

Centre for Urban Transitions, Faculty of Health, Arts and Design



Social and affordable housing in Australia: a social cost-benefit analysis

A/Prof Christian Nygaard

Centre for Urban Transitions

Swinburne University of Technology

Dr Trevor Kollmann

Centre for Transformative Innovation

Swinburne University of Technology

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Executive summary

Australia has a current shortage of social and affordable housing. This shortfall is projected to increase across all State and Territories to 2036 (Lawson et al 2018).

In August 2020, the Community Housing Industry Association (CHIA) with support from National Shelter and Homelessness Australia commissioned this research to draw on available Australian data and tools such as the Australian Social Value Bank to incorporate wider social and economic benefits in a social cost-benefit assessment of social and affordable housing. This is part of CHIA's initiative to make better economic cases for social and affordable housing.

The provision of social and affordable housing is compared across three financing mechanisms – a market-based, going concern within the build-to-rent sector; using market sales to cross subsidise social and affordable housing construction (market sales mechanism); and implementing a tax credit policy to enable upfront equity injection (tax credit mechanism).

The draft report was peer-reviewed in 2001/22 by an international- and Australian-based reviewer. Summary feedback and the research team's responses are included in Appendix 4 of this report.

Key results

The provision of social and affordable housing requires financial assistance and innovation to be viable in commercial terms. The estimated **wider social and economic benefits (WSEB)** in this report show that the **overall societal gain** from providing social and affordable housing **exceeds the cost of public support** required to deliver new housing construction.

Unsurprisingly, **financial viability is highly contingent on financing mechanism and cost of borrowing** (interest rates). In our central estimate, only the market sales and tax credit mechanisms are financially viable means of providing social and affordable housing. However, a market sales mechanism (cross-subsidy) is particularly sensitive to changes in interest rates. An increase in the interest rate environment (3 percentage points in NHFIC and commercial lending rates) renders the market sales mechanism no longer financially viable (Table ES1). The tax credit mechanism remains financially viable also at higher interest rates. This is a policy design feature and requires a substantially higher level of tax credits.

At a 4 per cent social discount rate (DCR) the inclusion of wider social and economic benefits and the asset value of stock *retained* as social and affordable housing increases the social benefit-cost ratio (B/C ratio) from 1.19 to 1.25 under the tax credit mechanism; and from 1.07 to 1.12 under the market sales mechanism. Overall, **from a societal perspective, investment in social and affordable housing generates a positive economic and wellbeing outcome**. The B/C ratio under the tax credit mechanism and market sales mechanism remains greater than 1 at a 5 per cent DCR but falls below 1 for DCRs set at 7 and 10 per cent. From a public policy perspective, **the net present value (NPV) of the societal gain exceeds the net present value**

of the cost of public support for both higher tax credit levels/interest rates as well as when the DCR is set at 7 and 10 per cent.

In monetary terms, the **NPV of WSEB** over 22 years under a tax credit mechanism is approximately **\$1.1bn**, substantially higher than \$770mn generated under the market sales mechanism. The combined NPV of WSEB and retained as social and affordable (total) asset value is \$4.55bn (\$5.28bn) and \$2bn (\$5.71bn) under the tax credit mechanism and market sales mechanisms, respectively.

The difference in WSEB is due to a substantially higher share of **dwelling retained as social and affordable** during the 22-year assessment period, 94 per cent versus 54 per cent, tax credit mechanisms and market sales mechanisms, respectively. Under a tax credit mechanism, the share of dwellings retained as social and affordable dwellings beyond the 22-year assessment period substantially exceeds the market-based and market sales mechanisms.

Alone the **WSEB generated by a tax credit mechanism amounts to some 37 per cent of the foregone Commonwealth tax revenue**. When including the value of any retained housing stock, after all debts are settled in year 22, the combined retained asset and WSEB value **exceeds the forgone Commonwealth revenue more than fourfold**.

