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The Effects of Building Controls on Housing Design, Development and Affordability

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Presenters note

This paper is presented in lieu of the one promised to the conference organisers by Roger Hay, but not delivered because he died of pneumonia in September 2010.

When sorting out Roger's papers, I came across a "scoping study" commissioned by the Ministry of Housing in 1994, which traverses many of the issues signalled in the conference abstract.

I believe much of the study is still relevant, especially in the light of recently proposed reforms to the Resource Management Act 1991, and the creation of the new Auckland Council.

This paper is a version of that 1994 report, heavily edited to fit the word limit for the conference papers. I have added some comments and references of my own, these all appear in footnotes.

Where a contemporary reference has been updated, the change is denoted by square brackets, so that *Building Industry Authority*, for instance, may be replaced with [Department of Building and Housing (DBH)] and thereafter [DBH]. Current legislation is referred to without brackets: *Building Act 2004*, while Roger's original references appear in round brackets: *Building Act (1994)*.

Original abstract

The Effects of Building Controls on Housing Design & Developments

In this paper, "building controls" is given its widest-possible meaning, from the requirements for the design and construction of buildings, through the concepts of titles, to the subdivision of land.¹

One typical policy misconception is demonstrated by New Zealand's [Building Act 2004], in which the "quality" of housing is seen as a primary objective of building controls. This paper argues that "quality" is an entirely subjective concept, which is neither definable in any rational building controls system, nor enforceable by it. Design and construction controls must be limited to the "soundness" of buildings.

This paper argues that the greatest single restraint on intelligent and productive housing design is the rigidity of the traditional legal concept of land titles, and the consequential custom of subdividing land into parcels before being sold for housing.

The alternatives to this customary are briefly examined, ranging from mobile home parks to the proposed Industrialised Building Systems (IBS) land developments in the 1970s, and later Housing New Zealand developments.

It will be shown that these developments, where all the houses are first placed in the most efficient way, and then the land title (if any) defined afterwards, are the most environmentally and economically productive form of housing development.

PART ONE: BUILDING SITE COSTS

Sections 1 to 5 focus on reducing the costs of developing land. The objective is to examine all the ways in which the cost of the site for each dwelling can be reduced as a proportion of the total cost. This focuses mostly on the obvious remedy of reducing the area of the site and making more efficient use of services by increasing the density of housing. The key to this is in planning controls, and, through them, the conditions in which the industry could greatly increase the range and choice of the types of dwelling it is offering.

1. Planning controls and amenity values

1.1 *The situation with the Resource Management Act*

For the purposes of this study, only the Auckland regional plan is considered, because it is the region with the greatest demand for new housing.

On the basis of the criteria specified in the Resource Management Act 1991, the Auckland regional plan proposes a curb on any further urban expansion. This affects each of the district plans within the region, restricting the amount of "urban fringe" land which will be permitted to be used for new housing developments over the next 10 years.

Regional Council planners are satisfied there is sufficient land for housing, within the boundaries they propose, for the next 20 years demand. However two leading land developers disagree, and argue that there may be only 2 years worth of suitable land. Who is correct

¹ And, in the final section, a strategy for making the New Zealand housing industry more competitive by expanding the international market for timber-framed building systems.

² It is these ongoing differences of opinion that, in part, led to the restructuring of local government in Auckland in 2

depends on the nature of the specific areas of land each side has in mind, and the criteria being used as the basis of their viewpoints.

On the Auckland isthmus, the Regional Plan expects the isthmus area to provide for 30% growth in housing in the next 10 years. However, the city is currently imposing curbs on further infill housing, because its sewerage and stormwater drainage systems have reached capacity. Increasing densities on the isthmus over the next 10 years will have to be achieved mostly by redeveloping existing buildings, without adding to their catchment areas (roof or carparking areas). This could well have far-reaching effects, for reasons discussed in Section 3 of this Study.²

1.2 District plan controls on housing developments

District Plans allows three types of activities: "Permitted" activities, "Controlled" activities and "Discretionary" activities. In practice, all comprehensive housing developments, and most subdivisions, are Controlled activities, while multi-unit housing developments are Discretionary activities.

