Arboricultural Appraisal Report

Subsidence Damage Investigation at:

27 Vicarage Meadow
Mirfield
WF14 9JL

CLIENT:	B Maule & Co Ltd
CLIENT REF:	20185072 / 20227573
MWA REF:	SUB230703-13606
MWA CONSULTANT:	John Graham B.Sc. Hons PhD
REPORT DATE:	26/08/2023

SUMMARY

Statutory Controls			Mitigation (Current claim tree works)	
TPO current claim	Yes – T1. T2, T3		Policy Holder	No
TPO future risk	Yes – T4		Domestic 3rd Party	Yes
Cons. Area	No		Local Authority	No
Trusts schemes	No		Other	No
Local Authority: -	Kirklees Council			

Introduction

Acting on instructions from B Maule & Co Ltd, the insured property was visited on 20/07/2023 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 detached 2 storey house, built in 1997, with a single storey extension to the right and conservatory to the rear left built 2003.

External areas comprise gardens to the front and rear.

The site is generally level to the front and rises to the rear boundary in the rear garden.

Damage Description & History

The current damage affects the main house and was first noticed in summer 2022.

For a more detailed synopsis of the damage please refer to the building surveyor's technical report.

A previous claim in 2018 recommended removal of third party trees.

Site Investigations

Site investigations were carried out by Auger on 24/05/2023, when 3 trial pits were hand excavated to reveal the foundations, with a borehole sunk through the base of the trial pit to determine subsoil conditions. A drainage survey was also undertaken.

Foundations:

Ref	Foundation type	Depth at Underside (mm)
TP/BH1	Concrete	350
TP/BH2	Concrete	1500
TP/BH3	Concrete	1200

Soils:

Ref	Description	Plasticity Index (%)	Volume change potential (NHBC)
TP/BH1	Brown silty fine to medium gravelly CLAY	14 - 22	Low - Medium
TP/BH2	Brown silty fine to medium gravelly CLAY	29 - 30	Medium
TP/BH3	Brown silty fine to medium gravelly CLAY	23 - 24	Medium

Roots:

Ref	Roots Observed to depth of (mm)	Identification	Starch content
TP/BH1	850	*Quercus spp.*	Positive
TP/BH2	1,500	*Quercus spp.*	Positive
TP/BH3	1,700	Too small to identify	Negative

Quercus spp. are oaks (both deciduous and evergreen).

Drains: The drains have been surveyed and no significant defects identified.

Monitoring: No information available at the time of writing.

Discussion

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

In 2018 there was a case of subsidence at the subject property. This damage was to the rear conservatory and extension. At the time site investigation revealed the presence of a subsoil containing clay. Tree roots were also recovered from beneath the foundations of the property that were identified as oak, directly implicating the third party trees T1, T2, T3 and T4. Tree management recommendations were made (specifically current claim recommendations called for the removal (felling) of T2 and T3). However during the recent arboricultural survey to inform the current claim no evidence of any recent significant tree works was noted.

The recent 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/BH2, and plastic limit only in TP/BH1 and TP/BH3, 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 850mm and 1,500mm bgl in TP/BH1 and TP/BH2, respectively, and recovered samples have been positively identified (using anatomical analysis) as oak, the origin of which will be T1 and/or T2 and/or T3 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 T1, T2, and T3 are the principal cause of or are 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, T2, and T3 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.

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

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	Oak	15 *	570 *	15	9	Older than Property	Third Party 25 Church Lane WF14 9HU
Management history		Subject to past management/pruning.					
Recommendation		Remove (fell) to near ground level. Owner to physically remove any regrowth (no chemical treatment due to translocation risk).					
T2	Oak	15 *	630 *	16	7.5	Older than Property	Third Party 25 Church Lane WF14 9HU
Management history		Subject to past management/pruning.					
Recommendation		Remove (fell) to near ground level. Owner to physically remove any regrowth (no chemical treatment due to translocation risk).					
T3	Oak	15 *	630 *	16	8	Older than Property	Third Party 25 Church Lane WF14 9HU
Management history		Subject to past management/pruning.					
Recommendation		Remove (fell) to near ground level. Owner to physically remove any regrowth (no chemical treatment due to translocation risk).					

