

PERCEPTIONS OF REGULATORY BUILDING INSPECTORS AND DESIGNERS ON THE PROPOSED RISK-BASED INSPECTION REGIME IN NEW ZEALAND

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The New Zealand government proposed a new control regime to streamline the process of building approval by introducing risk-based inspections for certain types of building works. The risk-based inspection is generally perceived as having the capacity to accelerate the process of building approvals therefore allowing contractors to project manage their time and workers without the bottleneck of regulatory inspections. The paper evaluates this newly proposed risk-based building inspection scheme. The perception of construction stakeholders on this new scheme was sought. Data was collected through a questionnaire survey and in-depth interviews with construction stakeholders. Regulatory building inspectors expressed concerns about the shift in liability from councils to licenced building practitioners and the need for regulatory bodies to introduce compulsory surety and warranties for building practitioners. Respondents also expressed that building licenced practitioners were unskilled and not mature enough in terms of experience and qualifications to undertake self-certification.

Keywords: building regulations, liability, licenced building practitioners, risk

INTRODUCTION

In August 2009 the New Zealand Government announced a review of the Building Act 2004 to identify areas the Act could be improved to minimize the cost of compliance without compromising quality of building and construction works (Williamson, 2010). The Government focus is on achieving quality homes, through building activities that is business-enabling and within efficient regulatory framework. In other words, construction that is produced cost-effectively by a productive sector that is competent, and with a regulatory system that is administered efficiently and cost-effectively. Government also has a target on restoring consumers' confidence following historical building quality failures, so that they are able to make informed decisions when carrying out transactions in the building and housing market (DBH, 2009).

A report initiated by the Building and Construction Sector Productivity Taskforce (2009) had suggested that productivity within the construction industry is relatively lower than those in other sectors of the New Zealand economy. The report went further to recommend the development of quicker regulatory and consenting processes

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to reduce the barriers and roadblocks faced by urban development projects. This realisation is the starting point for this research study and effectively its desired conclusion. Currently there is insufficient data on the effects of building regulatory initiatives in New Zealand, and on productivity enhancement without compromising quality. Also very little is known about the implementation of the risk-based inspection by those stakeholders involved. Therefore the current study provides some empirical data that could contribute to construction stakeholders' knowledge of the risk-based inspection regime as a regulatory tool.

LITERATURE REVIEW

Productivity within the construction industry

The construction industry gives an indication of the state of the national economy. When the construction sector is booming so too is the economy and when the economy takes a dip the construction sector usually follows suit. It can be said that construction is important to a country financially and in providing gainful employment to a variety of actors and participants. Lewis (2009) notes that the construction industry is normally narrowly defined to involve only those trades that are directly involved with the construction of building structures but the industry should be seen to be part of a wider construction sector that includes other aspects of the business from obtaining raw materials through to the removal and demolition of the facility at the end of its lifecycle. The New Zealand construction industry sector is the fifth largest, employing over 157,000 fulltime equivalents (FTEs) which equates to 8% of the total economy. The wider construction related services employ a further 42,000 FTEs. A Price Waterhouse Coopers (2011) report indicates that, a decade post the millennium, 14% of all new employment have been in the construction industry in New Zealand and the sector contributes averagely 4.4% of Gross Domestic Product.

The New Zealand construction industry is a volatile market and certain events have contributed to this ongoing trend. The shortage of building stock experienced in Auckland (Auckland Council, 2013) and Christchurch (exacerbated by the 2011 and 2012 earthquakes) have major implications on Building Control Authorities as there is evidence that inspection services already contribute bottlenecks. (Department of Building and Housing [DBH], 2012). Auckland's housing demand pressures are evident with a lack of supply causing soaring housing prices throughout the region which has also pushed up demand in the major cities. Aucklanders are unable to afford within the city limits, so are looking to purchase properties outside its boundaries which is also pushing regional house prices up. The situation in Auckland and Christchurch is consequently impacting the rest of the nation. The government is under pressure to deal with this crisis as Auckland homes alone have hit an all-time high as average house prices of \$828,502 in 2015 have risen to \$955,753 in 2016 which equates to a 15.4% increase, (Quotable Value New Zealand [QV], 2016).

Building regulations

One may ask, why there is so much emphasis on building regulations. At the lower level of the spectrum building controls set out to provide a minimum standard of building requirements to ensure the safety of occupants. Some other requirements are to ensure occupants remain safe and healthy in which performance based criteria's and plumbing provisions are provided. Apart from the health and safety aspect, minimum standards for building should also ensure that public expectations of buildings they purchase, particularly the family home are fit for purpose and have a certain minimum level of quality.

