Arboricultural Appraisal Report

Subsidence Damage Investigation at:

6 Butterleys
Dodworth
Barnsley
S75 3TD



CLIENT:	Graham High Group Ltd
CLIENT REF:	L/2020/62058/S
MWA REF:	SUB220607-10207
MWA CONSULTANT:	John Graham B.Sc. Hons PhD
REPORT DATE:	14/06/2022

SUMMARY

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

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Introduction

Acting on instructions from Graham High Group Ltd, the insured property was visited on 09/06/2022 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 circa 1980, with extensions to the front and rear including; front porch, rear porch, rear conservatory and single storey rear-left extension. External areas comprise gardens to the front and rear. The site slopes from the right down to left with a drop to the neighbouring property on the left of approximately 1.5m. The rear garden has been levelled.

Damage Description & History

The original damage affected the rear left corner and was first noticed in 2019. Following repairs, in 2020 further cracking occurred. The policy holder highlighted continued movement in the central rear region of the property and potential damage from movement to the front porch. For a more detailed synopsis of the damage please refer to the building surveyor's technical report.

At the time of the building surveyor's inspection (23/09/2020) the structural significance of the damage was found to fall within Category 2-3 (slight-moderate) of Table 1 of BRE Digest 251.

We have not been made aware of any previous claims.

Site Investigations

Site investigations were carried out by GEOCORE on 23/09/2020, 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. A drains survey was also undertaken.

Foundations:

Ref	Foundation type	Depth at Underside (mm)
TP/BH1 Main house	N/A	470
TP/BH1 Extension	N/A	470

Soils:

Ref	Description	Plasticity Index (%)	Volume change potential (NHBC)
TP/BH1	'Stiff light brown slightly sandy slightly gravelly CLAY with occasional fine to coarse roots. Gravel is of fine to coarse sub angular.'	20 - 22	Medium

Roots:

Ref	Roots Observed to depth of (mm)	Identification	Starch content
TP/BH1	650	*Quercus spp.*	Positive
TP/BH1	650	*Pomoideae gp.*	Positive
TP/BH1	650	*Cupressaceae spp.*	Negative

Quercus spp. are oaks (both deciduous and evergreen)
Pomoideae gp. include apple, cotoneaster, hawthorn, pear, pyracantha, quince, rowan, snowy mespil and whitebeam
Cupressaceae spp. include Lawson cypress, western red cedar, Monterey cypress, Leyland cypress and junipers

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

Monitoring: Crack monitoring is in progress.

Discussion

Opinion and recommendations are made on the understanding that Graham High Group Ltd 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 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 650mm bgl in TP/BH1 and recovered samples have been positively identified (using anatomical analysis) as oak, pomoideae and cypress, the origin of which will be, T3 and/orT4, T2 and/or T5 and/or STG1, and T1, respectively, confirming their influence on the soils below the foundations.

Crack monitoring during the initial stage of the claim showed stability following removal of trees STG1 – late 2020/early 2021. Movement subsequently continued 2021/2022.

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 T2, T3 and T4 are the principal cause of or are materially contributing to the current subsidence damage. While T1 and T5 are likely to be a secondary influence.

