

Arboricultural Appraisal Report

Subsidence Damage Investigation at:

17-20 Meadway Gardens
Ruislip
HA4 7QP



CLIENT: Meadow Chartered Surveyors
 CLIENT REF: 9440113P
 MWA REF: SUB240909-15618
 MWA CONSULTANT: Andy Clark
 REPORT DATE: 04/11/2024

SUMMARY

Statutory Controls		Mitigation (Current claim tree works)	
TPO current claim	Yes - T2	Policy Holder	Yes
TPO future risk	No	Domestic 3 rd Party	Yes
Cons. Area	No	Local Authority	No
Trusts schemes	No	Other	No
Local Authority: -	London Borough of Hillingdon		

Introduction

Acting on instructions from Meadow Chartered Surveyors, the insured property was visited on 01/11/2024 to assess the potential role of vegetation in relation to subsidence damage.

We are instructed to provide opinion on whether 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 observations/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 purpose-built two-storey block of four flats of traditional construction.

External areas comprise allocated gardens to the front and rear.

The site is generally level with no adverse topographical features.

Damage Description & History

Damage relates to the left-hand ground floor flat No. 19 and the first floor flat No 20 above, with cracking noted throughout.

At the time of the initial assessment (15/03/2023) the structural significance of the damage was found to fall within Category 2 (Slight) of Table 1 of BRE Digest 251. Further details of the damage can be obtained from Meadow Chartered Surveyors.

We have not been made aware of any previous claims.

Site Investigations

Site investigations were carried out by GEOCORE on 17/06/2024, when two 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 drains survey was also undertaken.

Foundations:

Ref	Foundation type	Depth at Underside (mm)
TP/BH1	Concrete	500
TP/BH2	Concrete	500

Soils:

Ref	Description	Plasticity Index (%)	Volume change potential (NHBC)
TP/BH1	Firm to stiff light brown slightly sandy slightly gravelly CLAY with occasional cobbles	44 - 54	High
TP/BH2	Firm to stiff light brown slightly sandy slightly gravelly CLAY	46	High

Roots:

Ref	Roots Observed to depth of (mm)	Identification	Starch content
TP/BH1	2400	Quercus spp.	Present
		Too decayed for identification	Absent
TP/BH2	No Roots Observed	N/A	N/A

Quercus spp. are oaks, both deciduous and evergreen.

Drains: The drains have been surveyed and defects have been identified, however 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 Meadow Chartered Surveyors has 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 indicates moisture depletion/desiccation at the time of sampling at depths beyond normal ambient soil drying processes, such as evaporation, which is indicative of the soil drying effects of vegetation.

Roots were observed below foundation depth in TP/BH1 and recovered samples have been positively identified (using anatomical analysis) as *Quercus* spp., the most likely origin of which will be T1 Oak as the closest related tree to the TP/BH1 location, however the much larger but more distant T2 Oak is also within influencing distance of the building and may also be a source of the retrieved samples.

Irrespective of the identification of recovered root samples, the roots of the Cypresses of TG1 and TG2 groups are also likely to be present below foundation level in proximity to the area of movement/damage with the potential to influence soil moisture and volumes. T3 Laurel will also likely exert a localised contributory influence.

