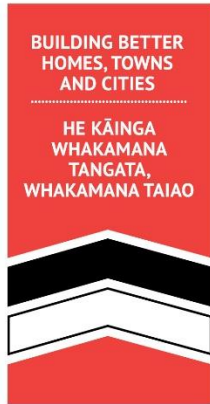


National  
**SCIENCE**  
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## **Build Costs, Prices, and Affordable House Retention: A case study of the Starter Home**

Dr Kay Saville-Smith (Centre for Research, Evaluation and Social  
Assessment (CRESA))

Report for Affordable Housing for Generations

June 2023

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Every effort has been made to ensure the soundness and accuracy of the opinions and information expressed in this report. While we consider statements in the report are correct, no liability is accepted for any incorrect statement or information.

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# Executive Summary

This report follows the affordability trajectory of the Starter Home built in 2010 as a demonstration model. The Starter Home was the outcome of a design competition by the Department of Building and Housing in 2008. The supreme winner was S3 Architect, an Auckland-based practice, which designed and delivered a courtyard starter home. The dwelling was designed for flexible use and configuration with three bedrooms and two bathrooms and two vehicle spaces on a 474m<sup>2</sup> site.

The Starter Home was designed to be energy efficient. When the first Starter Home was built in 2011 by Housing New Zealand, the construction was around \$230,000 (GST Excl). Over 160 Starter Homes were built subsequently with build costs lying between \$1,600/m<sup>2</sup> and \$1,700/m<sup>2</sup>. This report shows how the first Starter Home with its very modest and affordable cost has been overwhelmed by price shifts since. Those mean that if the first Starter Home was sold in 2023 it would be out of reach even for modest income households attempting to achieve housing security through owner occupation.

The Starter Home was sold in 2011 at \$340,000. The first valuation after the 2011 sale saw an increase of almost 28 percent. The valuation in 2017 was a nominal increase of about 54 percent. The 2021 valuation increased the value by 37 percent over that in 2017. The estimated market value retreated a little, almost 6 percent, between 2017 and 1 June 2023 but the first Starter Home's valuation peaked in 2021 at \$920,000.

While median household incomes increased, the valuations of the Starter Home increased more quickly. If the Starter Home was placed in the market, it would no longer be affordable. In 2010, 42 percent of renter households in the area could have affordably purchased the Starter Home. Despite the increased sale price to \$340,000 in 2011, still 39 percent of local renters could have affordably purchased the Starter Home. By 2017, only 24 percent of renting household in the area would be able to affordably purchase the Starter Home. In 2023, it is estimated that only 23 percent of local renting households would be able to affordably purchase the Starter Home.

In 2011 it would have required 42 percent of the local median household income. By 1 June 2023, purchasing the Starter Home would have committed 77 percent of median household income on mortgage repayment. This is despite median household incomes showing a historical growth rate of over 4 percent annually on a compounding basis. As Figure 4.2 shows, among renter households in the area, gross household incomes ranged from \$20,000 or less annually to more than \$150,000 in 2018.

The Starter Home's trajectory illustrates that establishing and sustaining a stock of affordable housing over time is by no means straightforward. Minimising construction cost is crucial but not sufficient. The Starter Home's affordability trajectory demonstrates how inappropriate it is to explain the crisis of housing affordability as an artefact of building costs.

# 1 Introduction

This study has been undertaken within the Affordable Housing for Generations research programme, which is part of the Building Better Homes Towns and Cities National Science Challenge (BBHTC). That programme is dedicated to alleviating the under-supply of affordable housing and the housing crises associated with it through targeted research and research-based solutions. The Affordable Housing for Generations research programme recognises that appropriately price-pointed, functional housing is critical to household and community wellbeing. The programme is structured around five components (Infobox 1.1).

This study delivers to Components A, B and E respectively by exploring the build cost and subsequent price and value of a demonstration simple house built in 2011. The analysis addresses the issue of sustaining a stock of housing that is affordable to modest and low-income households. It builds on previous research and commentary on housing affordability and affordable housing by focusing on the dynamics around build costs and house prices and how dwellings built at low cost in a housing market segment may lose their affordability in the face of house price inflation – even where there has been considerable household income.

<b>Infobox 1.1 Research Components</b>
Component A: Markets, Housing Distribution and Wellbeing
Component B: Price Points for Affordable Housing and Housing Affordability for Key Workers
Component C: Meaning of Home & Dimensions of Affordability
Component D: Affordable Housing and the Impact of Dwellings
Component E: Realising Housing's Public Good - Funding & Developing Fit for People Housing Futures

## Report structure

This report is structured as follows:

- Section 2 provides a brief description of the simple, starter home designed by S3 Architects for the competition organised by the New Zealand Department of Building and Housing.
- Section 3 sets out the market trajectory of the starter home subsequent to its build completed in 2011.
- Section 4 comments on the affordability of the starter home for low- and modest-income households between 2011 and 2021.
- Section 5 comments on the challenge of producing and retaining affordable housing.

