IN THE MATTER OF

THE CANTERBURY EARTHQUAKES ROYAL COMMISSION

BRIEF OF EVIDENCE OF GARY HAVERLAND

29 November 2011

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1. My full name is Gary Haverland. I am a director of Structex Metro Limited. I have a Bachelor Degree in Civil Engineering and I am a Chartered Professional Engineer. I have been practicing as a qualified structural engineer for 24 years.

2. On the evening of 4 September 2010 Mr Steve Martin contacted me by telephone in relation to the Hotel Grand Chancellor (**the Hotel**). Mr Martin is the Hotel's General Manager. Mr Martin asked me to inspect the Hotel, as best as I can recall, to determine whether there were any immediate safety concerns arising because of the earthquake on 4 September 2010.

3. I inspected the Hotel on 5 September 2010. The inspection commenced around 8.30am and finished at around 12.30pm.

4. The Hotel had a Green placard with a level 1 rapid assessment having been carried out. Given the owner's instruction to identify initial structural and safety issues I carried out my inspection to Level 2 (Christchurch City Council RAPID Assessment). A Level 2 Rapid Assessment is meant to identify immediate structural and safety hazards and includes an inspection of the building interior. It is a visual inspection only and not intended to provide detailed information on repairs that may be required. It is focussed on immediate public safety as well as assessing the need for any temporary works such as shoring, temporary securing, making safe or barricading. According to the New Zealand Society for Earthquake Engineering '*Guidelines for Building Safety Evaluation During a State of Emergency*' (August 2009) Level 2 Rapid Assessments are appropriate for the assessment of large multi-story buildings.

5. No building plans were made available to me at the time of the inspection. The plans would have been of limited assistance in the context of a visual-only inspection. Plans are useful when a detailed inspection is being carried out.

6. The Hotel is a ductile frame building designed and constructed in the mid to late 1980s, with the expectation that these buildings have good performance characteristics in an earthquake. I inspected a representative sample of floors which included the level 28 stair (observing only minor damage due to building movement, not of a structural nature), the level 14 kitchen (no damaged observed) and the level 15 bottom of stair (where some damage to vinyl was observed). The exterior was not inspected. Mr Martin directed me to areas of

damage that he had observed and which he wanted me to view and comment on. He accompanied me during the inspection.

7. I observed some damage to the GIB linings with cracks generally at sheet joints and corners. The extent of damage to the linings was not so extensive to suggest that the structure was compromised. As such and as it was a visual inspection only, I did not inspect behind the GIB linings. I also observed that at the base of the level 15 stair an area of vinyl had torn. The Hotel staff and I removed a section of bulkhead to the underside of the stair to allow a closer inspection of the stair support. The base of the stair is rebated and seats onto an opposite rebated landing to allow the stair to slide relative to the landing. This is consistent with standard design and construction practices of the time to allow seismic movement between floors to occur. The sealant in the sliding joint was still in place and undamaged and the stair support also appeared to be in sound condition.

8. The areas that I viewed during my inspection indicated that the damage to the Hotel was superficial only and not of structural concern. All relevant observations I made are contained within the Structex Seismic Inspection Report dated 5 September 2010 (**the Report**) (**GH1**).

9. I provided my comments to Mr Martin on 5 September 2010 and later emailed him a copy of the Report. I heard no more from Mr Martin or the Hotel's owners until after the Boxing Day earthquake. I was asked to undertake another assessment of the Hotel however I was unavailable to do so. I understand that the building owner's engaged another firm to carry out the inspection.

10. To my knowledge information from GNS or other sources about the likelihood, location and extent of further aftershocks was not available at the time of my inspection. In my opinion the severity of the aftershocks that were being experienced were highly unlikely to cause subsequent damage to the Hotel. The Hotel was constructed out of reinforced concrete. These buildings are expected to sustain large earthquake loads with multiple cycles of loadings and maintain their structural integrity. Given the limited damage I observed as a result of the

7.1 magnitude earthquake on 4 September, I considered it highly unlikely that further structural damage would occur as a result of the less severe aftershocks.

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 29 November 2011

Gary Haverland

GH1

seismic inspection no. 01 Date: 5 September 2010 **structex**

Project: Hotel Grand Chancellor By: Gary Haverland Ref: 10675

Distribution Steve Martin, Hotel Grand Chancellor

The following report is an initial inspection to Level 2 (Christchurch City Council Earthquake RAPID Assessment), structural inspection. This report is meant to identify initial structural and safety issues. It is not intended to provide detailed information on all repairs. We expect that additional information will be required in cases where repairs are required.

An inspection of the Hotel Grand Chancellor building at 161 Cashel Street, Christchurch was carried out on 5 September 2010 to view damage to the building as a result of the earthquake on 4 September 2010.

The damage viewed primarily included cracking to the GIB board linings in the corridors, generally at sheet joints and corners.

Cracking to GIB linings had occurred in the corner of the large foyer adjacent to the Conference rooms. This appears to be located at the seismic separation between the tower and the carpark buildings.

An area of vinyl had torn at the base of the level 15 stair. While on site, a section of bulkhead to the underside of the stair was removed to allow closer inspection of the stair support. The base of the stair is rebated and seats onto an opposite rebated landing to allow the stair to slide relative to the landing. The sealant was still in place and the stair soffit appeared to be in sound condition.

The seismic gap between the two sections of carparking was also viewed. Some damage had occurred to the flashings over the seismic gap. Some areas of asphalt covering the gap were also dislodged by approximately 20mm. Movement at this location is expected and is not a structural concern.

The areas viewed during this inspection indicate the damage is superficial only and not of a structural concern.

Damage to plasterboard wall linings and vinyl floor coverings at the base of stone stairs may be repaired.

Damaged to the asphalt surface at the seismic gap to the carpark may be reinstated. Ensure the seismic gaps is not filled or only filled with a compressible material, when repairs are carried out.

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