STRUCTURAL ENGINEERS REPORT

ON

19, HOLLY HILL

HAMPSTEAD

LONDON

Client: Mrs J.A. Shepherd
19, Holly Hill
Hampstead
London
NW3 6QN

Engineer :
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Ref: MD/J4099

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1.0 BRIEF

1.1 Patterson Reeves & Partners were appointed to undertake a structural inspection and report on the end terrace property at 19, Holly Hill, Hampstead

1.2 This report is to include an appraisal of the overall structure with the appropriate recommendations of investigations or remedial works as considered necessary.

2.0 INTRODUCTION

2.1 This report is based on a general structural condition survey prepared on behalf of Mrs J. Shepherd. A visual inspection of the property was undertaken on Thursday 27th June 2013. Weather conditions at the time were fine and dry.

2.2 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.

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

2.4 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 J Shepherd.

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

3.0 HISTORY

3.1 From the history of events we understand that approx 15 years ago the property had been inspected due to concerns over structural movement and as a consequence, the gable end wall which was leaning outwards was restrained by the introduction of mild steel straps within the first floor construction, under the direction of a Structural Engineer. Whilst we have seen photographs of the straps, no copy of the original report or details of the works are available.

PRP were asked to visit site to re-evaluate the condition of the property, as further movements had become apparent, by the property owner. These movements being most apparent at door and window openings, and there were some internal fractures to the walls.

4.0 GENERAL DESCRIPTION OF THE PROPERTY

4.1 The property which is the subject of this report is the end terrace of a block of 3 No, 4 storey cottages, built at least 200 years ago.
The property is of solid masonry construction, with timber floors, tiled roof supported on cut timbers. The external wall appears to be 340mm thick up to the first floor, reducing to 225mm brickwork above.

4.2 The building has been subject to alterations to the external walls, such as brick infills to windows. The lower ground floor has been lined in response to damp issues. Elsewhere, internally other historical alterations may have occurred, but due to the age and condition we cannot comment further.

4.3 The lower ground floor is set below the general ground level. The site slopes to the south, however, the ground level immediately around the property is reasonably flat. The ground adjacent the gable wall has a flower border, grass and there are 2 trees, and bushes along the southern site boundary. To the rear the area is paved, and at the front, a path, flower borders, grass and bushes.

4.4 The block of 3 houses occupies a sloping/terraced site and is located to the North of the main road junction/underground in Hampstead

4.5 The ground conditions reported by the owner are heavy clay.

4.6 We have not taken the opportunity to test or comment upon any incoming services such as gas, electric and water. At the time of inspection the property was furnished and occupied

5.0 OBSERVATIONS AND INSPECTION

5.1 Please note that all references to the orientation of the property are made whilst observing the property from the front.

External

5.2 Viewing the front elevation at lower ground floor there is the front door; approach via steps down, and to the left is the kitchen window.

5.3 Above to upper ground , first and second floor are windows located centrally at each of the levels.

5.4 At the time of the inspection, we noted that the frame to the front door wall distorted sloping down to the right, and the window also distorted sloping down to the left. The short length of brickwork between the 2 appeared level, but a check on it verticality reported that it was out of plumb by approx 80mm.

5.5 In addition on the front elevation, numerous areas of brickwork had clearly shown past movement, and deterioration, and replacement/making good and re-pointing had been undertaken, on many occasions, at various times in its history, evident by the various patterns of mortar types and colour.

5.6 The left the flank wall shows many signs of past movements and repair, evident by vertical fractures some attempted repaired by re-pointing, some not. A window opening has been in filled and there are irregular bed joints and panels of various bricks and mortars.

5.7 The flank wall does lean outwards, and measurements indicated that the brickwork at first floor level leaned out by approx 50mm – 85mm beyond the wall at upper ground floor level, and the wall at upper ground floor leaned outwards by about 50-85mm beyond the wall at external ground floor level, being about 700 above lower ground floor level. Resulting in a combined out-of-plumb dimension of about 100-170mm

5.8 Adjacent to the kitchen window in the flank wall a buttress has been constructed at some time in the past.

5.9 The amount of horizontal movement reduced towards the rear of the property.

5.10 The rear elevation of the property had areas of repair and fractures but to a lesser extent to the flank wall.

Internal

5.11 On the top floor within the roof space the front room floor substantially crossfall towards the gable wall. Although the front window appears reasonable level.

