

In the matter of the Commissions of Inquiry Act 1908

And

In the matter of the Canterbury Earthquakes Royal Commission

**Brief of evidence of Alistair Geoffrey Boys relating to 593 Colombo
Street for hearing week commencing 12 December 2011**

Date: 9 December 2011



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Qualifications and experience

- 1 My full name is Alistair Geoffrey Boys.
- 2 I am a structural engineer in the employ of Holmes Consulting Group Limited (**HCG**).
- 3 I hold a bachelor's and master's degree in civil and structural engineering, BE (Civil) and (ME) Structural conferred by the University of Canterbury. I have three years postgraduate experience in engineering.

Scope of evidence

- 4 I, on behalf of HCG, provide this Brief of evidence in response to the Canterbury Earthquakes Royal Commission's email dated 16 November 2011 in relation to the building at 593 Colombo Street.

Inspection : 24 September 2010

- 5 I am asked whether I arranged for a yellow placard to be affixed to the building following my inspection on 24 September 2010.

Response

- 6 I did not affix a yellow placard to the building as there was an existing yellow placard already affixed presumably from a previous inspection carried out by another party. My handwritten site report and typed up site report dated 24 September 2010 and Rapid Assessment Form - Level 2, are attached. It is noted that in my report I observed that the Yellow Tag should remain in place. The Yellow Placard was located on or adjacent to the front entry into the Lingerie Store on Colombo Street.

Assessment Form

- 7 I am asked if the assessment form, which refers to 593 Colombo St, relates to the building as a whole.

Response

- 8 I confirm that my assessment form related to the building located at 593 Colombo St, as a whole.

Communication of Yellow Placard status

- 9 I am asked whether I advised the occupiers and NAI Harcourts of my conclusion that the building be yellow placarded and as a result have only "short term entry".

Response

- 10 I advised NAI Harcourts of the continued yellow placard status of the building. This advice was provided verbally during a meeting held on 24 September 2010 whilst providing an update of the building inspections carried out to that date. This was subsequently confirmed by my Site Report and Level 2 Inspection form of the same date.
- 11 Due to the existing 'yellow' status of the building there were no tenants in occupation at the time of my inspection. I do not recall if I specifically informed NAI Harcourts verbally that the building was to remain unoccupied but it was understood that Yellow placarded buildings were restricted to short term entry only and my Level 2 Assessment report confirmed the building to be suitable for short term entry only. My site report confirmed the building was not safe to occupy.

Christchurch Council

I am asked whether I advised the Christchurch Council of my assessment and conclusions.

Response

- 12 I provided NAI Harcourts with my typed up Site Report and a copy of the completed Level 2 Assessment Form. I did not specifically provide these to Christchurch Council given there was no change in the building's status.

Photographs

- 13 I am asked to identify the photographs which were taken during my inspection.

Response

- 14 The photographs taken during the inspection on 24 September 2010 are those referred to as CIMG1526-CIMG1535, as previously supplied to the Royal Commission.

Structural Concerns

- 15 I am asked to provide more detail, if possible, about the structural concerns I had with the building and, in particular, the separation of the floor and walls as noted in my report.

Response

- 16 The primary structural concerns I had were in relation to:

- Potential fall hazards; and
- The potential instability of the southern wall.

Potential Fall Hazards

- 17 The fall hazards noted concerned the parapets to the rear of the building. I observed that they displayed evidence of cracking and displacement when viewed from ground level. The parapets to the remainder of the building did not display any obvious signs of damage from ground level.

Potential Instability of the Southern Wall

- 18 The potential instability of the southern wall related to the apparent separation of the southern wall, on the St Asaph Street façade, from the first floor diaphragm. The separation was measured to be approximately 10mm in width and showed some evidence of pre-existence. Due to the level of displacement in evidence, I did not consider this a collapse hazard. I was also aware of the existing barriers beneath this wall protecting pedestrians below the building.
- 19 As noted in my Site Report, I was of the opinion that further investigation of the building structure was warranted with particular reference to the South wall connection to the first floor (noted as second floor in the Site Report as a result of designating the Ground floor as Level 1).
- 20 There was minor damage to the interior masonry walls, timber partitions and lathe and plaster lining.

Date: December 2011



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Alistair Geoffrey Boys



Project Name: 595 (Gilmoo St)
Project No: 105380-71
S.R. No:
Date: 24/9/10
Reviewed By: AIR

SITE REPORT

Work Reviewed:

POST EQ INSPECTION

Observations & Comments:

* 2 Storey URM - Flats above
- retail below

HC in

* WEST WALL - DAMAGE @ DOWNPIPE LOCATION @ TOP (FRONT CORNER PARAPET CORNER?)

