



Canterbury Earthquakes Royal Commission
Te Komihana Rūwhenua a te Karauna

11 October 2011

Mr Alistair Boyce
Opus
PO Box 1482
CHRISTCHURCH

By email: alistair.boyce@opus.co.nz

Dear Sir

91 Cashel Street, Christchurch

The Royal Commission of enquiry into building failure caused by the Canterbury earthquakes is currently examining the failure of a number of buildings in the Christchurch CBD, including the building that was situated at 91 Cashel Street (the Building.)

The Commission has obtained the Christchurch City Council file in relation to the Building. I note that you completed a statement by chartered professional engineer in respect of the Building on 31/12/10 (copy **enclosed**).

Would you please provide the following information, by **21 October 2010**:

1. Please explain the nature of any verbal instructions you received in relation to the Building and a copy of any written instructions.
2. Had you previously inspected the Building (or any of the adjacent buildings)? If so, please provide details.
3. What information were you provided from the Christchurch City Council file? Please provide copies of any documentation you were given.
4. Were you aware of the matters which had been observed by the Council Level 1 Rapid Assessment on 26 December 2010 which led to a Building Act notice being served on the owner of the property? If so, please provide details.
5. Were you provided with a copy of the Building Act notice served on the owner?
6. Please outline the nature and extent of any inspection conducted by you of the Building.
7. Please forward copies of any report prepared by you in relation to the Building including any photographs, drawings etc.

8. What did you understand you were certifying in paragraph a. in the statement signed by you on 31/12/10? In particular, what features of the Building were you certifying as having been inspected?
9. Why did you alter the date of 4 September 2010 to 26/12/2010? What effect did this have on what you believed you were certifying in paragraph a?
10. Were there any "potentially dangerous features" as set out in paragraph b. in relation to the Building? If so, please provide details.
11. What were the potentially dangerous features in relation to the Buildings at 89A and 95 Cashel Street to which you were referring in c?
12. After 31/12/10 did you have any further involvement in the Building? If so, please provide details.
13. Have you provided reports in relation to any of the buildings adjacent to this Building? If so, please provide the details as sought above in relation to those buildings.
14. When carrying out any inspection of the Building (or any adjacent buildings) did you consider any of the following in coming to any subsequent conclusions:
 - (a) The Building's plans. If so, please provide details.
 - (b) The construction history of the Building and any structural strengthening that had been carried out in the past. If so, please provide details.
 - (c) Any previous reports or assessments by any engineers in relation to the Building. If so, please provide details.
 - (d) The impact of the 4 September 2010 earthquake and subsequent aftershocks on the structural integrity of the Building and, in particular, whether the Building's capacity to withstand further aftershocks was diminished as a result. If so, please provide details.
 - (e) Any information from GNS or any other source about the likelihood, location and extent of further aftershocks. If so, please provide details.
 - (f) The possibility of an aftershock of 1 magnitude less than the earthquake of 4 September 2010. If so, please provide details.
 - (g) Information from Christchurch City Council relating to building standards or the inspection of buildings following an earthquake. If so, please provide details.
 - (h) Any information from any other party relating to building standards or the inspection of buildings following an earthquake. If so, please provide details.

- (i) The Christchurch City Council's policy in relation to cordons/barricades around potentially dangerous buildings. If so, please provide details.

The above information is requested pursuant to the Royal Commission's powers of investigation under s 4C Commissions of Inquiry Act 1908.

Yours faithfully



Mark Zarifeh
Counsel Assisting
Canterbury Earthquakes Royal Commission

Statement by Chartered Professional Engineer in respect of the building at:

(Building Address) ⁹¹ ~~91~~ Cashel Street

(Business Name *if applicable*)

I, Alistair Bayne (name), am a Chartered Professional Engineer (No. 201940) with relevant experience in the structural design of buildings for earthquake actions.

I have been engaged to provide advice to the owner on the interim securing / strengthening of the above building following the earthquake of 4 September 2010.

I am aware of all the measures taken to secure or strengthen the building (the work) which were carried out by (*Name and contact address of contractor*).

SBL Southbuild, PO Box 27-158 Shirley, ChCN 8640

I have inspected the work on completion and am satisfied on reasonable grounds that:

- a. *Structural integrity and performance.* Where the structural integrity and/or structural performance of the building (or part of the building) was materially affected by the Darfield earthquake or any aftershocks to date, interim securing measures have been taken to restore the structural integrity and performance of the building to at least the condition that existed prior to the earthquake of ~~4~~ 26/12/2010 September 2010.
- b. *Potentially dangerous features.* Potentially dangerous features on the building such as unreinforced masonry chimneys, parapets and walls have been removed or secured so that their integrity and level of structural performance is consistent with that generally achieved in other parts of the building, and so reduces the danger to people's safety and of damage to other property.
- c. *Threat from nearby buildings.* (Delete one if not applicable) (89A & 95 Cashel St.) Protective measures installed on the subject building are sufficient in nature and extent to protect its occupants in the event of collapse of potentially dangerous features on *adjacent or nearby buildings*.

