

Chapter 8

Innovation and the building industry

8.1 On average, construction costs constitute the single largest component of new dwelling costs, both for infill and greenfield developments. Indeed, according to the former NHSC, construction costs generally account for more than half of the costs of new dwellings across Australia.¹ In light of the overall significance of construction costs, this chapter considers whether the use of new construction methods and materials, or the adoption of more efficient regulatory settings as they apply to the construction industry, could help improve housing affordability.

8.2 In addition to considering these issues, this chapter also examines the influence of energy efficiency on housing affordability, and the need to build housing that is accessible, adaptable and culturally appropriate.

Construction costs

Building codes and regulations

8.3 Australia's on-site construction requirements are consolidated in a single code, the National Construction Code (NCC). The NCC covers the Building Code of Australia (BCA) and the Plumbing Code of Australia, and is managed by the Australian Building Codes Board (ABCB). The committee received evidence from the Chairman of the ABCB and a number of housing industry bodies regarding the efficiency and effectiveness of the NCC, and its relationship to housing affordability.

8.4 Put simply, the NCC, as the ABCB website explains, 'provides the minimum necessary requirements for safety, health, amenity and sustainability in the design and construction of new buildings (and new building work in existing buildings) throughout Australia'. The NCC is not a regulation itself, but 'model regulation' that the states and territories agree to use as the basis for their building control legislation.²

8.5 The NCC is a 'performance-based code', meaning builders and other participants in the construction industry have flexibility in how they comply with the NCC. In addition to mandatory Performance Requirements, the NCC includes Deemed-to-Satisfy Provisions (prescriptive solutions), which can be used to comply with the Performance Requirements. According to the ABCB, as a performance-based

1 Looking at the five mainland state capitals in its second *State of Supply Report* in 2010, this was true of infill developments in all markets, and greenfield developments in all markets except Sydney, where construction costs were 38 per cent of the total costs (with land costs constituting a higher proportion of greenfield development costs in Sydney). National Housing Supply Council, *2nd State of Supply Report* (2010), pp. 119, 121.

2 Australian Building Codes Board, 'About the National Construction Code', <http://www.abcb.gov.au/about-the-national-construction-code.aspx>.

code, the NCC encourages innovation. Mr Neil Savery, General Manager of the ABCB, explained the difference between performance-based standards and prescriptive standards:

A performance requirement does not tell you the solution. It says, 'This is the minimum thing we expect of you, but how you achieve it, how you solve it, is up to you.' And there are different ways you can have [to] demonstrate it—through a 'deemed to satisfy' provision; through a verification method, if they exist; through expert judgement, which can be your qualified building surveyor, your architect, your fire engineer et cetera. As opposed to, if it were a prescriptive solution, not only would we be telling you the measure you have to achieve, we would be telling you the way in which you had to achieve it and there is no alternative.³

8.6 Mr Savery told the committee that one step being taken to improve compliance with the NCC, and thereby reduce construction costs, was making the NCC a free document as of 2015.⁴

8.7 Mr Savery explained the relationship between improved access and compliance with the NCC and the upfront and ongoing costs of a house:

If we can lift productivity through increasing or improving access, awareness and understanding of the National Construction Code, we believe that we can improve compliance. If you improve compliance, you reduce cost. Cost should not be seen just in the context of the initial construction, be it a new house, the renovation of an existing house or an addition to an existing house. There are flow-on effects from not having to have disputations with builders and not having to go back and repair tardy workmanship and all of those things if we lift compliance.⁵

8.8 Conversely, Mr Savery argued, poor compliance with the NCC could add significantly to construction costs. Mr Savery explained that often local governments did not adequately understand the NCC, or understood it but nonetheless used planning scheme powers to introduce building requirements that exceeded its minimum national standards. Mr Savery provided the example of floor-to-ceiling height standards to highlight how such departures from the NCC could add to housing costs:

The National Construction Code sets the minimum standards; and in some local governments they insist that, say for a typical apartment building, the floor-to-ceiling heights be different. Apart from the fact that that exceeds the minimum standard, a lot of building practice is geared to the standards

3 Mr Neil Savery, General Manager, Australian Building Codes Board, *Proof Committee Hansard*, 10 November 2014, p. 3.

4 Mr Neil Savery, General Manager, Australian Building Codes Board, *Proof Committee Hansard*, 10 November 2014, p. 2.

5 Mr Neil Savery, General Manager, Australian Building Codes Board, *Proof Committee Hansard*, 10 November 2014, pp. 1–2.

