

Carl Swainston Engineering Limited

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Civil - Structural – Architectural

Location: 1 & 2 Nelson Row Middleton in Teesdale Co Durham.



Date: 20/09/21

Structural Report

Abstract

The dwelling fabric is showing signs of subsidence movement which has resulted in the formation of vertical cracking down window reveals and the masonry fabric between lintels and cills. This is visible on both front and rear elevations.

There is a visible out of plumb shift outwards on the elevation adjacent the public footpath of around 75mm over the length of the level (1200mm) which is possible wall separation.

There is visible separation of the external wall from the inner flanking walls this is mainly noticeable on the first floor at the ceiling to wall interfaces.

The homeowner has removed render on some of the elevations which has revealed cracking of up to 25mm in width.

This report is in connection with the proposed planning application for the deconstruction of the existing dwellings and repositioning on a new building line a new dwelling. This report has been prepared by Carl Swainston who is a structural and civil engineer with 20 years as a professional engineer and a further 19 years previously as a banker mason and fixer (stonemason).



Location Centre Shot

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1.0 Instructions and Objectives

1.1 In accordance with verbal instructions from the clients an inspection of the masonry fabric was completed in order to assess the structural condition and identify any defects, probable cause of these defects and recommendation for remedial works to correct any defects.

1.2 The survey was undertaken on September the 11th 2021, present were Carl Swainston and Mr & Mrs Carnell the homeowners.

2.0 Limitations

2.1 The inspection was carried out at ground level, no inspection of the rafters was undertaken and no indication of the condition of the existing roof structure was undertaken.

2.2 No inspection or testing of any electrical systems was undertaken.

2.3 No inspection for the presence of contaminants was undertaken, i.e. for the presence of Radon, Asbestos or other hazardous material.

2.4 No inspection of any drainage or any other aspect except for the condition of the existing masonry walls and major structural elements was undertaken.

3.0 Site Inspection and Defects

3.1 The property is a pair of terraced houses which have been knocked through into one family dwelling; the dwellings are circa early C19 and are of solid stone wall construction. Judging by the name Nelson Row the properties were built around the early 1800's when Admiral Lord Nelson came to prominence.

3.2 Masonry

The wall thickness is generally 450mm thick and comprises masonry heads and cills to doors and windows. The stone seems to be locally sourced sand stone and is laid in courses to a 'water shot' configuration, and brought to courses under cills and at the eaves.

3.3 Roof

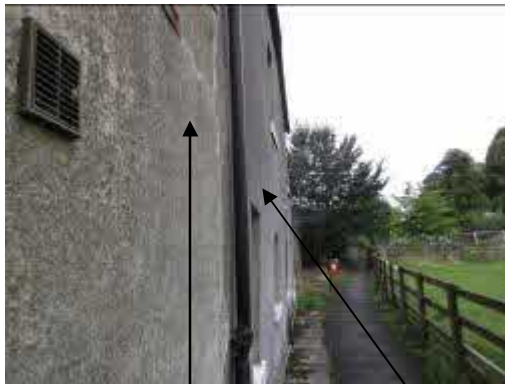
The building has a slate roof which appears to be watertight.

3.4 Defects

The external structural walls to all faces seem to be suffering from subsidence related cracking and the North wall seems to be deflecting outwards from the eaves.



South Aspect Cracking



North Aspect Cracking and Out of Plumb Shift

East Aspect Cracking

Internal defects seem to be at the first floor eaves area where the internal walls seem to be disengaging from the external walls.



Internal Cracking at Door Head



Internal Gable Wall Crack



Bedroom North Wall Cracking

Bedroom South Wall Disengaging From Exterior Wall

4.0 Recommendations

4.1 All defects are subsidence related, this is a major concern as the structure was not originally built on an adequate foundation – the original foundation would be larger stone slabs built wider than the wall section and built directly on to clay subsoil.

4.2 In my opinion the more sustainable option would be to deconstruct the entire existing dwelling and rebuild on a building line set back from the footpath which will give amenity space to the front aspect, this is more suited to the needs of a modern family home, at present the dwelling is adjacent a busy footpath.

4.3 In my opinion the existing property would require underpinning around the full perimeter and internal walls, the existing cracks would require crack stitching, it would be necessary to replace the entire roof with a lighter roof.

4.4 The cost effectiveness of installing the remediation works to what are two small Victorian era cottages is questionable in terms of the size and layout of the existing property is not compatible with a modern family home.

4.5 It would be my recommendation that the property be deconstructed and moved 2 to 3m away from the public footpath, rebuilt to a modern internal layout but retaining some of the original features such as the window and door heads and cills. There would be ample natural stone for reconstruction if that was preferred by the building owners.

5.0 Conclusion

5.1 It is the opinion of the surveyor that the defects are severe and will only get worse over time; the structural walls are suffering from differential settlement meaning part of the foundation has

failed causing vertical cracking to all faces of the structure. There is evidence that the North wall has an out of plumb shift which is caused either by roof spread or the outer face of the stone wall separating from the inner face usually called wall separation.

5.2 It is the opinion of the surveyor that the cost of remediation works and remodeling to the internal layout would not full fill the requirements of a modern family home. The dwelling when built originally may have been adequate for early Victorian living, but for the 21st century family the layout and room sizes are unacceptable.

The estimated costs for repairs would well exceed £80K and you would still only have an early Victorian era home with small rooms which is totally unsuitable for modern living.

Photo Appendix



Major Crack Full Height of Gable



Major Crack at Eaves



Gable Wall Cracking



Cracking Under Cill