Arboricultural Appraisal Report

Subsidence Damage Investigation at:

Four Oaks
Maiden Street
Weston
Hitchin
SG4 7AA



CLIENT:	Davies Group Ltd
CLIENT REF:	71690687
MWA REF:	SUB170207-1076
MWA CONSULTANT:	David Williams (N.D.Arb MArborA)
REPORT DATE:	17-02-2017

SUMMARY

Statutory Controls			Mitigation (current claim)	
TPO	No		Insured	Yes
Cons. Area	Yes		3rd Party	No
Trusts schemes	N/A		Local Authority	No
Planning	N/A		Other	No
Local Authority: -	North Hertfordshire District Council			

MWA Arboriculture Ltd
Bloxham Mill Business Centre
Barford Rd, Bloxham
Banbury
OX15 4FF

Tel: 0191 432 9560
Email: office@mwaarboriculture.co.uk

Introduction

Acting on instructions received from Davies Group Ltd, the insured property was visited on 15/02/2017 for the purpose of assessing 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 two storey dwelling dating back to c.1965 with various additions including an in-fill extension (kitchen) to the front dating back to c.1987, garage extension dating back to c.1997 and rear single storey extension of unknown age.

External areas comprise gardens to the front and rear occupying a plot with slight changes in elevation from the front towards the rear.

Damage Description & History

The current damage is limited to the front, in-fill extension that now accommodates the kitchen/dining areas.

The damage was first observed during September 2016 prompting a claim to buildings insurers.

At the time of the engineers' inspection on 4th October 2016 the structural significance of the damage was found to fall within Category 3 (moderate) of Table 1 of BRE Digest 251.

Site investigations

Site investigations were carried out by DRC on 23rd November 2016 when a single trial pit was excavated to reveal the foundations, with a borehole being sunk through the base of the trial pit to determine subsoil conditions.

Foundations:

Ref	Foundation type	Depth at Underside (mm)
TH1	Concrete	1000

Soils:

Ref	Description	Plasticity Index (%)	Volume change potential (NHBC)
BH1	Stiff becoming very-stiff silty CLAY	32.0	Medium

Roots:

Ref	Roots Observed to depth of (mm)	Identification	Starch content
BH1	1700	*Quercus spp.*	N/A

Drains: No information currently available

Monitoring: Level monitoring is in progress.

Discussion

Opinion and recommendations are made on the understanding that Davies 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 of medium volume change potential (NHBC Classification) susceptible to undergoing volumetric change in relation to changes in soil moisture. A comparison between moisture content and the plastic and liquid limits suggests significant desiccation in BH1 peaking at 2000mm depth.

Soil suction testing records 'severe' (BRE Digest 412) desiccation where the suction vs depth profile corroborates the interpretation of Atterberg limits data.

There is desiccation 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 1700mm and recovered samples have been positively identified (using anatomical analysis) as Quercus spp., the origin of which will be T1 confirming the influence of this tree on soil volumes below the area of damage.

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, the dominant cause of which will be the drying action of T1 below the in-fill kitchen extension.

Consideration has been given to pruning 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.

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

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.

Table 1 **Current Claim** - Tree Details & Recommendations

Tree No.	Species	Ht (m)	Dia (cm)	Crown Spread (m)	Dist. to building (m)	Age Classification	Ownership
T1	Oak	13.5	140+	1.3	7.6-9.0	Older than property	Policy Holder
Management history		A tree of significant dimensions with multiple cavities.					
Recommendation		Remove subject to ground heave being within acceptable limits. Scope for bat presence/activity within the trees cavities.					
H1	Box	1.0	MS	1.0	0.0	Younger than property	Policy Holder
Management history		Managed hedge					
Recommendation		Maintain at current dimensions.					

