CSR# 91224831

Christchurch Eq. RAPID Assessment Form - LEVEL 1

Inspector Initials	EAB	Date of Inspection	26/12/10	Exterior Only	✓
Territorial Authority	Christchurch City	Time	4:10pm	Exterior and Interior	

Building Name Ballantynes

Short Name

Address 43 Lichfield St

GPS Co-ordinates S° E°

Contact Name

Contact Phone

Storeys at and above ground level ____ Below ground level ____

Total gross floor area (m^2) ____ Year built ____

No of residential Units ____

Photo Taken Yes No

Type of Construction

- ☐ Timber frame
- ☐ Steel frame
- ☐ Tilt-up concrete
- ☐ Concrete frame
- ☐ RC frame with masonry infill
- ☐ Concrete shear wall
- ☑ Unreinforced masonry
- ☐ Reinforced masonry
- ☐ Confined masonry
- ☐ Other:

Primary Occupancy

- ☐ Dwelling
- ☐ Other residential
- ☐ Public assembly
- ☐ School
- ☐ Religious
- ☐ Commercial/ Offices
- ☐ Industrial
- ☐ Government
- ☐ Heritage Listed
- ☐ Other

Investigate the building for the conditions listed below:

Overall Hazards / Damage	Minor/None	Moderate	Severe
Collapse, partial collapse, off foundation	☑	☐	☐
Building or storey leaning	☑	☐	☐
Wall or other structural damage	☑	☐	☐
Overhead falling hazard	☑	☐	☐
Ground movement, settlement, slips	☑	☐	☐
Neighbouring building hazard	☑	☐	☐
Other	☑	☐	☐

Comments

Choose a posting based on the 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.

INSPECTED *GREEN* ☑ G1 **RESTRICTED USE** *YELLOW* ☐ **UNSAFE** *RED* ☐

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):
- ☐ Level 2 or detailed engineering evaluation recommended
  - ☐ Structural ☐ Geotechnical ☐ Other:
- ☐ Other recommendations:

Estimated Overall Building Damage (Exclude Contents)

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

Sign here on completion

Date & Time 26/12/10

ID

Inspection ID _____ *(Office Use Only)*

BUI.LIC43.0024.2

20/3/11

RED PLACARD BUILDINGS
RISK ASSESSMENT

ZONE: 11 - RED
GridID: 12
TYPE: COMMERCIAL
ADDRESS: 43 LICHFIELD ST
OTHER: RAILANTYNES

Type of Construction (Tick Only One)

- ☐ Timber frame
- ☐ Steel frame
- ☐ Tilt-up concrete
- ☑ Concrete frame
- ☐ RC frame with masonry infill
- ☐ Concrete shear wall
- ☐ Unreinforced masonry
- ☐ Confined masonry
- ☐ Other: _____

Detached ☐ Semi detached ☑ Fully Attached ☐

Risk of building collapsing or part of building collapsing onto adjacent property or public space.

Low ☐ Moderate ☑ Severe ☐

Risk of building collapsing or part of building collapsing into itself or onto its own property only.

Low ☐ Moderate ☑ Severe ☐

Potential occupancy of Public space and/or adjacent building
(cul-de-sac, planted area → low), (collector road, house, isolated shop → moderate), (arterial, shopping mall, grandstand → severe)

Low ☐ Moderate ☐ Severe ☑

Overall building damage

0 – 25% ☐ 25 – 50% ☑
50 – 75% ☐ 75 – 100% ☐

Recommend action to address the immediate damage:

Demolition ☐ RISK#: RAS 260

OR Partial Deconstruction i.e. remove parapet

_____

_____

OR Alternative Options i.e. Prop, Brace etc

Remainder (4) front panel facades both skewed off at top - lower levels require checking / strengthening

Assessors Comments: _____

_____

Assessors Name: Paul Fairbairn **Ph Num:** 0220381124

Assessors Signature: _____ **Time and Date:** 20/3/2011 1540


BALLANTYNES
DUNSTABLE HOUSE
SINCE 1854
BALLANTYNES
GOODS ENTRANCE
43 LICHFIELD STREET
MAXIMUM HEIGHT 3.5 M
New season
instore now
ATF

