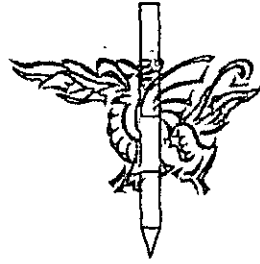


Our Ref: 45/20118795



03 October 2012

B. MAULE & CO. LTD

Engineering Appraisals & Surveys

**ENGINEERING APPRAISAL
CONCERNING SUBSIDENCE DAMAGE AT
2 LAMBERT FOLD
DODWORTH
BARNSELY
S75 3SX**



INTRODUCTION

This report is presented on behalf of the Buildings Insurers, Liverpool Victoria, in respect of an insurance claim for subsidence damages.

CIRCUMSTANCES

Following instruction from Insurers on 30th September 2011, B Maule and Co Ltd attended the subject property on 10th October 2011.

Following a visual inspection, we were of the opinion that internal and external cracking, concentrated to the rear/rear right of the subject property had occurred due to subsidence.

We considered that subsidence movement may be due to volumetric changes in the founding soils occurring as a result of moisture extraction activities of an adjacent oak tree.

Site investigations comprising geotechnical investigation, drainage survey, arboricultural assessment and a level monitoring exercise were instigated. The results of the various investigations are discussed later within this report.

DESCRIPTION OF PROPERTY AND HISTORY OF OWNERSHIP

The subject property comprises a detached, two storey, domestic dwelling constructed circa 1990.

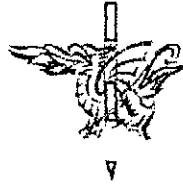
The design and construction methodologies are traditional.

The property is owned and occupied by Mr K and Mrs A Jaques and their family being purchased in 1995.

DESCRIPTION OF DAMAGE

At the time of our initial inspection, damage was noted externally to the right flank and rear elevation. Internal crack damage was noted to the ground floor rear right lounge, first floor rear right bedroom and first floor front right bedroom.

With maximum crack widths of circa 5mm width, the damage classified as falling within Category 2 of the BRE Digest 251, table 1, classifications, i.e. Slight.



INVESTIGATION RESULTS – DRAINAGE

Given the presence of drainage services in the vicinity of movement, a CCTV survey was instructed. A copy of the site plan which accompanied the drainage survey is appended to this report. Drainage leaks were not indicated as being a causal factor of subsidence movement.

The drainage survey found the bulk of the drainage system to be in good order with the exception of run RWP1 – Buried Manhole which tracks along the right flank.

The survey found the run mentioned above to be misshapen from 4.0 to 9.0 metres downstream of RWP1 as a result of ground movement.

The damaged run was excavated and partially replaced in January 2012.

INVESTIGATION RESULTS – GEOTECHNICAL

The geotechnical investigation comprised a trial pit with borehole extension adjacent to the rear right corner and remote borehole. The investigation found:

The underside of the foundation to the rear right corner of the property was located at 1200mm below ground level.

Directly below the foundation natural firm to stiff clay was seen to 1450mm BGL, followed by siltstone to 1750mm BGL and then sandstone to termination of the investigation at 2100mm BGL.

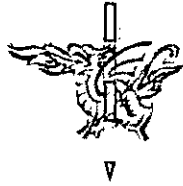
Subsequent analysis of the clay band found it to be of intermediate to high plasticity according to BS5390.

Root activity was seen within recovered soil samples to a depth of 1600mm.

Roots recovered during the investigation were (tentatively) identified as emanating from a Quercus (Oak).

The limited horizon of the clay band meant no meaningful moisture analysis was possible. However and taken as a whole, the results of the geotechnical investigation support our opinion that the damage to the subject property is the result of vegetation induced clay shrinkage.

A copy of the geotechnical report is appended to this report.



INVESTIGATION RESULTS – LEVEL MONITORING

A level monitoring exercise was instructed and commenced 31st October 2011. A copy of the results table including readings up to 30th August 2012 is appended to this report.

The level monitoring exercise to date records a clear pattern of seasonal movement positively indicating the influence of adjacent vegetation.

INVESTIGATION RESULTS – ARBORICULTURAL ASSESSMENT

Arboricultural assessment was undertaken by MWA Arboriculture Ltd. A copy of the associated report is appended to this report.

MWA concluded the substantive cause of subsidence damage to the subject property was shrinkage of the clay subsoil due to the moisture demand activities of the adjacent Oak tree.

MWA recommend the Oak tree be removed in order to stabilise the subject property.

No other items of vegetation were implicated as being causal factors in regards the current damage.

CAUSE OF DAMAGE

The results of the various investigations support our initial opinion that the cause of subsidence damage to the subject property is vegetation induced clay shrinkage with the significant factor being the adjacent Oak tree.

RECOMMENDATIONS

Normally in cases such as this the ground and hence property can be stabilised if the causal factor is addressed, i.e. the Oak tree is removed, such that crack repair and decorative reinstatement works only may be progressed.

We therefore recommend removal of the adjacent Oak tree as a means of stabilising the subject property.

However and in the event that the Oak remains, superstructure only type repairs are likely to fail.

In the event the Oak remains consideration may be given to the use of a root barrier or similar as a means of removing the trees influence upon the founding soils.



In the event that tree works are progressed and the building stabilises naturally, repair costs may be in the order of £5,000.00 only.

Should the tree remain and installation of a root barrier be progressed, we anticipate repair costs will increase by around £10,000.00.

CONCLUSION

Damage has occurred to the subject property indicative of subsidence.

Site investigations have established the conditions necessary for clay shrinkage to occur.

Roots from the adjacent Oak tree have been found at sub-foundation depth (albeit by means of tentative identification only).

Level monitoring has recorded seasonal movement.

Beyond reasonable doubt, the adjacent Oak tree has been indicated as being the substantive cause of subsidence.

Arborists have recommended the removal of the adjacent Oak as a means of stabilising the subject property.

Should the Oak be removed, it is expected the ground and hence property will stabilise such that superstructure only crack repair and decorative works may be progressed.

Should the Oak remain it may become necessary to stabilise the property by alternate means, such as by the use of a root barrier or similar.

Report by: Mark W Golding ND BTEC MFPWS

Mark W Golding ND BTEC MFPWS
For and on behalf of
B Maule and Co Ltd
Tel: 01582 602260
Email: mgolding@maule.co.uk