

Office market response to earthquake-prone building policy in New Zealand

Dr Olga Filippova
The University of Auckland
Department of Property

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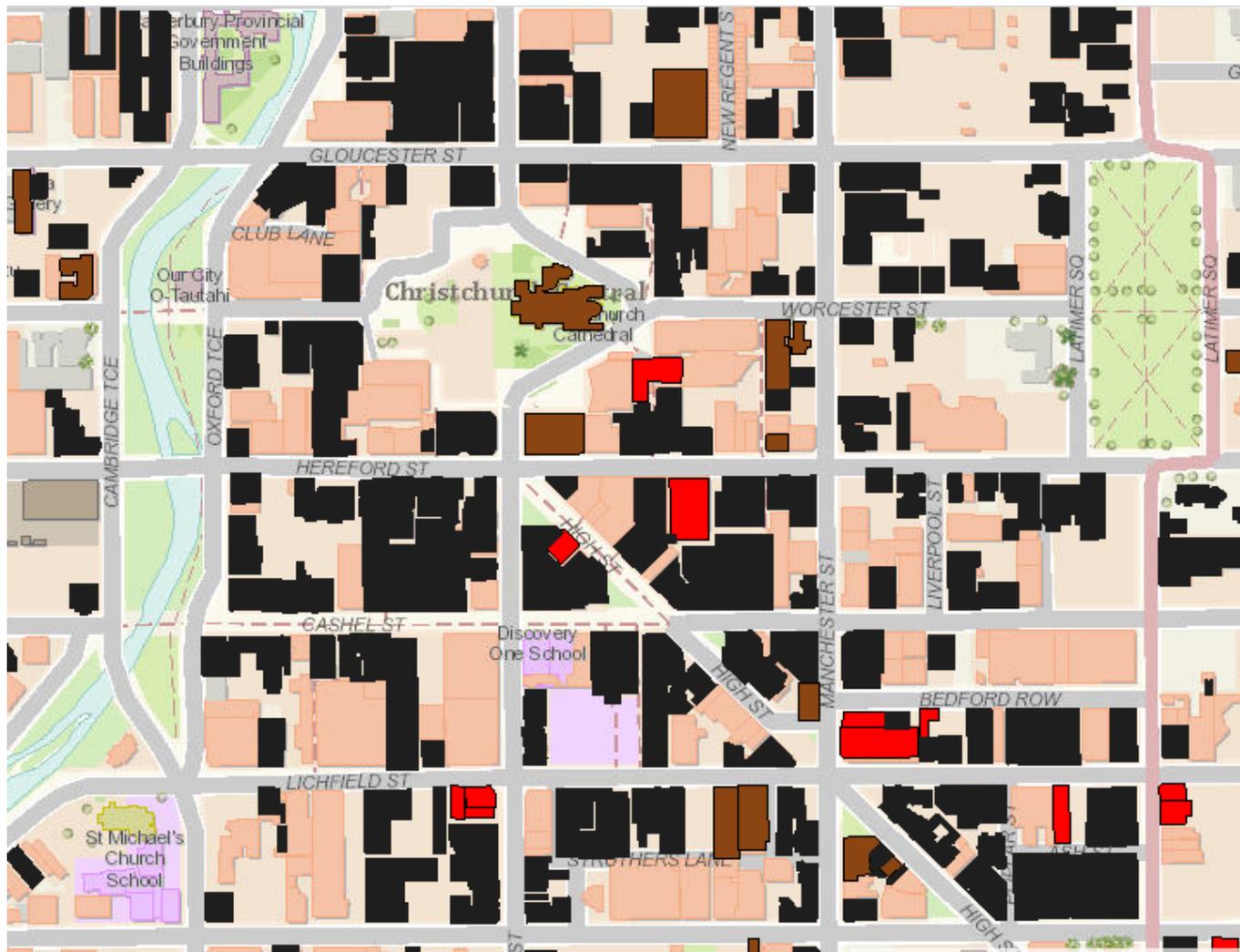
Introduction

22 February 2011

- 6.3 magnitude earthquake
- Epicenter 10km from Christchurch CBD
- Followed 7.1 quake in Sept (no deaths)
- 185 killed in Feb quake, 115 in CTV Bldg