However building controls are very often become a source of frustration and too bureaucratic for many involved in the construction industry. Owners seeking to develop new housing or rehabilitate existing housing are in disarray of the regulatory gauntlet involved in consents and approvals. Constructors very often find the consent and approval process bureaucratic and costly. Thus there is pressure internationally on governments and regulators to develop modern forms of regulation that deliver more for less, and in more sophisticated ways.

The role of the building inspector and licenced building practitioners (which in this study are licenced builders and building designers) are highly dependent on each other's professionalism and competency for a project to be completed in a compliant and fit for purpose manner for its future users. Figure 1.0 shows the current building consent process in New Zealand and displays the regulatory intervention of authorities at each phase which could add up to weeks and months. The present model under the building Act 2004 sets a 20 day consenting processing time frame for building projects in which the clock can be stop during this time for request for further information prolonging the issuing of the consent. Once the building consent is granted the owner or its agent (usually the head builder) is required to notify the building consent authority on predetermined inspections which on new simple residential building could range up to 20. This whole process is becoming cumbersome for builders to down tools until notifiable inspection signoff. Also building inspectors are under pressure due to resourcing as a result of the high demand of buildings in the main regions.

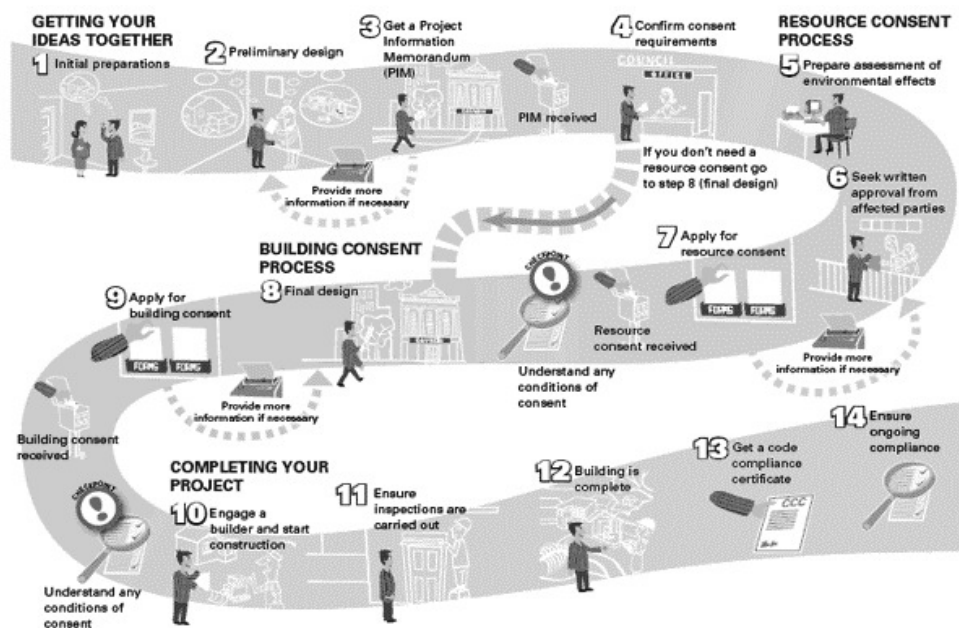


Figure 1 New Zealand building consent process (DBH, 2010).

May (2005) identified two barriers which have regulatory implications on affordable housing. First, are the cumbersome regulatory decision making processes that contribute to delays in construction and rehabilitation of housing. The second discourages housing development or rehabilitation in the first place which lessens the availability of housing in those areas due to developers moving to more favourable locations, consequently reducing overall housing supply. May and Burby (1998) discuss stylized enforcement strategies and what actually occurs out on the field categorizing enforcement into strict, creative and the most frequently used

accommodative enforcement, which in turn provides inconsistency in inspectors' decisions in whichever style they adapt.

Betts and Farrel (2009) indicate that global construction in the years towards 2020 forecast that an increase in construction activity over the next decade will put pressure on world materials and human resources to cater with development. May (2004) had explained constraints on homebuilders compliance with building code provisions due to the complexity of codes in which some codes number hundreds of pages and are often specified in technical terms that are not easily understood. This is evident of the New Zealand regulation system where there are thirty seven code clauses (35 technical) in which certain codes clause pages, number into the hundreds with specific verification methods for compliance. The logistic for homebuilders has dramatically changed in the last decade with modern homebuilding becoming more of a collaborative effort in which general contractors employ a range of subcontractors specializing in different phases of the construction process. In a typical 3 bedroom, brick and tile single level dwelling, it is not unusual to have six or more subcontractors providing services to complete its construction in New Zealand. May and Wood (2003) also mention that other constraints that frustrate homebuilders, are inconsistencies in what building inspectors require and their different interpretation of building code regulations.