I have identified *all* potentially dangerous features such as unreinforced masonry chimneys, parapets and walls *on all adjacent or nearby buildings* that have potentially dangerous features which threaten the subject building or its occupants.

Buildings which I have identified in the above category are:

- i. 89A Cashel Street
- ii. 91 Cashel Street
- iii. 95 Cashel Street

I have advised the owner of the subject building that approval for resumption of occupancy and use will be subject to Council approval to remove the red or yellow safety notices from the buildings listed above.

Signed A Bayne Chartered Professional Engineer

Date 31/12/2010

(91 Cashel St.)

Securing work to parapet completed on 31/12/2010.

30 NOV 2011



19 October 2011

Mr Mark Zarifeh
 Counsel Assisting
 Canterbury Earthquake Royal Commission
 P O Box 14053
 Christchurch Mail Centre 8544

Dear Sir

Re: 91 Cashel Street Christchurch

I refer to your letter of 11 October 2011 to Mr Boyce regarding the above building.

As set out in your letter, Mr Boyce completed a statement by chartered professional engineer in respect of the building on 31/12/10. This was in response to a verbal request we received from the owner of the adjacent buildings (93 and 89 Cashel Street) to inspect and design securing work to the parapet to 91 Cashel Street to remove an identified fall hazard.

There were two Opus people involved in the response, Alistair Boyce, to whom you directed your inquiry, and Andrew Brown. For completeness, we have arranged for both Alistair and Andrew to address your questions, as follows:

Question	Alistair Boyce CPEng 209860	Andrew Brown CPEng 1006712
1. Please explain the nature of any verbal instructions you received in relation to the Building and a copy of any written instructions.	(a) Inspect the securing works designed and detailed by Andrew Brown (Opus CPEng structural engineer) once it had been installed by the Contractor on 31 December 2010 (b) Provide certification to the CCC that this securing work had been installed.	(a) Our verbal instruction from the owner of the adjacent buildings (93 Cashel and 89 Cashel), was to inspect and design securing work of the parapets to 91 Cashel, hence removing the identified fall hazard. (b) This scope of work was subsequently confirmed by the owner of 91 Cashel, who was out of Christchurch at the time.
2. Had you previously inspected the Building (or any of the adjacent buildings)? If so, please provide details.	I had not inspected the building prior to my inspection of the securing works on 31 December 2010.	As I recall, an inspection was made of only the area of the building where damage was identified, i.e. the parapet. We did meet with the tenant of the second level to gain access to the roof, and they indicated that no damage had occurred to the building on Boxing Day. I seem to recall that there was an inspection notice posted at the stair landing at first

Question	Alistair Boyce CPEng 209860	Andrew Brown CPEng 1006712
		floor covering an inspection of the building post 4 September earthquake.
3. What information were you provided from the Christchurch City Council file? Please provide copies of any documentation you were given.	I was not provided with any information from the CCC file.	Ditto
4. Were you aware of the matters which had been observed by the Council Level 1 Rapid Assessment on 26 December 2010 which led to a Building Act notice being served on the owner of the property? If so, please provide details.	I was aware that the Level 1 rapid assessment had noted that the roof parapet above Cashel Street was cracked and potentially loose, as was the parapet at the rear of the building.	Ditto
5. Were you provided with a copy of the Building Act notice served on the owner?	I was not provided with a copy of the Building Act notice served on the building owner however I read the notice taped to the Cashel Street entrance which noted the cracked parapets.	Ditto
6. Please outline the nature and extent of any inspection conducted by you of the Building.	The inspection I completed on 31 December 2010 comprised an inspection of the securing works at roof level to ensure that the steelwork had been correctly installed. This inspection was carried out from a man-cage suspended from a crane.	The nature of my inspection was to inspect the Cashel St parapet, which had been identified as a hazard. I inspected the remainder of the building parapets whilst on the roof, and identified the northwest and northeast corners also as a potential hazard to be addressed. A brief external visual inspection of the building was carried out to assess whether any other damage relating to the Boxing Day earthquake could be identified. None was found.
7. Please forward copies of any report prepared by you in relation to the Building including any photographs, drawings etc.	I did not prepare any reports or drawings in relation to the building, although Andrew did prepare a sketch of the securing works.	Design for temporary securing of the parapet was prepared, along with hand sketch details.
8. What did you understand you were certifying in paragraph a. in the statement signed by you on 31/12/10? In particular, what features of the Building were you certifying as having been inspected?	My understanding was that I was certifying that the securing works installed on 31 December 2010 restored the structural integrity and performance of the roof parapets to the condition that existed prior to the earthquake on 26 December 2010. In addition I was aware that the loose parapet at the rear of the building had been removed over a 0.5m length in both directions from both rear	

