



Influencing urban development through government demonstration projects



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ARTICLE INFO

Article history:

Received 7 July 2015

Received in revised form 18 February 2016

Accepted 20 February 2016

Available online 27 February 2016

Keywords:

Urban development

Demonstration developments

High-density housing

Building industry

Environmental sustainability

Urban planning

ABSTRACT

Government-backed high-density infill residential developments are used as a planning policy tool for engaging the building industry and promoting sustainable urban development. There is limited research into the influence such buildings have on the building industry and urban development outcomes. This paper presents analysis from interviews with 14 leading building-industry stakeholders about a demonstration mixed-use building developed by the Victorian state government in Melbourne, Australia. The development included innovative elements addressing environmental sustainability, governance, mixed tenure, mixed use and modular construction. The analysis found that stakeholders were acutely aware of the development, with some innovative elements – such as the modular construction – being monitored by stakeholders informally; other elements – such as environmental sustainability – were of nominal interest. Translation of informal learnings to stakeholder's own companies was lagging. While it is evident that the development has played a role in influencing the building industry to some extent, more effort is required to communicate practical outcomes and learnings in a formal way if sustainable urban development is to be facilitated through the demonstration development planning approach.

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1. Introduction

More than half of the world's population now live in urban areas, a percentage that is predicted to increase rapidly in the coming decades (UN, 2014). In Australia, major cities are home to almost 80% of the population (DIT, 2013). By 2041 an additional 3.1 million homes will be required in these cities as the population increases and the average number of occupants per dwelling decreases (McDonald & Temple, 2013). Where and how to locate these additional homes is of increasing concern for various public-, private- and community-sector interests, not only in Australia but globally, particularly in the context of climate change. In order to drive sustainable urban development, governments are increasingly taking a proactive approach by directly funding innovative demonstration developments in an effort to guide the building industry and consumers, and to test planning approaches. There is limited evaluation of these demonstration buildings on the influence they have on the wider building industry and urban development, so transferring learnings to policy and planning outcomes or the building industry has been difficult (Femenias, 2004; NHSC, 2013).

This paper begins to address this research gap by providing perspectives from building-industry stakeholders about a Victorian state

government funded and developed demonstration higher-density housing project known as the Nicholson in Melbourne, Australia. While there is some research evaluating innovative, higher-density housing demonstration developments (Femenias, 2004), this is typically focused on one or two innovations (e.g. environmental sustainability) and limited to the users of the building and/or design, economic and technical elements, rather than the influence of these elements and outcomes have on wider building-industry stakeholders from an urban policy and planning perspective (Heiskanen, Nissilä, & Lovio, 2015; Hu, Geertman, & Hooimeijer, 2014a; Ridley et al., 2013). This paper therefore addresses the question:

How does a government-developed demonstration project perform as a model for future urban development and influence the wider building industry?

The paper firstly presents an overview of the literature around sustainable urban developments and innovative demonstration buildings, followed by a description of a case study and methods used. The analysis and discussion are then provided around the five key elements from the case study.

2. Shifting to sustainable affordable higher-density housing

Over recent years there has been a shift towards higher-density housing in major cities, both in Australia and internationally (NHSC, 2013). This is in recognition from policy makers and planners that cities

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must restrict low-density urban expansion, for reasons including the loss of agricultural land and the high cost of providing infrastructure in these areas. Concern is also emerging that while greenfield development sites can contribute to housing affordability, they are limited in their ability to provide housing and associated amenities for an affordable, environmentally sustainable and socially equitable future (Atkinson, Wulff, Reynolds, & Spinney, 2011; De Sousa, 2002; Giannakodakis, 2013). Higher-density housing infill within existing city boundaries, and particularly areas close to key hubs of activity and public transport, is now seen as a more effective housing solution for many urban areas (City of Melbourne, 2010). While there are identified benefits from higher-density housing, without considered development design that takes into account constraints of the existing built environment, environmental sustainability, the integration into the local community and tenure outcomes, there can also be significant variable-term frame problems, both for occupants and the local community (CABE, 2001; Farris, 2001; Kearns, Whitley, Mason, & Bond, 2011; Macmillan, 2006). In Australia numerous plans, policies and initiatives at federal, state and local government level have been developed to regulate and guide built-environment stakeholders to address these challenges (e.g. City of Melbourne, 2013).

Increasing densification is occurring against a backdrop of improving environmental performance across the built environment (Garnaut, 2008). Over the past two decades countries such as the UK, USA and Australia have introduced a range of measures, such a minimum building performance requirements, financial incentives/rebates and requirements for renewable energy or 'smart' technologies, aimed at improving the environmental sustainability of the built environment (Moore, 2012). While these approaches have been recognised as having some success in achieving their desired outcomes, current built-environment standards in Australia, and many other countries, still fall short of requirements to limit climate change impacts.