To reduce time and processing costs, it would be desirable for the majority of new housing developments to be classified as "permitted" activities, with minimal conditions. But it is unlikely that there will be national consistency in the district planning rules for all housing, even for comparable situations.

Greater commonality and consistency among district plans can be achieved by the adoption of New Zealand Standards which specify a flexible range of conditions for the approval of all new housing developments.

1.3 "Amenity values" as the decisive concept

The concept of "amenity values" in the RMA can be applied to the preservation of a community's resources, but also to what that community believes people in new houses must have provided for them.

One of the Act's purposes is to set out the procedures to be followed and the matters to be considered, in settling all differences of viewpoints about which kinds of amenity values are to prevail in a housing development.

The result is that District Plans tend to codify the amenity values of the types of housing which people on council committees are already familiar with, and conversely, to provide for discretionary controls over types of housing developments with which they are unfamiliar. There is a danger that unfamiliar housing forms such as mobile home parks or high-density housing developments are likely to be translated as "adverse effects" on current amenity values.³

² It is these ongoing differences of opinion that, in part, led to the restructuring of local government in Auckland in 2008 to 2010.

³ Fischel (2001a, b) makes a compelling case that it is homeowners' concerns about maintaining their property values that are the decisive influence on planning decisions. Perhaps the RMA might function more effectively if this was made explicit, and controlled in the legislation, instead of using "amenity value" as a euphemism.

2 Charges, engineering standards and code overlaps

2.1 Territorial authority charges on housing developments

Concerns about development contributions appear to be based as much on their rationale (ie, which costs should be borne by whom) as on their size.⁴

2.2 Civil engineering standards in housing developments

There is a long-standing professional tradition for civil engineers to make design decisions on the basis of what they consider to be in the best long-term interest of the community - without giving the affected community any opportunity to say whether its interests are best served by those decisions.⁵

The basic standards for the durability of roading, public lighting, drainage and water supply should be specified in all district plans on the grounds that these are all part of the physical resources for which the plans are providing sustainable management.

To ensure national consistency, these requirements in each district plan should be specified by reference to a national consensus standard.⁶

2.3 Overlaps between District Plan Rules and the NZ Building Code

The Building Act (1994) was developed quite separately but in parallel with the development of the Resource Management Act 1991. This created overlaps, which were predictably a recipe for confusion, inconsistency, and delays - all of which will amount to extra costs on new housing.

The blame for these costs is typically attributed to local authorities, but the fundamental reasons lie at Government level.

The Minister should initiate an assessment of the overlaps and conflicts between the district plans of the territorial authorities in the major conurbations, and the requirements and approved documents specified in the NZ Building Code in relation to housing.

3 Models of intensive land uses

3.1 Persuasive design models

The common rationale for the market predominance of single unit houses, each separately positioned on its own section, is that this is what the buyers want. There needs to be a way of overcoming the market barriers of unfamiliarity with a wider range of options, and prejudices about higher density housing developments.

New Zealand has a long history of producing large housing developments on the basis of imported "pattern books" and other overseas models. New Zealand should seek out models of

⁴ The situation has not changed much since 1994, as indicated in the Local Government New Zealand "Best Practice Guide to Development Contributions" (LGNZ, 2003): "Experience with financial contributions under the Resource Management Act 1991 and before that with contributions under Part XX of the Local Government Act 1974 has shown this is a contentious area, at least as between councils and developers."

⁵ See Shoup (1997), for an example of how engineering standards for car-parking impose costs on developers, communities, and society as a whole.

⁶ Such a standard was in fact adopted in 2004, ten years after Roger's recommendation, as *Land development and subdivision engineering*, NZS 4404:2004. This has subsequently been reviewed and was republished in 2010 as *Land development and subdivision infrastructure* NZS 4404:2010.

medium density housing: especially those which have achieved significant cost reductions without loss of quality, which would overcome common prejudices.

The NZ Housing Initiative was an example: a proposed Fletcher Homes development in Manukau City that demonstrated significant cost reductions over conventional subdivisions. The scheme achieved about 35% site coverage, without any considerable loss of amenity, through allocating a "footprint" for each house - and a variety of footprints were offered.