that have been set. When someone comes along and says, 'Ignore that, we want to set something different,' they have to go and customise designs, customise factory production processes. The other I will call it an absurdity is that you might simply be separated by a road that delineates two council areas. The council on the right abides by the National Construction Code and the council on the left does not. The builder is potentially building in both council areas and has to adjust to both construction requirements. That adds to cost.⁶

8.9 Asked to quantify the cost of local governments implementing standards in excess of the NCC minimums, Mr Savery pointed to a report by the Centre for International Economics suggesting 'local government variations that exist across the country are probably costing about \$300 million per annum'.⁷

8.10 The HIA also referred to the costs added by governments applying building standards that exceeded the national minimum standards, and recommended restricting the ability of governments to do so.⁸

8.11 Whereas Mr Savery and the ABCB Chairman's submission argued that the NCC had a positive impact on housing costs, the HIA suggested that the frequency of revisions to the BCA—which constitutes Volumes One and Two of the NCC—made it 'difficult for industry participants to maintain efficient operating processes'; this, in turn, imposed 'unnecessary costs, barriers and administrative burdens on business'. Changes to the BCA, the HIA argued, should be limited to every five years:

...to allow time for the residential building industry to interpret and apply the changes and to allow time to update internal administrative processes. The stringencies in the code should also be maintained over longer periods to allow the manufacturing sector to develop new and innovative product to meet these standards in more cost effective ways.⁹

New construction methods and materials

8.12 A number of submitters drew the committee's attention to new design and construction methods and building materials with the potential to reduce building costs and thereby improve affordability outcomes.

8.13 For example, Lend Lease informed the committee of alternative building materials it was pioneering in Australian housing construction, and how this was

6 Mr Neil Savery, General Manager, Australian Building Codes Board, *Proof Committee Hansard*, 10 November 2014, p. 3.

7 Mr Neil Savery, General Manager, Australian Building Codes Board, *Proof Committee Hansard*, 10 November 2014, p. 3.

8 Housing Industry Association, *Submission 178*, pp. 12–13.

9 Housing Industry Association, *Submission 178*, pp. 12–13. Mr Savery informed the committee that member governments have agreed that as of 2016 changes will be introduced on a three-year cycle. *Proof Committee Hansard*, 10 November 2014, p. 7.

shortening construction time and cost. The use of pre-fabrication, it suggested, had two particular cost advantages: 'it can be concurrently processed without any site constraints, and more importantly, it benefits from an assembly-line method of production as opposed to a cellular in-situ method.'¹⁰ Lend Lease added:

It is important to note that innovations in design, alternative materials and pre-fabrication such as these often need the early and explicit support of Governments. The lead time for adoption of innovative technologies and methods by markets and regulatory regimes can often be compressed with such support. This becomes less necessary over time as standardisation and economies of scale are achieved.¹¹

8.14 The HIA submitted that the availability of competitively priced imported and locally produced building products assists in containing building costs, and ultimately improving housing affordability. The globalisation of building products, it suggested, was 'providing builders and consumers with access to a wider choice of products as well as new products that are being utilised to meet more complex construction requirements.' At the same time, it warned that it was imperative that competition be on a fair and level playing field, and building standards and requirements for the performance and safety of building materials and products must be adhered to by both local and imported products:

At HIA's 2012 Housing Summit—*Building Products: a compliance free zone*, industry representatives and government officials agreed that ensuring building products and components used in the Australian housing industry comply with codes and standards was an important matter for consumers, regulators and policy makers as well as for builders and designers.

The cost of failure and subsequent replacement of substandard materials—and the damage they can cause—will invariably outstrip any initial savings on the original purchase, and in the case of structural materials, sanitary and electrical components particularly, the potential cost to the health and safety of staff or customers is far greater. The recent example of non-complying electrical wiring highlights this point.¹²

8.15 WALGA underlined the need for 'innovation in the use of building materials and construction methods' that could reduce the cost of developing new homes. Yet despite this need, WALGA suggested there was:

...very little evidence to suggest that innovative construction design and methods are being sought by the development industry in response to declining affordability of homes. The majority of those companies within the housing industry responding to affordability do so through reducing dwelling and lot sizes, changing dwelling product and sourcing cheaper or more efficient materials that reduce time (and therefore costs) on site. The

10 Lend Lease, *Submission 170*, p. 1.

11 Lend Lease, *Submission 170*, p. 2.

12 Housing Industry Association, *Submission 178*, p. 12.

bulk of any change that has happened in the building process involves a modification or refining of traditional construction techniques rather than wholesale change.¹³