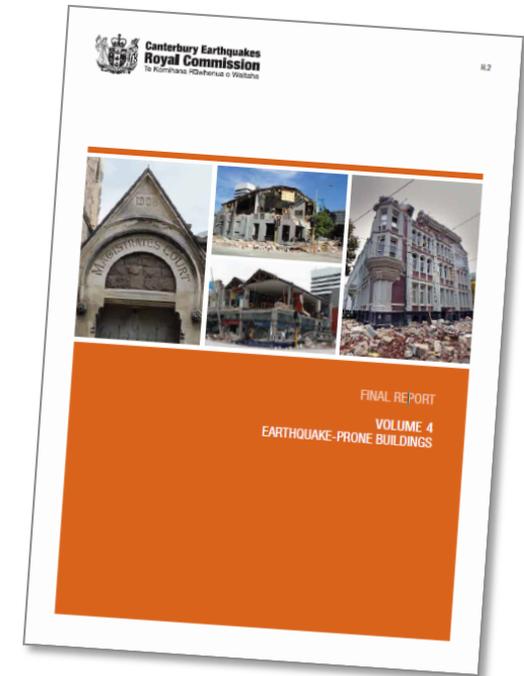


1,350 CBD Buildings partly or fully demolished in Christchurch CBD since Sept 2010 – 70% of the CBD



Canterbury Earthquakes Royal Commission

- Volume 4: Earthquake-prone buildings
- Released Dec 2012
- Basis for Earthquake-prone buildings bill (amendment to Building Act)
- Move towards nationwide standard of 34%+ of 'New Building Standard' (NBS)
- Earthquake-prone building stock mainly built before 1976 seismic design standards
 - An earthquake-prone building is one that is likely to fail in a moderate earthquake and is 1/3 or less of the strength of a building designed to the current Building Code
 - An earthquake-prone building is less than 34% NBS



%NBS	0%	20%	33%	67%	80%	100%
Seismic Grade	E	D	C	B	A	A+
Relative Risk	High		Moderate	Low		
Designation as per Building Act 2004	Earthquake Prone Building (%NBS <=33)		Earthquake Risk Building (%NBS <67)	Low Potential Earthquake Risk (%NBS >=67)		

Assessment of earthquake prone buildings

- Some Councils (Wellington & Auckland) taking active approach
- Assessing pre-1976 commercial and multi-storey residential building stock
- Council supplies landlords with a seismic performance report including % of NBS
- High NBS tends to be flaunted by landlords while sub 34% scores are reluctantly divulged to tenants

Wellington City Council

101 Wakefield Street, P.O. Box 2199, Wellington, Telephone 499-4444
Email: EOPBuildingProject@wcc.govt.nz



List of Earthquake Prone Buildings as at 28/04/2015

The buildings listed below are earthquake prone under Section 124 of The Building Act 2004. A notice has been served to the owners of these buildings.