The Minister should initiate research and publication of a range of exemplary models for intensive housing developments. Draft planning and regulatory rules to support each such model should also be published, to allow for their rapid incorporation in district plans.⁷

4 Options for building site entitlements

4.1 *Greater flexibility in design of housing developments*

Infill housing is a poor method for increasing the density of housing. The most efficient method is to purchase of groups of houses, and amalgamate their titles. That takes the sort of time and capital which is not readily available in the NZ housing industry, so it is probably requires the kinds of re-development partnerships between territorial authorities and industry which are employed overseas.

Once a block of individual sites is amalgamated in this way, it is illogical to re-subdivide the land into individual titles, recreating the original problem. We need to consider other options, such as:

- mobile home parks rent a plot to each mobile home owner;
- the extensive use of underlying leasehold titles for housing estates, used in other countries;
- communal ownership of land (which we treat as a problem, rather than as an opportunity for better resource management).

4.2 *Better mixes of housing types and tenures*

The development of large housing areas, with the same sort and size of dwellings throughout, is unable to provide the benefits of the wide-ranging mix of ages and kinds of people that occurs in most of our older suburbs.

In multi-unit housing developments, where the housing units are pre-designed, there is also typically only one form of ownership or tenure on offer.⁸

In the case of low cost housing developments, where all the houses are "low cost", this may contribute to a decline in their collective value.

An alternative approach is the use of pre-defined site "footprints", on which individually-designed houses can be built. Where that technique has been explored, it resulted not just in sharply reduced costs of development, but also in a far more sensitive use of the land and a

⁷ Following Roger's line of argument, the same comment could now be made with respect to Auckland Council. The issue of managing growth primarily affects Auckland, and the amalgamated council is now of sufficient size that it ought to have the capacity to undertake this work without central government assistance.

⁸ Easthope (2009) explores the role of unit (or strata) title: "Urban consolidation policies and higher density housing development have become major drivers of urban change... The realisation of these policies relies almost entirely on the provision of strata titled dwellings. There is thus a need to explore the role of governance arrangements in providing the framework of complex rights and responsibilities for the multiple stakeholders involved."

considerable gain in amenity values. The pre-defined "footprint" technique also creates the opportunity to mix the types and sizes of housing being offered in any one development.

Having built the houses first, one should then consider which, if any, of them need separate land titles. A choice of freehold, unit title, leasehold and rental options should be offered to prospective residents.⁹

4.2. *Using leasehold more intelligently*

Leasehold titles are not favoured because rising land values can result in periodic major jumps in the annual rent. But that problem is in the way the rent is set, not in the leasehold system itself.

To allow for greater use of leasehold, separate sections could be gradually be acquired by the territorial authority, which would then lease the block of land to a developers, on the basis of competitive bids for its re-development.¹⁰

5 Comparison of site cost factors

The brief for this study asked some questions about the costs involved in developing housing sites, to which there can be no authoritative answers, as there is no nation-wide data. It would be very beneficial to the housing industry to have a way of being able to objectively compare the actual and the typical costs of one kind of housing development with another.

Such a system should provide the ability to compare the costs, and the cost factors, in the whole range of housing sites. It is suggested that the system should be integral with the Construction Cost Comparison System recommended in Section Six of this report.

The scope of site cost factors part of the system should exclude the costs of any dwelling: say above the top of the foundations or some defined point. The factors that would need to be included would be, e.g., the costs of:

- Acquisition (but not the costs of holding onto the land until the market is ready);
- Design and approvals (overhead plus delay costs);
- Charges and fees;
- Shaping;
- Roading and paving;
- Drainage;
- Utilities and street lighting;
- Value-adding features;
- Obtaining titles;
- Marketing, and lease or sale arrangements;
- Developer's profit margin (i.e. return on investment, to identify whether a risk-adjusted rate of return is above or below comparative investment opportunities).

⁹ The issue is explored in some detail in Monk and Whitehead (2010)

¹⁰ The Ministry for the Environment (2010) proposes five options for changing access to the designations system under the Public Works Act 1981. The focus, however, is on assisting private sector investors to develop infrastructure: housing affordability issues are not addressed.

