IN THE MATTER OF

THE CANTERBURY EARTHQUAKES ROYAL COMMISSION

BRIEF OF EVIDENCE OF CHRISTOPHER JAMES GORDON

24 January 2012

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1. My full name is Christopher James Gordon.

2. I hold a Bachelor of Engineering (Civil) degree. I am a member of the Institute of Professional Engineers of New Zealand. I am a Chartered Professional Engineer. I have been practising as a qualified structural engineer for 18 years. I am employed by Lewis and Barrow Limited (Lewis and Barrow) as a structural engineer since 1994.

3. I became registered as a Chartered Professional Engineer during 2011, along with a large number of qualifying engineers under the initiative of the Institute of Professional Engineers, who sought to increase the number of engineers available to work on damaged buildings in Canterbury.

4. I was the duty engineer for Lewis and Barrow, on call over the Christmas period 2010/2011. I received a call from Daryl Fraser, the manager of the Iconic Bar at 200 – 204 Manchester Street on 27 or 28 December 2010. Mr Fraser wanted to engage Lewis and Barrow to address the red placard issued by the Christchurch City Council (Council) following the aftershock on 26 December 2010.

5. On 28 December I collected a file relating to this building from Lewis and Barrow's offices and took this with me to my site inspection.

6. During my site inspection on 28 December 2010, I visually assessed the exterior of the Iconic Building. I walked around the north, west and south facades of the building and viewed the east facade from Gloucester Street. I did this before entering the building.

7. I noted damage to the gable end wall on the eastern side of the building. Specifically, I noted disrupted bricks to the apex of the gable. I also noted some minor cracks on the north and west faces of the building. However, the cracking appeared to be historic.

8. After I had inspected the exterior of the building, I viewed the red placard that was located on a window to the west side of the building. The placard had been issued by the Christchurch City Council on 27 December 2010 and referred to disruption of the east wall gable end apex. I was not provided with any other

documentation in relation to the building or the rapid assessments completed after the 26 December aftershocks.

9. I am now aware that a rapid assessment carried out on 26 December 2010 (BUI.MAN200.0004.153) referred to damage on the west wall and noted "esp apex lose bricks. Could fall outwards". I believe the reference to the west wall may have been an error. There was no apex on the west wall, it had a flat parapet (refer photograph 03 BUI.MAN200.0012.4). Also, there were no loose bricks on that facade when I inspected the building on 28 December 2010 (refer photographs BUI.MAN200.0005.28 and BUI.MAN200.005.36). I am satisfied that, if there had been damage to the west wall following the 26 December 2010 aftershocks, I would have noted that during my inspection.

10. I met with Mr Fraser and entered the building. Mr Fraser showed me how to access various areas of the building. I found some outwards displacement of the double brick east wall from the interior of the roof space between the truss top and bottom chords over the central portion of this wall.

11. I prepared a site report detailing the interim repair works required (BUI.MAN200.0004.164). I recommended that the outside face of the east end gable wall be lined with 20mm plywood fixed to the existing bolts at roof level and new bolts at bottom chord level to strengthen the wall for in-plane and out-of-plane loads to at least the level it had before the damage was sustained. I also recommended adding joists and a plywood floor between the bottom chords of the first two truss bays to prevent bricks falling inwards. Such repairs would provide temporary support of the damaged wall which would allow the building to be re-occupied.

12. I also noted that the brick wall, above the truss bottom chord level, would need to be removed and rebuilt with a suitable structure for long term support.

13. I left the site report dated 28 December 2010 (BUI.MAN200.0004.164) with Mr Fraser who was to arrange for a builder to complete the work.

