

AN EXPLORATORY EVALUATION OF A NEW NATIONAL ONLINE CONSENTING SYSTEM IN NEW ZEALAND

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ABSTRACT: *Government passes laws both through statute and regulation to protect people. The Building Act is one of such government regulation that obligatorily requires that buildings are designed and constructed for safety, health, development and the safeguard of people from possible injury. In March 2008, Government announced a package of initiatives intended to streamline the building regulatory consenting function. One of these initiatives was to investigate the feasibility of establishing a national online building consent application and lodgement tracking system, which could be used across all local government Territorial Authorities and Building Consent Authorities in New Zealand. Government is collaborating with the private sector to develop Geobuild, a set of standards for consumers, the construction sector and government that links all aspects of the construction process from design through to procurement, construction and maintenance. Geobuild will set minimum national standards and software protocols to allow information sharing between the private and public sectors. When interoperable the Geobuild standard are expected to improve productivity, building quality and safety and reduce building cost. The study evaluates the effectiveness of this proposed national online consenting system scheme in New Zealand. The larger study programme on which this paper is based intends to gather the perception of building control practitioners on this new scheme, as a form of preliminary evaluation. Also data will be collected through a questionnaire survey to homeowners/agents of completed homes. The intent is to provide an exploratory evaluation which could help institute the new scheme in New Zealand. The paper describes this larger study to put its relevance into perspective for the New Zealand construction industry and academia. The National online consenting system will potentially accelerate and provide consistency to the building process but can only flourish if a collaboration of all affected parties provides input to their aspects of the scheme.*

KEYWORDS: *New Zealand, Online consenting, Geobuild, Consent process.*

1. INTRODUCTION

The New Zealand building industry has come to a cross road with amendments to the Building Act, 2004. The amendment was occasioned by the shortage of building stock experienced in Auckland and Christchurch (exacerbated by the 2010 and 2011 earthquakes). The Department of Building and Housing [DBH], 2012 have reported that events will have major implication on Building Control Authorities as there is evidence that consenting services already contribute bottlenecks. Prolonging building timeframes can result in a number of unexpected costs. Delays in construction cause delays in progress payments, which can lead to late payment penalties and interest incurred on debt. Labour costs may be due to increased inspections and longer building timeframes causing poor use of subcontractor time. Delays can also expose developers to the risk of contract disputes due to late delivery. If streamlining the consenting process could address these bottlenecks it is projected that the demand versus supply shortfall would improve 2012 new dwelling consents of 16,929 (Auckland, 4,582 and Canterbury, 4,037) in addressing Auckland shortfall of 13,000 houses a year and the Governments National building shortage crisis. (Statistics New Zealand, 2012).

There is however significant and justifiable concern that an increased volume of building linked with a decrease in consenting hours would result in another mass failure (DBH, 2005) in built quality in New Zealand. For example; an increase in volume inevitably draws in less skilled labour, hence the need for experienced/ competent inspectors gets greater not smaller in boom times. The repercussions of the leaky-building (Hunn, Bond & Kernohan,2002) crisis which plagued New Zealand in the early 2000, has left a perception of discontent from society towards the construction industry and central / local government (May, P. J,2003).It is an evolving affair with constant reminders through lengthy judiciary suits and the

premature decaying of buildings.

2. LITERATURE REVIEW

2.1 Building Act review

The government passes laws both through statute and regulation to protect people and the Building Act purports that buildings are designed and constructed for safety, health, development and safeguard people from possible injury. (Massey, W, 1999). At present central and local government through their building Consent Authorities are the guardians of the New Zealand building regulations, the Building Act 2004 and New Zealand Building Code 1991(NZBC).

In August 2009 the Government announced a review of the Building Act 2004 to investigate how the Act could be updated to minimise the cost of Compliance without compromising quality of building and construction. The Government objectives, (Department of Building and Housing, 2010),

- Quality homes and buildings produced through a business – enabling and efficient regulatory framework
- Consumers able to make informed decisions and have confidence in carrying out transactions in the building and housing market
- Homes and buildings produced cost-effectively by a productive sector with the right skills and knowledge
- A regulatory system that is administered in an efficient and cost effective manner.