Recommendation: That the Minister discuss this proposal jointly with BRANZ and the [NZ Construction Industry Council],¹¹ with a view to formally requesting BRANZ develop such a system and cover the costs of doing so from the BRANZ levy.

PART TWO: CONSTRUCTION COSTS

The focus of sections 6 to 10 is on reducing the costs of construction, by increasing the productivity of the construction process. The objective is to examine what factors could increase the productivity and competitiveness of the New Zealand building industry.

6 Analysis of building cost factors

6.1 The Productivity Factor

There are strict limits to the reduction of costs of new housing in New Zealand, as long as it is mainly built by handcraft methods, on site.¹²

Evidence of this can be found in the North American mobile home industry, which is able to produce houses at around one-quarter to one-sixth of the cost of site-built houses of comparable size and appointments.

The major reason for the lower cost is that mobile houses are entirely built on factory type assembly lines, with no interruptions to the workflow by weather or unavailability of subcontractors, the use of high-speed sub-assemblies, and an uninterrupted supply of materials and components.

The next two areas of cost saving are that the houses can be placed almost instantly on the simplest of pre-prepared sites (a concrete pad, or "hard-standing", with flexible pipe connections to drains and water), and that the sites themselves are usually rented.

The least reason for the lower cost is the lightweight construction and the common use of relatively low-cost pre-finished lining materials – but it only this reason, and the consequent perception of shoddy construction, that prejudices buyers against mobile homes.

6.2 Cost comparison methods

The information the building industry has on comparative building costs does not show where and how real cost reductions can be made. The industry currently relies on comparative analyses of materials and labour as proportions of the costs of similar size houses, on similar sites, with similar construction, and using similar on-site construction methods.

A better way of analysing construction costs was proposed by the Industry Research Group, School of Architecture, Victoria University of Wellington, in 1982 -1983. In her paper on "Building Controls in New Zealand: The control system and its economic impact", Professor Helen Tippett proposed the main cost factors to be considered. Translating the terms slightly, the factors relevant to this study are:

- The project design and management costs
- The control system costs; and

¹¹ Originally *Housing Industry Council*

¹² This point is confirmed and explained in (Elliot, 2008): "...building traditional 'stick built' homes is fairly labor intensive, and labor-intensive goods tend to get more expensive relative to non-labor-intensive goods over time... the productivity of on-site house building is not rising as fast as (the productivity of) other sectors of the U.S. economy."

- The element costs: the sum of the material, labour and equipment costs for particular physical building elements.

Professor Tippet's work focussed on analysing the cost of processes involved in designing and constructing single (relatively large) building projects, rather than dwellings. Nevertheless, it does indicate the important factors to be considered in any analysis of costs.

Recommendation: That the Minister discuss with [Department of Building and Housing (DBH)];¹³ the potential for a cost analysis database for housing construction; a way for that database to be easily and swiftly accessed by the housing industry; and education for house builders on how to make best use of the database so as to increase their productivity and competitiveness.

7 The inaccessibility of the New Zealand Building Code

7.1 Complexity and its consequences

The NZ Building Code is costly and composed of many sections, each dealing with one distinct "functional requirement" of all buildings.

Each section first states the objective of the provision; then the broad "functional requirement"; then the actual "performance" required. All these comprise the actual regulatory requirements. They apply to all buildings except where specific exclusions or applications are noted. Nearly all of these exclusions relate to housing or to accommodation buildings.

This is an unhappy situation, as the Code's requirements for the conventional single unit house are mostly quite light-handed. Even for multi-unit housing, the actual fire safety and sound transmission requirements are not onerous. But because of the way the Code is structured, it can be very difficult to grasp what is required and what might be permissible.

The practical effect is that many small house-building firms have not bothered trying to grasp the Code's requirements, and they rely on a building inspector to tell them what is required. It is not the role of building inspectors, however, to explain the options or identify alternatives.

