

Addendum Arboricultural Report

Subsidence Damage Investigation at:

38 Holyrood Close
Reading
RG4 6PZ



CLIENT:	Crawford & Company
CLIENT REF:	SU2003018
MWA REF:	SUB210106-8164REV01
MWA CONSULTANT:	Mark Bisley (BSc Hons)
REPORT DATE:	03/02/2022

SUMMARY

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

Introduction

This is an addendum to our initial report dated 03/02/2021 following receipt of level monitoring readings and clarification on heave risk associated with the removal of the oak T3.

Acting on instructions from Crawford & Company, the insured property was visited on 18/01/2021 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 two storey, semi-detached house built c. 1970 with an integral garage to the left and a front porch.

External areas comprise gardens to the front and rear. The site is generally level with no adverse topographical features.

Damage Description & History

The current damage affects the front of the right side of the dwelling with internal and external cracking present on both floors. It was first noticed in August 2020.

At the time of the engineer's inspection (11/09/2020) 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 building surveyor's technical report.

Site Investigations

Site investigations were carried out by CET on 06/11/2020, when two trial pits were hand excavated to reveal the foundations, each with a borehole sunk through the base of the trial pit to determine subsoil conditions. A drains survey was also undertaken.

Foundations:

Ref	Foundation type	Depth at Underside (mm)
TP1	Concrete	930
TP2	Concrete	890

Soils:

Ref	Description	Plasticity Index (%)	Volume change potential (NHBC)
TP/BH1	Medium dense to dense, sandy, silty, clayey GRAVEL to 1.10m. Stiff, silty CLAY to 3.00m. Terminated at 3.00m.	30 - 44	Medium - High
TP/BH2	Stiff, silty CLAY to 3.00m. Terminated at 3.00m.	45 – 54	High

Roots:

Ref	Roots Observed to depth of (mm)	Identification	Starch content
TP/BH1	2200	<i>Quercus spp.</i> <i>Fraxinus spp.</i>	Present Present
TP/BH2	1800	<i>Quercus spp.</i>	Present

Quercus spp. are oaks.

Fraxinus spp. are ash.

Drains: The drains have been surveyed and defects identified, although leaking drains are concluded not to be a cause of the current damage.

Monitoring: Level monitoring is in progress. Readings from 21/01/2021 to 12/11/2021 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. A comparison between moisture content and the plastic and liquid limits suggests moisture depletion at the time of sampling in TP/BH1 and TP/BH2 at depths beyond normal ambient soil drying processes such as evaporation indicative of the soil drying effects of vegetation.

A comparison of soil suction data with Table 1 of BRE Digest 412 suggests very severe desiccation in TP/BH1 (1130 – 1380kPa) and TP/BH2 (887 – 1120kPa).

Roots were observed to a depth of 2200mm bgl in TP/BH1 and recovered samples have been positively identified (using anatomical analysis) as *Quercus spp.* and *Fraxinus spp.*, the origin of which will be T3 and TG2 respectively, confirming their influence on the soils below the foundations.

Roots were also observed to a depth of 1800mm bgl in TP/BH2 and recovered samples have been positively identified (using anatomical analysis) as *Quercus spp.*, the origin of which will again be T3.

Level monitoring from 21/01/2021 to 12/11/2021 has recorded a pattern of movement consistent with root induced clay shrinkage followed by swelling (uplift) during tree dormancy. The maximum amplitudes of movement is at the front of the property from where oak roots have been recovered.

The ash TG2 and birch T2 were removed on 5th August 2021 with movement continuing after this further demonstrating the influence of the oak T3.

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 T3 is the principal cause of the current movement and associated subsidence damage.

Following a review of the technical information, we have concluded the only viable long-term solution in mitigating the influence of T3 and restoring long term stability to the property is the removal of T3. Whilst crown reduction (pruning) may reduce soil drying by T3 in the short term, the tree will quickly restore its leaf area and soil drying potential through regrowth. In this instance, crown reduction is considered to be an unreliable method of removing the influence of T3.

A heave assessment by Crawford and Company has concluded the risk of heave following the removal of the oak to be within acceptable limits.

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

Other vegetation recorded presents a potential future risk to building stability and management is therefore recommended.

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

Tree No.	Species	Ht. (m)	Dia. (mm)	Crown Spread (m)	Dist. to building (m)	Age Classification	Ownership
T2	Birch	8	215 *	7	5.5	Younger than Property	Third Party 36 Holyrood Close RG4 6PZ
Management history		REMOVED 5 TH AUGUST 2021					
Recommendation		N/A					
T3	Oak	17	1300 *	20	12	Older than Property	Third Party 36 Holyrood Close RG4 6PZ
Management history		No significant recent management noted.					
Recommendation		Remove (fell) to near ground level and treat stump to inhibit regrowth.					
TG2	Ash	15	300	12	9	Younger than Property	Third Party 36 Holyrood Close RG4 6PZ
Management history		REMOVED 5 TH AUGUST 2021					
Recommendation		N/A					

