

Arboricultural Appraisal Report

Subsidence Damage Investigation at:

The Elms, Badwell Road
Walsham-le-Willows
Bury St Edmunds
IP31 3BT



| | |
|-----------------|--------------------|
| CLIENT: | Crawford & Company |
| CLIENT REF: | SU2205985 |
| MWA REF: | SUB230106-11919 |
| MWA CONSULTANT: | Richard Percival |
| REPORT DATE: | 13/07/2023 |

SUMMARY

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

Introduction

Acting on instructions from Crawford & Company, the insured property was visited on 22/02/2023 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 two-storey detached house of traditional construction originally built in 1698. The house appears to have been added to multiple times during its history, however we do not have any exact dates in this regard.

External areas comprise a gravel driveway with gardens surrounding the property.

The site is generally level with no adverse topographical features.

Damage Description & History

Damage relates to the front elevation where cracking indicates downward movement. For a more detailed synopsis of the damage please refer to the surveyor's technical report.

We have not been made aware of any previous claims.

Site Investigations

Site investigations were carried out by CET on 25/04/2023, when a single trial pit was hand excavated to reveal the foundations, with a borehole sunk through the base of the trial pit to determine subsoil conditions. No roots were observed / recovered below foundation level. A drainage survey was also carried out, with no significant defects were found. Please refer to the Site Investigation report for further details.

Property: The Elms, Badwell Road
Walsham-le-Willows
Bury St Edmunds
IP31 3BT

Client Ref: SU2205985
MWA Ref: SUB230106-11919

Discussion

Opinion and recommendations in this report are made on the understanding that Crawford & Company have identified clay shrinkage subsidence as a cause of building movement and damage.

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 at depths beyond normal ambient soil drying processes such as evaporation indicative of the soil drying effects of vegetation.

No roots were observed below foundation level during the site investigations, although there were roots observed to a depth of 0.88m bgl. The flint foundation depth was recorded as being 0.9m bgl.

The origin of the roots observed in TP/BH1 are likely to be T1 walnut. There is a strong possibility that the roots of this tree extended below foundation level in proximity to the area of movement/damage and influencing soil moisture and volumes.

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 T1 is materially contributing to the current subsidence damage.

If an arboricultural solution is to be implemented to mitigate the influence of the implicated trees/vegetation we recommend that T1 is 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 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 close to the foundations and are likely to extend below the property.
- 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 | Walnut | 8 | 260 | 8 | 11 | Younger than Property | Policy Holder |
| Management history | | Subject to past management/pruning. | | | | | |
| 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 | Cedar of Lebanon | 22 | 1055 | 17 | 20 | Younger than Property | Policy Holder |
| Management history | | Subject to past management/pruning. | | | | | |
| Recommendation | | No works at present. Subject to review if movement persists. | | | | | |
| T3 | Horse Chestnut | 18 * | 800 | 15 | 27 * | Younger than Property | Policy Holder |
| Management history | | No recent management noted. | | | | | |
| Recommendation | | No works at present. Subject to review if movement persists. | | | | | |
| T4 | Cedar | 17 * | 720 | 15 | 20 | Younger than Property | Policy Holder |
| Management history | | No recent management noted. | | | | | |
| Recommendation | | No works at present. Subject to review if movement persists. | | | | | |
| T5 | Laurel | 5.5 | 150 Ms * | 4 | 9 | Younger than Property | Policy Holder |
| Management history | | No recent management noted. | | | | | |
| Recommendation | | Maintain broadly at no more than current dimensions by periodic pruning. | | | | | |
| T6 | Ash | 12 | 340 | 8 | 12 | Younger than Property | Policy Holder |
| Management history | | No recent management noted. | | | | | |
| Recommendation | | Maintain broadly at no more than current dimensions by periodic pruning. Subject to review if movement persists. | | | | | |
| T7 | Oak | 17 | 720 | 16 | 28 | Younger than Property | Policy Holder |
| Management history | | No recent management noted. | | | | | |
| Recommendation | | No works at present. Subject to review if movement persists. | | | | | |

Ms: multi-stemmed * Estimated value

Property: The Elms, Badwell Road
Walsham-le-Willows
Bury St Edmunds
IP31 3BT

Client Ref: SU2205985
MWA Ref: SUB230106-11919

Table 2 Future Risk - Tree Details & Recommendations Cont'd


| Tree No. | Species | Ht (m) | Dia (mm) | Crown Spread (m) | Dist. to building (m) | Age Classification | Ownership |
|--------------------|--------------------------|------------------------------------------------------------------------------------------------------------------|----------|------------------|-----------------------|-----------------------|-------------------------------|
| T8 | Magnolia | 6 * | 180 * | 4 * | 4 * | Younger than Property | Policy Holder |
| Management history | | No past management noted. | | | | | |
| Recommendation | | Maintain broadly at no more than current dimensions by periodic pruning. | | | | | |
| H1 | Laurel | 1.2 * | 40 * | 1 | 3.8 | Younger than Property | Policy Holder |
| Management history | | Regularly trimmed. | | | | | |
| Recommendation | | Continue current pruning regime. | | | | | |
| TG1 | Including yew, cherry | 12 * | 400 * | 10 * | 9 * | Younger than Property | Policy Holder |
| Management history | | No recent management noted. | | | | | |
| Recommendation | | Maintain broadly at no more than current dimensions by periodic pruning. Subject to review if movement persists. | | | | | |
| ST1 | Beech | 2.5 * | 600 * | 0 | 9.5 * | Younger than Property | Policy Holder |
| Management history | | Recently removed. | | | | | |
| Recommendation | | No works at present. Subject to review if movement persists. | | | | | |
| W1 | Including ash, oak, pine | 20 * | 500 * | 12 * | 20 * | Younger than Property | Third Party Dovedale IP31 3BT |
| Management history | | No past management noted. | | | | | |
| Recommendation | | No works at present. Subject to review if movement persists. | | | | | |

Ms: multi-stemmed * Estimated value

Site Plan



Plan not to scale – indicative only

 Approximate areas of damage

Images





Management of vegetation to alleviate clay shrinkage subsidence.

All vegetation requires water to survive which is accessed from the soil. Clay soils shrink when water abstracted by vegetation exceeds inputs from rainfall, which typically occurs during the summer months. When deciduous vegetation enters dormancy and loses its leaves and rainfall increases during the winter months, soil moisture increases and the clay swells. (Evergreen trees and shrubs use minimal/negligible amounts of soil water during the winter).

Buildings founded on clay are susceptible to movement as the clay shrinks and swells which can result in cracking or other damage.

Where damage does occur, pruning (reducing leaf area) can in some circumstances be effective in restoring stability however, removal of the influencing vegetation (trees, shrubs, climbers) causing the ground movement offers the most predictable and quickest solution in stabilising the clay and hence the building and for this reason is frequently initially recommended as the most appropriate solution.

Often this is unavoidable due to the size or number of influencing trees, shrubs etc and their proximity to the building. Very heavy pruning of some species to a level required to effectively control its water use can result in the trees decline and ultimately death and is one factor considered when making recommendations for remedial tree works. Pruning alone, whilst reducing soil moisture uptake is often an unpredictable management option in restoring building stability either in the short or long term.

In some circumstances however, where vegetation initially recommended for removal is subsequently pruned and monitoring indicates the building has stabilised, removal becomes unnecessary with decisions based on best evidence available at the time.