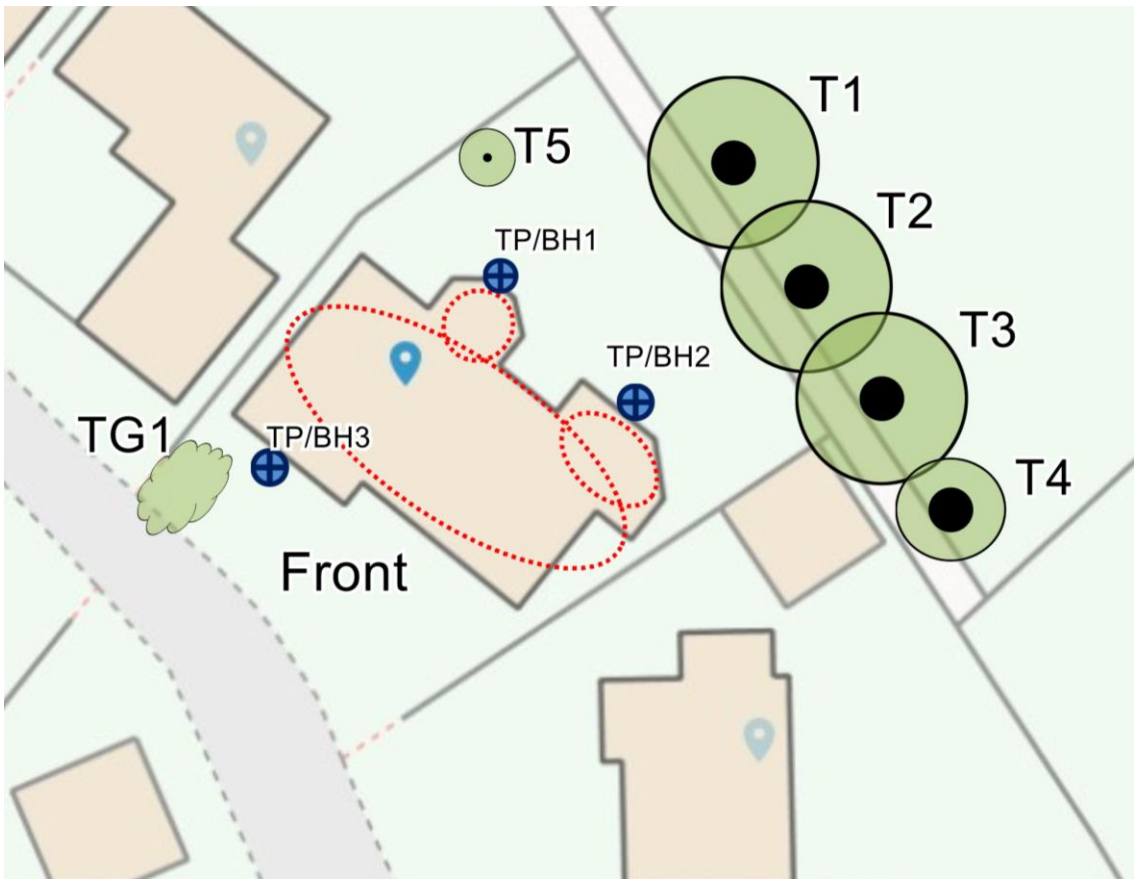
Ms: multi-stemmed * Estimated value

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

Tree No.	Species	Ht (m)	Dia (mm)	Crown Spread (m)	Dist. to building (m)	Age Classification	Ownership
T4	Oak	15 *	400 *	14	11	Older than Property	Third Party 25 Church Lane WF14 9HU
Management history		Subject to past management/pruning.					
Recommendation		Reduce height by ~ 3.0 and crown radius by ~ 1.5m – 2.0m to leave a balanced crown structure. Prune on a triennial cycle to broadly maintain the tree at its reduced crown dimensions.					
T5	Conifer	3 *	50 Ms *	1.5	6	Younger than Property	Policy Holder
Management history		Subject to past management/pruning.					
Recommendation		Maintain broadly at no more than current dimensions by periodic pruning.					
TG1	Cypress and box	2	50 Ms	1	1.3	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

