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# 22 Pilgrims Lane, NW3 1SN

## Structural Assessment of Subsidence Issues

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### 1.0 INTRODUCTION

1.1 We have been appointed by Andrew and Brigid Nuthall to carry out a structural assessment of 22 Pilgrims Lane.

1.2 Mr and Mrs Nuthall are buying the house and have commissioned various surveys covering the general condition of the house and the refurbishment work required. This assessment specifically addresses the evidence of subsidence to the house.

1.3 This overview is based on a visual inspection only to the accessible areas, including the roof void. Further investigation will be required to be able to fully specify the work recommended below, however the visual inspection has been adequate to be able to produce an initial assessment of structural works.

1.4 It's acknowledged that the house needs full refurbishment. The Surveyors report has picked up many items where fabric needs to initially overhauled and probably eventually replaced e.g. roofs and other areas needing stripping out and survey e.g. damp in the lower ground floor. I have previously advised on general structural issues, consequently this report concentrates on the evidence of subsidence and the estimated works required to strengthen and repair it.

1.5 Because it would take time to get proper quotes especially as many items need detailed investigation and specification, I have provided guide budgets for the specialist structural work recommended below. These are initial estimates of the specialist structural work required to strengthen and repair the subsidence damage and are over and above the general refurbishment work required and do not include for access (such as scaffold), making good, redecoration, general builders prelims, VAT, fees etc. In due course these works will need to be fully specified and costed.

## 2.0 GENERAL INFORMATION ABOUT THE HOUSE AND SITE

2.1 4 storey end terrace house of traditional construction built in around 1880. Small three storey original rear extension. Two storey rectangular bay to front elevation. Timber joisted floors spanning front to back with central timber spine wall on upper floors, brick at lower ground floor. Main roof, front to back pitch with rafters supported on propped mid slope purlins. Flat roof to rear extension

2.2 The site slopes from front to back so that the lower ground floor is half a storey below street level, but more or less level with the rear garden. Mature trees to rear, an ash in the garden of 22 and a lime tree in the garden of a house on Downshire Hill, approximately 15m from the rear extension, to the south. There is also a small apple tree and several large climbers and shrubs in the rear garden of 22.

2.3 The house has been dug into the natural slope. As an end terrace the flank wall retains the soil to the adjoining site, which wasn't developed until the early twentieth century.

2.4 The subsoil in this part of Hampstead is London Clay, which is highly shrinkable and therefore prone to tree/clay related subsidence.

2.5 Drainage appears to run through the house from back to front with manholes at front and rear.

## 3.0 EVIDENCE OF SETTLEMENT OR SUBSIDENCE

3.1 Front Elevation

Historically the front elevation has moved to the right, possibly due to initial settlement of the flank wall, but probably also due to thermal expansion of the terrace of houses (a common issue in Victorian end terrace properties) There is evidence of very old crack repairs to the bay and elsewhere. This does appear to mainly historic, although an open crack in the bay above the first floor window cill is live due probably to an old weakness and more recent water/frost damage. This needs to be repaired in the short/medium term. Other cracks look like they are still prone to minor movements and should be strengthened. The whole elevation could do with cosmetic repairs in due course. Allow £4000 for strengthening to brickwork to improve the robustness of the wall (that figure does not include cosmetic work).

The upper piers between the windows are slender, fragile and slightly bulged, but don't appear to require rebuilding. In due course, roof repairs will help to restrain the top of the wall.

In summary the movement to the elevation is historic and the repairs required are due to a lack of maintenance, not a live subsidence problem.

3.2 Rear Extension

This is in relatively poor condition due to a combination of water ingress at the top through the roof and parapets, and subsidence concentrated on the outer corner.

The subsidence is almost certainly due to a combination of the clay soil, the southerly aspect the hill and the mature trees at the end of the garden. The recent movement is not large but has been ongoing for many years pulling away at the junction of the extension with the main house as can be seen by the recent cracks. The external stair is suffering from similar movement and pulling away.

The brickwork at the top of the extension is poor and shows lots of evidence of being perished through water ingress over many years. This has left the extension walls bulging and weathering, however the movement is not excessive and apart from the top 1.0m or so can be retained and repaired.

For the extension, in the short term any roof leaks should be repaired. You should also make sure the vegetation to the rear is kept well pruned to restrict is water demand. This will help control seasonal movement.

In the medium term both the subsidence and upper walls will need to be fully refurbished/strengthened/repaired.

Although further investigation will be required you should expect the subsidence repairs to include;

- Brick repairs at the junction with the main house. Allow £3000
- Rebuild the external stair
- Underpin (deepen the foundations) of the toilet and extension walls. This piece of work should be carried out first and as early as possible in a refurbishment programme to remove the risk of further damage. Allow £15,000 plus £2,000 to investigate and £1,500 fees.

3.3 Main Rear Elevation

This is bowing at the top possibly due to roof spread, and is fragile. Historically the flank wall corner has settled relative to the remainder, leaving some distortion and historic weaknesses. Window heads have been rebuilt and strengthened. Lower down, bulging has been caused by the rear extension pulling on the elevation at the junction. In the short term no work is required but in the medium term the following works are recommended;

- Underpinning or stabilising the extension will prevent further pulling and after repair will actually buttress the rear wall. (see above)
- Lateral restraint in the form of strapping should be added to the stair partition at second floor to help tie the top of the wall. Allow £2000
- Rebuild or repair the top window lintel and carry out crack repairs and strengthening elsewhere. Allow £4000

In summary the main rear wall isn't in itself suffering from subsidence but has suffered damage as a result of the movement of the rear extension, together with a lack of maintenance. Of the sums noted above about half is directly attributable to subsidence.

## 4.0 SUMMARY

22 Pilgrims Lane has suffered from historic movement, but more importantly, appears only to have had reactive maintenance work carried out over the last 50 years.

There are a number of structural issues but the only live evidence of subsidence is to the rear corner of the rear extension.

In the report above I have tried to separate the live subsidence issue from other repairs and catch up maintenance works. In summary only the works shown in section 3.2 and 50% of the works in section 3.3 are directly attributable to subsidence.

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