There are **important distributional differences** between a tax credit and market sales mechanism. Market sales generate a large positive benefit in Year 2 of the assessment period. However, these benefits do not accrue to low-income households or as public sector cost offsets, but to homeowners or investors. Under a tax credit mechanism, benefits accrue to low-income households and the public sector in the form of public sector cost offsets, improved household disposable income, and improved societal wellbeing (monetised through the Australian Social Value Bank's Wellbeing Values). The difference is also illustrated in the comparison of B/C ratios based on asset value that can be retained as social and affordable dwellings after 22 years, and the total asset value of the housing stock after 22 years. Table ES1 provides an overview of the key social-cost benefits results for each of the three financing mechanisms.

Table ES1 Social cost benefit assessment and financial viability

	Market-based	Market sales	Tax credits
<i>Real terms</i>			
NPV Discounted Cash flow	-\$8,052 million	-\$3,050 million	-\$8,017 million
NPV Discounted Cash flow + retained asset value	-\$1,089 million	\$1,265 million	\$3,466 million
NPV Discounted Cash flow + retained asset value + wider economic benefits*	\$94 million	\$2,034 million	\$4,550 million
NPV Discounted Cash flow + total asset value + wider economic benefits*	\$5,347 million	\$5,710 million	\$5,283 million
B/C Discounted Cash flow	0.55	0.82	0.56
B/C Discounted Cash flow + retained asset value	0.94	1.07	1.19
B/C Discounted Cash flow + retained asset value + wider economic benefits*	1.01	1.12	1.25
B/C Discounted Cash flow + total asset value + wider economic benefits*	1.30	1.33	1.29
WSEB as a share of tax credit cost (NPV basis), %*	Na	Na	37%
WSEB + retained asset value as a share of tax credit cost (NPV basis), x times*	Na	Na	x4.31
Distribution of wider social and economic benefits?	Low-income tenants & public sector.	Property investors, low-income tenants & public sector.	Low-income tenants & public sector.

<i>Nominal terms</i>			
Retained stock, post project period	57%	54%	94%
DSRC @ 3.5% NHCIF, 5.5% commercial lending, average project period	0.37	1.41	1.96
DSRC @ 6.5% NHCIF, 8.5% commercial lending, average project period	-0.29	0.54	3.15

Note: Debt service coverage ratio (DSCR); Wider social and economic benefits (WSEB), Net present value (NPV), Benefit-cost ratio (B/C), National Housing Finance Investment Corporation (NHFIC). Green=financially viable, red=not viable. * These estimates include calculations provided by the Australian Social Value Bank. The Australian Social Value Bank values used in these estimations are owned by Alliance Social Enterprises (www.asvb.com.au). They have been produced by Simetrica, using best practice methodology for policy evaluation. These values are **used under Licence # [P8Xw5y]** with expiry date [1/12/2020].

Methodology

A semi-hypothetical construction program of 50,000 build-to-rent social and affordable dwellings in Sydney and Canberra was used as the basis for comparing social cost and benefits associated with three business case mechanisms. The three business case mechanisms are i) a market-based going concern case; ii) a market sales case; and iii) a tax credit case. Dwellings are located across inner/middle ring suburbs in Sydney (multiunit developments) and greenfield suburbs in Canberra (mix of multiunit and house/townhouse developments). Land and market context inputs are specific to the selected suburbs. The UNSW Affordable Housing Assessment Tool (AHAT) (Randolph et al 2018) was used to model recurrent cost and revenues. The primary source of finance for each of the three business cases is a NHFIC 22-year bullet bond. Additional financing is provided through commercial bank lending (market-based concern); sale of dwellings at market value (market sales); and, a tax credit tradable for upfront equity injection. Unlike the economic assessment of traditional infrastructure projects, social and affordable housing suffers from uncertainty around the evidence base and lack of standard ways in making better cases for investment (Denham et al 2019). The analysis in this report draws on two main evidence bases for monetising and associating wider social and economic benefits with new social and affordable housing construction. First, the Australian Social Values Bank, which provides monetary estimates of Wellbeing Values as well as secondary benefits (e.g. public sector cost offsets).¹ Second, a literature review of the Australian evidence around magnitude and incidence of wider social and economic benefits in social and affordable housing (Nygaard 2019b). The social cost and benefits are conducted in real terms (no general price increases) and evaluated at 4, 5, 7 and 10 per cent social discount rates (DCR). The financial assessment is conducted assuming a general inflation rate of 2 per cent, and two interest rate scenarios. Given the mix of mix of monetary and non-monetary benefits, the substantial under-provision/projected future demand, and social justice dimension of social and affordable housing the central assessment is based on a 4 per cent DCR.