The review found that there were weaknesses in certain parts of the system such as consumer protection, and the system was out of balance. Regulatory setting have resulted in an unduly low tolerance for risk, with a strong emphasis on central and local government protecting home owners from the risks of building defects and failures (Department of Building and Housing, 2010). The issues identified by the review were,

- Problems with ensuring responsibility sits in the right place
- Undue reliance on building consent authorities
- Fragmented administration of the building control system

The reality is that the construction sector is currently one of the least productive and least efficient contributors to the New Zealand economy. A prime example of this is the sector has had a high tolerance for rework. That is, if it doesn't get it right first time, the view was it could always sort it out later or could it be. A 2006 survey by the New Zealand Centre for Advanced Engineering found that 69% of newly-completed buildings had a defect at the time of handover to the client. Maurice Williamson the minister of Building and housing has responded "That's not good enough, and we are tackling the problem head on through the Licensed Building Practitioner scheme, the recently introduced Restricted Building Work designation, the Building Act reforms and other initiatives such as the Productivity Partnership."

The Ministry of Business, Innovation & Employment (MBIE) 2012 has reported that the construction sector accounts for about 4% of New Zealand's GDP (about the same as agriculture), but employs 8% of the country's workforce. In Australia the building and construction sector accounts for 7% of GDP, in the UK 8% and in the US 9%. Clearly there's room to improve.

The sector has become less productive over the last two decades and was one of the main contributors to a 1.2% fall in productivity across the economy between 2006 and 2009. But be assured, there is no slowing down or direction change, this is about taking what has been a poorer cousin of other parts of economic development and bringing it into the main stream. This government sees the Building and Construction sector as a vital cog in its economic growth agenda, Minister of Building and construction, Maurice Williamson (14 May, 2012).

2.2 Restricted Building Work & licensed Building Practitioners

On the 1st of March 2012 the Restricted Building Work designation took effect. Restricted Building Work is any work which is critical to the structural integrity or weather tightness of a house or small-to-medium-sized apartment building. As a rule, Restricted Building Work is work that requires a building consent. The designation is underpinned by the Licensed Building Practitioner scheme, a national building competency

programme established to raise standards and accountability across the building and construction sector and to give consumers greater confidence in the quality of building work done. It underpins an efficient and accountable building sector focused on quality. The scheme has been well received by industry. By the end of April a total of 20,222 people had applied for 26,334 licences.

The introduction of Restricted Building Work also directly impacts on Building Consent Authorities (BCAs) and building officials because at the completion of restricted building work licensed building practitioners are required to provide the owner and BCA with a Memorandum or Record of Building Work to confirm the Restricted Building Work was carried out or supervised by an LBP and that identifies which LBPs were involved. While this is a relatively simple and straightforward process, it is also critical to the success of the Restricted Building Work designation, and the significance of your role can't be overstated. From the point of view of building practitioners, the benefits of being licensed have increased considerably with the introduction of Restricted Building Work.

The combined effect of Restricted Building Work, the licensed building practitioner scheme and our Building Act reforms will be a more efficient and productive sector with less red tape, more streamlined consenting and compliance systems, and clearer accountabilities for all parties. This will be beneficial for the sector, consumers, building owners and also the economy as a whole.

2.3 The Auckland Plan: Increase house supply to meet demand

According to projections of demand in Auckland, there is a demand to build more houses per year in New Zealand than industry and systems can currently sustain (Auckland plan 2012). Auckland's population is projected to increase to numbers between 2.2 and 2.5 million over the 3 decades (NZ Census 2013). Around 400,000 additional dwellings will be required by 2040, which means that at least 13,000 additional houses have to be built each year. The challenge is great, as of 2012 a shortfall of about 10,000 homes, and levels of house building are less than half the volume required. In the year of 2012, only 5,000 consents for new homes were issued per year in Auckland, and not all these projects have commenced. Further, in New Zealand as a whole, only about 24,000 houses are built each year, and the rebuilding of Christchurch will take up a large part of national construction capacity.

The 2012 Plan provides greater certainty for developers about when and where development will occur over the next 30 years. Auckland has a large shortfall in housing and a depressed development sector, it is a major task in achieving at least 13,000 new dwellings on average per year over the 30-year life of the plan, without urgent, bold, multi-sector action.