If an arboricultural solution is to be implemented to mitigate the influence of the implicated trees/vegetation we recommend that T1, T4 and T5 removed and T2 and T3 are reduced. 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 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	3	50 Ms	2	6	Similar Age to Property	Policy Holder
Management history		No significant recent management noted.					
Recommendation		Remove (fell) to near ground level.					
T2	Apple (Crab)	6 *	200 Ms *	6 *	10 *	Similar Age to Property	Third Party 1 Lambert Fold S75 3SX
Management history		No significant recent management noted.					
Recommendation		Reduce height to ~ 4.0m and crown spread to ~ 4.0m. Maintain broadly at reduced dimensions by periodic pruning.					
T3	Oak	18 *	650 *	16 *	19 *	Older than Property	Third Party 1 Lambert Fold S75 3SX
Management history		No significant recent management noted.					
Recommendation		Reduce crown by ~2.0m - 2.5m balancing crown. Maintain broadly at reduced dimensions by periodic pruning.					
T4	Oak	13 *	450 *	10 *	18 *	Older than Property	Third Party 2 Butterleys S75 3TD
Management history		No significant recent management noted.					
Recommendation		Remove (fell) to near ground level and treat stump to inhibit regrowth.					
T5	Apple (Crab)	3	100 Ms	2	7.5	Younger than Property	Policy Holder
Management history		No significant recent management noted.					
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
T6	Cherry	5	320 *	3	4.5	Older than extension(s)	Policy Holder
Management history	Recently reduced/pruned.						
Recommendation	Remove (fell) to near ground level and treat stump to inhibit regrowth.						
T7	Rowan	6 *	180 *	5 *	9	Younger than Property	Third Party 8 Butterleys S75 3TD
Management history	No significant recent management noted.						
Recommendation	No works required at present (subject to review if movement persists).						
SG1	Mixed species including; Hypericum and spirea.	1	10	0.5	7	Younger than Property	Policy Holder
Management history	No significant recent management noted.						
Recommendation	No works required.						
SG2	Mixed species including; pyracantha, clematis, laburnum	4 *	100 Ms *	2 *	9 *	Similar Age to Property	Third Party 1 Lambert Fold S75 3SX
Management history	No significant recent management noted.						
Recommendation	No works required.						
SG3	Mixed species including; laurel, spirea, Californian lilac	2.5	20	2	2.5	Younger than Property	Policy Holder
Management history	Subject to past management/pruning. In raised bed.						
Recommendation	Maintain broadly at no more than current dimensions by periodic pruning.						

