Arboricultural Appraisal Report

Subsidence Damage Investigation at:

The Lodge
Lavender Rd
Waterlooville
PO7 8BX

CLIENT:	Brawdia
CLIENT REF:	BRW.041305
MWA REF:	SUB250214-16076
MWA CONSULTANT:	Mark Bisley (BSc Hons)
REPORT DATE:	13/03/2025

SUMMARY

Statutory Controls			Mitigation (Current claim tree works)	
TPO current claim	No		Policy Holder	Yes
TPO future risk	Yes - T5		Domestic 3rd Party	No
Cons. Area	No		Local Authority	No
Trusts schemes	No		Other	No
Local Authority: -	Havant Borough Council			

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Introduction

Acting on instructions from Brawdia, the insured property was visited on 11/03/2025 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 two- and three-storey, purpose-built care home, constructed in the 1980s.

External areas comprise soft landscaping on all sides and a car park to the front right.

The site is generally level with no adverse topographical features.

Damage Description & History

The current damage affects the southeast corner of the structure with internal and external cracking on both floors. It was first noticed in September 2022 and has become worse since.

At the time of the engineer's inspection (January 2024) the structural significance of the damage was found to fall within Category 2 (slight) of Table 1 of BRE Digest 251.

Site Investigations

Site investigations were carried out by Auger on 01/05/2024, when three 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 also sunk to the front. A drains survey was undertaken.

Foundations:

Ref	Foundation type	Depth at Underside (mm)
TH1	Concrete	1300
TH2	Concrete	1200
TH3	Concrete	1300

Soils:

Ref	Description	Plasticity Index (%)	Volume change potential (NHBC)
TH1	Moist, very stiff, gravelly, silty CLAY to 3.00m. Ends at 3.00m.	29 - 54	Medium - High
TH2	Moist, very stiff, gravelly, silty CLAY to 3.00m. Ends at 3.00m.	38 - 59	Medium - High
TH3	Moist, very stiff, gravelly, silty CLAY to 3.00m. Ends at 3.00m.	31 - 49	Medium - High
TH4	Moist, very stiff, gravelly, silty CLAY to 3.00m. Ends at 3.00m.	28 - 37	Medium

Roots:

Ref	Roots Observed to depth of (mm)	Identification	Starch content
TH1	None observed	NA	NA
TH2	1700	*Quercus spp.* *Ulmus spp.*	Present Present
TH3	None observed	NA	NA
TH4	-	-	-

Quercus spp. are oaks.
Ulmus spp. are elms.

Drains: The drains have been surveyed and defects identified.

Monitoring: No information available at the time of writing.

Discussion

Opinion and recommendations in this report are made on the understanding that Brawdia 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 in TH2 and the onset in TH3 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.

This is supported by a comparison of soil suction data with Table 1 of BRE Digest 412 which indicates:
TH1 – Very slight to slight desiccation (11 – 53kPa)
TH2 – Very slight to severe desiccation (34 – 332kPa)
TH3 – Very slight to severe desiccation (7.6 – 477kPa)
TH4 – Very slight desiccation (6.6 – 9.4kPa)

Roots were observed below foundation depth in TH2 and recovered samples have been positively identified (using anatomical analysis) as *Quercus spp.* and *Ulmus spp.*, the origin of which will be T2 and TG1 respectively, confirming their influence on the soils below the foundations. TG1 is however likely to be having a lesser effect than T2 due to the age and size of the trees.

Irrespective of the identification of recovered root samples, the roots of T1 and T4 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.

T5 would also be capable of affecting the building but is much older than the building, so is not likely to be increasing its effects upon the structure. Importantly, areas of the building to the north of T5 are at similar distances and no damage has been reported in those areas. We do not therefore consider the influence of this tree be established at this time. This may however be subject to review if movement persists.

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. Having considered the information currently available, it is our opinion that T1, T2 and T4 are the principal cause of or are contributing to the current building movement and damage.

If an arboricultural solution is to be implemented to mitigate the influence of the trees/vegetation considered to be responsible for the movement/damage, works set out at Table 1 below are recommended.

Where other vegetation recorded presents a potential future risk to building stability, management is recommended (see Table 2).

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, the size of the affected area of building and the level of moisture depletion.

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

Replacement planting may be considered subject to species choice and planting location.

Site Plan

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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	Magnolia	5	215 Ms	9	3.5 and 7 to home 4.5 to bin store	Similar Age to Property	Policy Holder
Management history		Subject to periodic reduction as part of an ongoing management regime.					
Recommendation		Remove (fell) to near ground level and treat stump to inhibit regrowth.					
T2	Turkey Oak	22	700 *	20	8	Older than Property	Policy Holder
Management history		No significant recent management noted.					
Recommendation		Remove (fell) to near ground level. Owner to physically remove any regrowth (no chemical treatment due to translocation risk).					
T4	Holm Oak	3.5	310	9	12	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

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
T3	Cherry	3.5	45 Ms *	3	7	Younger than Property	Policy Holder
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.					
T5	English Oak	24	1350	24	14	Older than Property	Policy Holder
Management history		No significant recent management noted.					
Recommendation		Do not allow to exceed current dimensions (subject to review if movement persists).					
TG1	Ash, Elm, Oak, Hazel,	17	375 Ms *	4 - 16 *	5.5	Older than Property	Joint Policy Holder and/or Local Authority
Management history		No significant recent management noted.					
Recommendation		No works required at present (subject to review if movement persists).					
H1	Beech	1.5	10 Ms *	1	9	Younger than Property	Policy Holder
Management history		Subject to past management/pruning - appears regularly trimmed.					
Recommendation		Do not allow to exceed current dimensions.					