The Auckland Council influences housing supply through its planning, regulatory and consenting processes. For developers, the loss of equity and profit caused through delays can be more costly than the fees themselves. Time and costs across the entire development process need to be reviewed. Processes can be streamlined to increase certainty around cost and timing. The Auckland Council could move to outcomes-based consenting and other incentives for development in existing urban areas, and zone land for development in new growth areas.

Build and deliver on a multi-sector Housing Strategic Action Plan to achieve the required increase in housing supply, including options to increase affordable housing supply for first home buyers. New Zealand's building industry is small-scale and fragmented, with a lot of silo design, construction skills shortages, and low productivity. All these factors impact on supply and house prices, combined with the post Christchurch earthquakes has provided pressure on housing nationally.

2.4 Christchurch Earthquakes

On Saturday 4th September 2010, a magnitude 7.1 earthquake occurred near Christchurch. It was widely felt over the South Island and lower areas of the North Island, and caused considerable damage in central Canterbury, especially in Christchurch. It was the largest earthquake to affect a major urban area since the 1932 Hawke's Bay earthquake. The scientific name given Darfield earthquake, though it is more widely known as the Canterbury earthquake. It produced the strongest shaking ever recorded in New Zealand. Ground near the epicentre moved up to 1.25 times the acceleration due to gravity. The earthquake was accompanied by a large surface rupture. The quake occurred at a time when majority of people were in the

homes asleep and the streets were largely deserted. The lack of casualties was also due to strict building regulations and partial strengthening of older buildings.

The worst damage was suffered by mainly pre-1940s buildings constructed of brick and masonry, and lacking adequate reinforcement. Some walls crumbled, with bricks cascading on to the streets. Brick chimneys toppled through tile roofs. One of the few cases of serious injury was caused by a falling chimney. A number of historic stone churches were badly damaged, although both the Anglican and Catholic cathedrals survived with minor cracking. An early Treasury estimate of the cost of the earthquake was \$4 billion. Aftershocks continued for several months after the earthquake, some strong enough to cause damage to already-weakened structures. The event had left a question mark on the uncertainty of stability of older buildings and this was to come to fruition in the 2011 earthquakes with devastating consequences.

On Tuesday 22 February 2011 at 12.51 p.m. Christchurch again was struck by a magnitude 6.3 earthquake, which took the lives of 185 people and injured several thousand. The earthquake epicentre was near Littleton, just 10 kilometres south-east of Christchurch's central business district. The earthquake took place more than five months after the 4 September 2010 earthquake, but is considered to be an aftershock of the earlier quake.

In contrast to the September earthquake which hit in the evening the earthquake occurred during lunch time, when many people were on the city streets. The collapse of two multi-storey office buildings – the Canterbury Television and Pyne Gould Corporation buildings accounted for 110 fatalities. Falling bricks and masonry on Manchester Street and Cashel Mall killed 11 people, and six died in two city buses crushed by crumbling walls. Rock cliffs behind houses collapsed in the Sumner and Redcliff's area, and boulders tumbled from the Port Hills summits, with five people killed by falling rocks. Although not as powerful as the magnitude 7.1 earthquake on 4 September 2010, this earthquake occurred on a fault line that was shallow and close to the city, so the shaking was particularly destructive. The earthquake brought down many buildings previously damaged in the September 2010 earthquake, especially older brick and mortar buildings. Many historic buildings were heavily damaged, including the Provincial Council Chambers, Littleton's Timeball Station, and both the Anglican Christchurch Cathedral and the Catholic Cathedral of the Blessed Sacrament. Among the modern buildings damaged, and eventually demolished, was Christchurch's tallest building, the Hotel Grand Chancellor. Over half of the buildings in the central business district were demolished.

Liquefaction was much more extensive than in the September 2010 earthquake. Eastern sections of the city were built on a former swamp. Shaking turned water-saturated layers of sand and silt beneath the surface into sludge that squirted upwards through cracks. Properties and streets were buried in thick layers of silt, and water and sewage from damaged pipes flooded streets. House foundations cracked and warped, wrecking many homes. Despite the damage to homes, there were few serious injuries in residential houses in liquefaction areas. However, several thousand homes would need to be demolished, and some sections of suburbs will probably never be re-occupied.