Risk-based regulations

Rothstein (2006) describes risk-based regulation as the allocation of resources in proportion to risks to society, considering both the impacts themselves and the likelihood that they happen, in order to establish appropriate levels of control. The Department of Building and Housing in New Zealand envisages providing a better balance between regulation and risk, so that building consent authority's oversight and control of building work is proportional to the risks and consequences of failure and the skills and capability of the people involved (DBH, 2010).

The proposed risk-based (or "stepped" or "streamlined") building consenting process which forms part of the Building Amendment Act 2012 in contrast to other legislation in this Act has not been implemented as the government has emphasised that it will not come into effect until the construction industry is ready. The Licensed Building Practitioner scheme is in its ninth year and indications are the risk-based building consenting is on the horizon.

The legislation will create four types of building consents in which applicants will be able to align their project with, according to the criteria and parameters of building work involved. The four types of building consents are low-risk residential, simple residential, standard and commercial. Applicants will also be required to provide the BCA, risk profiles and quality assurance systems for projects which government have yet specified the criteria. The implementation of this scheme will relax the number of notifiable inspection by the BCA and provides for review and inspection by third parties. At the time of the current study, definitions and regulation of this scheme have not yet been released.

It appears from these different types of consent that the scope of the BCA's duty of care will become "user-pays". For lower risk building jobs, a person could make use of the cheaper low risk application process but would not be able to hold the BCA liable if the building project goes awry due to an unperceived fault in the plans.

This scheme has a major impact on the roles of construction stakeholders in New Zealand. The different types of consents provide applicants the options to take the

risk of paying a lower fee for no regulatory input and taking on more liability or standing than with the status quo. If issues arise in the future the "duty of care" (Invercargill City Council v Hamlin, 1994) placed on councils would come in to play during the disbursement of cost for repairs if negligent inspection was part of the cause.

In New Zealand, the transition of building consent authorities adapting to risk-based inspection is sporadic with two of its largest cities Auckland and Christchurch utilising this tool to cope with demand on the consenting regime. In 2013 the Christchurch City council had implemented a pilot scheme of risk-based (or "stepped" or "streamlined") building consenting process in lieu of the Building Amendment Act 2012 and despite other parts of the Act coming into force, risk-based still remained inactive. The Council would determine what buildings would qualify and set prescriptive parameters for applications. Applications that do not meet the standard were reverted back to the status quo of the 20 day consenting process duration from the Building Act 2004. Those that were successful were able to fast track their building projects and where a request for further information was required and the issue was minor, a phone call was made instead of a formal letter for further information.

A review of the process showed that the average processing applications for low-risk building consents was four hours and that all consents were processed within 24 hours of lodgement. The Auckland Council has a similar process which they also introduced to their customers. Under a memorandum of understanding (MOU) the criteria and expectations that both parties would be privileged to agree upon. The objective is to achieve partnership in providing a fit for purpose product, on time without compromising quality. Organisations were pre-approved by the Council and were able to participate but were monitored on their performance to remain on the scheme. The building consents were either granted or refused within a timeframe of usually 2 - 5 working days.

Current regulations are increasingly regarded as barriers to market liberalization and as a result there is an international trend towards reducing government responsibility for building quality (Burby et al., 2000). Many countries are attempting to simplify their building control regimes, often through a combination of deregulation and the shifting of responsibility (and in some cases balance) to the private sector (Yau, 2009). At its simplest, Rothstein et al. (2006) conceives risk-based regulation as allocating resources in proportion to risks to society (such as health, safety or environmental risks), considering both the impacts themselves and the likelihood that they happen, in order to establish appropriate levels of control.

A report by Berman (2012) with experience from overseas building control bodies with experiments with risk-based inspection and Contractor Quality Assurance programmes that focus inspectorate efforts where needed, and not where not, suggests that gains of construction time are possible without diminishing built quality. Risk-based inspections is an established practice in a number of areas in the UK sector. These are evident in the health sector with the enforcement of food safety, Hobbs (2002) and areas of fire safety, Ramachandran (1999). Bennett (2002) provides a risk-based component in satisfying inspection regulations in occupational health and safety sector. In each case the frequency of inspection and associated enforcement actions are based on a combination of the risk posed by the activity and the standard of management.