Christchurch Eq RAPID Assessment Form - LEVEL 2

Inspector Initials: MSR / MARK B (TEAM 150.)
Territorial Authority: Christchurch City
Date: 1/4/11
Time: 18.01.
Final Posting (e.g. UNSAFE): L2/Y2

Building Name
Short Name: BALLYNTYNES.
Address: 43 LICHFIELD ST.
GPS Co-ordinates: S° E°
Contact Name:
Contact Phone:

Storeys at and above ground level: 6
Below ground level: 1
Total gross floor area (m²): 1500
Year built: 2000
No of residential Units: —
Photo Taken: Yes No

Type of Construction
- ☐ Timber frame
- ☐ Steel frame
- ☐ Tilt-up concrete
- ☑ Concrete frame
- ☑ RC frame with masonry infill
- ☐ Concrete shear wall
- ☐ Unreinforced masonry
- ☐ Reinforced masonry
- ☐ Confined masonry
- ☐ Other:

Primary Occupancy
- ☐ Dwelling
- ☐ Other residential
- ☐ Public assembly
- ☐ School
- ☐ Religious
- ☑ Commercial/ Offices (RETAIL)
- ☐ Industrial
- ☐ Government
- ☐ Heritage Listed
- ☐ Other

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	☑	☐	☐	
Building or storey leaning	☑	☐	☐	
Wall or other structural damage	☐	☐	☑	FAILED CORBELS AND COLUMNS
Overhead falling hazard	☐	☑	☐	GLASS / BRICKS TO LICHFIELD ST.
Ground movement, settlement, slips	☑	☐	☐	
Neighbouring building hazard	☑	☐	☐	
Electrical, gas, sewerage, water, hazmats	☐	☑	☐	SEWAGE IN BASEMENT.

Record any existing placard on this building:

Existing Placard Type (e.g. UNSAFE): L2/Y1.

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		RESTRICTED USE		UNSAFE		
GREEN	G1 G2	YELLOW	(Y1) Y2	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: MAJOR REPAIR REQUIRED, PROPPED NOW.

Estimated Overall Building Damage (Exclude Contents)

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

Sign here on completion: FOR MARK BATTERSBY
Date & Time: 1/4/11.
ID: 02446 71532.

Inspection ID: _____ (Office Use Only)

CDB 7500 0445

Structural Hazards/ Damage	Minor/None	Moderate	Severe	Comments
Foundations	☑	☐	☐	
Roofs, floors (vertical load)	☐	☐	☑	LOCALISED FLOOR FAILURE NW L1
Columns, pilasters, corbels	☐	☐	☑	CORBEL FAILURE NW GROUND FLOOR
Diaphragms, horizontal bracing	☑	☐	☐	
Pre-cast connections	☑	☐	☐	
Beam	☐	☐	☑	BEAM FAILURE OVER CORBEL
Non-structural Hazards / Damage				
Parapets, ornamentation	☐	☑	☐	CRACKING TO BRICK WORK (STR)
Cladding, glazing	☐	☑	☐	CRACKED BEADS LOOSE (STR)
Ceilings, light fixtures	☑	☐	☐	
Interior walls, partitions	☐	☑	☐	PARTITION WALLS.
Elevators	☑	☐	☐	NOT SEEN
Stairs/ Exits	☐	☑	☐	BRICK FACADE RHS STH ENTCE.
Utilities (eg. gas, electricity, water)	☑	☐	☐	NOT SEEN
Other	☑	☐	☐	
Geotechnical Hazards / Damage				
Slope failure, debris	☑	☐	☐	
Ground movement, fissures	☑	☐	☐	
Soil bulging, liquefaction	☑	☐	☐	

