change in relation to changes in soil moisture.

Roots were observed to a depth of 2.0m bgl in TP/BH1 at the property frontage, and recovered samples have been positively identified (using anatomical analysis) as Prunus spp. and probably Quercus spp. but possibly Castanea spp.

The origin of the Prunus spp. roots will be the Laurel within SG1 group. Given the absence of any nearby Castanea species, the Quercus spp. roots will emanate from T3 Oak.

Level monitoring records an uplift (recovery) between the October 2019 and December 2019 of up to 2.7mm, before downward movement is then observed into the spring and summer months of 2020 – indicative of the seasonal pattern of movement associated with the influence of vegetation on shrinkable clay soils.

Based on the information currently available, engineering opinion and our own site assessment we conclude the damage appears consistent with shrinkage of the clay fraction due to the soil drying effects of vegetation.

Having considered the information currently available, it is our opinion that T3 Oak is the principal cause of the current subsidence damage - the drying effects of which across the site will be significant. Nearby Cypresses T1 and T2 are a potential contributory influence, as well as a localised influence to a much lesser degree from the Laurel of SG1 group. Vegetation to the rear of the property [not recorded], comprising mostly Birch and shrub spp. vegetation, is of mostly low moisture demand and sufficiently distal from the property not to be significant.

If an arboricultural solution is to be implemented to mitigate the influence of the trees/shrubs considered to be responsible for the damage we recommend that T1, T2 and T3 are removed. The nearby Laurel from SG1 group should also be removed in order to negate any contributory influence.

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.

Conclusions

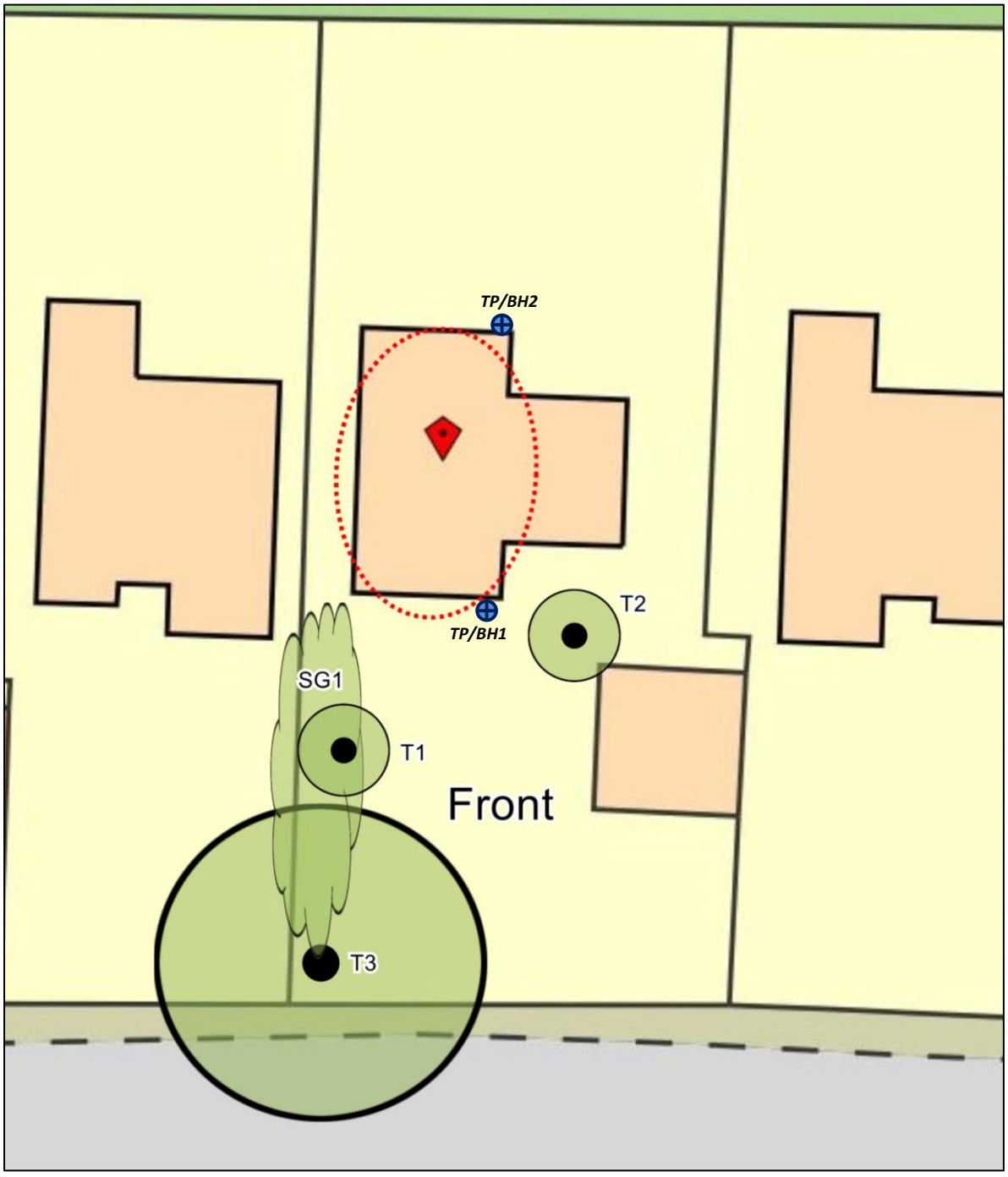
- Conditions necessary for clay shrinkage subsidence to occur related to moisture abstraction by vegetation have been confirmed by site investigations and the testing of soil and root samples.
- Engineering opinion is that the damage is related to clay shrinkage subsidence.
- There is significant vegetation 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	Cypress	6.5	400 *	2.0	6.7	Younger than Property	Policy Holder
Management history		No past management noted.					
Recommendation		Remove (fell) to near ground level and treat stump to inhibit regrowth.					
T2	Cypress	5.5	380 *	2.5	4.4	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	Oak	17.5	1000 *	19.0	15.9	Older than Property	Policy Holder
Management history		No past management noted.					
Recommendation		Remove (fell) to near ground level and treat stump to inhibit regrowth.					
SG1	Mixed spp. shrub group consisting mostly Laurel, Holly, Aucuba, Viburnum, Forsythia, and Choisya	2.0	20 Ms *	1.5	1.0	Younger than Property	Policy Holder
Management history		Subject to past management – most appears regularly trimmed.					
Recommendation		Remove (fell) Laurel adjacent to front left corner of building to near ground level and treat stump to inhibit regrowth.					

Ms: multi-stemmed * Estimated value

Site Plan



Plan not to scale – indicative only

Approximate areas of damage

Images



View of T1 and T2 Cypresses with SG1 group visible to left of frame



View of T3 Oak



View of rear garden – mostly Birch and shrub spp. vegetation [not recorded] not considered relevant