Report:
3 Baldwins Manor

Dan Fordham
30/09/2024

Fordham Consulting Ltd
Cambridge
01223 855788
office@fordhamconsulting.co.uk
www.fordhamconsulting.co.uk

Managing Director: Daniel Fordham BEng. CEng. MIStructE.

The Institution of StructuralEngineers

24-0921
3 Baldwins Manor

1 Brief and Scope

1.1 Fordham Consulting Ltd was instructed to undertake a visual inspection of the garage at the above property following concerns raised regarding potential cracking and movement.

1.2 The property was visited by Daniel Fordham on 27th September 2024. The weather was dry but had been raining heavily for the previous few days.

1.3 No destructive or intrusive testing was carried out and no trial holes were excavated.

1.4 The survey and report are concerned with overall structural behaviour only.

2 Observations

2.1 The garage consists of a detached single storey building, with pitched tiled roof on prefabricated trusses; load bearing blockwork perimeter walls with timber cladding and a low level brick plinth.

2.2 To the rear the ground level is approximately 750mm – 800mm higher than the garage floor level and the rear elevation of the garage acts as a retaining wall. An external retaining wall continues from the garage parallel to the boundary.

2.3 Externally cracking could be seen in the blockwork on the rear elevation where this meets the brickwork on the corner. The crack at this level is mainly covered by the retained material and is around 15mm in size.

2.4 Internally cracking was noted to the rear elevation at low level in the blockwork and consists of a stepped diagonal crack emanating from the rear corner and rising towards the centre of the wall. The crack measured 15mm at the largest Additional smaller stepped cracks were noted further along the wall.

2.5 Vertical cracking was noted between the rear wall and the internal piers at the rear corner and the centre of the wall. These cracks increased in size towards

Fordham Consulting Ltd
Cambridge
CB25 9QE
01223 855788
office@fordhamconsulting.co.uk
www.fordhamconsulting.co.uk

the bottom. These had a corresponding crack where the wall meets the ground floor slab and a step between the upper panel of the wall and the lower section.

2.6 Using a level, it could be seen that the lower panel of the wall has rotated so the base of the wall has moved outwards, away from the slab. The upper panel and the two internal piers were confirmed as plumb.

2.7 An Engineering Appraisal Report was provided, produced by Sedgwick International Ltd, which concluded that the movement was not subsidence related; the movement was related to lateral forces from the retained ground; and that the movement is an inward movement.

2.8 The report states that the movement is likely to be cyclical nature, however, the cracking was reported to be consistently increasing in size.

2.9 The report states the movement is classed as Category 3 in accordance with BRE Digest 251.

3 Discussion

3.1 In general the garage is in very good condition with the only defects noted to the rear wall on one side. The cracking indicates that a lower panel of masonry has moved separate to the rest of the structure and that the movement is to both leaves of the wall as the cracking and movement was observed both internally and externally in the same location.

3.2 The nature of the cracking, lateral steps and level check, indicate that the lower panel has moved vertically, laterally and rotationally. There is a significant downward movement that could not be contributed to a rotational movement solely, so there has been a downward movement of the wall in addition to rotational movement.

3.3 As the wall is retaining the raised external ground level, it would be expected that the lateral and rotational movement would be inward, towards the garage, however, this movement is clearly in the opposing direction. There is no evidence of impact or localised damage to the inner face of the wall.

3.4 BRE Digest 251 states category 3 as:

3.4.1 Cracks which require some opening up and can be patched by a mason. Repointing of external brickwork and possibly a small amount of brickwork to be replaced. Doors and windows sticking. Service pipes may fracture.

Weather-tightness often impaired. Typical crack widths are 5 to 15mm, or several of, say, 3mm.

3.5 BRE Digest 251 states category 4 as:

3.5.1 Extensive damage which requires breaking-out and replacing sections of walls, especially over doors and windows. Windows and door frames distorted, floor sloping noticeably. Walls leaning or bulging noticeably*, some loss of bearing in beams. Service pipes disrupted. Typical crack widths are 15 to 25mm, but also depends on number of cracks.*

3.6 Whist the maximum crack width is 15mm, the extent of localised damage would mean the lower panel will likely require rebuilding and is not suitable for patching or repointing. The category would fall between 3 and 4 in this case.

4 Conclusions

4.1 The wall panel to the rear elevation of the garage has moved significantly. The movement includes a significant downward vertical movement along with an outward lateral movement and rotation.

4.2 There is no evidence that the movement has been caused by the lateral forces arising from the retained ground to the rear, as the movement is not consistent with defects that would be expected for this load arrangement.

4.3 The is no evidence of impact or accidental damage to the inner face of the wall as the block face is in very good condition with no localised damage, scrapes or paint marking.

4.4 The cause of the movement is unclear at this time, however, the conclusions within previous report are not consistent with the damage observed on site. There is currently no evidence that the movement is cyclical or seasonal and the movement is not consistent with inward lateral forces as the movement is in the opposing direction.