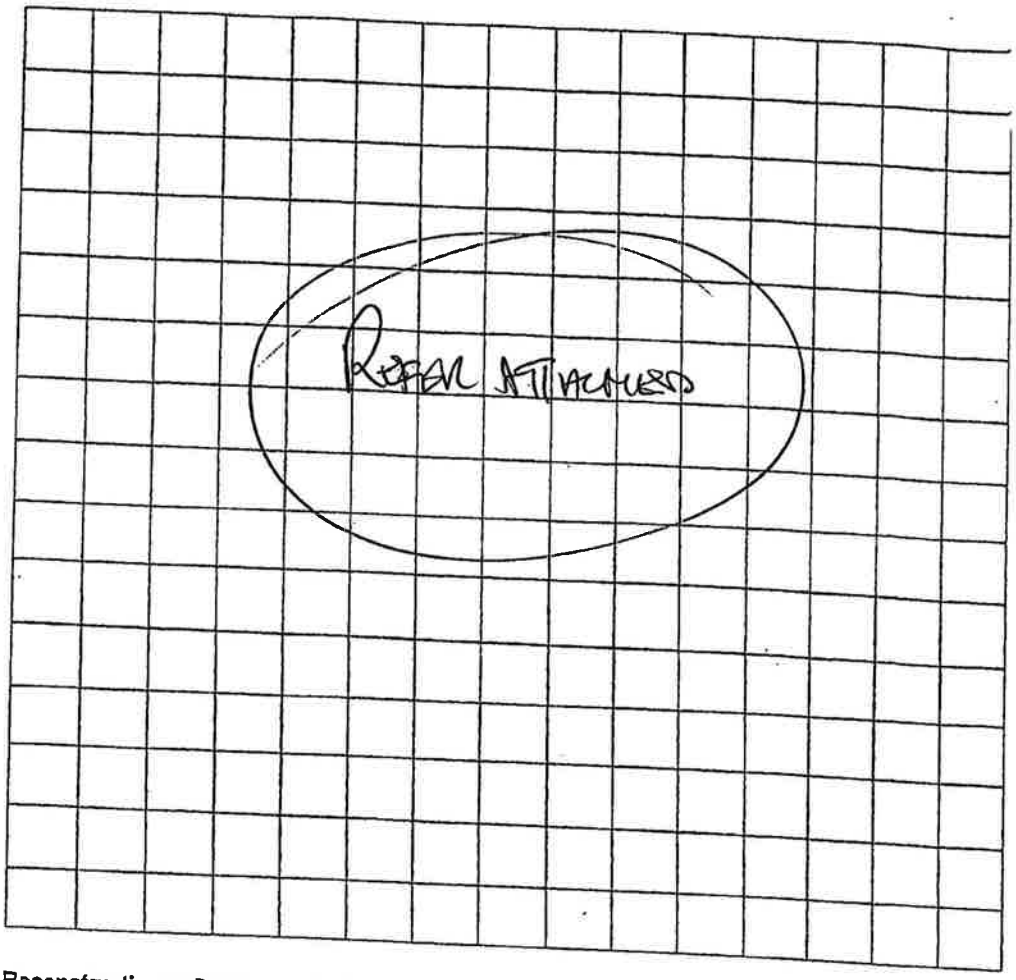
General Comment: BAD FAILURE OF CORBEL AND BEAM SEATING AT NW CORNER GRND FLOOR. FLOOR FAILURE ABOVE @ L1. CRACKING TO L3,4,5 BEAMS AND DOUBLE TEES (CAR PARK) ABOVE, SUPPORTED BY COLUMN ON FAILED CORBEL. DAMAGE AREA PROPPED BESIDE COLUMNS BASEMENT & GROUND FLOOR.

Usability Category

Damage Intensity	Posting	Usability Category	Remarks
Light damage *Low risk*	Inspected (Green)	G1. Occupiable, no immediate further investigation required	
		G2. Occupiable, repairs required	
Medium damage *Medium risk*	Restricted Use (Yellow)	Y1. Short term entry	DAMAGE PROPPED, BUT MINIMUM EXPOSURE TIME FOR RETRIEVAL OF BUS. RECORDS ETC UNTIL FULLY REPAIRED
		Y2. No entry to parts until repaired or demolished	
Heavy damage *High risk*	Unsafe (Red)	R1. Significant damage: repairs, strengthening possible	
		R2. Severe damage: demolition likely	
		R3. At risk from adjacent premises or from ground failure	

Inspection ID: _____ *(Office Use Only)*

Sketch (optional)
Provide a sketch of the entire building or damage points. Indicate damage points.