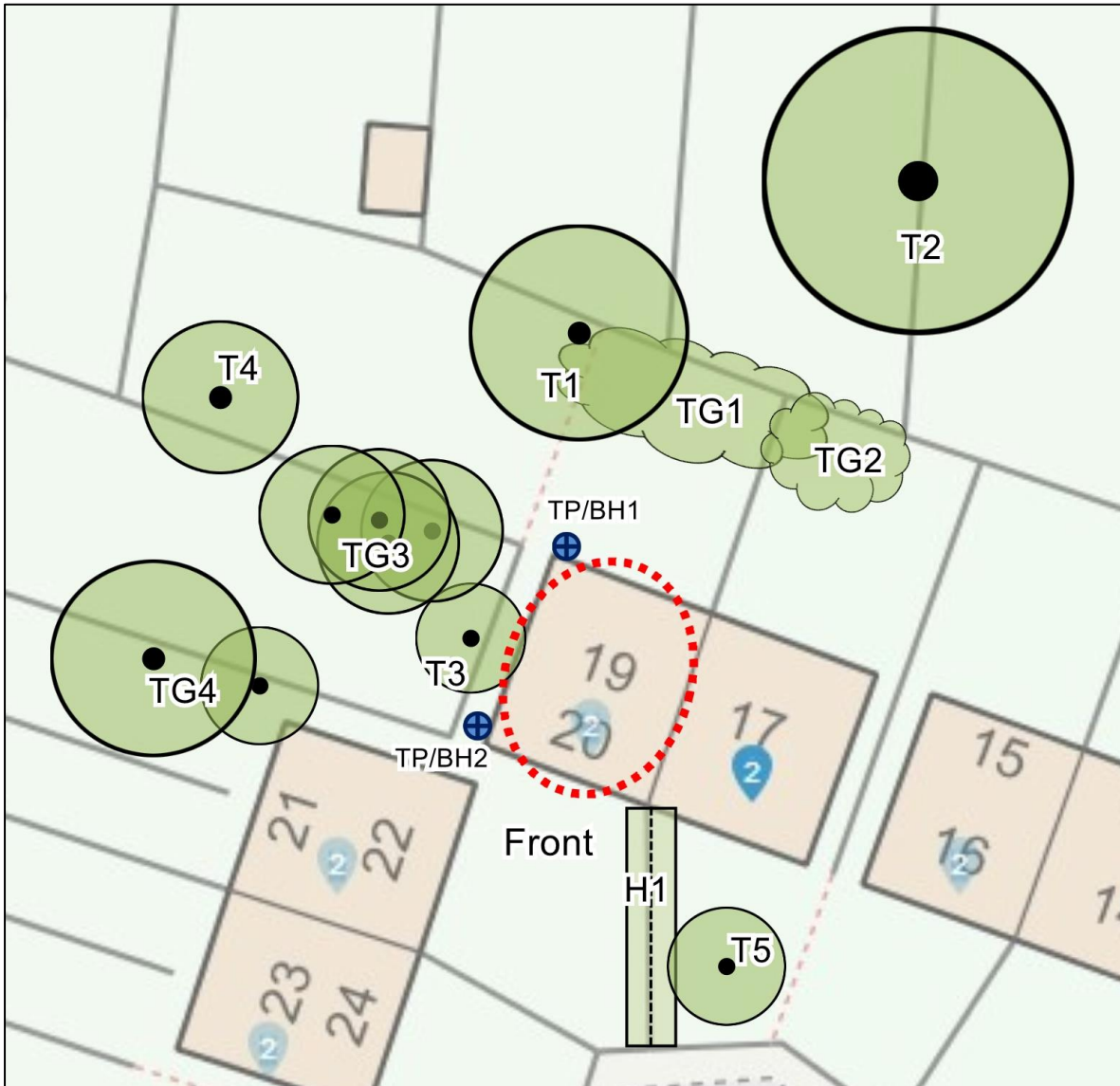
Based on the information currently available, engineering opinion and our own site assessment we conclude there is damage consistent with shrinkage of the clay subsoil exacerbated by the soil drying effects of vegetation.

If an arboricultural solution is to be implemented to mitigate the influence of the trees/vegetation considered to be responsible for the movement/damage, we recommend that T1 Oak and T3 Laurel are removed and TG1 and TG2 Cypress groups are reduced, combined with crown reduction of the more distant T2 Oak.

Where other vegetation recorded presents a potential future risk to building stability, management is recommended (see Table 2). Recommended tree works may however be subject to change upon receipt of additional information.

Consideration has been given to pruning alone as a means of mitigating vegetation influence, however in this case, this is not considered to offer a viable long-term solution due to the species characteristics, size and proximity of the responsible vegetation to the area of damage.

Site Plan



Plan not to scale – indicative only



Approximate areas of damage

Tree/vegetation locations are based on what could be determined at the time of the survey.

It should be noted that this is not always clear due to lack of access or a restricted view of the trees/vegetation and may be disputed by property owners.

MWA can undertake land registry searches as required.

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	15.0	560	11.0	11.4	Similar Age to Property	Policy Holder
Management history		Subject to past management/pruning - previously crown reduced.					
Recommendation		Remove (fell) to near ground level and treat stump to inhibit regrowth.					
T2	Oak	19.0 *	800	17.5 *	19.0 *	Older than Property	Third Party 20 Park Avenue HA4 7UQ
Management history		No significant recent management noted.					
Recommendation		Reduce height to approx. 16.0m and crown spread to approx. 12.0m leaving a balanced crown. Re-prune thereafter on a triennial cycle to maintain at reduced dimensions.					
T3	Laurel	3.5	50	4.0	3.0	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.					
TG1	Cypress group	6.5	200	5.0	10.4	Younger than Property	Policy Holder
Management history		Subject to past management/pruning - previously crown reduced and partially trimmed up to 2.0m.					
Recommendation		Reduce height to ~4m and prune lateral branches retaining live foliage. Prune annually to maintain at reduced dimensions.					
TG2	Cypress group	6.5	220 Ms *	5.0	10.4	Younger than Property	Policy Holder
Management history		Subject to past management/pruning - previously crown reduced and partially trimmed up to 2.0m.					
Recommendation		Reduce height to ~4m and prune lateral branches retaining live foliage. Prune annually to maintain at reduced dimensions.					