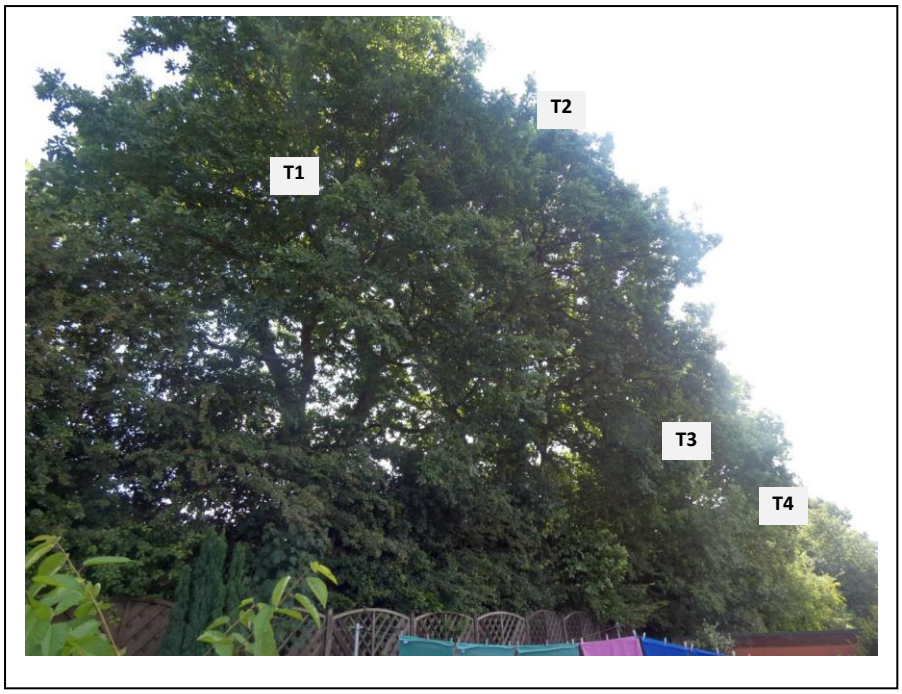
Site Plan



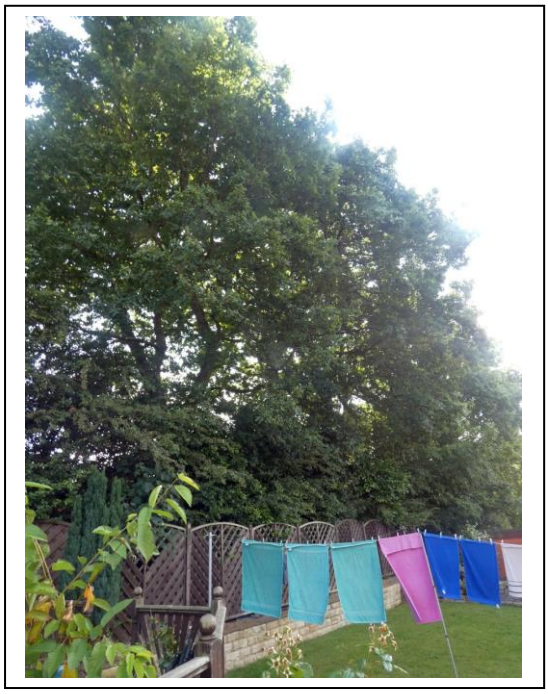
Plan not to scale – indicative only

Approximate areas of damage

Images



View of the rear third party trees.



View of T1 to T4.

View of TG1.

View of rear left.