8.16 Similarly, Professor Shane Murray remarked that, in terms of its delivery of stock, the housing industry remains essentially 'a cottage based industry which lacks innovation and sophistication in its delivery'. He argued that, at present, there was a 'type of extreme binary' in the forms of housing delivery, 'which are either high-rise apartments or detached low-density dwellings'. In order to deliver better affordability outcomes, he called for a greater emphasis on innovation 'through the industrialisation of the construction of housing—modularised delivery, off-site construction'.¹⁴

8.17 Asked about the tension between affordability and building quality, Mr Mills from the City of Melbourne cautioned that smaller apartment sizes or more cheaply designed and built dwellings did not necessarily equate to better affordability outcomes:

If you have poor-quality apartments without much light and ventilation, there are therefore life cycle costs of running that apartment, with more energy being used for light and mechanical ventilation, not to mention the health implications of living in a bedroom without a window. It is not any cheaper.¹⁵

8.18 Asked how flexible the NCC was in relation to new building materials and techniques, Mr Savery told the committee that one of the advantages of having a performance-based code was its flexibility. He noted the challenges innovation sometimes presented for regulators setting standards, yet told the committee:

Even though all regulators, all code writers and standards writers struggle with the fact that innovation comes along and it takes you time to move your processes through, if you have a performance-based code it at least allows people to come up with a performance-based solution to your minimum performance requirement, whilst you are working your way through with alternative standards.¹⁶

Energy efficiency and housing affordability

8.19 In large part, commentary about energy efficiency and its relationship to housing affordability during the inquiry focused on the 6-star requirements introduced

13 Western Australian Local Government Association, *Submission 37*, p. 12.

14 Professor Shane Murray, Dean, MADA, Monash University Faculty of Art Design & Architecture, *Proof Committee Hansard*, 9 September 2014, p. 14.

15 Mr Adam Mills, Senior Strategic Planning, City of Melbourne, *Proof Committee Hansard*, 9 September 2014, p. 32.

16 Mr Neil Savery, General Manager, Australian Building Codes Board, *Proof Committee Hansard*, 10 November 2014, p. 7. Also see The Hon John Thwaites, Chairman of the Australian Building Codes Board, *Submission 19*, pp. 8–9.

in the BCA in 2010. Under the revised requirements, new standard residential buildings must meet a 6-star energy efficiency rating (with a minimum of 5 and an average of 6 stars for multi-residential), instead of the previous 5-star rating. In his submission, the Chairman of the ABCB conceded that the higher standard might add 'a small amount to the initial construction cost of dwellings', but maintained that 'over the life of the building significant savings are returned to householders by increasing efficiency standards through lower energy costs resulting in a net benefit to the householder'. This was particularly true, the Chairman wrote, in light of increasing energy prices in recent years.¹⁷

8.20 AHURI pointed to research showing that after a few years of occupancy, the energy efficiency savings resulting from the higher star rating requirement outweighed the higher build costs. 'In other words', AHURI wrote, '[6-star building] energy efficiency pays when compared with "business as usual" 5-star designs'.¹⁸ In its submission, WALGA also noted that improving the sustainability and energy efficiency of a home was an important factor in improving that home's ongoing affordability.¹⁹

8.21 Mr Ian Yates, Chief Executive of the Council on the Ageing (COTA), told the committee that for renters, particularly those on a tight income stream such as aged pensioners, a lack of energy efficiency could add significantly to affordability pressures.²⁰ Aged and Community Services Australia (ACSA) also pointed to the significance of energy efficiency in determining housing affordability for older people, including people wanting to age in their homes:

An enhanced focus on environmental sustainability will have a positive impact on housing running costs and affordability levels. The development of energy efficient homes for older people in Australia in particular will provide positive outcomes for all, the ongoing running costs of homes will be reduced and older people with fixed incomes will be able to remain in their homes at an affordable cost.²¹

8.22 ACSA recommended that the various energy efficiency programs currently administered at the state level (running in South Australia, New South Wales and Victoria at the time of ACSA's submission), be folded into a National Energy Saving Initiative. This initiative, ACSA suggested, 'could directly accommodate these [state] schemes in a nationally consistent framework and deliver economies of scale'.²²

