

Arboricultural Appraisal Report

Subsidence Damage Investigation at:

2 Northborough Road
London
SW16 4AX



CLIENT:	Graham High Group Ltd
CLIENT REF:	L/2022/76092/S/GS/BC
MWA REF:	SUB230810-14010
MWA CONSULTANT:	Mark Bisley (BSc Hons)
REPORT DATE:	18/09/2023

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 (except TG1)	Local Authority	Yes
Trusts schemes	No	Other	No
Local Authority: -	London Borough of Croydon		

Introduction

Acting on instructions from Graham High Group Ltd, the insured property was visited on 08/09/2023 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, end of terrace house, built in the 1920s.

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 and rear of the dwelling with internal and external damage present. The two areas of damage are thought to be unrelated to each other. It was first noticed in September 2022.

At the time of the engineer's inspection (20/02/2023) the structural significance of the damage was found to fall within Category 2 (slight) of Table 1 of BRE Digest 251.

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

Site Investigations

Site investigations were carried out by DW Solutions Ltd on 15/06/2023, 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 remote borehole was sunk to the left. A drainage survey was also undertaken.

Foundations:

Ref	Foundation type	Depth at Underside (mm)
TP1	Concrete	700
TP2	Concrete	850

Soils:

Ref	Description	Plasticity Index (%)	Volume change potential (NHBC)
TP/BH1	Very stiff, silty CLAY to 3.00m. Ends at 3.00m.	32 – 49	Medium – High
TP/BH2	Stiff, silty CLAY to 2.50m. Very stiff, silty CLAY to 3.00m. Ends at 3.00m.	40 – 51	High
BH3	Firm, silty CLAY to 1.50m. Stiff, silty CLAY to 2.50m. Very stiff, silty CLAY to 3.00m. Ends at 3.00m.	38 – 55	Medium – High

Roots:

Ref	Roots Observed to depth of (mm)	Identification	Starch content
TP/BH1	2000	Broadleaf spp.	Absent - decayed
TP/BH2	2300	<i>Aesculus spp.</i>	Absent - decayed
BH3	None observed	-	-

Aesculus spp. are horse chestnuts.

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

Monitoring: No information available at the time of writing.

Discussion

Opinion and recommendations in this report are made on the understanding that Graham High Group Ltd 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 all excavations 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 (1400 – 1530kPa) in TP/BH1 and TP/BH2 (837 – 1490kPa). BH3 appears to have moderate to severe desiccation (213 – 1360kPa).

Roots were observed to a depth of 2000mm bgl in TP/BH1 and recovered samples have been positively identified (using anatomical analysis) as broadleaf spp., the origin of which could not be determined.

Roots were observed to a depth of 2300mm bgl in TP/BH2 and recovered samples have been positively identified (using anatomical analysis) as *Aesculus spp.*, the origin of which could not be determined.

In both cases recovered roots were decayed and so may originate from removed vegetation.

Irrespective of the identification of recovered root samples, the roots of T2, T4 and SG1 are also likely to be present 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 T2, T4 and SG1 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 T2, T4 and SG1 are removed.

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

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 but appear to be from previously removed vegetation.
- 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
T2	Field maple	5	160	3.5	4	Younger than Property	Local Authority
Management history		Subject to past management/pruning - appears regularly pruned.					
Recommendation		Remove (fell) to near ground level and treat stump to inhibit regrowth.					
T4	Ginkgo	4	40 Ms *	4.5	6	Younger than Property	Policy Holder
Management history		Recently reduced/pruned.					
Recommendation		Remove (fell) to near ground level and treat stump to inhibit regrowth.					
SG1	Hypericum, Hydrangea	2	5 Ms *	1.5	0	Younger than Property	Policy Holder
Management history		Subject to past management/pruning - appears regularly pruned.					
Recommendation		Remove (fell) to near ground level and grub out stumps 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
T1	Broadleaf cockspur thorn	4.5	80	2.5	6.5	Younger than Property	Local Authority
Management history		Subject to periodic reduction as part of an ongoing management regime.					
Recommendation		Maintain broadly at no more than current dimensions by periodic pruning.					
T3	Apple	5.5	230	2.5	9	Younger than Property	Local Authority
Management history		Subject to past management/pruning - appears regularly pruned.					
Recommendation		Maintain broadly at no more than current dimensions by periodic pruning.					
TG1	Sycamore	14 *	375 *	12 *	20	Younger than Property	Third Party 2 Norbury Court Road SW16 4HT
Management history		Subject to periodic reduction as part of an ongoing management regime.					
Recommendation		Maintain broadly at no more than current dimensions by periodic pruning.					
S1	Euonymus	2.5	40 Ms *	1.5	4	Younger than Property	Policy Holder
Management history		Subject to past management/pruning - appears regularly pruned.					
Recommendation		Do not allow to exceed current dimensions.					
S2	Laurel	2.5	45 Ms *	2	6	Younger than Property	Policy Holder
Management history		Subject to past management/pruning - appears regularly pruned.					
Recommendation		Do not allow to exceed current dimensions.					