5 Recommendations

5.1 It is recommended that further investigations are undertaken, as the cause of the movement is still inconclusive.

6 Photos

24-0921
3 Baldwins Manor



6.1 Cracking to rear corner

Fordham Consulting Ltd
Cambridge
CB25 9QE
01223 855788
office@fordhamconsulting.co.uk
www.fordhamconsulting.co.uk

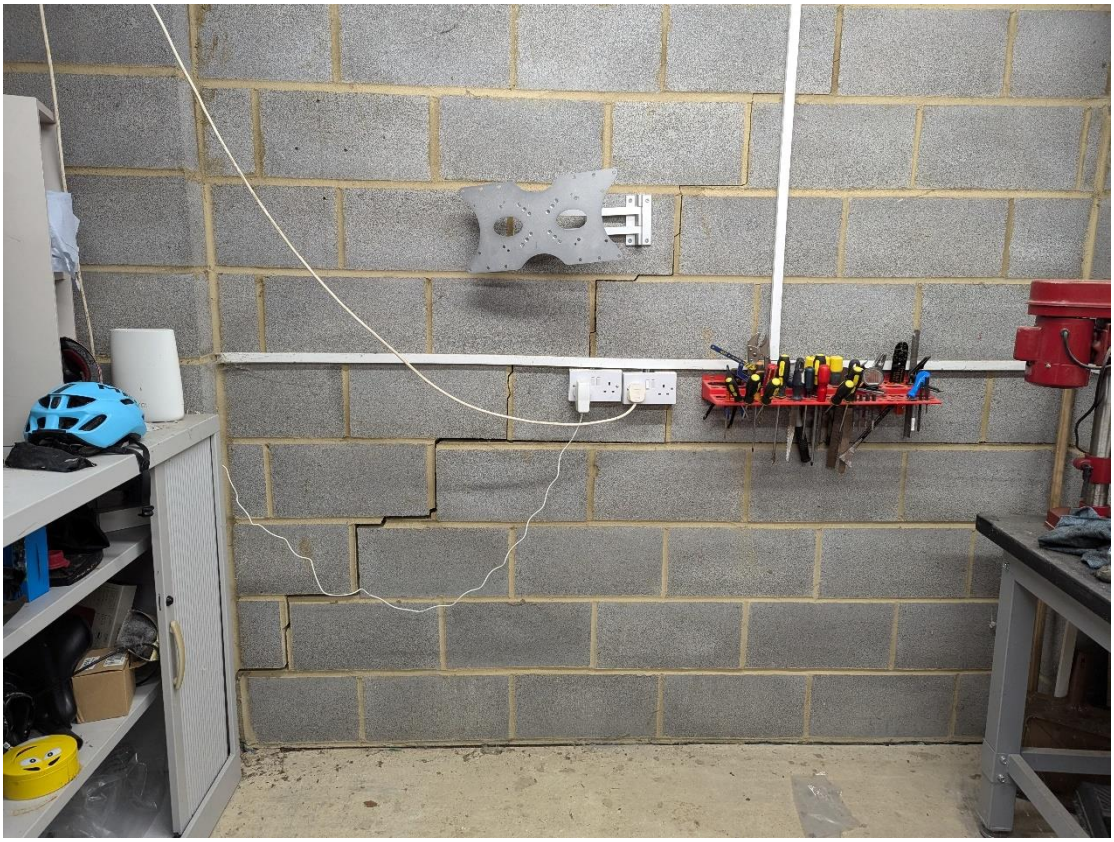
24-0921
3 Baldwins Manor



6.2 Cracking to rear corner

Fordham Consulting Ltd
Cambridge
CB25 9QE
01223 855788
office@fordhamconsulting.co.uk
www.fordhamconsulting.co.uk

24-0921
3 Baldwins Manor



6.3 Cracking to rear wall, internally

Fordham Consulting Ltd
Cambridge
CB25 9QE
01223 855788
office@fordhamconsulting.co.uk
www.fordhamconsulting.co.uk

24-0921
3 Baldwins Manor



6.4 Cracking to rear corner internally

Fordham Consulting Ltd
Cambridge
CB25 9QE
01223 855788
office@fordhamconsulting.co.uk
www.fordhamconsulting.co.uk

24-0921
3 Baldwins Manor



6.5 Cracking to rear corner internally

Fordham Consulting Ltd
Cambridge
CB25 9QE
01223 855788
office@fordhamconsulting.co.uk
www.fordhamconsulting.co.uk

24-0921
3 Baldwins Manor



6.6 View of outward step in masonry

Fordham Consulting Ltd
Cambridge
CB25 9QE
01223 855788
office@fordhamconsulting.co.uk
www.fordhamconsulting.co.uk

24-0921
3 Baldwins Manor



6.7 Lateral outward movement against central pier

Fordham Consulting Ltd
Cambridge
CB25 9QE
01223 855788
office@fordhamconsulting.co.uk
www.fordhamconsulting.co.uk

24-0921
3 Baldwins Manor



6.8 Lateral outward movement against corner pier

Fordham Consulting Ltd
Cambridge
CB25 9QE
01223 855788
office@fordhamconsulting.co.uk
www.fordhamconsulting.co.uk

24-0921
3 Baldwins Manor



6.9 Crack size

Fordham Consulting Ltd
Cambridge
CB25 9QE
01223 855788
office@fordhamconsulting.co.uk
www.fordhamconsulting.co.uk

24-0921
3 Baldwins Manor



6.1 Level check indicating outward movement

Fordham Consulting Ltd
Cambridge
CB25 9QE
01223 855788
office@fordhamconsulting.co.uk
www.fordhamconsulting.co.uk