# 2 House Prices and the Starter Home

Concerns around house prices and restricted entry into first time owner-occupation were sporadically referenced in public commentary during the post-war 20<sup>th</sup> century, particularly during the 1980s and 1990s. But it has become a persistent theme in the 21<sup>st</sup> century. Explanations for the affordability crisis for those seeking first time owner occupation have been many. Low wage growth has been one. Low interest rates coupled with the entry of

property investors into the residential property market has been another. Inflated land prices and housing under-supply have also been cited as key drivers of house prices.

Irrespective of the merits of those explanations, and they have all been subject to continuing public, policy and research debate,<sup>1</sup> one of the most persistent narratives has been the idea that the costs of building, in particular due to materials, labour costs and poor construction industry productivity, has been a primary driver of house prices in New Zealand.

The idea that material and build costs are particularly high in New Zealand, especially compared to similar products in Australia, has been countered by three main arguments:

- That build costs are not equivalent to house prices although prevailing house prices may condition both land prices and invite inflated material and labour costs.<sup>2</sup>
- That the 'product' the residential developers and the construction industry have delivered into market has been increasingly directed into upper value builds of greater size, more complex and elaborate designs, and turn-keys involving activities such as landscaping that were not previously associated with building.<sup>3</sup>
- That Government investment in housing, lending and land development acted for many years to stimulate builds in the lower quartile of house values and served to limit construction cost increases through rules around commissioning.<sup>4</sup>

Those conditions prompted the then Department of Building and Housing in 2008 to undertake a design competition and subsequent build to demonstrate that low-cost housing could be built using materials, products and labour available in the New Zealand market at less than \$1,500/m<sup>2</sup> or showing an innovative design which could be delivered as a starter home.<sup>5</sup>

The supreme winner of that competition was S3 Architect, an Auckland-based practice, which designed and delivered a courtyard starter home which was eventually completed in its initial rendition in 2011. The dwelling was designed for flexible use and configuration with three bedrooms and two bathrooms and with two vehicle spaces on a 474m<sup>2</sup> site (Figure 2.1 and Figure 2.2).

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<sup>1</sup> Mulheirn, (2019); See Rehm, Cheung, and Saville-Smith, (2023), for a review of the research related to special housing areas and hedonic analysis of their impacts on house builds and house prices in the Rolleston special housing areas established in 2016; Barker (2004); Barker, (2018). NZ Productivity Commission, (2012); NZ Productivity Commission, (2015).

<sup>2</sup> Murphy, (2019); Tookey, (2016).

<sup>3</sup> Saville-Smith (ed) (2019); Deloitte Access Economics, (2018).

<sup>4</sup> Saville-Smith (ed) (2019); Saville-Smith, (2018); New Zealand Commission of Inquiry, (1971).

<sup>5</sup> Department of Building and Housing, (2008); BRANZ, (2009); Joiner, (2009).



Figure 2.1 Starter Home Competition  
Supreme Winner S3 Architects 2009 –  
Oriented on Site (See Figure 2.2)

Figure 2.2 Starter Home Competition  
Supreme Winner Built in 2011 in  
December 2022



S3 Architects delivered a starter home design that achieved an excellent rating using the Green Home Scheme, a predecessor of the current HomeStar, with energy consumption on the standard design modelled at 26kWh/m<sup>2</sup> annually in Auckland, 47.7kWh/m<sup>2</sup> annually in Wellington and about 82 kWh/m<sup>2</sup> annually in Christchurch. That is, around 3,120kWh in Auckland, 5,724kWh in Wellington and 9,880kWh in Christchurch annually.<sup>6</sup>