Ms: multi-stemmed * Estimated value

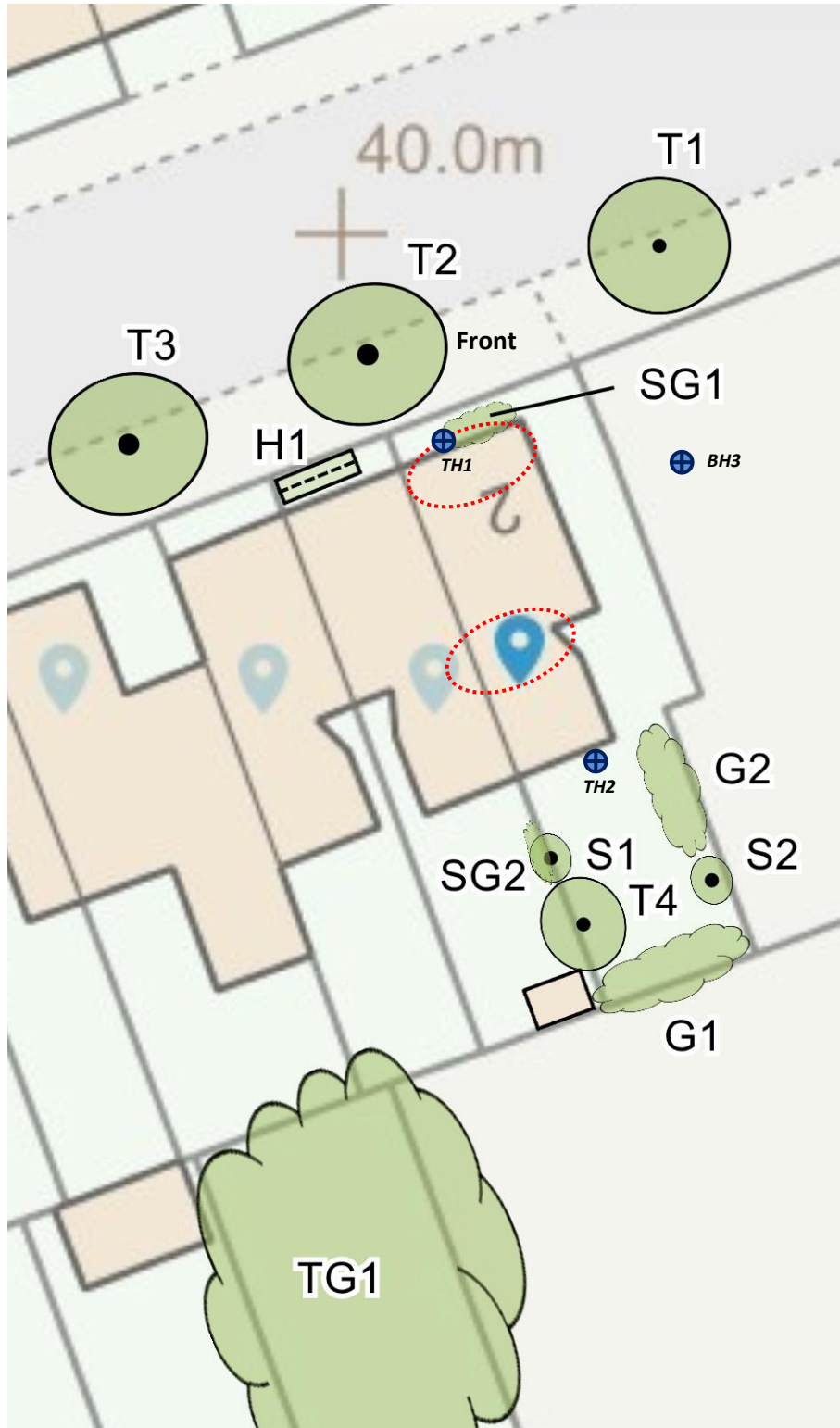
Table 2 Future Risk - Tree Details & Recommendations cont'd