Recommendations for Repair and Reconstruction or Demolition (Optional)

REQUIRES EXTENSIVE STRUCTURAL INSPECTION BY OWNERS ENGINEER AND REPAIR DESIGN BY OTHERS.
(* PROPPED FOR NOW AS MAKE SAFE)

3 *Inspection ID:* _____ *(Office Use Only)*

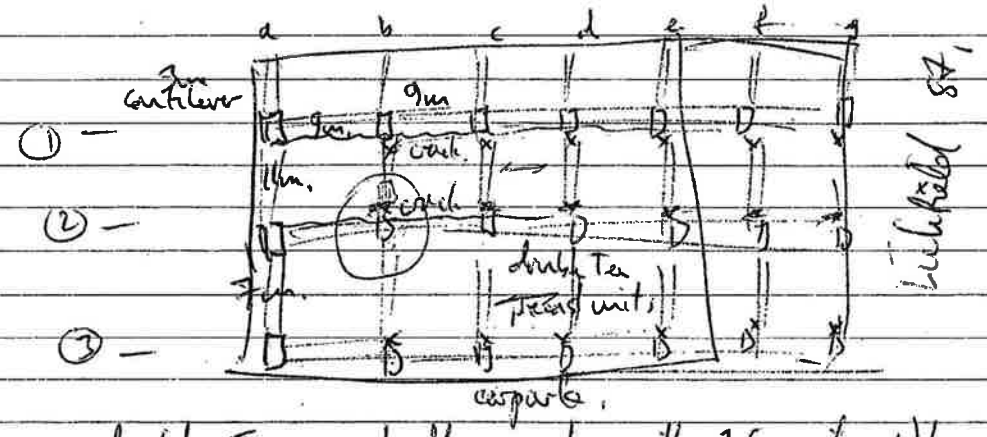
1/4/11

43 Lichfield St Carpark

Main carpark structure ok with minimal damage & only superficial concrete cover damage.

Carpark above Ballantynes
43 Lichfield St.
4 levels of carpark - lower level accessed from 33 level 10A.

- vehicles could be removed - minimal time



double T precast floor units with ? (unreinforced) topping spanning 9m.

Typical floor crack along lines ① & ② adjacent to longit beams

E-W

Level 2 x Beams above 1st level have flexural crack Grids ① & ② - some cover concrete on col line ③ spalled. Cover concrete at ramp, spandrel beam corbels and end supports dislodged g3 f3. Fascia cantilever spandrel Grid g severely damaged

Level 2 floor TT shows severe crack 2m from Grids ① to ② with flexural/shear crack to E-W beams 2m from Grids ① & ② lines ⑥ & ⑥

Other flexural cracking at beams at col face d e f g

Level 3 & 4 have no protection barrier to Lichfield St.

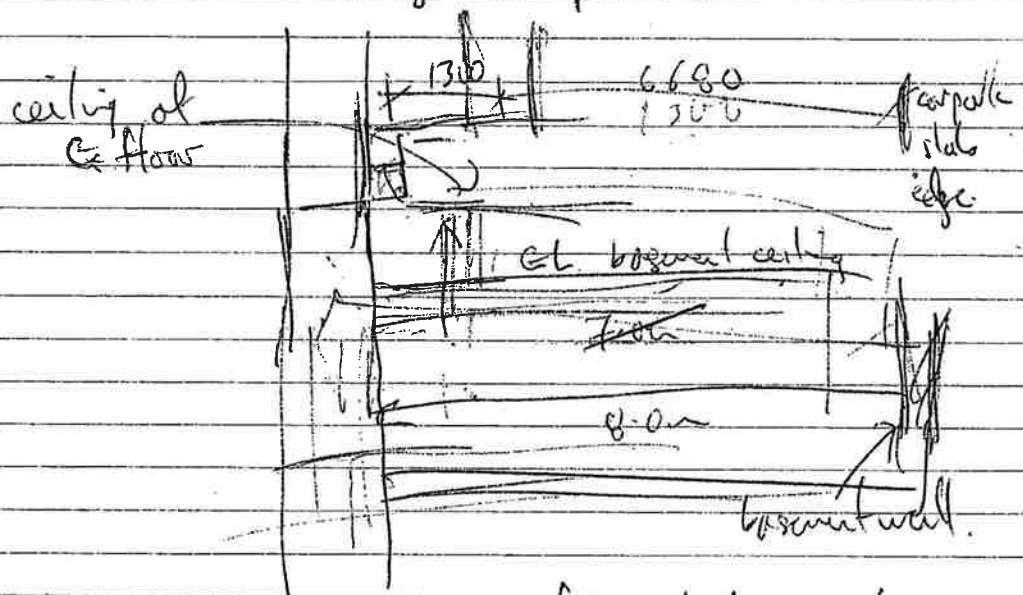
Ballantynes Basement

Basement storage West wall Sth end
fine cracks - some previously patched.

