

Under the Commissions of Inquiry Act 1908
In the matter of Royal Commission of Inquiry into building failure
caused by Canterbury Earthquakes

Brief of Evidence of
Stuart Michael Winterbourn in respect of
43 Lichfield Street

Dated: February 2012

Date of Hearing: 27 February 2012

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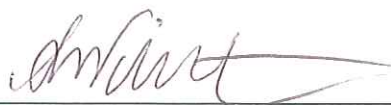
I, **Stuart Michael Winterbourn**, of Christchurch, Structural Engineer, say that:

1. My full name is Stuart Michael Winterbourn. I am a structural engineer employed by W2 which is my own company, and up until June 2011, I also worked part-time at Powell Fenwick Consultants Limited. I have a Bachelor of Engineering Degree (Hons) in Civil Engineering, and MIPENZ and a CPEng (Structural) and an IntPE. I have 14 years experience as a structural engineer. I graduated from the University of Canterbury in 1997.
2. On 25 March 2011 I was instructed to carry out a visual inspection of earthquake damage to 43 Lichfield Street following the February earthquake. I was instructed to assess the ongoing stability and comment on the possibility for repair if possible.
3. A number of walk through inspections were completed prior to me issuing my report dated 30 March 2011 [BUI.LIC43.0024]. The initial focus was to make the building safe for inspection, which included propping to the ground floor and level one, as well as removal of high level façade panels to Lichfield Street. My instructions were to focus the inspections on the assessment of damage to the building in light of the possible repair versus demolition question, and global stability.
4. My observations of the damage to the building are recorded in my report under the heading "Earthquake Damage". As I stated in the report, the damage was widespread and major structural elements had been stressed beyond the point where they could be repaired. In terms of remedial work possible, my recommendations appear under the heading "Remedial Work". Essentially, my opinion was that demolition and reinstatement would be cheaper and more practical than attempting to re-use the remaining parts of the building. It was also my opinion that there was a serious risk that the building might collapse and that demolition should be expedited.
5. At the time of the inspection that I carried out on 25 March 2011, I had not received any information from GNS or any other source about the likelihood, location and extent of any further after shocks.
6. I had not received any information from the Christchurch City Council relating to building standards or the inspection of buildings following an earthquake.

7. I had not received any information from any other party relating to building standards or the inspection of buildings following an earthquake.
8. At the time of the inspection in March 2011, I had access to the building plans which were recovered from the building itself.
9. I was aware of the Christchurch City Council's earthquake prone policy, however this building is a modern building and as such I expected that it would have been designed to the code at the time that it had been built and the earthquake prone policy would not apply. As it was a modern building, no structural strengthening had been carried out.
10. I have been asked to comment on the general failure mechanism of the building, in particular the failure of the concrete façade panels. I noted during the inspection that the concrete façade panels on the south face were connected with weld plates which I did not consider an appropriate detail at the time due to the lack of movement tolerance in the connection. Such a detail would attract large loads to these connections, and as such I concluded that this displacement caused the failure of the welds and subsequent collapse of the panels. On review of the drawings, from what I could see the connections had been constructed as shown on the drawings.
11. I instructed the removal of a high level panel on Lichfield Street that had not fallen, as it was precarious. However, I was not on site at the time of removal of the panel, and did not inspect it once it had been removed. From recollection, I believe it was Smith cranes that removed the panel.
12. I have been asked to comment on whether the design and/or fixing of such concrete panels has been a problem with other buildings and requires review. I am not aware of specific examples, but I am aware that building displacements have been more than expected, and this needs to be considered for the protection of secondary elements.

DATED

February 2012



Stuart Michael Winterbourn