7.2 A guide to housing requirements only

The actual extent of costs resulting from the situation outlined above might justify a research study. A more practical approach might be to accept the problem as self-evident, and invest in providing the housing industry with a "Simple Guide" to the housing requirements of the NZ Building Code. Such a guide needs to:

- be easy to understand and to use -both by intending house owners and by small builders;
- be comprehensive and absolutely reliable;
- be formally approved by [DBH];¹⁴
- provide clear explanations of the actual options available, including critical comments on any aspects of the non-mandatory methods and solutions;
- set out the relative responsibilities of developers, owners, builders, and suppliers in terms of both the Building Act and the Consumer Guarantees Act;
- provide advice on the rights involved, and the best procedures, where there are disputes with building inspectors;
- be readily available in all bookshops.¹⁵

¹³ Originally BRANZ. The DBH might now be a more appropriate source of such advice to the Minister.

¹⁴ Originally *the Building Industry Authority*

8 Performance: dominant values or risk criteria

8.1 Performance criteria in the NZ Building Code

It is commonly believed that the Building Code is based on minimum performance requirements. In fact the Code is quite uneven in its choice of whether its provisions are to protect property, or provide for the safety of life, health and welfare of building occupants.

The difference is most clear when comparing its requirements for fire safety with those for structural durability. In its fire safety provisions, the emphasis is clearly on preventing danger to life and damage to adjoining buildings. The structural requirements, on the other hand, state that all buildings have to withstand all loads they are likely to experience throughout their lives, which means not just "preventing collapse", but also resisting deformation, discomfoting vibrations, and structural degradation.

In fact, the bulk of the housing provisions in the Code reflect the dominant values of our society, including the kinds of features we have only quite recently come to accept as normal in house design. For instance, it requires all houses to be supplied with piped water (supply from a rainwater tank only is not allowed); it fails to provide for the use of septic tanks; it does not allow wooden sink benches of the kinds our grandmothers used to scrub; and it does not allow for someone to build a shower over a freely-draining gravel floor.

The Code not only restrains an individual's freedom to design and build a house to suit their own values, but also restricts the development of housing where the occupants may want to accept different levels of performance, and be able to evaluate their own level of risk, in return for significant cost savings.

8.2 Hazard-based regulatory criteria

If we took the stance that the purpose of building controls is only to prevent people from being endangered, then the Building Code would be far more rigorously constructed than it is.

If the approach taken by the fire safety part of the Code were extended, then the performance criteria would relate only to specified hazards, set in terms of the actual dangers to be safeguarded against, and also with regard to precisely who is endangered.

Achieving regulatory control of this type will rely on practical guidelines, in the form of texts and manuals, serving much the same purpose as recipe books. These need to show how to achieve the basic performance criteria specified in the Code, while also providing a choice of features and benefits that an owner may choose for each feature of his house.

9 Compliance and approval

9.1 Ensuring compliance by inspection¹⁶

In New Zealand, building inspectors have traditionally been former builders, with little training in the requirements they enforce, therefore lacking the ability to make technical decisions at the same level of difficulty as architects or engineers. In Australia, Britain and North America, their counterparts are all highly trained professionals.

¹⁵ And now, on the internet.

¹⁶ This sub-section refers to on-site inspection of individual buildings. The following sub-section refers to the approval and certification of building products and systems. The distinction was not entirely clear in Roger's original paper.

Consequently NZ building inspectors have varying levels of competence. Many prefer to deal with prescriptive requirements that can be enforced with certainty, and are cautious about approving alternatives. This causes uncertainty, conflict, on-site delays and sometimes unreasonable costs.

The drafters of the Building Act (1991), instead of requiring Councils to ensure their building inspectors received appropriate tertiary-level training, borrowed from Britain the unproven concept of setting up independent "building certifiers" who could compete with Council inspectors in inspecting building work and certifying that it complied with the Code.

To ensure that a building certifier is a "fit and proper person" and is adequately qualified, the Building Act (1991) set out over eight pages of detailed requirements and procedures. However the Act had no equivalent requirements for council building inspectors.¹⁷

9.2 *Ensuring compliance through assurance*

The notion, in the Building Act (1991), of a "building certifier" seems grounded in an archaic belief that officially authorised "inspectors" are needed to ensure that building products and systems comply with regulatory requirements. That notion is out of step with modern quality assurance techniques, including third party accreditations, are accepted as more reliable ways of ensuring that products will be delivered with the specific qualities and performances required.