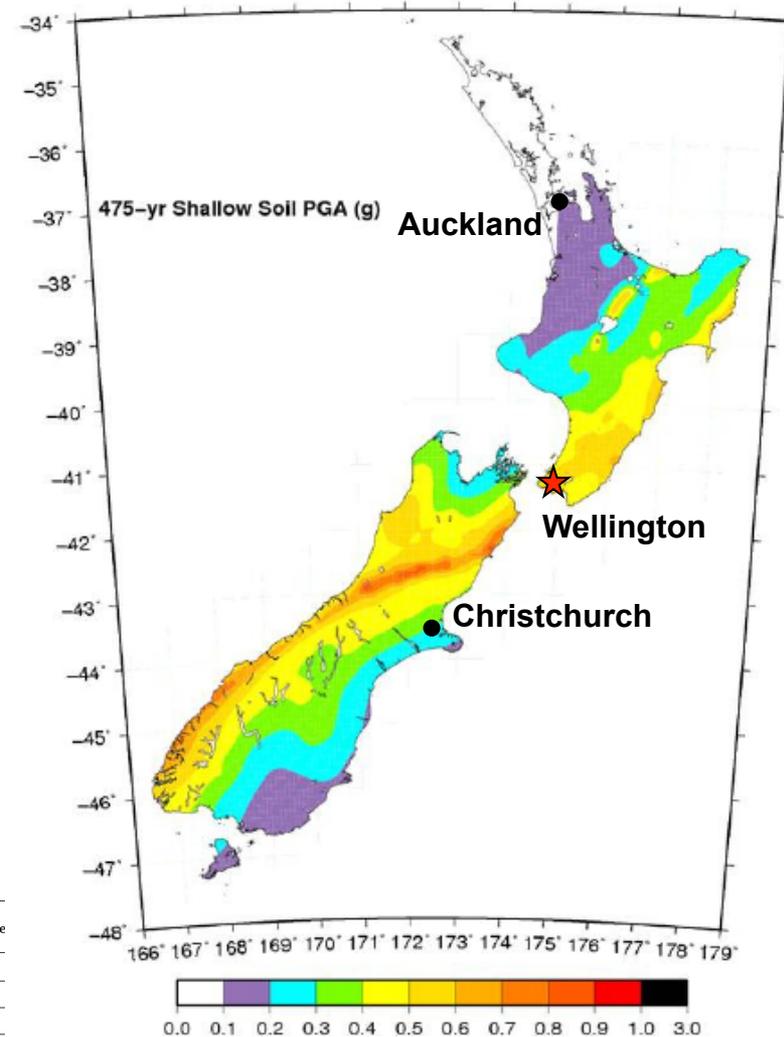
Please Note: The status of buildings in this list can change on a day to day basis and the information was current on the date the list was published. Please contact the Council for up to date information on individual properties, we would suggest you obtain a Land Information Memorandum (LIM).

The street address may differ from the street address recorded in other systems/publications

- Building Ref is a reference to identify a building where there is more than one structure/building on site. (ie not a street address reference)
- Expiry Date - Refers to the expiry date on the earthquake-prone building notice.
- NZ Historic Places Trust Category - a one or two indicates that a building has a category one or category two listing.
- WCC Heritage - A tick indicates that a building is identified as a heritage building in the District Plan.

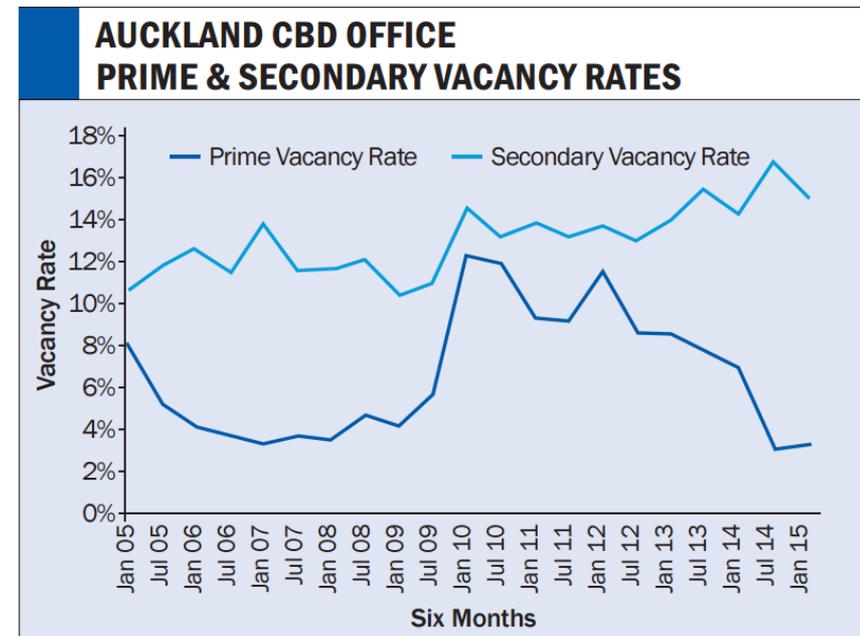
Total: 723

Street Name	Street No	Building Ref	Location Comment	Building Name	Expiry Date	NZ Historic Places Trust Category	WCC Heritage
ABBOTT STREET	1	A		All Saints Anglican Church	30-05-2029	No	<input checked="" type="checkbox"/>
ABEL SMITH STREET	24	A		Old Service Station Bldg	29-03-2025	No	<input type="checkbox"/>
ABEL SMITH STREET	70	B	AKA Rear Building		28-02-2027	No	<input type="checkbox"/>