Ms: multi-stemmed * Estimated value

T - Tree; TG - Tree group; G - Group; H - Hedge; S - Shrub; SG - Shrub group; C - Climber; W - Woodland; ST - stump

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	Western Red Cedar	15.0	520	6.0	16.6	Younger than Property	Policy Holder
Management history		No significant past management noted.					
Recommendation		Maintain broadly at no larger than current dimensions by periodic pruning.					
T5	Apple	3.5	140 *	4.5	6.5	Younger than Property	Policy Holder
Management history		Subject to past management/pruning - appears regularly pruned.					
Recommendation		Maintain broadly at no larger than current dimensions by periodic pruning.					
TG3	Mixed spp. group of lapsed self-sown Ash and Sycamore with Laburnum	4.5 - 6.5	80 - 110	4.5	7.0	Younger than Property	Policy Holder
Management history		No significant recent management noted.					
Recommendation		Remove (fell) Ash and Sycamore stems to near ground level and treat stumps to inhibit regrowth.					
TG4	Birch and Sycamore group	10.0 - 16.0	140 - 220 Ms *	Up to 11.0	12.5 *	Younger than Property	Third Party 21 - 24 Meadway Gardens HA4 7QP
Management history		No significant recent management noted.					
Recommendation		Maintain broadly at no larger than current dimensions by periodic pruning.					

Ms: multi-stemmed * Estimated or approximate value

T - Tree; TG - Tree group; G – Group; H - Hedge; S - Shrub; SG - Shrub group; C - Climber; W – Woodland; ST - stump

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
H1	Privet and Hazel hedge	1.3	5	1.5	0.3	Younger than Property	Policy Holder
Management history		Subject to past management/pruning - very recently crown reduced/pruned.					
Recommendation		Cut-back sides hard to leave hedge no thicker than 0.5m. Trim thereafter on an annual cycle to maintain at broadly reduced dimensions.					

Ms: **multi-stemmed** *** Estimated or approximate value**

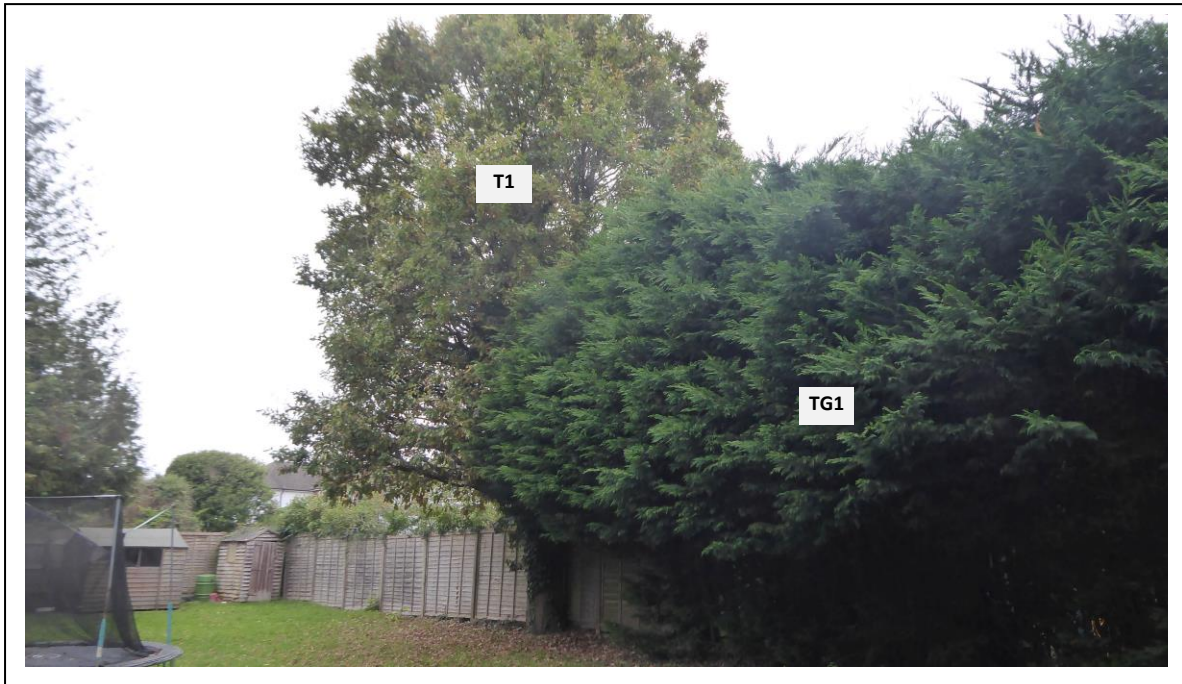
T - Tree; TG - Tree group; G – Group; H - Hedge; S - Shrub; SG - Shrub group; C - Climber; W – Woodland; ST - stump