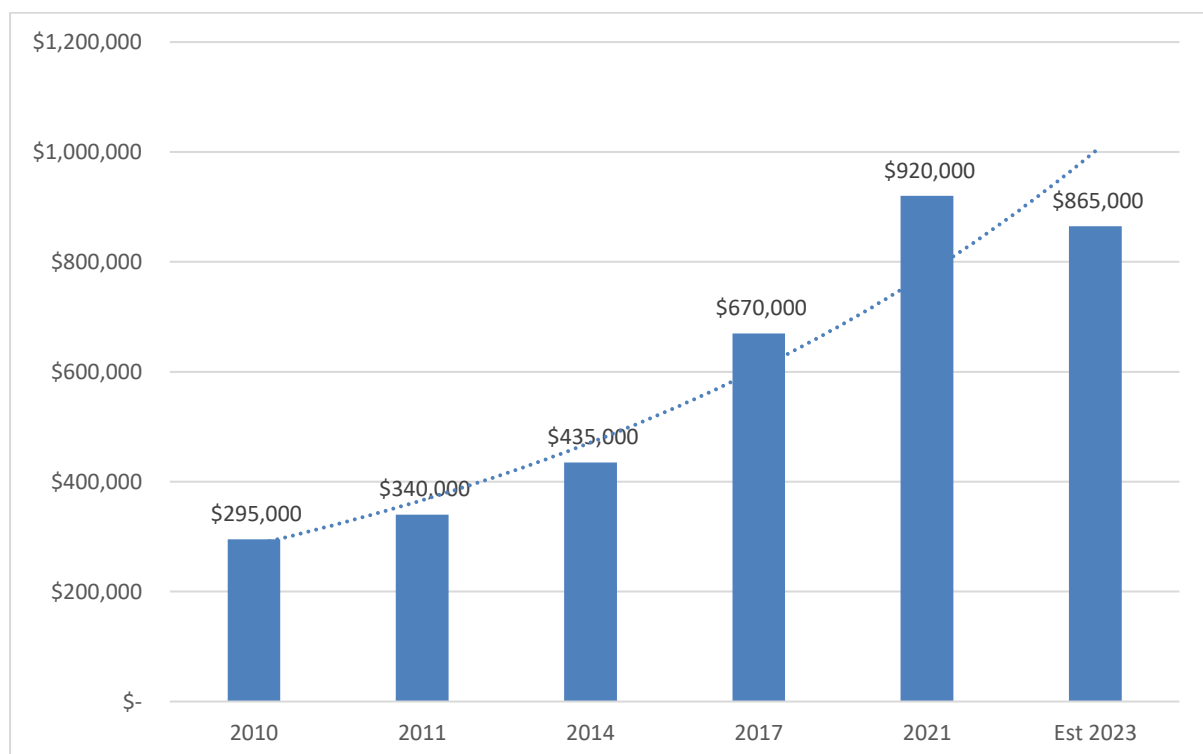
Eventually the winning Starter Home design was built in 2011 by Housing New Zealand. The construction was around \$230,000 (GST Excl). Over 160 homes were built subsequently with build costs lying between \$1,600/m<sup>2</sup> and \$1,700/m<sup>2</sup>.<sup>7</sup>

### 3 The Price Trajectory of the Starter Home

Housing New Zealand built the Starter Home as a demonstration model after partitioning a site in Preston Road, Otara. There were a number of transactions around that process in 2010. The records suggest that the land was eventually valued at \$140,000. With the build, the valuation increased to \$330,000 for both dwelling and land.

Figure 3.1 sets out the subsequent sale prices in 2010 at \$295,000, again in 2011 at \$340,000, valuations and estimated market value thereafter.

**Figure 3.1 The Starter Home Sale Prices (2010 and 2011), Valuations (2014-2021) and Estimated Market Price (2023)**



<sup>6</sup> Auckland Design Manual, (Accessed June 2023).

<sup>7</sup> Auckland Design Manual, (Accessed June 2023).



The initial price to market of the Starter Home and its land was less than the combined land valuation and build cost. Notably, that pattern was typical of low-cost housing destined for owner occupation in the post-war period when, compared to the house price movement experienced from about 2003, house price increases were relatively muted. In essence, the price/build cost relationship for this Starter home reflected a pattern which prevailed when dwellings were destined for long term use and security and low housing costs in retirement rather than an investment commodity.

The impact of changing house prices is apparent in post-sale valuations. The first valuation after the 2011 sale saw an increase of almost 28 percent. The valuation in 2017 represented a nominal increase of about 54 percent. The 2021 valuation increased the value by 37 percent over 2017. The estimated market value retreated on a little, almost 6 percent, between 2017 and 1 June 2023.<sup>8</sup>

## 4 Changing Affordability of the Starter Home

There are three dimensions of the affordability any owner-occupied dwelling: the costs of maintaining and operating the dwelling; the costs of rates and insurances; and, the costs of acquisition and servicing any related borrowing. In relation to operating costs, it has already been noted that the Starter Home designed by S3 Architect minimised in-home energy consumption. The maintenance costs of the Starter Home cannot be established from existing and public data. However, it can be noted that the primary materials for cladding and roofing – brick and coloursteel – have been assessed by BRANZ as having extended expected lives<sup>9</sup> and showing low cost over their life cycles.<sup>10</sup>

The third dimension of affordability, that is the affordability of acquiring the Starter Home, can be approached in two ways. The first is to consider the price at which the Starter Home was purchased. The second is the affordability of the Starter Home in relation to its successive valuations. The first approach indicates the Starter Home was affordable for a significant proportion of households living in the area. The second approach shows the affordability of the Starter Home declined rapidly despite increasing median household incomes.