Key post-earthquake market impacts

- Increased awareness of building standards
- Tenant priorities vary by group (corporates vs SMEs)
- Seismic concerns have now overtaken the focus on Sustainable Buildings
- Insurance impact all but small tenants most
- Firm origin influences risk perception and behaviour
- Most effects have faded over time or mitigated through leases



Source: Bayleys Research

Research design and method

- Framework
 - Tenants' preferences towards existing buildings may change with regard to growing awareness of seismic strength
 - Evidence of this behaviour could be found in increased rental prices in buildings with low seismic risk
- Purpose of the study
 - Measure the rental price differentials between seismically safe and earthquake-prone buildings after the Canterbury earthquakes



Previous office studies

- Asking rent for the dependent variable dominates
 - Property market suffers from information constraints
 - Further complicated by the confidentiality clauses (Dunse et al. 1998)
 - Individual lease transactions appear in *Brennan et al. (1984)* and *Gabe and Rehm (2014)*
- Location, age and size are the main contributors in explaining the variation in rent
- 'Rent premium' studies employ hedonic modelling as the standard methodology for examining price determinants



Data

- Office leasing transactions
 - A sample of 2012-2014 leasing transactions for the Auckland (67) and Wellington (97) CBDs
 - Including net effective rent, locational and physical characteristics
 - Source Colliers International (NZ)
- Seismic performance of buildings
 - Percentages of the National Building Standard (%NBS) of buildings used in analysis
 - Source Auckland and Wellington City Councils; online listings

WELLINGTON CBD PRECINCT MAP



AUCKLAND CBD PRECINCT MAP



Method

- Log-linear hedonic rent model
 - $\ln R_i = \alpha_i + \beta x_i + \varphi Z_i + \varepsilon_i$
 - R_i is the natural log of effective rent per m^2 in a given leasing transaction
 - x_i is a vector of explanatory characteristics such as building class, submarket and %NBS
 - Z_i is a vector of time related variables such as lease commencement year



QUALITY VALUE ENVIRONMENT

205QUEEN

“ 205 QUEEN STREET IS AN A-GRADE BUILDING HOUSING A WIDE RANGE OF QUALITY PROFESSIONAL TENANTS ”

www.propertyconnector.co.nz/1005653Q1

HIGH QUALITY BUILDING SPECIFICATION

- Efficient column free floors
- 100% backup power generation
- 133% (NBS) seismic performance rating
- 5 Star Green Star (NZGBC Award) in design rating
- Floor to ceiling double-glazed facade
- 18 air-conditioning zones per floor
- 5 high speed lifts per tower

EXCELLENT AMENITIES AND ACCESS

- Extensive café, restaurant and bar offerings
- Supermarket in adjacent building
- Numerous retail offerings and service providers
- Prominent corner-site with Queen and Victoria Street entrances
- Secure on-site parking and numerous off-site options
- Easy motorway access
- Naming and signage rights available
- Great public transport options for staff

Descriptive statistics

		Auckland	Wellington
Area leased (m ²)	Mean	939	846
	Min	103	55
	Max	6,216	13,205
Net face rent (NZ\$/m ² /yr)	Mean	324	288
	Min	200	98
	Max	555	433
Net effective rent (NZ\$/m ² / yr)	Mean	296	228
	Min	117	98
	Max	540	414
Building class	P	17	-
	A	16	4
	B	13	31
	C	21	62