Distance to building measurements are to the nearest point of the building unless otherwise stated.

Tree dimensions may be estimated or approximate based on accessibility.

Crown spread values are normally an estimate of the maximum spread but note tree crowns may be asymmetrical.

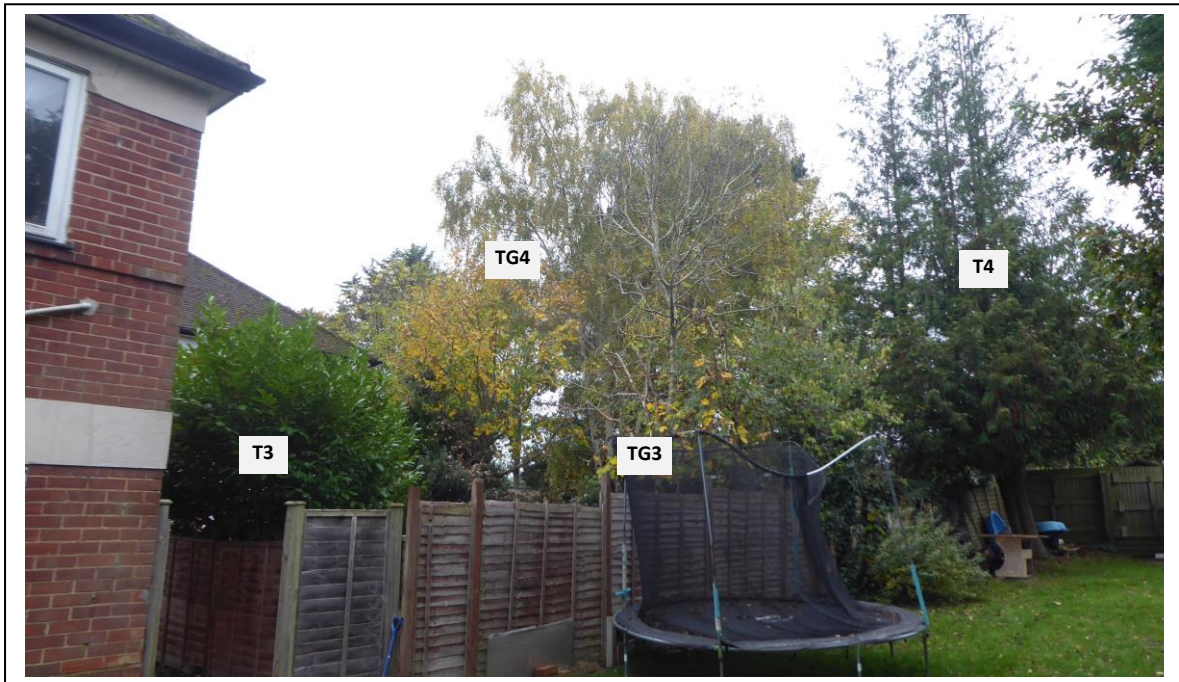
Photographs



View of T1 Oak and TG1 Cypress group



View of T2 Oak behind TG1 and TG2 Cypress groups



View of T3 Laurel, with TG3 group and T4 Western Red Cedar to left and TG4 group visible beyond



View of T5 Apple and H1 Privet and Hazel hedge

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 taken up by vegetation exceeds inputs from rainfall, which is at its maximum 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 soils are susceptible to movement as the clay shrinks and swells which when exacerbated by vegetation can result in building movement and cracking to walls.

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 reliable and quickest solution in reducing seasonal volumetric changes in the clay, restoring building stability, 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 and future management of a tree. Pruning alone, whilst reducing soil moisture uptake is often an unpredictable and unreliable management option in restoring building stability, either in the short or long term.