¹ These estimates are based on calculations provided by the Australian Social Value Bank. The Australian Social Value Bank values used in these estimations are owned by Alliance Social Enterprises (www.asvb.com.au). They have been produced by Simetrica, using best practice methodology for policy evaluation. These values are used under Licence # [P8Xw5y] with expiry date [1/12/2020].

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1. Introduction

The Covid-19 pandemic starkly brought out just how much economic and societal sustainability relies on good housing infrastructure. It also brought out the inequities in housing outcomes and access that have built up in Australia over a longer period, and that continue to grow. For instance, work by Lawson et al. (2018) estimates a shortfall of some 727,000 social housing units by 2036. In a series of AHURI projects, Hulse et al. (2019) track the evolving lack of access to affordable private rental for low- and moderate-income households (Quintile 1 and Quintile 2 households). This work also shows that access to affordable private rental continues to deteriorate and, in places such as Sydney, middle-income households (Quintile 3 households) may also trade-off affordability for access to jobs and urban amenity rich locations.

Reasons for this deterioration and changing housing outcomes are multiple and reflect institutional, population policy (migration) and labour market trends since the 1980s (Burke et al. 2020). While many Australians have benefitted from the accompanying increase in property and real estate prices, there are also evident distributional impacts and consequences that generate additional public sector costs, social wellbeing impacts and, potentially, productivity impacts in a more conventional sense.

Infrastructure Australia's 2019 audit included, for the first time, social infrastructure as part of Australia's nationally significant infrastructure. In particular, the audit defined social (with further reference to affordable) housing as infrastructure that contributes to 'supporting Australia's economy, liveability and sustainability' (IA 2019:388).

A key challenge in the provision of social and affordable housing is the gap between the cost of provision and the incomes generated through rental revenue. Australian estimates suggest that this financing gap is approximately 60 per cent for social housing and between 30 to 35 per cent for affordable rental housing (AHWG 2016, Nygaard 2019a). These estimates are, however, based on conventional analysis of social and affordable housing as 'going concerns'. They do not include potential public sector cost offsets or private gains that arise from decent and affordable housing.

To be included on the Infrastructure Priority List Infrastructure, investment initiatives are required to develop a cost-benefit analysis (CBA) that is supported by a strong evidence base. The aim of cost-benefit analysis is to measure and account for the impact of decisions across an entire community (i.e. individuals, organisations and public sector).

This comparison raises two specific challenges for social infrastructure. First, unlike many transport and utility infrastructure projects, social infrastructure is not characterised by the same user-pays potential. For social housing tenants, the capacity of users to pay is also a function of public policy (i.e. social security payments). Developing a cost-benefit based business case therefore requires a more nuanced social impact assessment and valorisation.

Second, the physical provision of social infrastructure will, often, be reliant on significant public sector investment. While several Australian studies provide evidence on potential public sector cost offsets arising from investment in social and affordable housing, there are few attempts to incorporate the available evidence in a systematic assessment of the return on any public sector support or policy (in the form of wider social and economic benefits). Neither is there detailed modelling of how the available evidence in practice would be incorporated in the assessment of social and affordable housing provision.

The aims of this report are therefore threefold:

1. Draw on available Australian data, research and evidence to incorporate additional social and economic benefits in a cost-benefit assessment of social and affordable housing.
2. Provide an input to Infrastructure Australia's assessment framework around social infrastructure by applying standard Australian social cost-benefit assessment conventions to a social and affordable housing program of 50,000 dwellings constructed in nine tranches in Sydney and Canberra.
3. Provide an illustrator, or 'how-to' example, for capacity building around making better financial cases for social and affordable housing.

The remainder of the report contains four main sections; Section 6 concludes.