14. On 29 December 2010, I contacted Warren Lewis of Lewis and Barrow, who was in Nelson between Christmas and New Year of 2010. The nature of my telephone

was to touch base with Mr Lewis and to ensure that there was no information which Mr Lewis knew about the building which I should know. I discussed with Mr Lewis the damage I had observed to the east wall and my scheme for strengthening the damaged area. I questioned Mr Lewis about the strength of the roof bracing and top floor ceiling bracing. We decided to further strengthen the outside face of the plywood by adding vertical steel angles over the plywood along with matching vertical timber to the inside face fixed at existing bolt spacing.

15. I inspected the site again on the 29th December. The repair work that I recommended in my report dated 28 December had been commenced by Nathan Cook Builders. At the time of my inspection the framing and plywood were in place between the end trusses to the affected east wall. Scaffolding was being placed to give access to the external face of the east end gable. Some additional structural details, those agreed to with Mr Lewis, are recorded in my site report dated 29 December 2010 (BUI.MAN200.0004.165).

16. On the 30th of December Daryl Fraser phoned to advise that the work was progressing and was almost complete. I visited the site and observed that all work was proceeding as detailed in my site reports.

17. On 30 December 2010 I prepared a Christchurch City Council CPEng Statement form that had previously been required by the Council. As I had not gained CPEng status at the time, I crossed out the CPEng reference and emailed the form (BUI.MAN.0004.163) to the Council with a covering email explaining that I was although I was not a chartered professional engineer I did have significant experience with seismic design (BUI.MAN200.0004.162). In my opinion the remedial work provided adequate support to the damaged areas and I requested that the Council remove the red placard from the site. I also noted that a building consent application had been made and that an amendment would be lodged in January to include the removal of the east gable end wall and reinstatement with a suitable structure. I anticipated that the building owner or its insurer would engage Lewis and Barrow to design a permanent repair as we had a current file for the building. An amendment to an existing consent application would have been an efficient way of dealing with the permanent repair.

18. On 30 December 2010 John Mitchell of the Council phoned to advise me that the Council required the statement which addressed the repair work was to be given by a Chartered Professional Engineer. As it is a widespread practice for engineers who have an engineering degree but have not yet become chartered to carry out their work with the oversight of a chartered engineer, who ultimately provides certifications of the work, I approached Simon Gifford, of Lewis and Barrow. After reviewing the file and discussing the damage and repair works with me, Mr Gifford provided the necessary statement dated 31 December 2010 (BUI.MAN200.0004.166).

19. On 31 December 2010 I emailed the CPEng form to the Council and delivered a copy to Mr Fraser at the site.

20. I discussed the Iconic Building briefly with Mr Lewis on his return to Christchurch. I told him about the work that had been done to the building and which I had checked. I then gave the files back to Mr Lewis. I had no other involvement with the building.

21. I note Ms Cooney was concerned about the stability of the repairs because she could not see any bracing on the inside to which the outside ply wood was attached (WIT.COO.001.2).

22. The external plywood along with the external steel angles and aligned internal timber boards were fixed to the truss bottom chord and roof structures to prevent bricks falling outwards but also to replace the in-plane strength of the wall lost by the disruption to the brick wall. The plywood floor installed between the truss bottom chords to the first two truss bays was to prevent bricks from falling inwards and spilling onto the floor below. Because of the diagonal truss strut and tie members there was no viable method to install plywood against the inside face. I don't recall there being any holes through the brick wall at the time of the repair.

23. I had noted on site and from the existing drawings in the file that steel ceiling plane bracing had been installed at truss bottom chord level to distribute lateral loads from out-of-plane forces to in-plane walls through steel angles bolt fixed to the walls. Additional steelwork had been installed at ceiling plane level so that

horizontal (earthquake or wind) loads were transferred from wall faces to side walls. The plywood and steel angle facing to the exterior of the gable end was tied into the truss bottom chords which were fixed to this bracing system giving normal distribution of the lateral loads for this building.

This statement is true to the best of my knowledge and belief and was made by me knowing that it may be used as evidence for the purposes of the Royal Commission of Inquiry into the Canterbury Earthquakes.

Dated 24 January 2012

Christopher James Gordon