ADDENDUM TECHNICAL REPORT

Crawford Reference: SU1903345

Uplands Residents Management Company
Flats 1 & 3
Uplands Court
19 Frithwood Avenue
Northwood
HA6 3LY

Prepared for

Allianz Commercial

Claim Reference BH/2/337828

SUBSIDENCE CLAIM

DATE 27 May 2021

Crawford and Company
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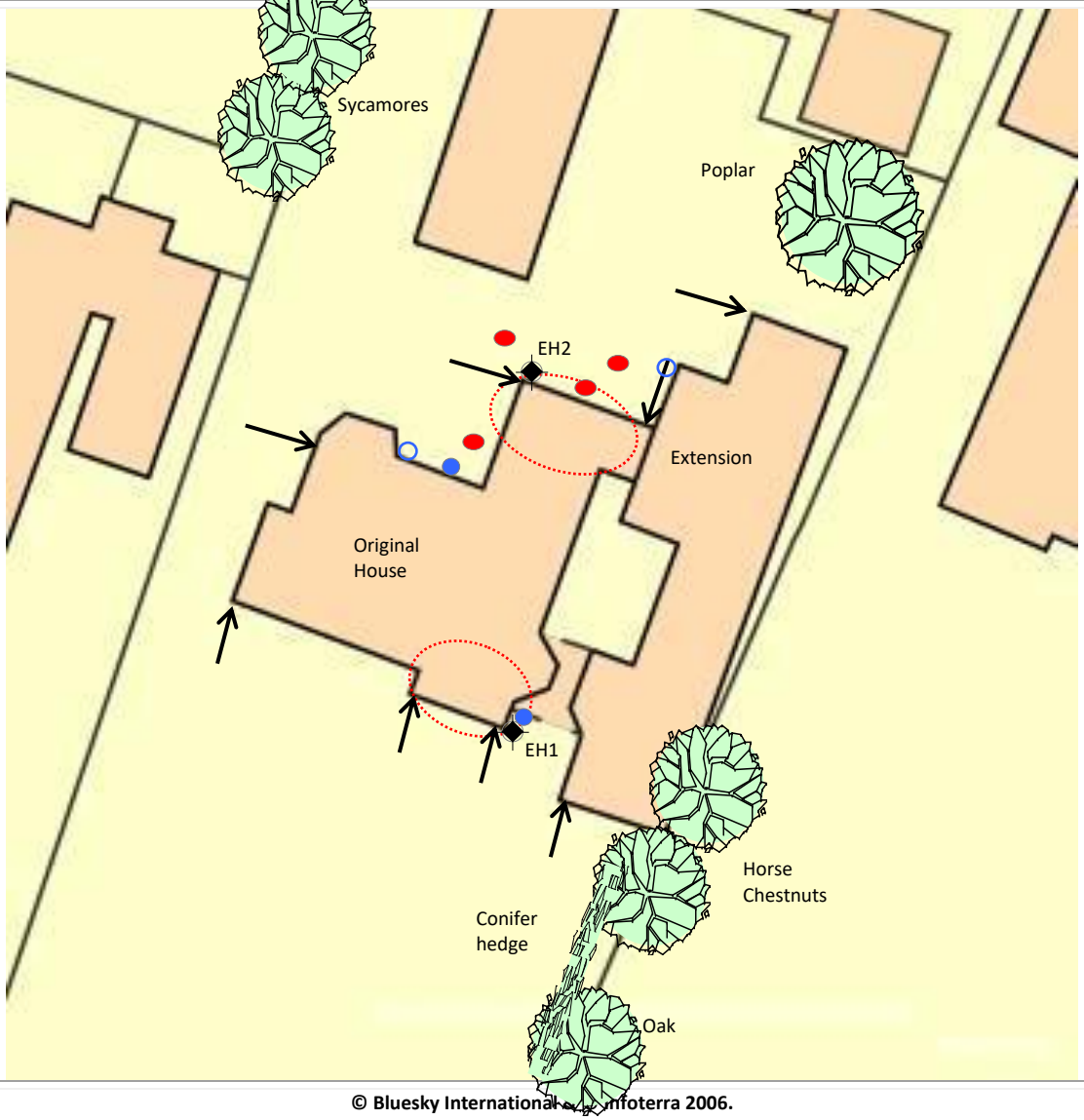
Site Plan	This plan is Not to Scale

This plan is diagrammatic only and has been prepared to illustrate the general position of the property and its relationship to nearby trees etc. The boundaries are not accurate, and do not infer or confer any rights of ownership or right of way. Position of utilities is only indicative and [illegible]s must satisfy themselves regarding actual location before commencing works.



