# Arboricultural Appraisal Report

## Subsidence Damage Investigation at:

9 St Helier Drive
Barnsley
S75 2HD

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|---|---|
| CLIENT: | B Maule & Co. Ltd |
| CLIENT REF: | 20129573 |
| POLICYHOLDER: | Mr Howe |
| MWA REF: | S030812.01DM |
| MWA CONSULTANT: | Stephen Swinburne |
| REPORT DATE: | 14 Aug 2012 |

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## 1.0 Introduction

Acting on instructions received from B Maule & Co. Ltd the insured property was visited on 12 Aug 2012 for the purpose of assessing the potential role of vegetation in respect of clay-shrinkage 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.

Recommendations are given with reference to the technical reports and information currently available and may be subject to review upon receipt of additional site investigation data and engineering opinion.

The 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.

## 2.0 Property Description

The property occupies a relatively level site and comprises a brick built, detached bungalow with well-maintained gardens to the front and rear.

We understand that the property was constructed in 1974 and has not been extended.

## 3.0 Damage Description & History

The current damage was noted earlier this year when the property was inspected prior to being put on the market for sale. Cracking is present on the rear wall of the bungalow.

## 4.0 Site Investigations

Site investigations were carried out on the 13th of July 2012. Two trial pits were hand excavated to reveal the foundations; TP1 was excavated to a depth of 700m whilst TP2 reached a depth of 900mm. To determine subsoil conditions a borehole was sunk through the base of each trial pit reaching 2100mm in both BH1 and BH2.

Foundations:

TP/BH1 -A concrete foundation bearing at 590mm below ground level (bgl) onto stiff grey mottled orangish brown CLAY

TP/BH2 -A concrete foundation bearing at 490mm bgl onto made ground. Natural stiff clay was uncovered to 1700mm.

Soils:

The natural clay material encountered in both TP/BH1 & TP/BH2 was tested and classified as having a high volume change potential.

Roots:

TP/BH1 - Recovered samples identified as Acer spp to 610mm whilst Pomoideae roots were recovered to 1800mm.

TP/BH2 -Roots recovered from this borehole were recorded as originating from a broadleaved species however the recovered samples were too decayed for positive identification.

## 5.0 Appraisal

Opinion and recommendations are made on the understanding that engineers 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 high shrinkage potential (NHBC Classification) susceptible to undergoing volumetric change in relation to changes in soil moisture. Based on a comparison between moisture content and the plastic and liquid limits there is evidence of severe desiccation in BH1 with less severe desiccation in BH2. This desiccation is at depths beyond normal ambient soil drying processes such as evaporation and is indicative of the soil drying effects of vegetation.

Roots were observed and recovered to a depth of 1800mm in BH1 and 1950mm in BH2 confirming the influence of several elements of vegetation on soil moisture and volumes below much of the property. Our survey did not highlight any trees of the Pomoideae group that would be the likely origin of the Pomoideae roots recovered from TP/BH1. Roots from the laburnum T6 are likely to be present but this tree is of the Leguminosae genus.

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.

Due to the presence of a number of large trees in relatively close proximity to the rear elevation of the property it is not possible to apportion specific degrees of influence to individual trees. There are several trees with the potential to be affecting moisture volumes beneath the foundations of the property and as such, if a predictable Arboricultural solution is to be implemented to restore stability to the property, significant remedial works will be necessary and it is our opinion that T3, T4, T5 & T6 should be removed and a period of monitoring be initiated to assess the efficacy of the prescribed tree works. Should further movement occur a review of vegetation management may be required.

## 6.0 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.
- There is significant vegetation present with the potential to influence soil moisture and volumes below foundation level resulting in the movement of the property.
- Removal of vegetation is recommend together with future management of retained vegetation.
- Recommended works should be implemented as soon as possible with the effects being assessed by monitoring. If movement persists further opinion should be sought from ourselves.

## Table 1 Tree Details - Current Claim

| Tree No. | Species | Ht (m) | Dia (cm) | Crown Spread (m) | Dist. to building (m) | Age Classification | Ownership |
|---|---|---|---|---|---|---|---|
| T3 | Sycamore | 16 | 56 | 9 | 9 | Not significantly older than the property | Insured |
| Recommendation | | Remove tree and subsequent regrowth on an annual basis. | | | | | |
| T4 | Ash | 15.5 | 45 | 10 | 10 | Not significantly older than the property | No 11 Oakfield Walk, S75 2LW |
| Recommendation | | Remove and treat stump to inhibit regrowth | | | | | |
| T5 | Sycamore | 16* | 60* | 9* | 8* | Not significantly older than the property | No 7 St Helier Drive |
| Recommendation | | Remove and treat stump to inhibit regrowth | | | | | |
| T6 | Laburnum | 6 | Ms | 5 | 2 | Younger than property | Insured |
| Recommendation | | Remove and treat stump to inhibit regrowth | | | | | |