Section 2: Provides a problem statement, initiative identification (mechanisms for delivering social and affordable housing) and a description of social and affordable housing program details.

Section 3: Sets out details for the business case development, including costings, cash flow and wider social and economic benefits.

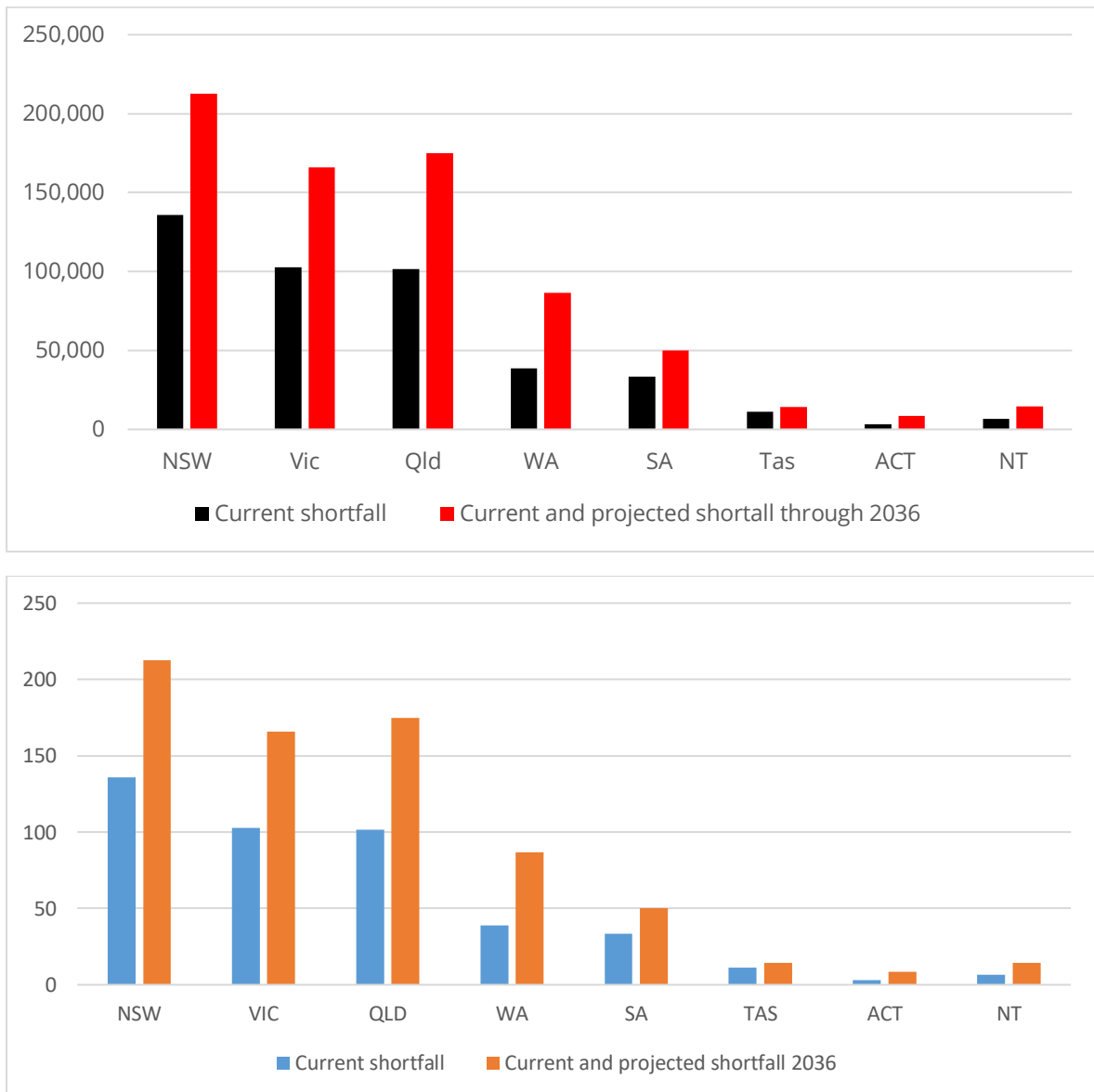
Section 4: Provides a summary of the financial assessment of three delivery mechanisms. The detail of this intermediate step is presented in Appendix 3.