Level 1
Ground floor fractured corbel 26

1st floor 26 ctl. extra pushing floor up.

6.68 to edge of carpark slab

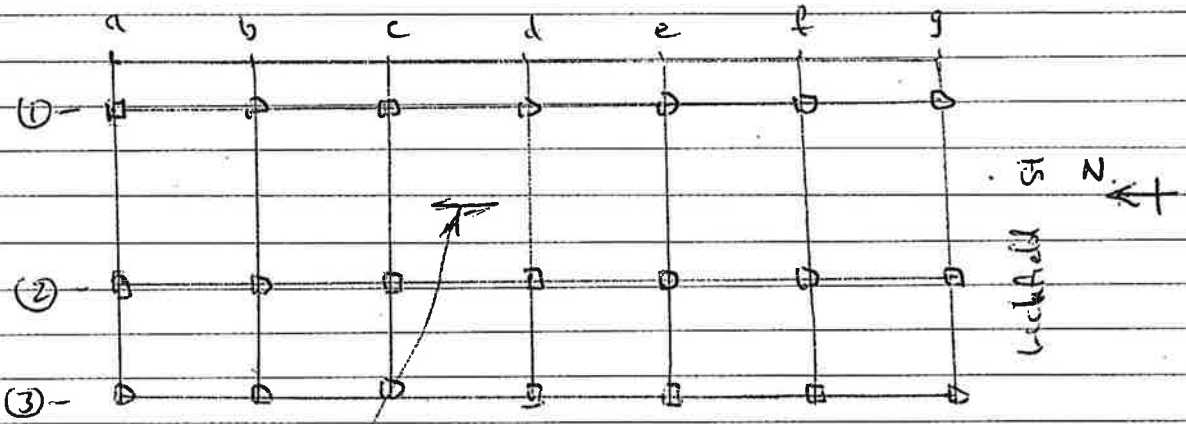


Detached masonry veneer at Lichfield St Entrance.

1/4/11 L2 Inspection : Ballantynes 43 Lichfield St
Mark Batchelar

Basement + 2 floors + 4 levels of carpark.

Carpark levels accessable from level 10A carpark building 33 Lichfield St



Topping to TT units has full depth cracking along lines ① & ② Weathered cracks with no visible topping mesh - possibly fully fractured. - reduced diaphragm capacity in N-S

Second carpark level TT show severe crack 2m from Grds ① → ② with flexural/shear crack to E-W beams approx 2m from Grds ① & ② lines b & c Other beams show flexural cracking of beams at col. face — d e f g

First carpark level: Cover concrete on ramp lower end beam corbels and end supports dislodged Fascia concrete spalled. Grid g severely damaged - hazard for Lichfield St.

~~Level 3~~ Carpark level 3 & 4 have no protection barrier to Lichfield St

Ballantynes: Basement:

Basement storage: West wall sthend - fine cracks, some previously patched.