17 The Hon John Thwaites, Chairman of the Australian Building Codes Board, *Submission 19*, pp. 9–10.

18 Australian Housing and Urban Research Institute, *Submission 93*, p. 28.

19 Western Australian Local Government Association, *Submission 37*, p. 12.

20 Mr Ian Yates, Chief Executive, Council on the Ageing, *Proof Committee Hansard*, 28 July 2014, p. 22

21 Aged and Community Services Australia, *Submission 111*, p. 6.

22 Aged and Community Services Australia, *Submission 111*, p. 6.

8.23 The Equality Rights Alliance also submitted that 'energy efficiency and household running costs need to be a central consideration in the provision of affordable housing'. Noting the barriers that prevent people on low incomes from investing in improved energy efficiency, and the inability of tenants to improve the energy efficiency of their homes, the Equality Rights Alliance endorsed the following recommendations made in a 2013 ACOSS report:

- Energy efficiency standards for rental properties, and landlord tax incentives for energy efficiency measures to improve energy efficiency of rental properties.
- Additional funding for targeted retrofits of the worst performing social housing where health, climate and hardship risks are greatest.²³

8.24 Mr Alan Pears AM noted that the HIA-CBA housing affordability indicator (a variation of the '30 per cent rule' applied to mortgage repayments), does not allow for reduced housing costs from improved energy efficiency. On this basis, Mr Pears suggested the indicator is simplistic and 'seriously distorts housing policy'. Mr Pears told the committee that the indicator was used by some in the building industry to argue against higher energy efficiency standards on grounds of affordability. The problem, Mr Pears argued, is that the indicator:

...ignores all other living costs. So, where the sustainability features of a home reduce ongoing living costs and enhance capacity to repay the mortgage and enhance resale value, their contribution to capacity to make repayments is ignored.²⁴

8.25 The HIA argued that energy efficiency regulations for new residential buildings, and in particular the 6-star energy efficiency standards under the BCA, were excessive:

Energy efficiency standards were first introduced in the BCA from 2003, with complementary requirements for some fixed services introduced in 2010. The standards have been increased twice in six years. Based on federal government research regarding the 2010 changes, the higher level stringency delivers a benefit/cost ratio of less than 1:1. Although analysis clearly demonstrated that the regulation imposed a net cost on the community, this additional cost was imposed on all new homes.²⁵

Housing that is accessible, adaptable and appropriate

8.26 A central theme in much of the evidence received by the committee is that meaningful housing affordability requires that housing is also accessible, adaptable and appropriate to occupant needs. Dr Wendy Stone told the committee that in addition to structural reforms to enable people to afford housing, greater attention

23 Equality Rights Alliance, *Submission 95*, p. 15.

24 Mr Alan Pears AM, *Submission 67*, pp. 1–2.

25 Housing Industry Association, *Submission 178*, pp. 12–13.

needed to be given to ensuring 'the housing that people have must be adequate in size for families, and also in nature for disabled and elderly people.'²⁶ Similarly, Dr Maree Petersen from the University of Queensland's Institute for Social Science Research stressed that 'affordable housing for older people has to be accessible as well, because that brings the security'.²⁷

8.27 COTA noted that it was often the case that 'the only affordable housing is not appropriate, either because of its design, or its geographic position and lack of proximity to necessary services'. With regard to older people, COTA wrote that in order for people to be able to age in place successfully, the house they live in needs to be appropriate to their changing needs. For this reason, COTA had been involved in developing the Liveable Housing Design Guidelines.²⁸ The nationally-endorsed Guidelines were developed by Liveable Housing Australia, a not-for-profit partnership between community and consumer groups, government and the residential building industry. The Guidelines are intended to ensure homes are safe and accessible for all occupants and better anticipate and respond to the changing needs and abilities of the people who live in the home.²⁹

8.28 Mr Yates told the committee that COTA was keen to see the Guidelines more widely adopted.³⁰ In its submission, COTA noted that while take-up of the standards had been slower than anticipated, at this stage COTA 'does not support making the standards mandatory but believes there need to be more initiatives developed to encourage their adoption by both consumers and the building industry'.³¹

8.29 The Residential Development Council (RDC), part of the Property Council of Australia, also recommended that the government work with industry members to encourage adoption of the Guidelines, and to support industry with training and education to this end. The RDC also suggested the government require that all new homes built using Commonwealth incentives were consistent with the Guidelines.³²

8.30 National Seniors Australia told the committee that its research indicated that 36 per cent of over-50s live in housing that does not have design features suitable for

26 Dr Wendy Stone, private capacity, *Proof Committee Hansard*, 9 September 2014, p. 18.

27 Dr Maree Petersen, Postdoctoral Research Fellow, Institute for Social Science Research, University of Queensland, *Proof Committee Hansard*, 10 September 2014, p. 14.

28 COTA Australia, *Submission 191*, p. 6.

29 Liveable Housing Australia, 'About the Guidelines', <http://www.livablehousingaustralia.org.au/86/about-the-guidelines.aspx>.