The government immediately activated its National Crisis Management Centre, and declared a national state of emergency the day after the quake. Christchurch's central business district remained cordoned off for more than two years after the earthquake. The weeks past the earthquake about 70,000 people were believed to have left the city due to uninhabitable homes, lack of basic services and continuing aftershocks. Neighbouring city, Timaru's population swelled by 20% and thousands of pupils registered at schools in other cities and towns. The event has put a lot of strain on central and local government in the response of replacement homes and historic / building assessment in which majority of lives were lost, (MBIE, 2013).

The Christchurch earthquakes in 2011 and 2012 had also left government agencies and civil defense workers in two minds in terms of not knowing the design or construction of buildings that were in danger of collapse in the aftermath which was highlighted in the Canterbury earthquake royal commission report 2012 recommendations,

- The Ministry of Business, Innovation and Employment should be responsible for developing and releasing public communication materials about building management after earthquakes and other disasters during and after the state of emergency.

- Information management systems should be developed as part of planning for New Zealand's building safety evaluation process.
- The Ministry of Business, Innovation and Employment should work with territorial authorities and other relevant agencies to develop a way for territorial authority building records to be electronically recorded and stored off-site.
- A clear system for identifying individual buildings should be developed and included in the plans for a building safety evaluation process.
- Land Information New Zealand should continue to work on initiatives that develop consistent national addressing protocols and make this information available to the general public

2.5 Christchurch loss of building consenting accreditation

As a consequence of the Christchurch earthquake another devastating blow was to hit in form of the local building control authority losing their accreditation. At 11.10AM on Monday, July 1st 2013 TVNZ One News reported that Christchurch City Council Building Controls Department "had today been stripped of its Building consent accreditation. International Accreditation New Zealand (IANZ) has this morning issued a decision revoking the Council's capacity as a building consents authority".

IANZ had been engaged to provide a report on the Council's consenting process as claims from property developers believed that consenting department delaying tactics were costing thousands of dollars a day. This decision was effected immediately from July 8th 2013.

The council was made aware of the intention to revoke its accreditation as a consent authority in the previous month. The Government had also threatened to intervene stating that taking into account of the enormous stress of the earthquakes, the council was still moving too slowly. Prime Minister John Key in a statement "There is a huge amount of stress on the organisation because of the rebuild, but this is slowing things down".

The New Zealand Herald also reported in an article headed "Council consents: 'critically important' that process is sped up" that the Government wanted "to develop a longer term solution that ensures the Christchurch City Council delivers timely, quality consents, and that they are again IANZ accredited" Cabinet minister Gerry Brownlee.

An average of 35 building applications were received a day in March and April through the Council according to the agenda from the month's planning committee meeting. The work load has led to council officer's reporting "We have seen backlogs develop across all process steps-from pre-processing initial data entry through processing and into typing. The sheer volume exceeds capacity, and applicants are expressing a significant level of concern at this".

Mr Brownlee had previously hit out at the council's slow response, saying: "The council knew this workload was coming and hasn't adequately addressed it".

3. INTRODUCING THE INTEROPERABILITY STANDARDS

In New Zealand the laws and regulations that govern the construction of buildings and other structures are based on the Building Act 2004 (The BA04). The BA04 is administered by local government and all local governments (councils) are designated as Building Consent Authority (BCAs). BCAs have the obligation to issue building consents, undertake inspections during the construction phase, and issue Code Compliance Certificates (CCC) at the conclusion of the building process. Throughout the years councils and their BCAs have developed their own interpretations of the BA04 and have developed their own requirements for applicants seeking building consents within their territorial jurisdiction. The results of these silo requirements has produced a bottleneck in terms of high level of inconsistency between BCAs with respect to the nature and content of information to be submitted with building consent applications.

This bottleneck creates frustration and additional costs for applicants, particularly the group housing companies that have operations across New Zealand. Majority of the group housing companies offer a standard range of plans through either a branch or franchise network. Lodging a plan in various BCAs

location may have varying information requirements in those stipulated in BA04.

3.1 Geobuild

The Ministry of Business, Innovation & Employment (MBIE), in collaboration with another portfolio, Land Information New Zealand (LINZ), along with the Ministry for the Environment and the private sector developing Geobuild, an integrated online strategy that will utilise smart technology that links all aspects of the construction process, from design through procurement and construction and maintenance, to achieving productivity gains and quality improvements within the built environment.