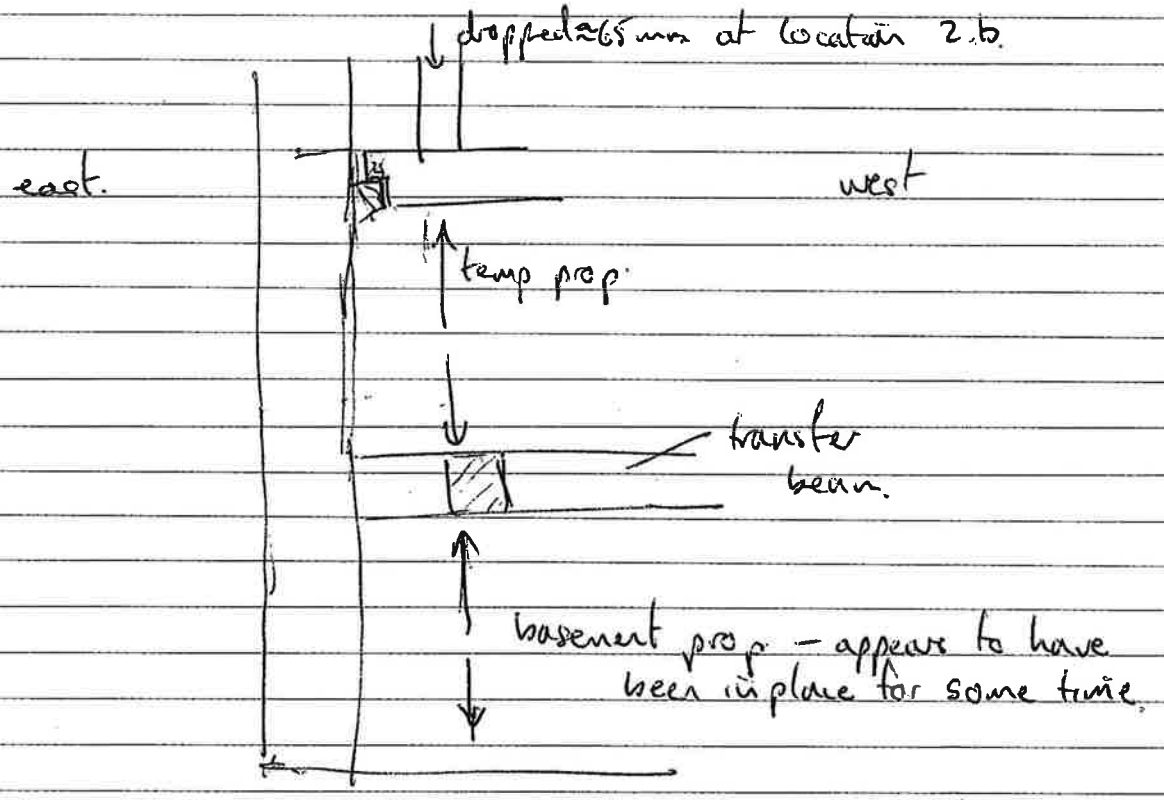
Propped beam at location 2b.

: Ground floor

Propped beam at location 2b adjacent to severely fractured beam corbel support (ceiling level)

: First floor

'Col. 2b 'pushing floor up' from below - adjacent col has however dropped due to lower beam corbel fracture.



Ponding of water on carpark at location 2.b and beam cracking at this location consistent with position of corbel damage & propping

Propping secures vertical load path for building

SMW

30 March 2011

POWELL FENWICK
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(03) 366-1777: phone
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www.pfc.co.nz: website

J Ballantyne & Co Ltd
P O Box 4648
Christchurch Mail Centre
CHRISTCHURCH 8140

ATTENTION: PHILIP RICHARDS

Our Ref:110341/S/1

Dear Philip,

RE: POST EARTHQUAKE SITE INSPECTION TO THE ANDERSON BUILDING AT BALLANTYNES, LICHFIELD STREET, CHRISTCHURCH

Powell Fenwick Consultants Ltd has been engaged by J Ballantyne & Co Ltd to inspect the above property.

SCOPE OF REPORT

The scope of this report is for the building owner to be made aware of any structural issues that may have occurred to the building as a result of the earthquake on the 22nd February 2011 and subsequent aftershocks.

In order to assess the structural suitability for use, and to identify any possible ongoing issues a walk through inspection of the buildings at the property was conducted by Stuart Winterbourn on behalf of Powell Fenwick Consultants Ltd on the 25th of March 2011.

The inspection covered visually available aspects of the building internally and externally. No coverings were removed, no drawings reviewed or any detailed engineering conducted. Non-structural facilities such as electrical, water, and other services, and weather tightness were not specifically inspected, but may be commented on where they impact the building structure. We note that this report is specifically for the purpose of assessing earthquake damage to date and further inspection may be required in the event of significant aftershocks or other events that could affect the structural integrity of the building.

PROPERTY INFORMATION

The Ballantynes department store comprises of a number of seismically separated buildings. This report is specifically in regards to the "Anderson" Building which is located in the Southwest corner of the site, which fronts on to Lichfield Street, and is south of the Guthrey Centre

The building comprises of two levels of retail space above ground, a further 4 levels of car parking above, and one basement level below ground. The primary structure of the building is a two way reinforced concrete frame. Flange hung double tee precast concrete floor units form the suspended slabs. The basement has reinforced concrete

walls and concrete floor slab and the perimeter of the building to the South and East is clad with precast concrete panels.