Tree No.	Species	Ht. (m)	Dia. (mm)	Crown Spread (m)	Dist. to building (m)	Age Classification	Ownership
SG2	Rose, Hibiscus	2	10 Ms *	1.5 *	2 *	Younger than Property	Third Party 4 Northborough Road SW16 4AX
Management history		Subject to past management/pruning - appears regularly pruned.					
Recommendation		Do not allow to exceed current dimensions.					
G1	Privet, Plum, Forsythia	3.5	80	2.5	8	Younger than Property	Policy Holder
Management history		Subject to past management/pruning - appears regularly pruned.					
Recommendation		Maintain broadly at no more than current dimensions by periodic pruning.					
G2	Includes Choisya, Fuchsia, Apple, Aucuba, Euonymus	2	3 Ms *	1	2	Younger than Property	Policy Holder
Management history		Subject to past management/pruning - appears regularly pruned.					
Recommendation		Maintain broadly at no more than current dimensions by periodic pruning.					
H1	Privet	1.5	5 Ms *	0.5	0.5	Younger than Property	Third Party 4 Northborough Road SW16 4AX
Management history		Subject to past management/pruning - appears regularly trimmed.					
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

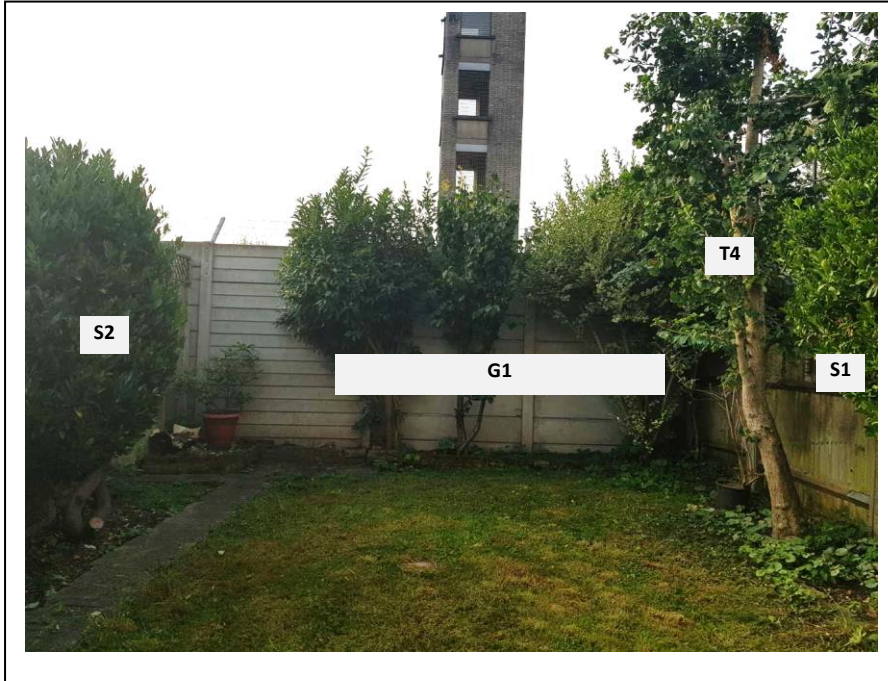
Images



View of trees to front of dwelling



View of vegetation to rear right



View of rear boundary



View of vegetation to rear left