The households which acquired the Starter Home in 2010 and 2011 respectively bought a home at a price that a substantial proportion of local renters in the Otara-Papatoetoe area could have afforded. In 2010, 42 percent of renter households in the area could have affordably purchased the Starter Home. Despite the increased sale price to \$340,000 in 2011, 39 percent of local renters could have affordably purchased the Starter Home at the time (Figure 4.1). In those years, the proportion of the prevailing median household incomes in Otara-Papatoetoe which would be needed to service a 25-year mortgage after 10 percent deposit would have been around 39 percent of the median household income in 2010 and

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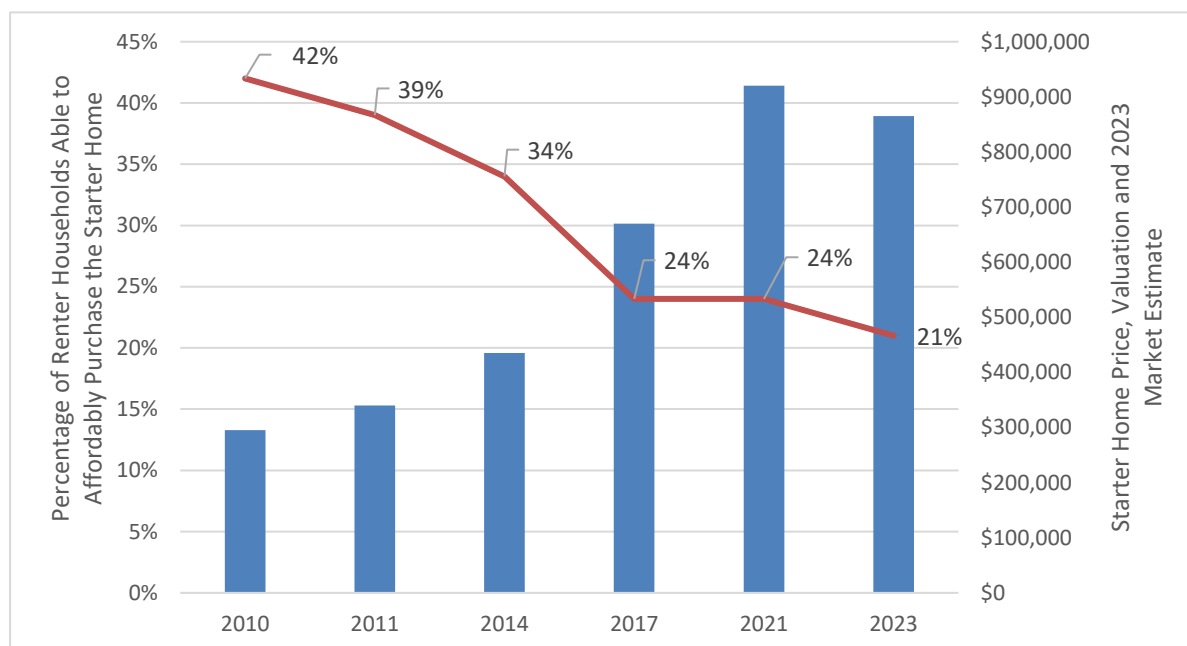
<sup>8</sup> Valuation records and 2023 estimate from OneRoof 1 June 2023.

<sup>9</sup> BRANZ, (2017); Thurston, (2011).

<sup>10</sup> Brunson, (2017); Fung, J. (2010); Page, (1997).

42 percent of the median household income in 2011 (Table 4.1) Outgoings in both years would be within the bounds of prudential lending by retail banks although both outgoings are in excess of the commonly used benchmark of housing stress of 30 percent or below of household income.

