

Lee James  
85 Cardiff Road  
Dinas Powys  
CF64 4JT

**THE VALE OF  
GLAMORGAN COUNCIL**

TOWN AND COUNTRY PLANNING ACT 1990

**APPROVED**

SUBJECT TO COMPLIANCE WITH CONDITIONS (IF ANY)

**Structural Survey at 18 Clive Place, Penarth**

**Introduction**

We are instructed to inspect this property and to report on the extent and significance of any structural defects found, with recommendations for remedial works.

We have been provided with a copy of a condition survey carried out by Martin Cotsen, Chartered Surveyor, and concur with his observations.

An initial inspection of the property was made by Peter Chapman, Principal of this firm, on 11<sup>th</sup> September 2013, with a repeat visit for record photography on 3<sup>rd</sup> October. All references to left and right in this report are to be taken as viewing from front to rear.

**Exterior walls**

**A. Front Elevation**

On the front elevation there is a bay window with Portland Stone framing to the windows and stone mullions. All are in reasonably good condition, with no indications of significant movement. However, all walls on this elevation have been extensively re-pointed, in particular the walls above the first floor level, indicating a history of movement which had caused cracking which had disrupted the original stonework pointing.

The replaced pointing is most intensive around a blocked up window above the first floor bedroom windows, (ref. Photograph 1). It can be clearly seen that the two brick arches above these windows have suffered a degree of failure, the arch springings on the central brickwork pier being noticeably lower than those on the outer brickwork reveals. Much re-pointing has been carried out on the arches themselves, and it is clear that at some time in the past there was extensive disruption of the brick arches with several bricks in each of the arches having been replaced to restore the arch integrity and their ability to support the stonework panel above.

The loading from this stonework will be considerable, with the major proportion being carried on the brickwork pier between the windows which has moved downwards by an estimated 20-25mm. This has resulted in the movement in the brick arch springings referred to above, and the arch failures are a direct consequence. If Photograph 2 is referred to, it will be seen that the two external window sills slope noticeably downwards towards the pier, confirming its downward movement.

The loading from the pier will be carried on a bressummer, most probably double timber beams, spanning across the bay window opening in the front wall, and the downward movement of the pier house is an indication that it has become overloaded, either because it was sized inadequately when the house was built, or because there has been deterioration in the timber.

This could happen if the end bearings of the beams developed wet rot as a result of becoming exposed to moisture for a significant length of time due to rain penetrating into the wall through cracks in the mortar joints. Alternatively, the timber could have been weakened by insect infestation or possibly dry rot. At all events, whatever the cause it is highly likely that it will continue to develop, increasingly weakening the bressummer, with continuing downward movement. In a 'worst case scenario', the bressummer could fail completely at some future time, leading to a partial collapse of the front wall.

**B. Side and Rear Elevations**

### **The side wall adjacent to the front elevation**

The side wall of the rear annexe shows signs of subsidence at and near the rear corner. Vertical movement of the wall is indicated by a very noticeable failure of a brick arch over a window approximately 1.2m from the corner (ref Photograph 3), where a block of three bricks has become displaced downwards, requiring re-pointing at some time in the past. There is a raking crack sunning upwards towards the right from the arch and meeting another crack near the corner where the brick quoin has separated from the main stonework (ref Photograph 4).

The remainder of this wall is in a reasonably sound condition, (ref Photographs 5 & 6) but the rear wall, which is rendered, has minor cracks which run with a mainly vertical orientation upwards to the gable roof verge near the outer corner (ref Photographs 7 & 8). The disposition and orientation of this cracking is indicative of a minor subsidence at the rear corner of the building.

### **C. Garage Walls**

The garage is in an overall poor condition, bordering on dilapidation. There is a pronounced vertical crack, varying between 4mm - 8mm, in the front wall, running for the full height from ground level to roof, (ref Photographs 9 & 10), (crack behind shelving). The cause of this is not clear, but it is likely to be either a degree of subsidence at one of the front corners or a result of the wall contracting with seasonal thermal changes. The vertical orientation suggests that the latter is the most likely. The remaining walls are in sound condition.

