

## Conclusions and Recommendations

The main part of the property has a traditional "Victorian" appearance but was constructed in a later period and incorporates some non-traditional features such as the precast concrete entrance canopy, columns and balustrading. Also, precast concrete has been used for decorative external features such as lintels, window surrounds, and the cornice at gutter level.

Unfortunately, it appears that the precast concrete elements have been manufactured without an appreciation of the need to use good quality concrete and to provide sufficient concrete cover to embedded reinforcement.

In addition, the property appears to have been poorly maintained externally. From a structural viewpoint, the main external problems have stemmed from leaking gutters and leaks through the roof of the entrance canopy. This has caused the concrete elements to become saturated and, combined with the relatively poor quality of the concrete itself, has led to cracking and spalling through the expansive effect of frost action.

The current condition of the entrance canopy is a cause for concern and we recommend that it is removed for safety reasons as soon as possible.

Replacement of the affected concrete elements on a like for like basis would require the experience of a competent precast concrete specialist. Bespoke shuttering would be required for each element and the cost is therefore likely to be significant.

Before considering the replacement of the damaged concrete features and carrying out remedial works to the cracks in the walls, it would be necessary to repair the roof and gutters in order to minimise the risk of saturation of the walls in the future. The advice of a roofing specialist would be required in order to determine the full extent of the remedial works, but we would anticipate that all existing roof coverings would have to be removed, a felt or other membrane laid over the sarking, and the roof coverings replaced. In addition, the cast iron gutter sections would require removal, cleaning, painting and re-installation. The joints between the gutter sections would have to be sealed in such a way as to maintain water tightness while allowing for thermal movements. It may be possible to re-use some of the existing slates, but the cost of the roof and gutter works is again likely to be significant.

The cracking above the arched window to the stairwell, and in the ceiling above the first floor landing, is probably the result of differential settlement between the eastern and western parts of the building. The western part has shallower foundations and is therefore more likely to be susceptible to seasonal ground movements and settlement due to compression of the soil under the foundations. The foundations of the eastern part, being significantly deeper, are more likely to be bearing on firm soil. In order to avoid the risk of further differential settlement in the future, it would be necessary to either underpin the western part of the property or form movement joints in the walls and ceilings at the points of maximum stress. Underpinning would clearly be an expensive exercise and the formation of movement joints would have a significant effect on the appearance of the building, particularly at the front.

The rear extension is partly built over the boiler room, and therefore has some walls on deep foundations and some on relatively shallow foundations. We believe that this has also resulted in differential settlement, leading to sloping floors and cracking of walls and ceilings. It is unlikely to be economical to underpin the affected walls.

The cause of the horizontal cracking on the external faces of the rear extension is not clear. However, remedial works would probably require the existing render to be completely removed and replaced.

The detached garage requires remedial works to the roof covering, flashings and gutters as a minimum. At this stage we have not been able to carry out an inspection of the roof structure. To facilitate this the existing ceiling would have to be removed. Without knowing the condition of the roof structure it is not possible to make a recommendation regarding the feasibility of retaining the building.

Overall, in view of the extent and nature of the remedial works which would be required in order to extend the lifespan of the main building for mortgage and insurance purposes, we believe that it may be prudent to demolish the existing building and construct a new building to modern standards.

We trust the above report is adequate for your present purpose. If you require any clarification or further information please contact us.

Yours faithfully

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