**Figure 4.1 Proportion of Renter Households in Otara-Papatoetoe Local Board Area Affordably Able to Purchase the Starter Home 2010-2023 (NZ Census, Reserve Bank, Prepared by Ian Mitchell, Livingston Associates Ltd)**



**Table 4.1 Starter Home Proportion of Median Household Income (MHI) Required in Mortgage Costs Otara-Papatoetoe 2010 to 2023 (NZ Census, Reserve Bank, Prepared by Ian Mitchell, Livingston Associates Ltd)<sup>11</sup>**

Year	Starter Home Price	Required mortgage costs as a % of MHI
2010	\$295,000	39%
2011	\$340,000	42%
2014	\$435,000	50%
2017	\$670,000	63%
2021	\$920,000	62%
2023	\$865,000	77%

It is notable that the second household purchasing the Starter Home appears to have retained it for more than a decade. In doing so, they have been able to benefit from the Starter Home’s low-cost build. If the Starter Home had been on the market for sale

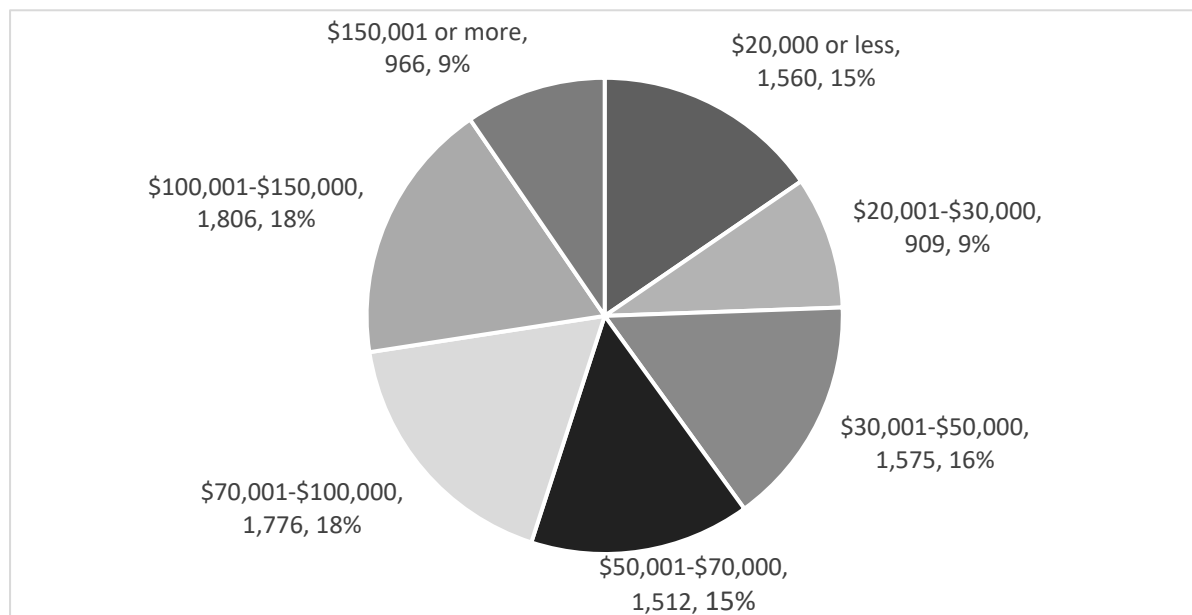
<sup>11</sup> The mortgage terms used include a 25-year term and a 10% deposit.

subsequently, its affordability would be very different notwithstanding its low build cost and rising median household incomes in the area.

Figure 4.1 shows the proportion of renters in the area who could affordably acquire the Starter Home, on the basis of valuations and the 2023 market estimate, declines from 39 percent in 2011 to 34 percent in 2014. There was a pronounced drop in the affordability of purchasing the Starter Home in 2017 with only 24 percent of renting households in the area being able to affordably purchase it. In 2023, it is estimated that only 23 percent of local renting households would be able to affordably purchase the Starter Home.

Moreover, the proportion of income that would be expended on the Starter Home if purchased increased. In 2011 it would have required 42 percent of the local median household income. By 1 June 2023, purchasing the Starter Home would have committed 77 percent of median household income on mortgage repayment. This is despite median household incomes showing a historical growth rate of over 4 percent annually on a compounding basis. As Figure 4.2 shows, among renter households in the area, gross household incomes ranged from \$20,000 or less annually to more than \$150,000 in 2018.

**Figure 4.2 Number and Proportion of Renter Households by Gross Household Income 2018 in Otara-Papatoetoe Local Board Area, Auckland (New Zealand Census Prepared by Ian Mitchell, Livingston Associates Ltd)**



## 5 Affordable Stock and Lessons from the Starter Home

The Starter Home’s trajectory illustrates that establishing and sustaining a stock of affordable housing over time is by no means straightforward. Minimising construction cost is crucial but not sufficient. The Starter Home’s affordability trajectory demonstrates how

inappropriate it is to explain the crisis of housing affordability as an artefact of building costs.