5.12 On the first floor front bedroom there is also a corresponding cross fall.

5.13 The narrow staircase down to the first floor has a substantial cross fall towards th central chimney breast.

5.14 The upper ground floor dining room floor has a substantial cross fall towards the living room; in addition the door and window to the front elevation are out of square and in a poor condition.

5.15 In the adjacent living room the front part of the floor has a cross fall towards the front of the building. It should be noted that there is a timber beam supporting this floor and it is this area between beam and wall that has the greatest fall.
In addition to which there is also a cross fall towards the gable wall, starting front the front window. This point is above the brick pier between the front lower grund floor and window, mentioned in clause 5.4 above.

5.16 On the lower ground floor there is cracking to the central chimney, and as previously noted the front door and window are both out of square.

5.17 On the ground floor in particular the external walls are out of plumb, however the internal waterproofing and lining prevent sight of the masonry.

6.0 DISCUSSION

6.1 It is clear that there has been ongoing movement of the building over a considerable period, much is historic, and various repairs have been undertaken, to varying standards.

6.2 There are areas of masonry which exhibit fractures and damage which have not been addressed

6.3 Where windows have been infilled and panels of masonry possibly replaced, the brickwork has not always been fully bonded, leaving vertical joints.

6.4 Areas of brickwork which have broken off have not been addressed and those areas could fail in due course.

6.5 The overall assessment of the flank wall's condition is that the brickwork is in poor condition, and not sufficiently bonded to give any confidence in remaining intact, for the long term.

6.6 The fact that the flank wall and also areas of the front wall are significantly out of plumb, and subsided, would indicate that there is movement at foundation level. The lateral movement is such that the centre of gravity of the upper wall is approaching or outside the external face of the wall at ground level.

6.7 Whilst we have not exposed the footing, it is likely that long term settlement of the subsoils, either due to volumetric change and/or uneven settlement of the wall base has occurred and is likely to continue.

6.8 The flank wall is also out of plumb by an unacceptable amount and ties have been installed to strap the wall into the upper ground floor and internal wall.

6.9 The front wall between the flank corner and central masonry pier, and pier and return to the right of the door, is similarly affected

6.10 The condition of the stormwater and foul drainage is unknown at this time, and due to its age, presence of trees, and movement of the walls, that damage has occurred and the presence of water from the drains could exacerbate the situation.

6.11 The reported movement which has be noted since the remedial works were carried out some 15 years ago, indicates that movement is ongoing.

Photographs are included in Appendix 'A'

7.0 CONCLUSIONS

7.1 From our overall visual inspection of the property, the end terrace property's flank wall is in imminent danger of failure and ongoing movement is likely. This could impact on the adjacent areas of the building, unless action is taken to prevent further movement.

7.2 The front elevation of the property gives us similar concern, although the movement is slightly less at this time, but again at some point in the future, we cannot rule out the possibility that failure will also occur.

7.3 We consider that remedial action is required, the extent of which would be subject to further investigation, including carrying out a soils investigation, exposing the footings and checking the conditions of drains.

7.4 We have considered several options available:-

a. Do nothing, and at some point in the future, and it's impossible to put a time period on this, failure of the building will occur.
b. Provide temporary/permanent shoring to the flank wall and possible at some time the front wall. However, will only defer the potential collapse.
c. Underpin the external walls, and potentially internal chimney. However, any vibration could exacerbate the poor condition of the gable wall masonry and lead to collapse.
d. Provide permanent masonry buttresses, up to the first floor, and underpin the flank wall, together with making good the masonry.
e. Demolish and rebuild the gable end wall up to first floor level, on new foundations, depth and size to suit the ground conditions.

Of the above options only items 'd' and 'e' are viable.

7.5 We recommend that you approach your insurance company to establish whether you have a claim under your policy.

Michael Doree
Principle Engineer
16th July 2013

APPENDIX A

PHOTOGRAPHS

1. **External view on front door and kitchen window.**
2. **Indicative record of amount that the pier between front door and window is out of plumb, measured down from first floor.**
3. **External view on flank wall- front area.**
4. **External view on flank wall central area.**
5. **Indicative record of amount that wall is out of plumb between upper ground floor and first floor**
6. **Indicative record of amount that wall is out of plumb between external ground level and upper ground floor.**
7. **Internal view on front elevation at second floor level showing cross fall to floor.**
8. **Internal view towards front elevation at first floor level showing cross fall to floor and out of square**
9. **Internal view on front elevation at upper ground floor level.**
10. **Internal view on front door and window at lower ground floor level**

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