Ms: multi-stemmed * Estimated or approximate value

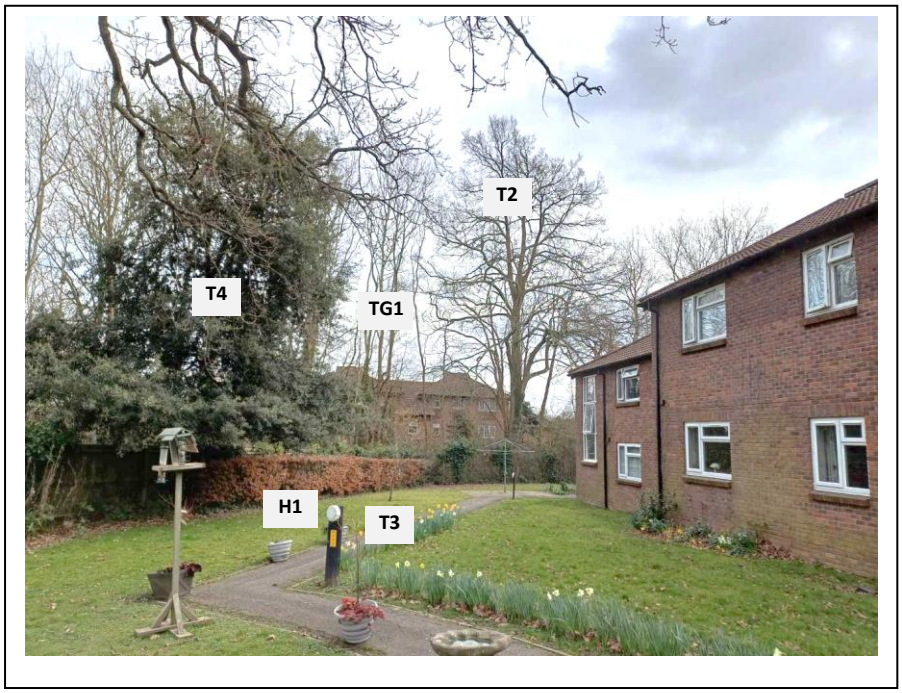
T - Tree; TG - Tree group; G – Group; H - Hedge; S - Shrub; SG - Shrub group; C - Climber; W – Woodland; ST - stump

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.

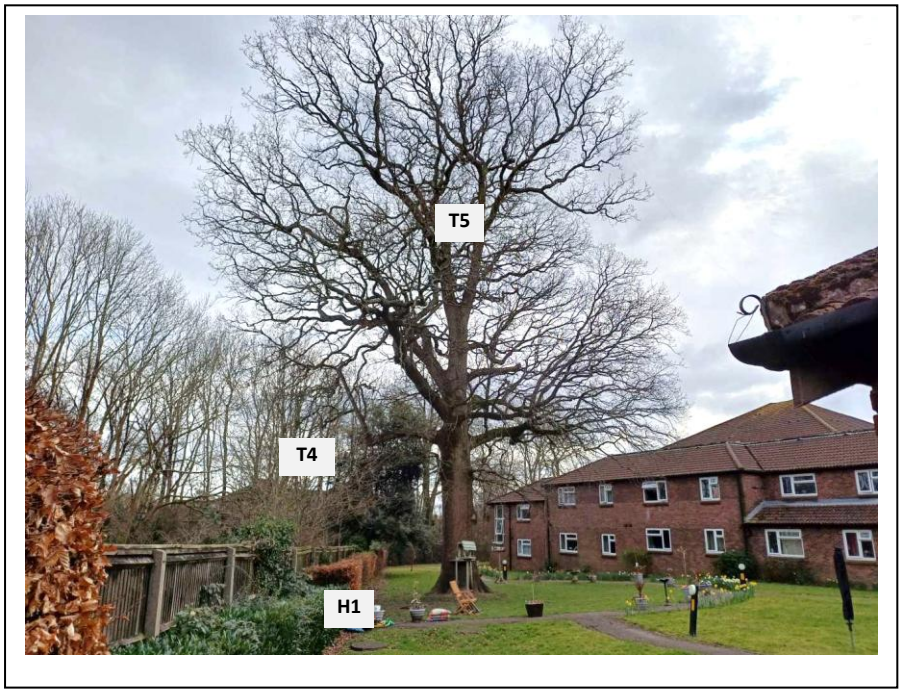
Photographs

View of T1 from south

View of trees to south



View of T4 and T2



View of T5 from north

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.