* (North) REAR WALL - NO SIGNIFICANT DAMAGE - PARAPET OK. # APPEAR'S STRIKE

* St Asaph facade Appears undamaged, Also Columbus facade

* minor cosmetic cracking to internal partitions (advt + Eve)
10 inter or masonry wall @ 0.2m

* UPSTAIRS ROOMS: EVIDENCE THAT THE ST ASAPH FACADE SOUK
MAY HAVE MOVED OUT BY 10mm
HARD TO DETERMINE IF PRE-EXISTING

⇒ CHERRY PICKER & INSPECT FROM ROOF
OR REMOVE LATH & PLASTER TO INSPECT
TIES BETWEEN ROOF & WALL
(# POTENTIALLY L2 FLOOR TIES)



Project Name 593 Colombo St
 Project No: 105380.71
 S.R. No: 001
 Date: 24 September 2010
 Reviewed By: Alistair Boys

SITE REPORT

Work Reviewed:

- Post Earthquake L2 Assessment

Observations & Comments:

- 2 Storey URM Retail Building, ~~currently YELLOW Tag~~
- Damaged masonry at the downpipe locations on the upper west wall
 - Repairs required to ensure no falling hazard
- ~~Externally no apparent damage evident to the facades on Colombo or St Asaph Streets.~~
- Internal inspection showed evidence that the ~~St Asaph street facade~~ may have moved out by 10mm at the centre of the wall. There is some evidence that ~~this may have been~~ ~~pre-existing due to newspaper~~ stuffed into the cracks between the external URM wall and the internal partitions (the upper residential tenancies look to have been unfit for tenants for some time).
 - Further structural investigation is required to ensure adequate connections between the level 2 floor and the URM walls, also the roof connection to the URM wall requires investigation.
- ~~Not Safe to occupy (YELLOW Tag remains in place)~~

Report Prepared By:

Alistair Boys
STRUCTURAL ENGINEER

105380.71SR2409.001.doc

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Christchurch Eq RAPID Assessment Form - LEVEL 2

Inspector Initials: ALB Date: 24/9/10 Final Posting (e.g. UNSAFE): YELLOW
 Territorial Authority: Christchurch City Time: 3:00 pm

Building Name
 Short Name: _____ Type of Construction
 Address: 593 Colombo St. Timber frame Concrete shear wall
 GPS Co-ordinates: S^o _____ E^o _____ Steel frame Unreinforced masonry
 Contact Name: _____ Fill-up concrete Reinforced masonry
 Contact Phone: _____ Concrete frame Confined masonry
 _____ RC frame with masonry infill Other
 Storeys at and above ground level: 2 Below ground level: - Primary Occupancy
 Total gross floor area (m²): ~200 Year built: _____ Dwelling Commercial/Offices
 No of residential Units: - Other residential Industrial
 _____ Public assembly Government
 _____ School Heritage Listed
 _____ Religious Other
 Photo Taken: Yes No

Investigate the building for the conditions listed on page 1 and 2, and check the appropriate column. A sketch may be added on page 3

Overall Hazards / Damage	Minor/None	Moderate	Severe	Comments
Collapse, partial collapse, off foundation	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<u>Damaged masonry & damage</u>
Building or storey leaning	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<u>locations & top of west wall.</u>
Wall or other structural damage	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<u>Apparent separation of L2 floor</u>
Overhead falling hazard	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<u>& URM walls (& internal partitions)</u>
Ground movement, settlement, slips	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<u>possibly pre-existing => further</u>
Neighbouring building hazard	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<u>assessment req'd.</u>
Electrical, gas, sewerage, water, hazmats.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Record any existing placard on this building:

Existing Placard Type (e.g. UNSAFE)

YELLOW

Choose a new posting based on the new evaluation and team judgement. Severe conditions affecting the whole building are grounds for an UNSAFE posting. Localised Severe and overall Moderate conditions may require a RESTRICTED USE. Place INSPECTED placard at main entrance. Post all other placards at every significant entrance. Transfer the chosen posting to the top of this page.

INSPECTED

GREEN

G1 G2

RESTRICTED USE

YELLOW

Y1 Y2

UNSAFE

RED

R1 R2 R3

Record any restriction on use or entry:

Further Action Recommended:

Tick the boxes below only if further actions are recommended

- Barricades are needed (state location):
- Detailed engineering evaluation recommended
 - Structural
 - Geotechnical
 - Other:
- Other recommendations:

Estimated Overall Building Damage (Exclude Contents)

- None
- 0-1 %
- 2-10 %
- 11-30 %
- 31-60 %
- 61-99 %
- 100 %

Sign here on completion

ALB

Date & Time ID

24/9/10

Inspection ID: _____ (Office Use Only)

Structural Hazards/ Damage	Minor/None	Moderate	Severe	Comments
Foundations	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Roofs, floors (vertical load)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Columns, pilasters, corbels	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Diaphragms, horizontal bracing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Pre-cast connections	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Beam	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Non-structural Hazards / Damage				
Parapets, ornamentation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	minor cracking to West end of St Asaph St parapet.
Cladding, glazing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Ceilings, light fixtures	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Interior walls, partitions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Elevators	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Stairs/ Exits	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Utilities (eg. gas, electricity, water)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Other	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Geotechnical Hazards / Damage				
Slope failure, debris	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Ground movement, fissures	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Soil bulging, liquefaction	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
General Comment				

Usability Category

Damage Intensity	Posting	Usability Category	Remarks
Light damage	Inspected (Green)	G1. Occupiable, no immediate further investigation required	
Low risk		G2. Occupiable, repairs required	
Medium damage	Restricted Use (Yellow)	Y1. Short term entry	
Medium risk		Y2. No entry to parts until repaired or demolished	
Heavy damage	Unsafe. (Red)	R1. Significant damage; repairs, strengthening possible	
High risk		R2. Severe damage; demolition likely	
		R3. At risk from adjacent premises or from ground failure	