Question	Alistair Boyce CPEng 209860	Andrew Brown CPEng 1006712
	corners in order to remove this potentially dangerous feature.	
9. Why did you alter the date of 4 September 2010 to 26/12/2010? What effect did this have on what you believed you were certifying in paragraph a?	The date was altered as we were asked to certify the position after the 26 December earthquake. We were not dealing with the state of the building pre and post the September earthquake.	
10. Were there any "potentially dangerous features" as set out in paragraph b. in relation to the Building? If so, please provide details.	The cracked roof level parapets were considered to be a potentially dangerous feature. The only damage observed to the parapets was to the Cashel Street elevation and the rear elevation. No other damage to other parapets was observed either from ground level or from roof level.	Agree
11. What were the potentially dangerous features in relation to the Buildings at 89A and 95 Cashel Street to which you were referring in c?	The buildings at 89A and 95 Cashel Street had Building Act notices served on them due to the danger posed from the 91 Cashel Street roof parapet over the Cashel Street elevation.	Agree
12. After 31/12/10 did you have any further involvement in the Building? If so, please provide details.	I did not have any involvement with this building after 31 December 2010.	On 31 December, I advised the owner that the securing was a short-term (less than 6 months) solution, and offered to carry out a detailed engineering assessment and advise on a long-term solution. No response was received from the owner until after the February event, when he requested that we prepare a report confirming demolition was necessary. Two attachments refer.
13. Have you provided reports in relation to any of the buildings adjacent to this Building? If so, please provide the details as sought above in relation to those buildings.	I have not provided any reports in relation to any buildings adjacent to 91 Cashel Street.	
14. When carrying out any inspection of the Building (or any adjacent buildings) did you consider any of the following in coming to any subsequent conclusions:		
(a) The Building's plans. If	The Building's plans were not	Agree

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so, please provide details.	viewed. Consideration was given to the building form.	
(b) The construction history of the Building and any structural strengthening that had been carried out in the past. If so, please provide details.	The structural form of the parapets was considered when reviewing the design sketches of the roof parapet securing works	Agree
(c) Any previous reports or assessments by any engineers in relation to the Building. If so, please provide details.	No previous reports were viewed.	Agree
(d) The impact of the 4 September 2010 earthquake and subsequent aftershocks on the structural integrity of the Building and, in particular, whether the Building's capacity to withstand further aftershocks was diminished as a result. If so, please provide details.	Consideration was given to the structural integrity of the building. My understanding was that there was little structural damage within the building and therefore with the exception of the Cashel Street and rear elevation roof parapets the condition of the building was similar to its integrity before the 26 December 2010 earthquake.	Agree
(e) Any information from GNS or any other source about the likelihood, location and extent of further aftershocks. If so, please provide details.	Securing works were typically designed for a code level earthquake to NZS 1170.5, therefore information from GNS was not sought.	Agree
(f) The possibility of an aftershock of 1 magnitude less than the earthquake of 4 September 2010. If so, please provide details.	Securing works were typically designed for a code level earthquake to NZS 1170.5.	We would note that the securing works for the parapet performed as intended, and, despite the collapse of the floor below, the concrete parapet on Cashel St was prevented from falling by the securing works installed and certified on 31 Dec 2010.
(g) Information from Christchurch City Council relating to building standards or the inspection of buildings following an earthquake. If so, please provide details.	The inspection of buildings following an earthquake was generally discussed with CCC and Opus.	Agree
(h) Any information from any other party relating to building standards or the inspection of buildings following an earthquake. If so, please	No other information was received.	Agree

Question	Alistair Boyce CPEng 209860	Andrew Brown CPEng 1006712
provide details.		
(i) The Christchurch City Council's policy in relation to cordons/barricades around potentially dangerous buildings. If so, please provide details.	The cordon around the building was in place prior to my inspection on 31 December 2010, and once the securing works were inspected the cordon was removed by the CCC.	Agree

In regards further requests for information, I refer to the conversation you and I had by telephone where we discussed the possibility of the Commission coordinating a combined request for information from Opus through either myself or Alison Swan. We would favour such an approach and suggest we meet at your earliest convenience to progress this initiative.

I trust the above information is sufficient for your purposes.

Yours sincerely

OPUS INTERNATIONAL CONSULTANTS LTD



Glen Hughes
SOUTHERN REGIONAL MANAGER