The role of governments in relation to the development of the built environment is typically the setting of minimum performance regulations and the development of strategic land-use planning regulations. In Australia, minimum performance requirements of residential dwellings are set by the federal government (Moore, 2012), however state and local governments have the ability to require improved performance or other design/occupation outcomes through planning requirements, which can be tailored for different regions. For example the approval of a residential development site at one location might be contingent on the inclusion of a certain amount of retail space, while this may not be a requirement for proposed developments in another area. There is evidence that identifies that the building industry is unlikely to voluntarily achieve improved environmental performance or design/amenity outcomes, as they believe that consumers will not pay for what is perceived as a limited benefit (Crabtree & Hes, 2009). There is also evidence that the building industry is unwilling to take risks to trial more innovative designs and solutions (Femenias, 2004). In this context, demonstration projects allow for the advancement of innovations in the built environment. This was reflected upon by a former Victorian state planning minister, who states in the 2014 metropolitan planning strategy *Plan Melbourne* that the government's land development authority (Places Victoria) 'will continue to play a vital role in developing key government land holdings, as well as other sites, where appropriate' (DTPLI, 2014, p. III). More broadly, Places Victoria, and the Victorian government, are confronted with the prospect of facilitating the accommodation of an additional 1.6 million dwellings and 3.4 million people by 2051 within increasing spatial, affordability and sustainability constraints (DTPLI, 2014).

Around the world, there are an increasing number of innovative higher-density housing developments that have attempted to address affordability, environmental sustainability, housing quality and social improvements as a way of promoting and advancing holistic sustainable urban development outcomes. While not always getting the outcomes right, these exemplar buildings are moving the planning, policy and research discussion forward. See Table 1 for leading exemplar residential

buildings. State or local governments played a critical role in some of these developments. For example the local authority sold the land on which BedZED was built for below market value in order to make the project viable (Peabody, 2009). A similar situation occurred for zHome in Washington, where the City of Issaquah brokered a deal to transfer the land to the developer at no cost, dependent on certain environmental sustainability and design requirements (Living Building Challenge, 2015). In addition, K2 apartments in Melbourne were developed by the Department of Human Services, a Victorian state government department (DesignInc, 2015). The other projects listed in Table 1 (with the exception of Printworks) were private-sector-led developments.

Research into such innovative developments is typically focused on evaluating direct lessons learnt, occupant satisfaction levels and technical performance or elements (Berry, Whaley, Davidson, & Saman, 2014; Heiskanen et al., 2015; Ridley et al., 2013; Zero Carbon Hub, 2014). There is limited research, both in Australia and internationally, that looks into the influence these demonstration developments have on the wider building industry as an urban planning tool (Femenias, 2004). The following section outlines a case study and evaluation that begins to address this research gap.

3. Case study — the Nicholson development

The Nicholson development is a graduated three to nine-storey residential apartment and retail complex 7 km from Melbourne's CBD. The developer was Places Victoria (the Victorian government property development agency). The AUD\$56 million project was envisaged as a commercially-replicable demonstration project of an innovative mixed tenure, mixed use apartment development offering high density affordable living in a well-connected location (Places Victoria, 2015). The site was a former tram depot owned by the Victorian state government. Initial (2011) purchase prices for the apartments ranged from AUD\$230,000 to AUD\$510,000 with an average of AUD\$367,000. This was substantially below the Real Estate Institute of Victoria's estimated 2011 apartment medium value of AUD\$474,500 in Melbourne. The Nicholson won the 2011 Urban Development Institute of Australia Judges' Award and was a finalist in the Property Council of Australia's Innovation and Excellence awards (Places Victoria, 2015). Places Victoria hoped that the development would influence the wider building industry to engage with some or all of the innovative elements in the building.

The Nicholson contains over 1900 m² of ground-floor commercial/retail space and 199 one- and two-bedroom apartments comprising:

- i. 110 privately owned apartments with 60% of purchasers owner-occupiers, of which 82% were first home buyers.
- ii. 58 apartments purchased by HomeGround Services (a registered affordable-housing provider) under the Australian federal government's Nation Building Social Housing Initiative, to be rented by low-income tenants at a maximum of 30% of tenants' income or less than 74.9% of market rent.
- iii. 31 apartments provided as affordable rental dwellings under the National Rental Affordability Scheme (NRAS). Low to moderate income earners occupy these dwellings at a 20% discount to market rent.

In addition to being a model of affordability with the inclusion of mixed-use and mixed-tenure, the Nicholson is distinguished by innovative environmental sustainability, governance and modular construction characteristics (Places Victoria, 2015). While individually, none of these elements are particularly novel, combined they represented significant innovation in the Melbourne housing market at that time.

- i. *Environmental sustainability*: The Nicholson was designed to a 6-star Nationwide House Energy Rating Scheme thermal energy rating (heating and cooling load of 114 MJ/m²·annum), which at the time was above the 5-star minimum requirement, and features roof-mounted solar panels to deliver solar-boosted hot water for

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