The New Zealand Government wants to see a greater level of interoperability between data sets within the construction industry to enable businesses and citizens to have improved accessibility to public information. The more information that is available the greater the decision making which enables innovation. Geobuild is the overarching concept to producing greater interoperability.

Geobuild will set minimum national standards and software protocols to allow information sharing between the private and public sectors. When interoperable, the three initial technological applications National online consenting systems, Building information Modelling (BIM) and Location based information are expected to improve productivity, building quality and safety and lower building cost.

3.2 Access to information

Information about a particular site or building can be located in various places, such as Central and local government agencies, private businesses and even private homes as the original set were destroyed as what had happened when a local borough had burnt down along with its building consent records. Information are formatted differently and a lack of common standards limits access and use. It is envisaged that with Geobuild, land and building owners, developers, architects and designers, building and construction companies and central and local government agencies would be able to quickly access and locate information on any site. They would be able to view all aspects of the land below the ground and if the building was designed using Building information modelling (BIM) software, a 3D view of the building and its structural components. A key component of this initiative is the development of a National Online Consenting system.

3.3 Local Government

The 2013 Census, show that 1,415,550 people usually live in Auckland which is an increase of 110,592 people, or 8.5%, since the 2006 Census. It population ranks 1st in size out of the 67 districts in New Zealand. Auckland has 33.4% of New Zealand population. While Parliament is elected to deal with issues relevant to New Zealand and its people as a nation, local government enables democratic decision-making by and for local communities. Local government makes decisions about local issues and services, having regard to local needs and priorities. This recognises that not all communities are the same, nor do they have the same issues.

In April 2009 the Government responded to the report of the Royal Commission on Auckland governance and agreed with the recommendation that there should be major changes to Auckland. At the same time the Government announced that the seven existing city and district councils and the Auckland Regional Council be disestablished and a new unitary council, the Auckland Council, be established.

As of the 1 November 2010 the Auckland Council replaced the existing Auckland Regional Council, Auckland City Council, Manukau City Council, North Shore City Council, Papakura District Council, Rodney District Council, Waitakere City Council, Franklin District Council and any associated community boards. The amalgamation of these groups signalled the beginning of a major logistic of reorganising of resources and personal. (Auckland Council, 2011)

There are 78 local authorities representing all areas of New Zealand, which consist of, 11 Regional Councils, 12 City Councils (which are largely urban); 54 District Councils; and 1 Auckland Council, Which amalgamated 8 former councils on 1 November 2010). Auckland Council, as well as the city and district councils, are collectively referred to as territorial authorities (TA). There are 67 in total. Other important local government activities include Civil defence planning and emergency preparedness.

Government through housing Minister Maurice Williamson eluded to the issue of whether to consolidate, or at least better align, BCAs. In 2011 Maurice wrote to Local Government New Zealand (LGNZ) indicating that he really questioned whether retaining 69 Building Consent Authorities (BCAs) is really in the best interests of New Zealand. He also advised that he wanted to see progress on using technology to improve service delivery. The Department has met with a nationally representative group of Councils, chaired by LGNZ. The focus has been on developing a common understanding of the opportunities from system changes, particularly for building and construction sector productivity. Alignment of services nationally will produce consistency of service delivery. A national on-line consenting system will enable this. Councils will provide relevant staff to work with the Department.

3.4 National online consenting system

A major component of Geobuild, online consenting system is able to accept digital applications for building consents. All information that is submitted as part of the consent application will need to comply with the Geobuild interoperability standards. As a paperless process the electronic application will be more convenient and cheaper for users. The lodgement and application process will be the same nationally providing consistency for all BCAs.

A National Online Consenting System will increase processing efficiencies, reduce costs for applicants and BCAs, and improve customer service through making the consent application process simpler and more efficient. It will also improve the customer experience by reducing application processing times, reduce processing costs and eliminating the need for applicants to visit the BCA. It would introduce a centralised, Internet based hub that receives, captures, and allows consistent processing of all building consent applications. Processing of consents, including inspections, will be conducted by Building Consent Authorities. The final aim is a service that provides for, and facilitates, the 'end-to-end' processing of consents using standard forms and consenting processes to provide applicants with a common experience, regardless of which Building Consent Authority (BCA) receives their consent application. Potential models from other countries have been operating, including Australia and the United Kingdom and Wales planning portal online site (Planning Portal U.K, 2013).MBIE in March 2013 reported the total projected direct minimum benefits of the national online consent system are \$67.3 million per annum. This took into account time saved by applicants and BCAs and benefits to contractors from the early issue of the code compliance certificate.