Given that individual Councils do not necessarily have the expertise to evaluate the reliability of those who offer "producer statements" or any other form of certification, it might make better sense if the Building Act were simply to give the Building Industry Authority a responsibility for accrediting all those classes of building industry professionals and organisations whom it regards as competent, by whatever criteria it thinks best, to ensure compliance with Building Code requirements.

9.3 *Approval of new products and system*¹⁸

In order to obtain approval for use of an innovative building product, or a new building system, it used to be necessary to hawk it around from Council to Council, seeking approval of each in turn. Then, in the late 70's, BRANZ introduced its Appraisal system through which it issued authoritative assessments of the fitness-for-purpose of any new building product or system. Councils then felt able to approve products on the basis of the credibility of the BRANZ appraisals. Parallel to this are the independent certification systems run by Standards New Zealand and by Telarc.

However, for new structural systems it [was] common practice to obtain individual Council approvals on the basis of a professional engineer's certificate. Councils [were] required by law to employ a registered engineer for certain responsibilities, so obtaining approval [was] often simply a question of one engineer scrutinising the certificate of another.¹⁹

On top of all those other systems, the Building Act (1991) [authorised] the Building Industry Authority (BIA) to provide "accreditation" (a different use of the term: actually meaning "approval") of building products and systems, with the automatic effect that Councils [had] to accept them. The process [was] elaborately specified in the Act, requiring that the product [had]

¹⁷ Neither does the Building Act 2004. Under section 248 of the Act, the Chief Executive of DBH has appointed International Accreditation New Zealand (IANZ), as the building consent accreditation body. IANZ is the accreditation body of the Testing Laboratory Registration Council (TELARC), established as an autonomous crown entity under the Testing Laboratory Registration Act 1972. It is not obvious that this seemingly infinite regression of accreditation agencies is preferable to a requirement in the Building Act that building inspectors hold appropriate qualifications recognized by the New Zealand Qualifications Authority.

¹⁸ In this section Roger's argument is presented in the past tense, because the flaws in the product approval system he outlined in 1994 were significant factors in the emergence of New Zealand's "Leaky Building" problem.

¹⁹ The term "engineer" was defined in the Local Government Act 1974. There is no similar term in the LGA 2002.

first to be appraised by an "appropriately qualified organisation". The Building Industry Authority then further assessed the product as to whether it [complied] with specified provisions of the Building Code, and if satisfied, [accredited] it.

This whole process [was] bureaucratic, slow and costly. Presumably, it was set in place because Councils were not being consistent in their approval of new products and systems. But the difficulties with approvals derive mainly from the fears of councils and their building inspectors about liability if their decisions are proven wrong.

The whole system would [have been] a lot simpler if the Act empowered the BIA to accredit persons and organisations that it considered capable of competently appraising, testing or certifying products, and then authorised Councils to accept the certificates of those accredited persons and bodies without fear of liability. Providing more contestability in the approval system, and a greater variety of approval methods, should enable faster and more cost-efficient approval processes, while producing some cost savings.²⁰

10 Developing competitive systems

10.1 New building systems in New Zealand

New Zealand has imported and produced many innovative systems of house construction. There are examples of imported prefabricated houses in all parts of the country, dating back to the earliest Pakeha settlements. There are also several examples of successful factory-built housing schemes, such as the 1920s Railways housing factory in Frankton, and the highly economic, neatly designed PTY factory-made houses of the 1960s, which still form integral parts of towns such as Mangakino.

And there are dozens of examples of innovative developments of new ways of construction, a few of which have endured very well, such as the Lockwood system, but most of which have had a relatively short life-span.

Until the industry as a whole can comprehend what it has to avoid, and to overcome, it will not be able to even start making consistent and well-planned steps towards achieving lower costs in housing. A comprehensive survey of the many innovative schemes that failed is needed, with a searching analysis of the key factors leading to their failure.