Ms: multi-stemmed

* Estimated value

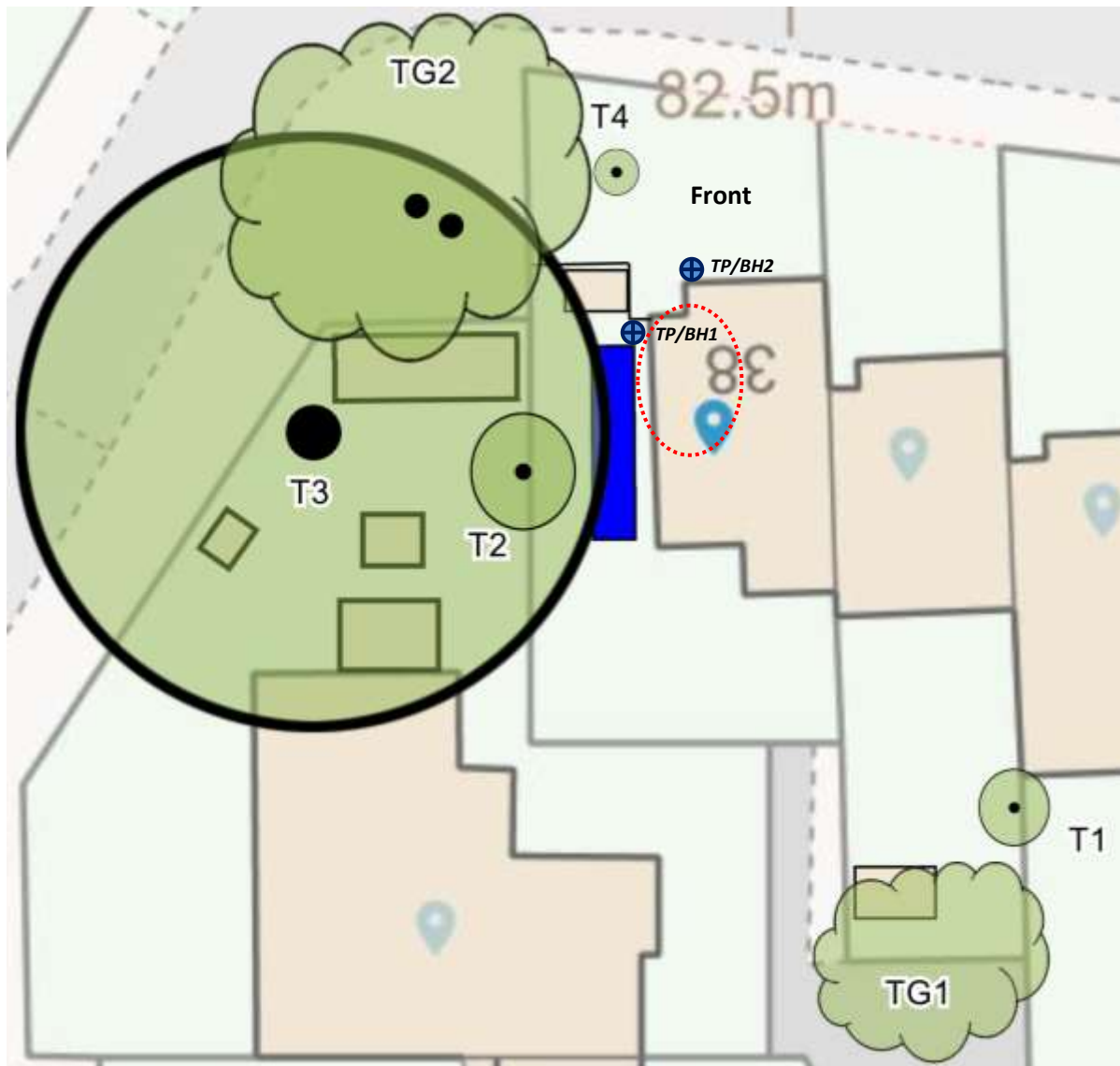
Table 2 **Future Risk - Tree Details & Recommendations**

Tree No.	Species	Ht. (m)	Dia. (mm)	Crown Spread (m)	Dist. to building (m)	Age Classification	Ownership
T1	Birch	8 *	175 *	4 *	15	Younger than Property	Third Party 40 Holyrood Close RG4 6PZ
Management history		Subject to past management/pruning - appears regularly pruned.					
Recommendation		Do not allow to exceed current dimensions.					
T4	Magnolia	2	15 Ms *	2	5.5	Younger than Property	Policy Holder
Management history		Subject to past management/pruning - appears regularly pruned.					
Recommendation		Do not allow to exceed current dimensions.					
TG1	Birch, Willow	8 *	275 *	6 *	16 *	Younger than Property	Third Party 40 Holyrood Close RG4 6PZ
Management history		Subject to past management/pruning - appears regularly pruned.					
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 trees to right from front



View of trees to right from right



View of right flank from rear



View of front elevation