3.4.1 Application Preparation

Consent applicants access the National Online consenting system via a secure government login. Applicants are able to revisit previously unsubmitted applications via an intuitive smart form workspace. Digital plans which have been formatted to BIM and associated documents and specification can be uploaded to the system.

3.4.2 Consent submission

System verifies the completeness of the information and application fees can be paid online.

3.4.3 Consent processing

Consent applications are formally accepted by BCA for lodgement and processing. If any issues arise during processing further information may be requested. Once processing is satisfied and approval given, invoices are generated and notifications sent.

3.4.4 Inspections

Applicants request inspections for their project in which appropriate competent inspectors are allocated. Inspectors access consent information and documents through their mobile devices. Smart inspection forms and mobile devices used to submit data back to the inspection systems electronically. Inspectors also have the facility to issue electronic enforcement notices on site.

3.4.5 Compliance Certification

3.7 Geobuild future benefits

Information provided by Geobuild could benefit emergency response services as in the 2011 Christchurch earthquake and its aftermath. Accessing information on the construction of the building would have provided structural stability of buildings for rescue team and agency to make risk based assessment. On a global scale Geobuild may contribute with acceleration of building projects forecasted for 2020 by economist (Betts, M. and Farrel, S., 2009).

4. THE RESEARCH

4.1 The research questions

The literature review provides in-depth analysis into the New Zealand building controls dilemma due to the rebuild of one its largest city from past natural disasters and the forecasted growth of its largest city population. It explores the concept of a process review of Geobuild, online consenting system as an alternative to paper based lodgements eliminating the need for applicants to visit the BCA. This provides the so called benefit of minimizing time and cost without undermining quality. This process also comes with a caution as past dramatic regulatory changes have led to drastic results in the leaky building crisis. Critical evaluation of the literature review indicates that there is a current need to examine online consenting as a regulatory tool in New Zealand. Thus the following research objectives are formulated for the larger study programme to provide an exploratory evaluation that could help institute the National online consenting scheme in New Zealand.

1. To understand the impact of online consenting in building construction and any roll on effect on performance.
2. To validate the research findings through subject matter experts in the New Zealand construction industry.

4.2 Research methodology

This research is undertaken to gain insights into the general nature of the online consenting scheme as a regulatory tool. It is not geared toward developing precise statistical projections or descriptions but to evaluate the online consenting scheme through regulatory building practitioners and identifying any relevant issues. An explanatory sequential mixed methods design will be used, and it will involve collecting quantitative data first and then explaining the quantitative results with in-depth qualitative data. The main form of data collection is Quantitative questionnaire surveys with building control practitioners in New Zealand followed by Qualitative interviews with home developers and franchise owners. Deliberate and area sampling of large Building Consent Authorities throughout New Zealand (Auckland, Hamilton, Wellington and Christchurch) for this not only covers the majority of the population but also covers the geographic makeup of the country. This study aims to design, develop, test in the field, simulate and apply a framework and tools to evaluate online consenting for it feasibility and effectiveness or deterrent as a Building Consent Authority tool in New Zealand. Adopting a semi-structured questionnaire will provide flexibility during interviews in clarification of questions and practitioners elaborating further on their responses. The research findings will be validated using the qualitative interviews with Subject matter experts. All interviews will be recorded and transcribed verbatim then analysed through the use of qualitative analysis software package, NViVo.

5.0 CONCLUSION

Conclusively the study finds that the online consenting scheme could provide building regulators a tool to accelerate building processes. The fact that the scheme is online may mean that transparency is available throughout the process providing consistency without compromising cost and quality. In situations where resources are stretched and the pool of competent talent is lacking, the new scheme also provides regulatory teams a tool that can be utilized. If there is one message to take out of the leaky building crisis, it is that

there is a colossal price to pay if regulators do not deal adequately with the challenges discussed in this paper, notably the shift of balance of regulatory oversight. The conclusion of the current study programme should provide a blue print for the adoption of the online consenting scheme as a regulatory tool in accelerating building processes. The fast tracking of building consenting will positively enhance the rebuilding of Christchurch for example.

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