



Building and Structural Prepurchase Reports Pty Ltd
ABN 64 003 762 918

Also trading as

BSPR Consulting Engineers

BUILDING CONSULTANTS
STRUCTURAL ENGINEERS

Our ref: K13/097

4 April 2013

Attention: Dr Suleman Qurashi
C/- Mo Nasiry
1/59 New Orleans Crescent
MAROUBRA NSW 2035

Dear Sir

RE: 104 DERBY STREET, PENRITH

Thank you for your instructions on the above. An inspection of the property has been undertaken specifically to assess cracks which are apparent in the dwarf brick wall supporting the front wall of the building. The areas inspected were the interior of the house, the external walls of the house and the surrounding grounds. The findings follow.

GENERAL

The house is a single storey dwelling of timber framed construction, with an estimated age of 50 to 60 years. It is situated on a relatively level block and is founded on a reactive clay. Inspection of the dwarf wall revealed it to be severely cracked. A number of bushes are located within a metre from this wall.

COMMENTS

The cracks are considered to have been caused by movement of the reactive clay foundation material. Clay soils expand and contract with changes in moisture content. While current footing design caters to some degree for this movement, cracking can still occur where there are significant changes in clay moisture content. In houses of this age the footings are less substantial than current standards stipulate and are therefore more susceptible to cracking.

There are a number of factors which can influence moisture content in clay soils. These include extended periods of wet or dry weather, the presence (or removal) of trees and large shrubs, the presence of pathways and other paved areas as well as broken water service pipes or stormwater pipes, including downpipes. For example, localised wetting of soil at the end of a broken downpipe can adversely affect the footings by causing localised heaving of the clay. Also trees can draw moisture from the clay causing it to shrink.

All of these and other factors can effect changes in the foundations which can in turn be responsible for movement of the footings and cracking of overlying walls. This is especially the case where such factors act on one part of the building only as this results in differential movement of the footings and associated cracking of walls. In clay soils it is therefore particularly important to maintain as consistent as possible a moisture content in the soil immediately surrounding (and under the building where relevant) to prevent differential movement of the clay.

With regard to the conditions that have influenced the front wall of this house the most obvious and likely is the presence of the trees and shrubs near the front wall.

CONCLUSION and RECOMMENDATIONS

The extent of cracking is significant although it has not affected the integrity of the building. The damage according to AS2780 "Residential Slabs and Footings" can be classed as category 3 where cracks require repair by breaking out affected areas of brickwork and rebuilding. In this instance it is considered that the footings are likely undersized.

Further movement and increased cracking is considered highly likely unless remedial works are undertaken. A piecemeal approach of only repairing the brickwork is not considered economical due to the highly suspect nature of the footings. It is therefore recommended that the dwarf wall and its footing be completely rebuilt. The details of the new footings are as per our attached drawing.

Should you have any questions please do not hesitate to call the undersigned.

Yours faithfully

A handwritten signature in dark ink, appearing to read 'Art Candarakis', with a stylized flourish at the end.

Art Candarakis B.E. Civil UTS