As Table 5.1 shows, the Starter Home build was around or under real construction costs for low-cost housing in 2010 and 2017.<sup>12</sup> However, house price inflation, measured by successive valuations and a market estimate for 1 June 2023, shows that low construction cost even in low-cost building terms, is not retained when a dwelling comes to market.

**Table 5.1 Nominal and real low-cost housing construction cost prices from 1950 to 2017**

Date	Low cost construction costs				
	Nominal costs		Modal House	Real inflation adjusted costs (2017\$)	
	\$ psm	Total	Floor Area	\$ psm	Total
Dec-50	\$41	\$3,800	93 m2	\$1,359	\$126,224
Dec-60	\$60	\$5,560	93 m2	\$1,315	\$122,185
Dec-70	\$82	\$7,615	93 m2	\$1,210	\$112,015
Dec-80	\$314	\$29,096	93 m2	\$1,409	\$130,466
Dec-90	\$844	\$79,379	94 m2	\$1,425	\$133,918
Dec-00	\$1,027	\$96,510	94 m2	\$1,455	\$136,783
Dec-10	\$1,395	\$167,449	120 m2	\$1,514	\$181,640
Dec-17	\$1,803	\$216,304	120 m2	\$1,803	\$216,304

To purchase the Starter Home at a purchase price three times that of household income,<sup>13</sup> a household would currently require an income of \$288,333. The Starter Home's estimated market valuation is currently 5.6 times the mean 2023 household income (\$155,653) of all households within Auckland City. If the Starter Home is on-sold, it will be out of reach for the majority of households.

Clearly, housing cannot be affordable if construction costs and, indeed, land and site development costs do not allow house prices to be set at a price point affordable to low- and modest- income households. However, the relationship between building costs and house prices is complex and a range of research and commentary has explored this in the New Zealand context.

Tookey and Murphy have both noted that opportunities for reduce prices can be diverted into increased margins or even into bidding up land prices.<sup>14</sup> An analysis of the procurement practices of community housing providers suggests that the gap between building costs and house prices can be narrowed. Community housing providers are constrained to deliver affordable housing. It is at the core of their operations. When working in trusting, long-term relationships with builders, community housing providers have shown that they can achieve

<sup>12</sup> Chapter 3 prepared by Dr Michael Rehm, Dr William Cheung, Ian Mitchell and Dr K. Saville-Smith in Saville-Smith (ed) (2019)

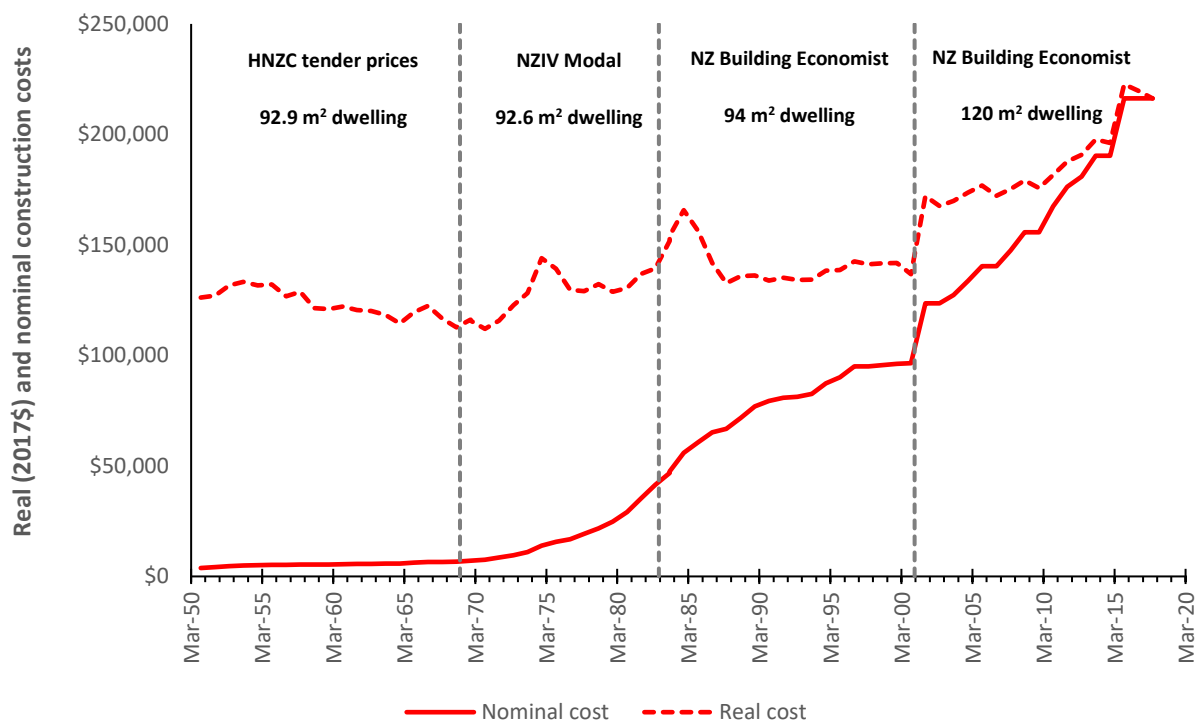
<sup>13</sup> Three times household income has a long history as a marker of affordability along with a proliferation of other measures. See OECD, (2023).