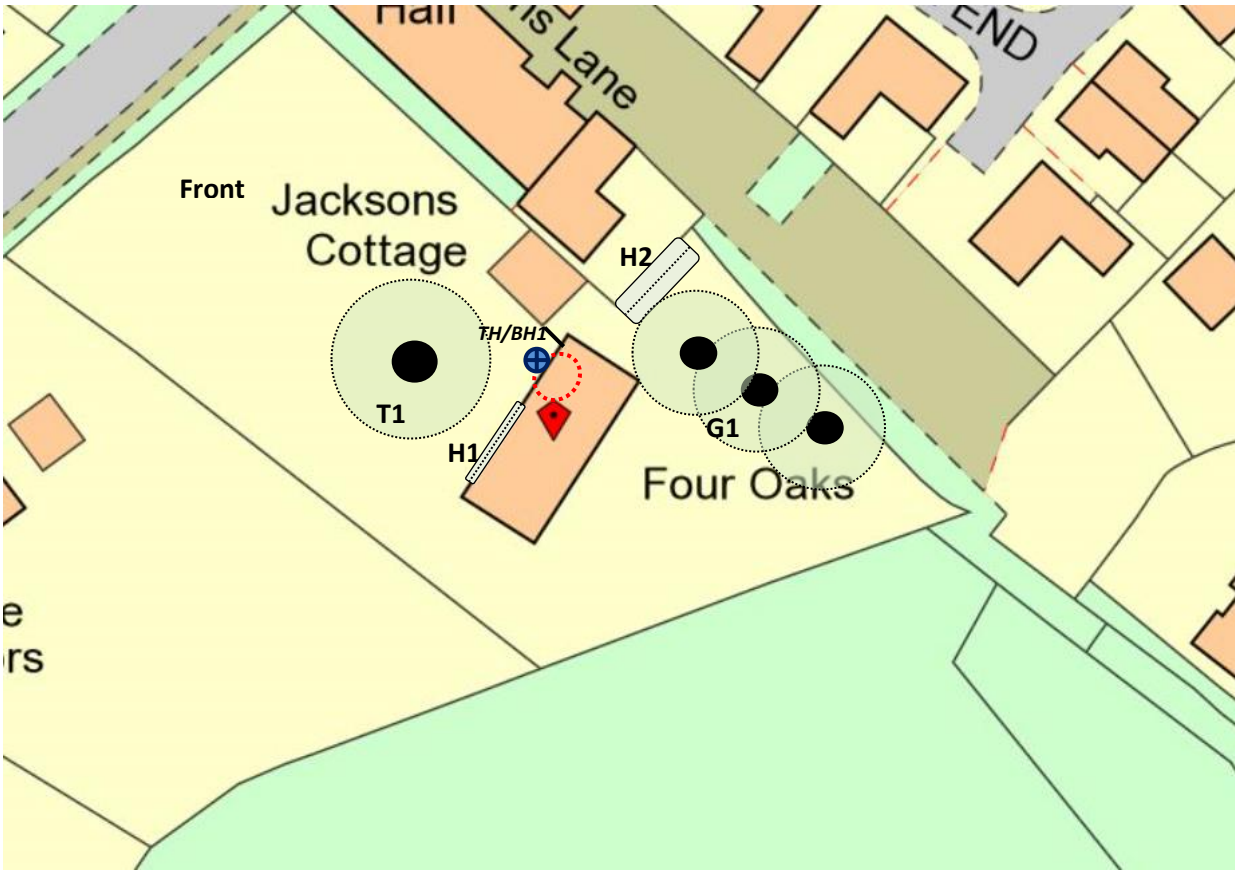
Ms: multi-stemmed * Estimated value

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

Tree No.	Species	Ht (m)	Dia (cm)	Crown Spread (m)	Dist. to building (m)	Age Classification	Ownership
G1	Oak x3	12.0-18.0	M/S Av60	3.0	4.7+	Older than property	Policy Holder
Recommendation		Maintain at current dimensions.					
H2	Cypress / Yew	2.7-5.0	MS	0.4	7.0+	Younger than property	Policy Holder
Recommendation		Maintain at current dimensions.					

Ms: multi-stemmed * Estimated value

SITE PLAN



Plan not to scale – indicative only

Approximate areas of damage

Images



View of T1 and front elevation



View of T1, H1 and area of damage highlighted



View of G1 and H2