### **D. Boundary Walls**

The wall on the left hand side is in a generally poor condition, with an approximately 3 metre length abutting the rear boundary wall in a state of complete collapse. For the most of its length, the rest of this wall is leaning outwards towards No. 16 at a considerable angle from the vertical, such that it cannot be far from collapsing into that property. This condition is likely to worsen with time, and could become dangerous.

On the opposite side of the property the wall is not in such poor condition, though there is some deterioration in the pointing.

The rear boundary wall is in a similarly reasonably sound condition, with some attention being required to the pointing to ensure that it does not begin to deteriorate in the future.

### **E. Internal Walls**

By far the majority of the internal walls are in good condition with little sign of cracking or disruption. The exception is the inside face of the wall on the front elevation which shows minor cracking which mirrors that seen externally.

Several of the walls on the first floor show damp areas along the wall/ceiling junctions where there are roof edges and guttering externally. These appear to be currently dry, only shown by dark areas in these zones. In one or two locations covings have become detached from the substrates, due to dampness affecting the fixing adhesives.

### **F. Roof**

Access to the roof void was only possible via a very small hatch which did not permit more than a 'head and shoulders' inspection, with a very limited lighting restricting the extent to which the roof structure could be seen. The roof members which could be seen appeared to be in a reasonable condition, with no water staining which might indicate a history of leakage in the past.

## **G. Recommendations**

A priority item will be to investigate the cause of the bressummer deflecting. To achieve this it will be necessary to expose the bressummer from within the front room inside the bay window. As a first stage, the timber bearings at each end on the front wall should be exposed so that their condition can be ascertained. If they are found to be sound, more exposure along the length of the beams will be required to be checked for infestation by boring insects or dry rot. If serious defects are found in the timber beams there is a likelihood that the movement, the results of which are seen externally, will redevelop, with the extensive repaired cracks re-opening, and the timber beams should be replaced by steel.

Before considering the measures, if any, to eliminate the subsidence at the right hand rear corner of the building, it will be necessary to establish why this has developed. One possible cause could be weakening of the subsoil beneath the foundations due to leakage from a fractured drain or water supply pipe in that locality, so it will be necessary to excavate around that corner to investigate the foundations and their bearings and the drain runs and their proximity to the walls. Before commencing this work it would be wise to monitor the crack by installing tell-tales, to be read every two months for at least six months, to confirm or otherwise that the subsidence movement is continuing. Any work found necessary to the drains must have the approval of Welsh Water prior to commencement.

This exercise will determine whether underpinning of the foundations is required or merely repairing the defects found in underground pipes.

When all the work found to be required in these walls has been carried out the cracks in the masonry should be repaired by breaking out cracked or broken stone, and raking out cracked mortar joints to a minimum depth of 75mm, to be refilled with a well-rammed semi-dry 1:1:6 mix cement:lime:sand mortar, to be neatly pointed on completion.

The entire system of roof guttering should be inspected for blockage, either partial or complete, which could cause overflowing onto or into the walls alongside them, causing the high level dampness noted above. Any detritus found must be removed to leave the guttering and down pipes in a clear and free-flowing condition.

The crack in the garage wall should be repaired by carefully breaking out cracked or broken blocks which straddle the crack, and replacing them with new blocks as necessary, set in neatly pointed mortar as above, followed by making good to the external render.

The left hand boundary wall has deteriorated past the point of no return, and should be taken down completely and rebuilt to a good standard. Consideration could be given to arresting the deterioration of the right hand wall by also taking it down and rebuilding.

Internal cracks in excess of 1mm width should be repaired by filling with a semi-flexible decorators' caulk, followed by redecoration as appropriate.

### **Limitations of this report**

We have not examined any parts of the buildings which are covered, unexposed or inaccessible, and we are therefore unable to report that any such part of the building is free from defect.

**Peter Chapman Associates**

**October 2013**

**3889**