STRUCTURAL ENGINEERS REPORT

ON

150 BODYCOATS ROAD

CHANDLERS FORD

EASTLEIGH

HAMPSHIRE

SO53 2JD

Client: Mr & Mrs Saywell
150 Bodycoats Road
Chandlers Ford
Eastleigh
Hants SO53 2JD

Date: 28th February 2014

Engineer : Patterson Reeves & Partners
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85 Leigh Road
Eastleigh
Hants S050 9DQ

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Ref: GMP/MH/J4361

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1.0 BRIEF

1.1 Patterson Reeves & Partners were appointed by Mr & Mrs Saywell of 150 Bodycoats Road, Chandlers Ford, Eastleigh, Hampshire, SO53 2JD to undertake a structural engineers inspection with report on their property 150 Bodycoats Road, Chandlers Ford, Eastleigh, Hampshire, SO53 2JD. The report is prepared with particular reference to cracking and structural movement which has occurred to the front half of the property.

2.0 INTRODUCTION

2.1 Mr & Mrs Saywell purchased the property at 150 Bodycoats Road, Chandlers Ford in 2008. At that time there was no signs of any significant structural movements or cracking. Following the summer of 2013 cracking has become apparent towards the front of the property. They have been advised to obtain a structural engineers report to establish the significant of the current movement and whether any remedial action is required.

2.2 This report did not include an inspection of parts of the structure which are inaccessible and we are therefore unable to report that the property is free from defects.

2.3 Our inspection of the property did not include those parts of the structure which are inaccessible, and we are therefore unable to report that the structure is free from defects other than those observed.

2.4 We can give no guarantee whatsoever against the presence of rot, disease, beetle infestation or other defects within the timber of the property.

2.5 No responsibility is accepted to any other third party for the whole or part of the contents of this report, which has been exclusively compiled for the use of Mr & Mrs Saywell.

2.6 This report should not be considered as a full structural condition survey.

2.7 The detailed inspection was undertaken by Chartered Engineer Neil Patterson on Friday 28th February 2014 in cold but dry sunny weather conditions.

3.0 OBSERVATIONS

3.1 All references made in this section are made as though looking towards the front of the property. During the inspection a number of photographs were taken and a selection of these are included in the Appendix.

3.2 The property is a two storey domestic dwelling with part facing brick and part tile hung elevations under a pitched concrete tiled covered roof. It was constructed in the 1960's and a rear single storey extension with mono pitched roof was added in the mid 1980's. There is a mature oak tree approximately 6 m to the front of the dwelling, which we understand is subject to a preservation order (TPO).

3.3 From an internal examination of the property significant gapping was noted under the coving in the front left hand lounge area. In the middle hall area at ground floor level there is cracking at the ceiling wall junction which runs up the stairs to the left hand external flank. Cracking was also in evidence in the ceiling above this higher half landing. The cracking extended up into the ceiling wall junction at first floor level adjacent to the loft hatch. Cracking was also evident at the ceiling wall junction in the first floor WC. Cracking was also in evidence through the tiling in the adjacent bathroom under the window.

3.4 From an internal examination of the front lounge it was noted that this had been reasonably recently redecorated with wallpaper. The floor in the lounge towards to the front left hand corner of the property was noted to be significantly out of level sloping towards the front left hand corner. This was measured using a 1.8 m long spirit level, which indicated a differential level of 50mm. (please refer to photographs)

3.5 An external examination of the brickwork indicated stepped diagonal cracking affecting the front left hand corner.

3.6 Trial holes have been excavated on the front and left hand flank elevations and these reveal that whilst the upper soil strata is of gravel deposits, clay is in evidence at approximately 0.8 m below ground level. The foundations were also noted to be founded at a similar level below ground. Several large and small tree roots were noted passing under the foundations (please refer to photographs).

4.0 DISCUSSION

4.1 It must be appreciated that properties of this age often have foundations which are somewhat shallower than required by todays design standards.

4.2 An examination of the Ordnance Survey Geological Map of Great Britain Sheet Number 315 indicates that the property is likely to be founded in an area of terrace deposits, although is overlying the Wittering Formation of the Bracklesham Group. From the trial holes undertaken it would appear that the terrace deposits are fairly thin. The Wittering Formation is known to contain highly shrinkable clays.

4.3 Desiccation of clay soil is a common cause of subsidence particularly following hot dry summers. One of the most common causes of desiccation consists of a reduction in soil moisture by tree root action. In the absence of a water table at shallow depth the root action of trees will reduce the soil moisture level in order to maintain growth. During longer periods of rainfall, usually during the winter months, some replacement of the moisture content of the soil occurs. However, when drought conditions occur or winter rainfall is limited zones of desiccation occur within the zone of influence of tree roots.

4.4 In woodland, desiccation develops over much larger areas since it is often not possible for rainfall to overcome the soil moisture deficiency.

4.5 The effect of the development of desiccation in clays soils results in an increase in the strength of the material. However, negative poor water pressure or soil suction also develops. Any foundation systems located within a soil undergoing a reduction in soil moisture can experience structural distress, resulting in a loss of volume and of shrinkage of the ground.

4.6 In the event that the source of desiccation is removed, this is usually followed by an increase in water content and subsequent heave of the soil.

4.7 At present there is no clear definition as to when the onset of desiccation occurs and two schools of thought exist. The first being that when moisture content falls below a level of 40% of the liquid limit, then the soil is said to be desiccated. However, this is considered a more onerous approach and sometimes a limit of 50% of the liquid limit is used.

4.8 The alternative approach is that the soil is said to be desiccated when the moisture content falls below the boundary limit defined as the plastic limit of the soil.

4.9 It must be borne in mind that the parameters can also vary with the composition and mineralogy of the different soil types and are also influenced by the effect of overburden pressures. In other words at depths of over 3m the natural moisture content of an undesiccated clay may well be less than 50% or 40% of the liquid limit. It is therefore difficult to be precise in these matters.

4.10 In this case a mature oak tree is in very close proximity to the property. This tree is defined as having a high water demand. The NHBC Guidelines would recommend that foundations of a least 2.5 m below ground level would be required in this instance.

4.11 Our inspection has shown that the property is suffering from ongoing movement and there is signs of significant distortions to floor slabs. In our opinion this movement is as a result of ongoing subsidence caused by the action of the nearby tree.

5.0 CONCLUSIONS AND RECOMMENDATIONS

5.1 It is concluded that the oak tree is likely to have a serious impact on the stability of the property. Subject to arboriculturists advice we would recommend that the tree be removed and replaced with a smaller lower water demand tree.



Neil Patterson BSc(Hons) CEng MICE
28th February 2014

APPENDIX A

PHOTOGRAPHS


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