# Arboricultural Appraisal Report

## Subsidence Damage Investigation at:

16 Heath Hurst Road
Hampstead
London
NW3 2RX

| | |
|---|---|
| CLIENT: | Crawford & Company |
| CLIENT REF: | SU1503854 |
| MWA REF: | SUB160115-501 |
| MWA CONSULTANT: | David Mahon (B.Sc Hons MICFor MArborA) |
| REPORT DATE: | 26-01-2016 |

## SUMMARY

| Statutory Controls | | | Mitigation (current claim) | |
|---|---|---|---|---|
| TPO | Yes – T1 | | Insured | No |
| Cons. Area | Yes | | 3rd Party | Yes |
| Trusts schemes | No | | Local Authority | No |
| Planning | No | | Other | no |
| Local Authority: - | London Borough of Camden | | | |

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

[redacted]

## Introduction

Acting on instructions received from Crawford & Company, the insured property was visited on 21/01/2016 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 mid-terrace 3 storey house with an original 2 storey projection to the rear built in C1900.

External areas comprise a small town garden to the front and a lawned and paved garden to the rear.

The site is generally level with no adverse topographical features.

## Damage Description & History

The current damage affects the rear projection with internal cracking at ground and first floor levels with external cracks on the rear left hand elevations. The damage was first noticed in September 2015.

At the time of the engineers' inspection (20/10/2015) the structural significance of the damage was found to fall within Category 4 (severe) of Table 1 of BRE Digest 251.

## Site investigations

Site investigations were carried out by CET on 04.12.2015 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 | 470 |

**Soils:**

| Ref | Description | Plasticity Index (%) | Volume change potential (NHBC) |
|---|---|---|---|
| BH1 | Firm to Stiff, mid brown, grey veined, silty CLAY | 52 - 62 | Very High |

**Roots:**

| Ref | Roots Observed to depth of (mm) | Identification | Starch content |
|---|---|---|---|
| BH1 | 2600 | Rosa spp<br>Fraxinus spp. | Present<br>Present |

Rosa spp. are roses.
Fraxinus spp. include common ash.

**Drains:** Drains have been surveyed and no significant defects identified.

**Monitoring:** Level monitoring is in progress.

## Discussion

Opinion and recommendations are made on the understanding that Crawford & Company 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 very high 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 shows desiccation in BH1 which is corroborated by the suction values indicating very severe desiccation (BRE Digest 412).

There is desiccation at depths beyond normal ambient soil drying processes such as evaporation indicative of the soil drying effects of vegetation.

Shear vane testing of the substrate indicates that it is sufficiently consolidated to bear the imposed load and as such the damage cannot be attributed to consolidation settlement. This is borne out by the relative age of the building and the recent appearance of damage.

Roots were observed to a depth of 2600mm bgl in BH1 and recovered samples have been positively identified (using anatomical analysis) as ash, the origin of which will be T1 confirming the influence of this tree on the soils below the foundations. The Rosa species roots are from non-significant vegetation.

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. Having considered the available information, it is our opinion that T1 is the principal cause of the current subsidence damage. If an arboricultural solution is to be implemented to mitigate the current damage and allow the soils beneath the property to recover to a position such that an effective repair solution can be implemented we recommend that T1 is removed.

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 (mm) | Crown Spread (m) | Dist. to building (m) | Age Classification | Ownership |
|---|---|---|---|---|---|---|---|
| T1 | Ash – Twin Stem | *17.0 | *600 | *12.0 | 9.5 | Younger than property | 3rd Party:- 4 Keats Close |
| Management history | | Reduced in past ~ (within the last five years) | | | | | |
| Recommendation | | Remove and treat stump to inhibit regrowth | | | | | |

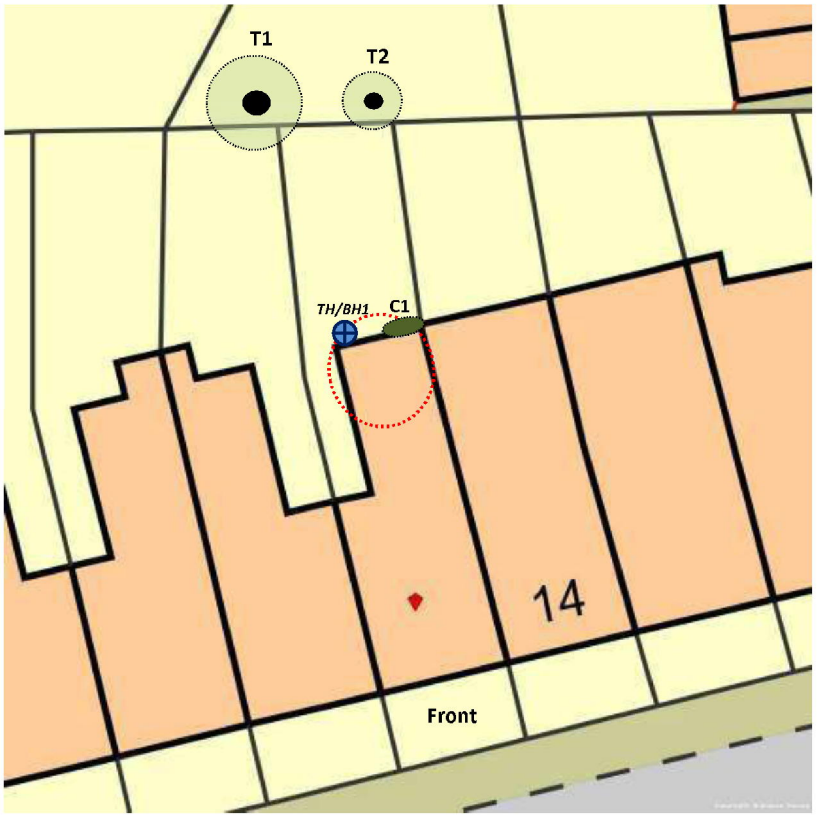
Ms: multi-stemmed * Estimated value

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

| Tree No. | Species | Ht (m) | Dia (mm) | Crown Spread (m) | Dist. to building (m) | Age Classification | Ownership |
|---|---|---|---|---|---|---|---|
| T2 | Lawson Cypress | *9.0 | *300 | 6.0 | 9.0 | Younger than property | 3rd Party:- 4 Keats Close |
| Management history | | No Recent Management | | | | | |
| Recommendation | | Do not allow to exceed current dimensions | | | | | |
| C1 | Jasmin | 3.0 | <70 | 3.0 | 1.0 | Younger than property | Policy holder |
| Management history | | Subject to past management | | | | | |
| Recommendation | | Do not allow to exceed current dimensions | | | | | |

Ms: multi-stemmed * Estimated value

**SITE PLAN**




Plan not to scale – indicative only

Approximate areas of damage

## Images

View of T1

View of T2

View of C1