Access to the car parking levels is via ramps that span to the Christchurch City Council Lichfield Street car park, and the roof-top car park of the Nam Yee Mid City Centre to the East is accessed directly from the Anderson building car park.

EARTHQUAKE DAMAGE

There has been widespread and significant damage to the building. The extent and type of damage noted during the inspection indicates that the building has been pushed close to its capacity for seismic loading. It is also apparent that the building has undergone large displacements, which have exceeded those assumed in the seismic separations that surround the building.

The following areas of structural damage were noted during the walk through inspection of the building:

- Failure of transfer beam / column connection has occurred at level 1. The transfer beam is supported on corbel with a 'pin' type connection. The concrete in this located has spalled off, and the concrete within the corbel has crushed. The corbel capacity has reduced significantly, and the connection is close to failure which would lead to major collapse of the building. The beam has dropped by 45mm at this location. This beam supports a column within its span which in turn supports 4 further floors above. As such the 45mm drop occurs at each level up the building, with associated effects on floor diaphragms and secondary stresses added through the concrete frame structure.
- Concrete beam hinging principally in the East – West direction. This has caused plastic deformation within the concrete beams with associated elongation of the concrete frames by up to 20mm. Associated cracking of the floor diaphragms has occurred
- Shear displacement of beams is evident at the ends of beams
- Beam elongation has caused columns to push outwards from the building
- Precast concrete façade panels to the South have fallen from the building. This is a result of insufficient capacity in the beam – column connections
- Failure of precast concrete cladding panel connections adjacent to the basement ramp.
- Failure of connections that support the South façade structure which has moved relative to the primary structure behind.
- Flooding of the basement as a result of damage to the basement slab and a failure of the basement tanking.

REMEDIAL WORKS

- In order to gain safe access to the building to complete the assessment, and to prevent a catastrophic collapse of the building, and surrounding buildings, temporary propping had been installed below the transfer beam from level 1 to basement slab level.
- The extent of damage and plastic deformations to the beams (elongation and shear deformation) that have occurred to the concrete frames are no repairable and will necessitate replacement of the beams of the concrete frames.
- Further the damage to floor slabs associated with the beam elongation, transfer beam failure, along with the practicality of removing the concrete beams will necessitate the removal of the floor slabs.

- The concrete columns have been pushed out of by beam elongation alignment, it is likely that there has been column hinging at the base of the columns at ground floor (which was not visible), and as such repair to the columns would also be necessary.
- The cladding panels that surround the building have either collapsed or have had connection failures and would need to be replaced.
- The basement tanking has failed, and there are also indications that erosion below the foundation may have occurred where water has flowed into the basement.

As described above, the damage to the building is widespread and major structural elements have been stressed beyond the point at which they can be repaired.

It is thus apparent that repair and strengthening of the building will essentially require demolition of most structural elements, and therefore **it is advised that demolition and reinstatement** of this building will be cheaper and more practical than attempting to re-use what parts of the building can remain.

Given the risk of collapse and excessive deflection the building poses to the surrounding area, it is recommended that demolition of this building be expedited.

ACCESS

The building capacity has reduced from that designed and as such access to the building is to be **restricted** to removal of products, damage assessments and making and anyone entering this area must be made aware of the risks that exist within the buildings. The General Public is not permitted in this building.

SUBSOIL CONDITION

Due to the water ingress to the lower ground and potential for liquefaction to have occurred below the building, Powell Fenwick Consultants Ltd advises that specialist geotechnical assessment should be sought prior to any new construction on the site.

ADDITIONAL INFORMATION

It is important to note that this information is based on a visual walk through inspection only. It is possible that there is unobserved damage that may become evident in the future. If this is the case, please note the areas you have observed and contact our office to discuss them if required.

Further ground movement or aftershocks could result in further earthquake damage to the building over the next few weeks. We recommend that the building is monitored regularly to review its integrity and if required we can carry out a more detailed structural inspection and evaluation.

This inspection and report is carried out under the standard conditions of contract as per the standard ACENZ "Short Form Agreement for Consultant Engagement". These conditions are attached to this document.

Please call our office on 366 1777 if you require further information or assistance.

Yours faithfully,
POWELL FENWICK CONSULTANTS LIMITED

S. M. WINTERBOURN

BE(Hons), CPEng (Structural), M.IPENZ