Key:

	Tree: Deciduous		Tree: Conifer		Shrub
	Hedge		Area of Damage		Bore Hole
	Trial Hole		Trial & Bore Hole		Level Monitoring
	Rain Water Manhole		Rain Water Gulley		Rain Water Pipe
	Waste Water Manhole		Waste Water Gulley		Toilet Pipe
	Rain Water Drain		Waste Water Drain		Electricity Cable
	Water Supply Pipe		Gas Supply Pipe		Incoming Gas Pipe
	Incoming Water		Incoming Electrics		

INTRODUCTION

We have been instructed by insurers to investigate a claim for subsidence at the above property. The area of damage, timescale and circumstances are outlined in our initial Technical Report. This report should be read in conjunction with that report.

To establish the cause of damage, further investigations have been undertaken and these are described below.

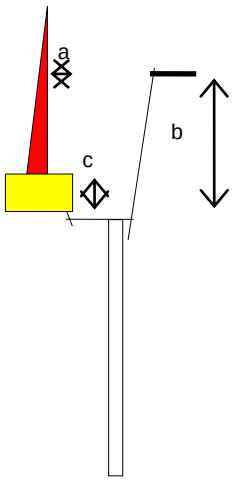
INVESTIGATIONS

The following investigations were undertaken to identify the cause of movement.

TRIAL HOLES

A trial hole was excavated to expose the foundations - see site plan for location and the diagram below for details.

Trial hole 01 was completed to the front right corner of the building in September 2019. The trial hole revealed a concrete trench fill foundation bearing on to a dry very stiff brown fine to medium gravelly CLAY.



Foundation Details

No.	Borehole Depth	Footing (a)	Underside (b)	Thickness (c)
TH1	3.00 m.	200 mm.	1,000 mm.	700 mm.

AUGERED BOREHOLES

A 50mm diameter hand auger was sunk - see site plan for location(s).

Borehole 01 was sunk from the base of trial hole 01 and to a depth of 3000mm below ground level. This confirmed very stiff clay to the full depth of the borehole.

SOIL SAMPLES

Soil samples were retrieved from the bore, wrapped in clingfilm before being bagged and deposited with a testing laboratory the same day. The laboratory have instructions to test the samples to determine if there is evidence of root induced desiccation.

DRAINS

A drain survey was completed which confirmed defects to the installation away from the area of damage. These were repaired in October 2020.

DISCUSSION

The results of the site investigations confirm that the cause of subsidence is root-induced clay shrinkage. The clay is plastic and thus will shrink and swell with changes in moisture content. Roots have extracted moisture below the depth of the footings, thus causing differential foundation movement to occur. This is supported by the following investigation results :-

- The foundations are at a depth of 1,000mm which is below the level that normal seasonal movement would occur.
- The moisture content profile indicates a reduction in moisture content at 1,000mm below ground level and using Driscoll's rule (0.4xLL) the moisture content reading of 21% does indicate desiccation at this level. This is also co-incident with the depth of root activity.
- Atterberg limit testing indicates that the soil has medium shrinkage potential with reference to NHBC 4.2 and hence will shrink and swell with changes in moisture content.
- Suction tests indicate desiccation in borehole 01 coincident with the depth of root activity.
- Roots retrieved, taken from an additional borehole completed in April 2021, were found to a depth of 2100mm below ground level. The roots stemmed from *Aesculus* (Horse Chestnut) and *Quercus* (Oak) species.
- Level monitoring indicates seasonal cyclical movement with downward movement in the summer months (as the clay shrinks) and upward movement in the winter months (as the clay swells). Please note that point 2 on the level monitoring is closest to the Horse Chestnut (T2) implicated by the arborist.

RECOMMENDATION

The cause of the movement needs to be dealt with first. From the results of the site investigation, we are satisfied that T2 (Horse Chestnut) can be removed (see accompanying arboricultural report). Based on our analysis, we are satisfied there is no adverse heave risk to the property.

Our Mitigation Unit will liaise with the Local Authority to arrange a TPO application to be submitted and advise of the outcome when it is received. A decision is normally taken by the Local Authority after 8 weeks of submission.

If the decision is favourable, our Mitigation Unit will arrange for the tree works to be undertaken, subject to authority from the tree owner(s). If the application is refused, there are possible grounds to Appeal or submit a further Application if there is new evidence. This will be reviewed in detail at the time.

Following completion of the tree management works, assuming permission is granted, we will undertake a suitable period of monitoring to confirm stability has been achieved before undertaking repairs to the property.

Provided the tree management is approved and works are carried out expeditiously, we anticipate that superstructure repairs and decorations only will be required. If tree management is not carried out, it may be necessary to consider a much more costly and disruptive scheme of stabilisation, such as underpinning. Budget estimates are presently as follows :-

Superstructure repairs and decorations - £15,000
Underpinning & Repairs - £75,000

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