THE RESEARCH

The research questions

The literature review provides in-depth understanding of the New Zealand building controls dilemma: productivity vis-à-vis quality. Construction productivity is low in comparison to other commonwealth partners. There are pressures from two of its largest cities Auckland (Auckland Council, 2013) and Christchurch (Ministry of Business, Innovation & Housing, 2013) for supply and demand for residential housing. The study explores process review of the risk based system as an alternative to resourcing building officials. This provides the so called benefit of minimizing time and cost without undermining quality but also relies on licensed stakeholders doing the work to stand by their product and be more accountable, if issues arise in the future pertaining to any of their projects. Critical evaluation of literature from Black and Baldwin (2010), Department of Communities and local government (2012a) and Department of Communities and local government (2012b) indicate that there is a current need to examine risk based inspection as a regulatory tool in New Zealand. Thus the following research objectives are formulated to provide an exploratory evaluation that could help institute the risk based inspection scheme in New Zealand.

2. To understand the impact of reduced regulatory intervention in residential building construction in New Zealand.
3. To ascertain problems with ensuring responsibility sits in the right place

Research methods

This research is undertaken to gain insights into the general nature of the risk based scheme as a regulatory tool. It is not geared toward developing precise statistical projections or descriptions but to evaluate the risk based scheme through regulatory building practitioners and identifying any relevant issues.

The sampling units for this study consisted of regulatory building inspectors and building designers in New Zealand as the main sample frame. These construction stakeholders have been selected because they are at the fore front of risk-based inspection being regulated into legislation as a Building Control tool. Building inspectors were randomly selected from data obtained from council's staff list and designers were selected through the Institute of Architects (NZIA) database in which designer's pre-requisite was residential construction. Table 1 shows building inspectors and building designers responses throughout New Zealand.

Deliberate and area sampling of large Building Consent Authorities throughout New Zealand (Auckland, Hamilton, Wellington, Christchurch and Dunedin) is undertaken. This not only covers the majority of the population but also covers the geographic makeup of the country. Interviewee variety is essential to the quality of data sourced in qualitative research, therefore all participants that are engaged for the research, have practical understanding of regulatory building inspections and residential construction practice. Adopting a semi-structured questionnaire with quantitative and qualitative approaches complement finding data. Data analysis for the quantitative results were undertaken through the use of SPSS software version 22, and qualitative results through NVivo 10.

The research findings will be validated in a future exercise through interviews with key industry players (i.e. subject matter experts or SMEs). All interviews are recorded and transcribed verbatim, then analysed using NVivo qualitative analysis software package.

Table 1: Geographic location of Building inspector and Designers surveyed

	Response Percent	Response Count	Response Percent	Response Count
Auckland (Auckland and Northland)	68.3%	43	38.3%	46
Canterbury (Canterbury, Ashburton and South Canterbury)	25.4%	16	16.7%	20
Central North Island (Taranaki, Wanganui, Hawkes Bay, Manawatu, Gisborne)	0.0%	0	8.3%	10
Southern (Otago, Gore, Southland)	4.8%	3	5.0%	6
Midlands (Waikato, Tauranga, Whakatane, Rotorua, Taupo)	1.6%	1	5.0%	6
Cook Strait (Wellington, Wairarapa, Nelson, Marlborough, West Coast)	3.2%	2	21.7%	26
Others	3.2%	2	5.0%	6
Total Inspectors		63		
Total Designers				120
Total Participants				183

RESEARCH FINDINGS

The first set of questions required participants to indicate if there was a need to review the current regulatory inspection regime and to comment on the appropriateness to risk of the number of inspections required on residential buildings. It is noted that both building inspectors and designers have responded overwhelmingly with over 70% agreeing that a review was needed on the number of regulatory inspections during residential construction.

Table 2: Building inspectors and designers views on the review of current regulatory inspections including the number of current inspections.

	Need to review current regulatory inspections?		Appropriateness of the number of building inspections	
	Response Percent	Response Count	Response Percent	Response Count
Yes	71.7%	33	68.8%	55
No	23.9%	11	13.8%	11
Not sure	4.3%	2	17.5%	14
Total Inspectors		46		
Total Designers				80
Total Participants				126

The second question reviewed the United Kingdom model in which the following paragraph was provided to participants to get a background understanding of currently implemented scheme in New Zealand. “United Kingdom risk-based inspection systems include a minimum number of phased inspections for all buildings and they typically give priority to buildings with high risk, such as environmental ones and optimize the process. For example, defined key stages of inspections for all buildings, plus additional inspections based on the building’s risk level. Hence risk-based inspections focus on what to inspect and when. Risk-based inspections are conducted to ensure a building’s structural safety, fire safety, worker safety and public safety but in a more efficient manner. Riskier buildings face more inspections. Having fewer

inspections for less risky buildings lowers costs without compromising safety, increasing flexibility and enabling inspectors to move away from random and phased inspections”.