10.2 Means of involvement in an Australasian-wide market

A major incentive for finding ways to lower housing costs is for the current industry to be exposed to a far larger housing market than New Zealand's. This has already been done to some small degree; the usually cited reason why this has not resulted in significant impact on the costs of the NZ housing units is the range of differences between Australian and New Zealand building regulations.

The key to technical coordination between Australia and New Zealand, in their housing markets, is through the formal policy of joint work agreed on by Standards New Zealand and Standards Australia. It is expected that the Building Code of Australia will eventually rely totally for expression of its technical detail on Australian Standards, which will in most cases actually be joint Australian/New Zealand Standards.

²⁰ And, the point that later became evident: housing affordability is not merely a matter of purchase price, but the financial impact of home ownership on one or more owners, over the life-span of the building.

10.3 The long-term potential of Pacific Basin housing standards

Australia seems to be leading a move towards development of regional construction standards for the Pacific Rim countries. This would provide a counter-balance to the dominance of the Eurocode Standards now rapidly taking form in Europe.

It is very much in the interests of European industry to advocate the use of Eurocode standards by other countries to support the export of European building systems and know-how around the world, including those in East and South-East Asia. However European construction standards reflect an obsession with the "durable" construction materials: masonry, concrete and steel, and have less comprehension of timber-based construction.

New Zealand, Australia and North America all share a common tradition of timber-framed housing, and a considerable expertise in the use of timber for much larger structures. If these Pacific Rim countries want a share of the very large construction markets of East and South East Asia they need a strategy for competing with the European exporters. This should involve development of regional standards for timber and pre-fabricated housing construction designed to gain acceptance in Asian markets.

Exposure to the urban housing markets of Asia should result in considerable gains in the sophistication, efficiency and productivity of the NZ housing industry. That, in turn, should eventually result in reduced costs in New Zealand housing.

Summary of Recommendations

The conclusion is that Government could play a significant role in assisting to lower housing costs through a range of research projects, initiatives, and specific actions. The following list is a summary of the recommendations made in this study:

1. Setting up a comprehensive cost analysis and comparison system

There is no industry-wide method for analysing and evaluating the significance of site development costs and fabrication costs. It is suggested that both parts of the system should be set up and managed by BRANZ, out of its levy income.

2. Initiating "Simple Guides" to the housing facets of the key legislation

The size and complexity of the NZ Building Code and planning legislation makes their requirements inaccessible to the majority of house designers and builders. This creates excessive compliance costs and barriers to entry for smaller developers.

3. Promoting exemplary models of higher density housing developments

The housing industry and territorial authorities need to become familiar with techniques of providing a much wider range of housing choices and costs in any one development.

4. Reviewing the requirements of District Plans and the NZ Building Code

There are unresolved overlaps between the requirements in the Building Code and requirements in District Plans. District planning rules tend to restrict the range of housing choices by favouring current amenity values. Parts of the Building Code are based on dominant values, which restrict others in their performance and design choices.

5. Evaluating alternative ways of being able to build on a site

We need to find easier ways of amalgamating the titles of many small separate sections in older housing areas. Acquiring the right to construct and own a dwelling should be achievable in a far

greater variety of ways. We make poor use of leasehold, and have no simple method of dealing with communal titles.

6. Gaining contestability in obtaining approvals and ensuring compliance

The control systems specified by the Building Act (1991) are clumsy, and take no cognisance of the more modern and efficient systems of quality assurance. The Act has failed to address the fundamental reasons for constant difficulties in ensuring compliance with requirements.

7. Understanding why more efficient systems of building have not succeeded

New Zealand has a long history of using and developing far more efficient ways of building houses. We have imported or developed a variety of prefabricated and factory-built housing systems, which should be exemplars of how to improve labour productivity. But we do not know exactly why they have failed. Until we do, we will not understand what needs to change so that lower-cost systems can be developed.

8. Enlarging the housing market by mutual recognition of standards

Through developing manufactured house component systems, the NZ housing industry could benefit through participating in the much larger Australasian and Pacific Rim housing markets. To gain access to those markets will require a government commitment to the promotion and development of regional housing standards which can be relied on all round the Pacific Rim. Greater use of joint Australian/New Zealand standards in the New Zealand Building Code would be a logical starting point.

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