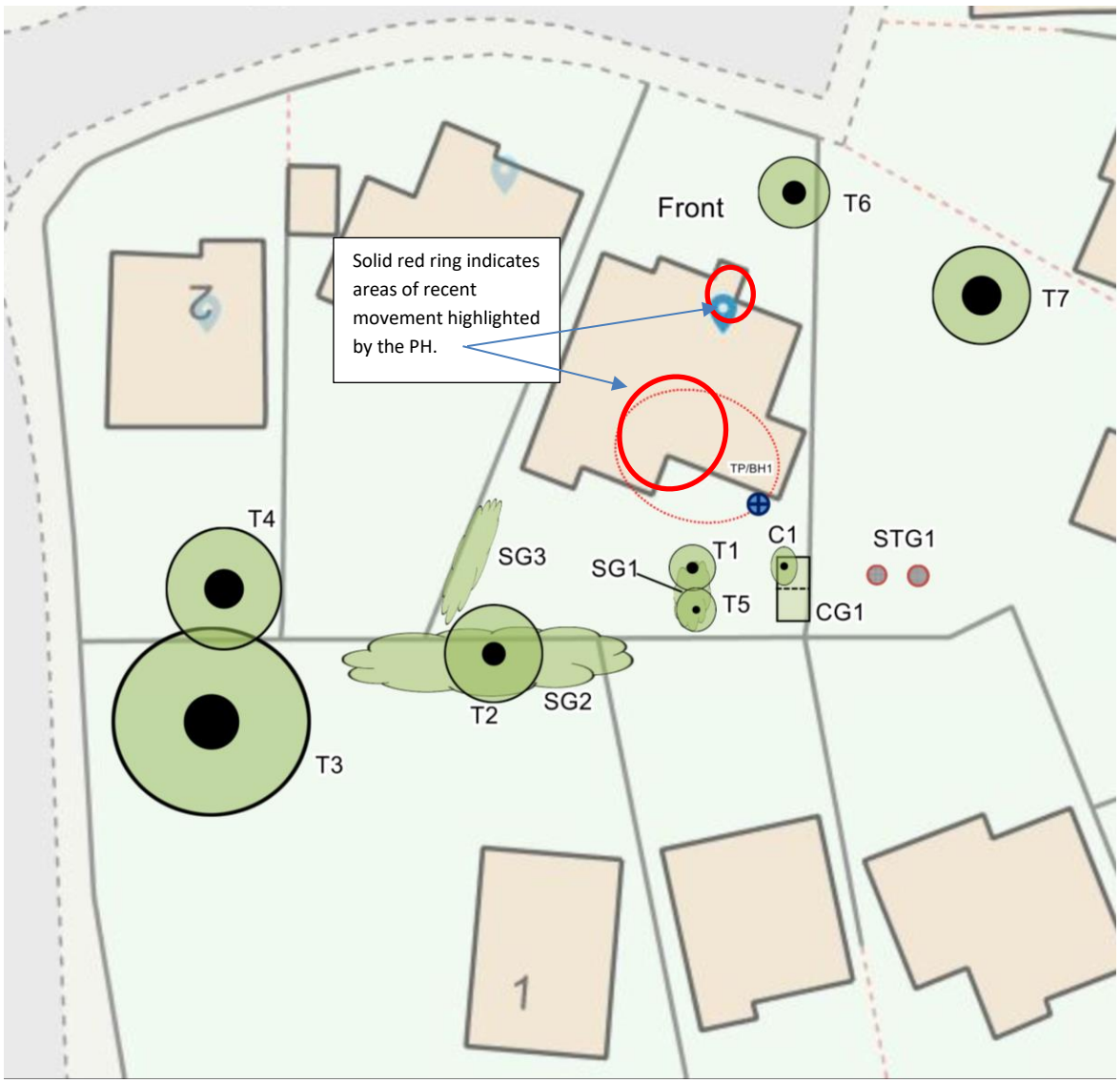
Ms: multi-stemmed * Estimated value

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
C1	Honeysuckle	2	10	1 *	1	Younger than Property	Policy Holder
Management history		Subject to past management/pruning.					
Recommendation		Maintain broadly at no more than current dimensions by periodic pruning.					
CG1	Ivy	2.5	10	3	2 *	Similar Age to Property	Joint Policy Holder & 8 Butterleys S75 3TD
Management history		Subject to past management/pruning.					
Recommendation		Maintain broadly at no more than current dimensions by periodic pruning.					
STG1	Possibly Rowan	0	300 *	0		Similar Age to Property	Third Party 8 Butterleys S75 3TD
Management history		Recently removed. (PH informed that STG1 looked like T7).					
Recommendation		No works required at present.					

Ms: multi-stemmed * Estimated value

Site Plan



Plan not to scale – indicative only

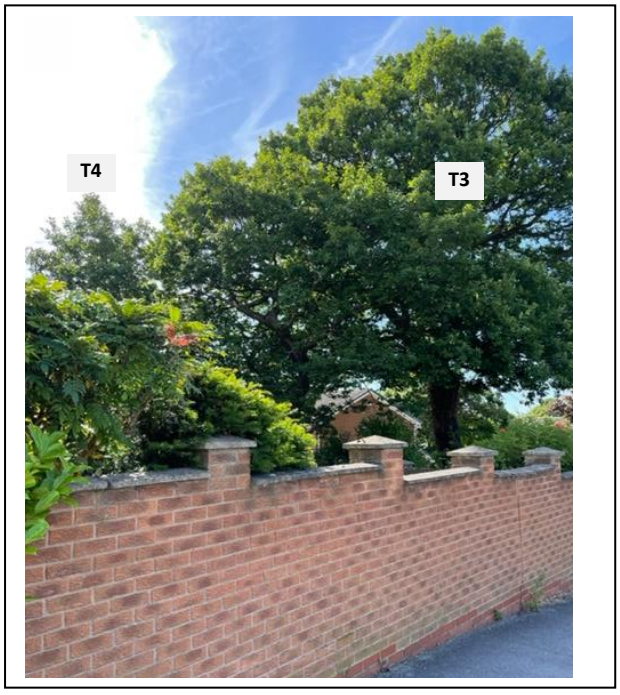
Approximate areas of damage

Property:	6 Butterleys Dodworth Barnsley S75 3TD	Client Ref: MWA Ref:	L/2020/62058/S SUB220607-10207

Images



View of T3 and T4 from street (Google street view 2009).



View of T3 and T4



View of T1 and T5



View of third party vegetation growing through PH trellis.



View of C1 and CG1.