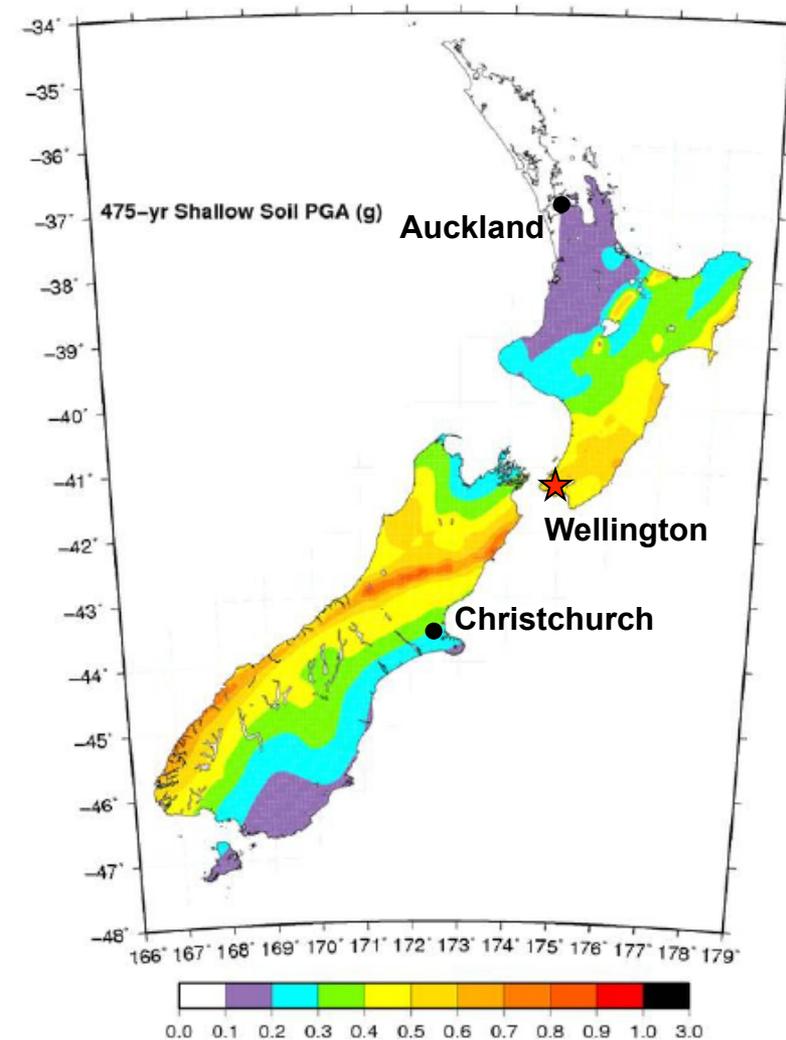
Hedonic model estimates

Variable	Auckland		Wellington	
	Coefficient	t-Statistic	Coefficient	t-Statistic
<i>Constant</i>	5.408	23.44***	5.474	22.61***
<i>Ln Area leased</i>	0.030	0.88	-0.038	-1.09
<i>Lease 2013</i>	0.015	0.20	0.028	0.51
<i>Lease 2014</i>	0.057	0.65	-0.008	-0.08
<i>Class Premium</i>	0.358	3.74***		
<i>Class A</i>	0.053	0.613	0.424	0.00***
<i>Class C</i>	-0.208	-2.42**	-0.301	0.00***
<i>Outside core</i>	-0.134	-1.83*	0.196	0.00***
<i>Fringe</i>			-0.315	-1.91*
<i>Te Aro</i>			-0.159	-0.04***
<i>Thorndon</i>			-0.043	-0.71
NBS	2.5E-04	0.47	0.004	0.01***
<i>R²</i>	<i>0.622</i>		<i>0.555</i>	
<i>F-stat</i>	<i>11.934</i>		<i>12.035</i>	
<i>N</i>	<i>67</i>		<i>97</i>	

Significant at *** 0.01, ** 0.05 and *0.1 levels

Hedonic model

- Is there a rental price premium in buildings with higher NBS ratings?
 - Wellington - Yes
 - Statistically significant rent premium as the value of NBS increases
 - 0.44% for every percentage increase in NBS rating
 - Tenants' WTP by increasing rating from EQP (33%) to Low risk (67%) is \$34/sqm based on average eff rent of \$228
 - Built on a faultline and has the highest earthquake risk in NZ
 - Auckland - No
 - No rent premium found
 - A long way from high seismic activity with a major shake expected every 10K-20K years
 - Greater risk of tsunamis, volcanic eruptions and floods



Next steps

- Collect additional leasing transactions from buildings with moderate and high earthquake risk
- Test other control variables such as building age, size and height
- Analyse leasing transactions that took place before the earthquakes (introduction of new policies)
 - Colliers International made available a sample of their records from 2010 – 2012 for the same study areas