<sup>14</sup> Tookey, (2016); Murphy, (2019); Murphy, (2019a).

design and performance standards similar to other new-builds placed on the market at higher prices.<sup>15</sup>

This is not to suggest that the trajectory and drivers of residential building costs are unimportant. Previous research has revealed that, in the long run, increases in real building costs for low-cost dwellings were relatively muted from 1950 until the turn of the 21<sup>st</sup> century (Figure 5.1). Some of that cost increase is attributable to increased house size even in low-cost housing production. Over the period 1950-2020, low-cost dwellings were small houses gradually rising in size from 92.9 m<sup>2</sup> with a jump from 94 m<sup>2</sup> to 120 m<sup>2</sup> around 2001.

**Figure 5.1 The price of low-cost dwelling nominal and real prices (excluding section price)<sup>16</sup>**



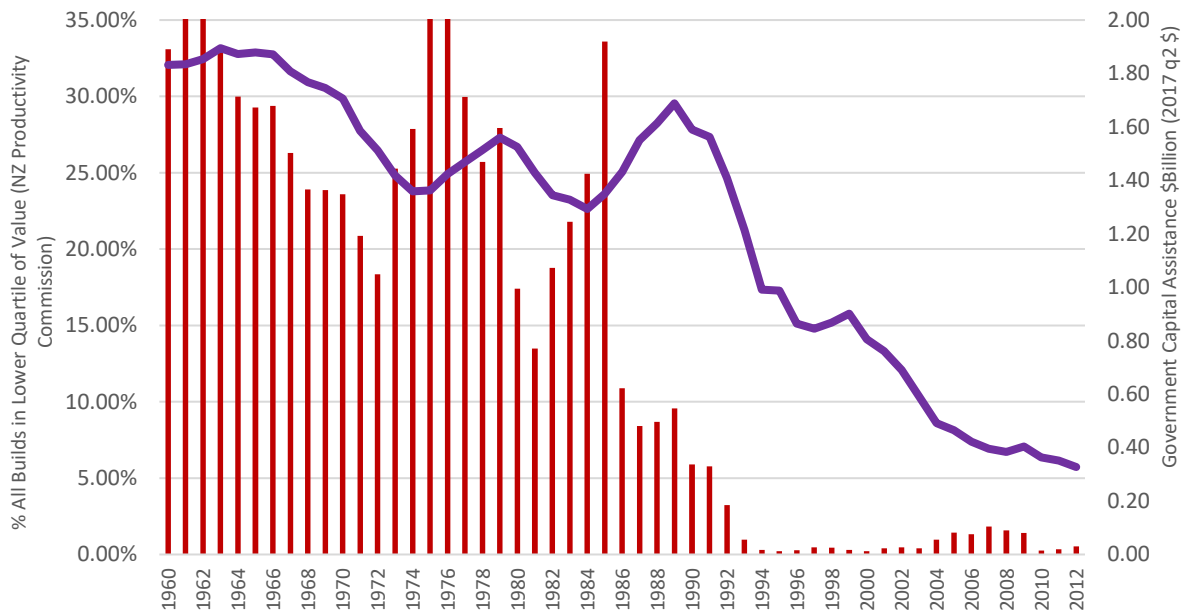
Notably, low-cost housing prices were strongly influenced by Government investment practices and policy settings. This is evident in the production of low-cost housing from 1960 until the 1990s (Figure 5.2). It ranged across lending to low- and modest- income households, state housing construction, funding and lending to council and community housing, and the provision of bridging finance to support the building industry to deliver to the low-cost segment of the market. Government investment practices shaped the size, costs and prices of houses delivered to the lower segments of the housing market. The construction industry was incentivised to both minimise costs and prices.<sup>17</sup>

<sup>15</sup> Saville-Smith, Saville-Smith and James, (2016).