30 Mr Ian Yates, Chief Executive, Council on the Ageing, *Proof Committee Hansard*, 28 July 2014, p. 22.

31 COTA Australia, *Submission 191*, p. 6.

32 Residential Development Council, Property Council of Australia, *Submission 212*, p. 14.

ageing.³³ National Seniors Australia told the committee that the Liveable Housing Guidelines were potentially effective in improving housing accessibility, but:

...legislative impediments exist at local council and state levels. It would be great to see them in the building codes or, to some extent, if builders or architects could be educated on how they could nicely be put into a home at a good cost and the benefits of doing that for the landlords of those homes through private rentals. They would be accessible to so many different people, and obviously a long-term tenancy as well could help that.³⁴

8.31 RI Australia and the Australian Network for Universal Housing Design expressed concern regarding the 'questionable' commitment of the housing industry to the Guidelines. They recommended that if the targets set by Liveable Housing Australia were not met, then the minimum access requirements should be incorporated into the NCC/BCA for all new and extensively modified housing.³⁵ The Disability Advocacy Network Australia, Ethnic Disability Alliance and Australian Federation of Disability Organisations also questioned how effective voluntary measures were, and suggested that until 'stronger measures are taken, many people with disabilities will find their needs unmet by the property market and housing stocks'. These organisations also recommended incorporation of the Guidelines into the BCA.³⁶

8.32 ACSA called a National Older Persons Housing Strategy that would 'focus on enabling older people to make housing adjustments and choices that enhance ageing in place, wellbeing and lifestyle'. In addition to increasing the supply of affordable rental housing and addressing the changing support needs of older tenants, ACSA submitted that a National Older Persons Housing Strategy would promote the development of adaptable housing, including a change to building standards, and provide for the expansion of home maintenance and modification programs.³⁷

Committee view

8.33 The committee welcomes steps taken to improve access, awareness and understanding of the NCC, and notes advice from the ABCB that these steps will help improve compliance and reduce construction costs.

8.34 The committee also notes evidence suggesting new, innovative building materials and construction methods have considerable potential to bring construction costs down and improve housing affordability. In particular, the committee notes the

33 Ms Marie Skinner, Senior Policy Adviser, National Seniors Australia, *Proof Committee Hansard*, 10 September 2014, p. 9.

34 Mrs Kylie Ullman, Policy Adviser, National Seniors Australia, *Proof Committee Hansard*, 10 September 2014, p. 14.

35 RI Australia and Australian Network for Universal Housing Design, *Submission 221*, p. 14.

36 Disability Advocacy Network Australia, National Ethnic Disability Alliance and Australian Federation of Disability Organisations, *Submission 202*, pp. 9–10, 18.

37 Aged and Community Services Australia, *Submission 111*, p. 4.

potential of modular, pre-fabricated housing, which can be delivered in less time and at lower cost than conventional housing, and may also have sustainability benefits. Modular and prefabricated housing is a core part of an emerging new sector in the Australian building industry, and could potentially stimulate the development of a high-skilled and cross-sectoral 'home grown' supply chain from forest to factory.

8.35 The committee encourages the Australian Government to engage with the building industry to ensure regulatory frameworks are conducive to the use of such materials and construction methods. The committee further believes that the issue of pre-fabricated housing deserves greater attention, and to this end recommends a separate parliamentary inquiry into the role of the prefabricated housing industry.

8.36 The committee acknowledges the importance of energy efficiency as an indirect housing cost. It notes that some progress has been made in recent years in ensuring new housing stock is more energy efficient.

8.37 Given the importance of ensuring housing is accessible, adaptable and appropriate to occupant needs, the committee is concerned by reports regarding the slow take-up of the Liveable Housing Guidelines. This is a matter that deserves close monitoring, and the committee would encourage the Australian Government to liaise with industry on how to ensure the wider adoption of the Guidelines.

Recommendation 12

8.38 The committee recommends a separate parliamentary inquiry into the Australian prefabricated housing industry, and its potential role in improving housing affordability and stimulating new activity in the manufacturing sector. This inquiry should consider, among other things:

- (a) the development of a comprehensive approach to creating a sustainable prefabricated building and insulated panel production industry;**
- (b) the possibility of Commonwealth prefabricated housing targets in a national affordable housing plan (see recommendation 4);**
- (c) the possibility of a Commonwealth prefabricated modular housing industry package to provide support for research and development, skills and training, assistance to establish new production and manufacturing facilities, and world class demonstration projects.**