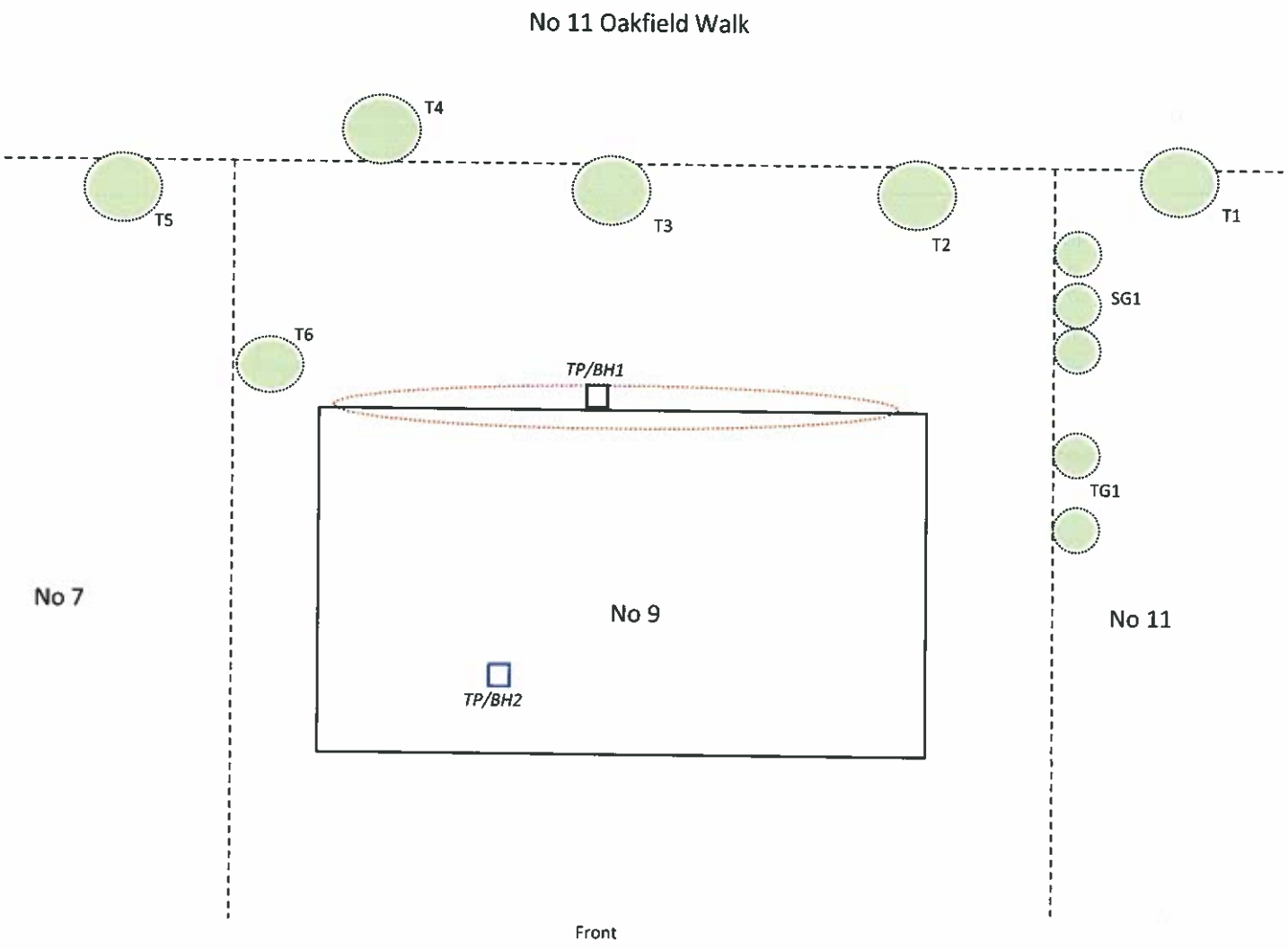
Ms: multi-stemmed * Denotes estimated value

Table 2 Tree Details - Future Risk

| Tree No. | Species | Ht (m) | Dia (cm) | Crown Spread (m) | Dist. to building (m) | Age Classification | Ownership |
|---|---|---|---|---|---|---|---|
| T1 | Sycamore | 16* | 60* | 18* | 15 | Not significantly older than the property | No 11 St Helier Drive |
| Recommendation | | Do not allow to exceed current dimensions. | | | | | |
| T2 | Sycamore | 12.5 | 48 | 8 | 10 | Not significantly older than the property | Insured |
| Recommendation | | Remove tree and subsequent regrowth on an annual basis. | | | | | |
| TG1 | Cypress x 2 | 6.5 | 30* | 3 | 2 | Younger than property | No 11 St Helier Drive |
| Recommendation | | Do not allow to exceed current dimensions. | | | | | |
| SG1 | Mixed species group including holly, pyracantha | 4 | Ms | 4 | 3 | Younger than property | No 11 St Helier Drive |
| Recommendation | | Do not allow to exceed current dimensions. | | | | | |

Ms: multi-stemmed * Denotes estimated value

## 7.0 Site Plan




Plan not to scale – indicative only

Approximate areas of damage

## 8.0 Images



## 9.0 Tree Works Estimate

Current claim tree works can be arranged with professional tree works contractors subject to a formal quotation.

**MWA Arboriculture maintains a vetted network of professional tree works contractors throughout the United Kingdom all of which are regularly audited to ensure compliance with our service standards.**

## 10.0 Statutory Protection

The Local Authority has confirmed that there is Tree Preservation Order in place and therefore the council consent will be required prior to undertaking tree management works.