<sup>16</sup> Chapter 3 prepared by Dr Michael Rehm, Dr William Cheung, Ian Mitchell and Dr K. Saville-Smith in Saville-Smith (ed) (2019).

<sup>17</sup> New Zealand Commission of Inquiry, (1971).

**Figure 5.2 Estimated government capital assistance (\$billion) to new builds delivered as affordable housing 1960-2012<sup>18</sup>**



Similarly, the dynamic interplay between building costs and house prices is also evident in the pricing found in the new-builds delivered into Rolleston’s Special Housing Areas (SHAs) established in 2016 under the Selwyn District Council’s Housing Accord with the Government.<sup>19</sup> The Selwyn District Council Housing Accord for Rolleston SHAs required 10 percent of new dwellings in the SHAs to be sold at no more than 75 percent of the local median house price. That price point was \$416,250. The SHAs never delivered the quantum new builds expected. Nor did the SHA areas show anything more than a muted impact on house prices overall. Nevertheless, 56 new builds were sold at prices equal to or below the Housing Accord established affordable price point. Indeed, the mode of new house prices in the SHAs was precisely \$416,250 with 28 dwellings selling at that amount. That pattern suggests developers are able to deliver lower price points within a broader build portfolio when required.<sup>20</sup>

Within the long run pattern of the real costs of construction, there are short run fluctuations often associated New Zealand’s pronounced cycles in new-build demand. Uncertainties in materials, labour costs and build delays can also present a series of ‘shocks’ to the construction industry which can translate into higher costs when demand is heated. COVID-related materials delays and erratic workforce attendance, successive natural adverse events, and heated house prices have contributed to significant increases in building costs.

<sup>18</sup> Saville-Smith, (2018); Saville-Smith, (ed) (2019); NZ Productivity Commission, (2012).

<sup>19</sup> Rehm, Cheung, and Saville-Smith, (2023).

<sup>20</sup> Rehm, Cheung, and Saville-Smith (2023).

These have placed pressures on constructing affordable housing for low- and modest-income households with prices in the last two years rising 45 percent.

Recent declines in demand associated with higher interest rates, changes in access to both development finance and household mortgages, as well as fragile household confidence about broader employment and living costs are beginning to now manifest themselves in muted material cost growth and labour demand. The 2023 Eboss Construction Supply Chain survey found that one in ten suppliers reporting that they are likely to lower their prices within six months.<sup>21</sup> It is not, however, clear that dwellings in the low-cost end of housing production will realise the benefits of downward cost pressure compared to households and investors seeking to acquire new builds in upper quartiles of value. Even if they do, the problem of ensuring that dwellings built in the low-cost segment of the stock are affordable over time remains.

## 6 Some Concluding Comments

The original Starter Home illustrates that low cost construction can deliver decent homes which are adaptable and able to achieve high thermal performance and low energy consumption. The trajectory of the Starter Home also demonstrates that well-worn but too often ignored precept that building costs are not the same as housing prices. The subsequent valuation of the original Starter Home after its initial sale shows that lower build costs are critical, but not sufficient, to provide housing affordable to low- and modest-income households. Strategies to encourage low-cost housing production need to be matched with strategies to retain affordable dwellings within the housing stock.

Over the last three decades or so, the raft of regulatory, investment and innovation stimulation of low-cost housing production has largely faded away. Devices such as Acceptable Solutions, simple home consenting, and multiple consents for simply design which were directed at reducing building consents have not been updated as the code requirements have changed. Plan books for New Zealand conditions of dwellings at different price points have become scarce. In addition, the construction industry has shown a propensity to move into higher quartiles of value. It is a move fuelled by a combination of reduced Government investment in building low-cost housing and land development from the 1990s and house price inflation.

There has never been a purposeful, explicit approach to low-cost housing retention. Where retention has occurred, it has largely been by virtue of long-term owner occupation. The pattern of seniors in mortgage-free owner occupation (only now falling away) is a manifestation of pre-saving facilitated by the housing policies initiated under Sid Holland's prime ministership starting in 1949.<sup>22</sup> Those that retained their initial homes sustained their

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<sup>21</sup> Eboss, (2023).

<sup>22</sup> Waldegrave, (2023).

access to affordable stock. Once that stock is subject to market exchange, especially where dwellings have become primarily commodities rather than for use value, it is likely to be lost as affordable housing. The precarity of affordable housing stock retention is, consequently, an outcome in which housing financialisation prompts considerable buying and selling and the decline of that other traditional mechanism of low-cost housing retention, housing in public or community ownership.



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