The results presented in Table 3 show that there was a positive outlook for adopting a UK risk assessment approach in New Zealand. There was an average of 70% participants that agree to similar changes as the UK. The third set of questions required participants to indicate if the New Zealand construction industry was ready for change in the relaxation of regulatory inspection in favour of a risk-based approach.

Table 3: Building inspectors and Designer views on adopting a United Kingdom risk assessment risk-based assessment approach.

	Building Inspectors		Designers	
	Response Percent	Response Count	Response Percent	Response Count
Yes	76.1%	35	67.5%	54
No	23.9%	11	17.5%	14
Not sure	0.0%	0	15.0%	12
Total Inspectors		46		
Total Designers				80
Total Participants				126

Table 4 present the responses received from the key stakeholders. The result shows that both building inspectors and designers have concerns with this change in regulation with 65% of inspectors not confident that New Zealand is ready for such change. Just over half of designers surveyed also express similar concerns.

Table 4: Building inspectors and Designer views on the New Zealand construction industry mature enough to implement the deregulation of current inspections

	Building Inspectors		Designers	
	Response Percent	Response Count	Response Percent	Response Count
Yes	15.2%	7	33.8%	27
No	65.2%	30	52.5%	42
Not sure				11
Total Inspectors		9		
Total Designers	19.6%	46	13.8%	80
Total Participants				126

To understand more about these results, participants were provided an opportunity to comment on their responses. Some key comments are transcribed in Table 5.

In response to deregulation of current building inspections a building inspector (BI003) states that builders and other contractors put profits before quality and inspection deregulation will only speed up this process in their favour. Similarly building inspector (BI023) explains that the building industry has a long way to go before regulation could be relaxed and that more education is required at all facets of the construction process. He often feels that he is expected by builders to carry out a "clerk of works" role rather than that of a building compliance regulator. Designer (D59) explains that until licensing of builders is graded as other established trades, self-assessment at this current stage was inappropriate.

CONCLUSIONS

Conclusively the study finds that stakeholders are apprehensive about risk-based regulation being rolled out, but there was optimism from the industry that risk-based regulation did have a place in the building consent framework. There are indications that once LBPs upskilled themselves in particular in building code compliance it

would eventually accelerate the building process without compromising cost and quality. It is evident from the findings that the current licencing scheme for practitioners is not robust enough for confidence of relaxed building relegation to be implemented. Stakeholders are requesting that better training is required and a call for regulatory bodies to introduce a compulsory surety and warranties scheme for all licenced building practitioners to be a part of.

Table 5: Stakeholders transcripts on New Zealand construction industry readiness for current regulatory inspections to be relaxed in favour of risk-based assessment approach.

Participant's coding	Commentary provided by participant's
D59 B38	Until licensing of builders is graded and has meaning self-assessment as done by electricians and gas fitters is inappropriate. Building practitioners and the need for regulatory bodies to introduce compulsory surety and warranties for building practitioners.
D61	Even LBPs don't seem to get it right. And many tradespeople seem unaware of requirements for other trades work, so cause problems for other trades.
D89	Better training required for builders
BI003	Not all builders - Franchise holders and developers sometimes come from outside the building industry and view the building in the short term as speed and profit (Contract law is the best way to deal with this)
BI016	The quality of workmanship is very poor across all Trades, including designers.
BI023	In particular reference to the residential building sector I feel the Building Industry has a long way to go before regulation is relaxed, More education, especially Building Act / Code Clauses / Standards, not only at the coal face but at all stages of the building process, I feel Designers are not providing well considered and fully evaluated plans and specifications, this combined with a lack of knowledge and supervision on site is very unnerving from a Building control perspective, I often feel that I am carrying out the ""Clerk of Works"" role and more than 50% of inspections carried out this is the expectation of the builder/contractor
BI049	The LBP scheme has not been a panacea for skilled work

The fact that the scheme is risk-based may mean that current inspections could be de-regulated in low risk areas providing opportunities for LBPs to cut corners during construction. The leaky building saga is a harsh reminder that initial intention of a new scheme being implemented for the sake of innovation to a performance based system also carries its dis-advantages, notably the shift of balance of regulatory oversight. In situations where regulatory resources are stretched and the pool of competent talent is lacking, the new scheme also provides regulatory teams a tool that can be utilized. The fast tracking of building inspections will positively enhance the rebuilding of Christchurch and address the supply demand in Auckland for example.

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