Section 5: Provides a social cost benefit analysis of delivering 50,000 social and affordable dwellings in Sydney and Canberra, and contrast these across three delivery mechanisms.

2. Problem statement and program description

2.1 Problem identification and prioritisation

Housing affordability has deteriorated for very low and low-income (hereafter low-income) households in Australia (Quintile 1 and Quintile 2 households). There is a current and growing shortage of affordable housing options. Research for AHURI shows that, for Australia as a whole and each State and Territory, there is a current shortfall of some 430,000 properties to meet the housing needs of low-income households. Figure 1 shows this housing construction need is projected to increase to 727,000 by 2036 (Lawson et al. 2018).

Figure 1 – Current and projected shortfall in low-income housing options

Source: Lawson et al. (2018).

As a result, social housing waiting lists for those in 'greatest need' is increasing (+35 per cent since 2015; AIWH 2020); housing affordability in the private rental sector is deteriorating (Hulse et al. 2019); and the number of homeless and those seeking support from homelessness services is increasing (+14 per cent since 2014/15; Pawson et al. 2020). Deteriorating housing affordability is also reflected in a decline in homeownership since 2006, a decline that is projected to continue to 2036 (Burke et al. 2020).

Australian research shows that homelessness, housing costs and housing affordability stress negatively affects individual and societal wellbeing, and generates additional (but avoidable) cost to governments and society. Appropriately located and affordable housing also generates productivity gains in a more conventional 'infrastructure' understanding:

- Homelessness: Public sector cost offsets by transitioning homeless to secure housing options (e.g. Conroy et al. 2014, Johnson et al. 2015, Parsell et al. 2015, Seivwright et al. 2020).
- Health and wellbeing: reduced ontological security, disempowerment, lack of control and stress (Phibbs 2005, Lewis 2006, Hulse and Saugeres 2011, Colic-Peisker et al. 2014, Bentley et al. 2016, Baker et al. 2017, Brennan and Galvez 2017). Lack of appropriate housing is resulting in additional public sector cost (PC 2019).
- Family and social cohesion: lack of affordable housing options means that individuals are unable to escape violent and abusive family situations (Ponic cited in Thomas 2017). Tenure stability found to correlate positively with social connectedness (Hulse and Stone 2007).
- Human capital accumulation and household budgets: housing stability found positively to affect educational outcomes (Phibbs 2005). Housing costs compete with other household expenditure. ACTCOSS (2016) found that some 19 per cent had compromised on food and grocery purchases, 30 per cent on health and medical treatments, and 52 per cent on family and leisure activities. Housing costs as a share of households' budgets is increasing for low-income households (Daley et al. 2018).
- Productivity: Maclennan et al. (2019) demonstrate significant productivity gains when affordable housing is paired with locational factors (such as transport connectivity and proximity to labour markets).

While demand for housing increased due to changes in financial, economic and demographic factors since the early 1990s, the supply of housing has not matched the demand growth. Between 1993 and 2013, the number of dwelling completions relative to population growth has declined (Burke et al. 2020). Cumulative undersupply has further reduced the ability of low-income households to secure affordably priced dwellings. Hulse et al. (2019) found an increasing mismatch between the price point of rental units and the income profile of the residing tenants between 2001 and 2016. Increasingly, higher income groups occupy rental dwellings that are affordable to Q1 and Q2 households. Exacerbating the problem, the stock of social housing (public and community housing) also declined relative to the resident population.

Two problems arise from this:

1. The supply of affordable housing options is too low relative to need and relative to its social value. This is, in part, an issue of scale and returns to investment in affordable housing options, but also investment in the housing system more widely as well as appropriately accounting for wider social and economic benefits generated through the provision of social and affordable housing. The significant financing gap that exists for social (ca 60 per cent) and affordable housing (ca 30-35 per cent) is a particular barrier to market-based solutions or responses.
2. When potentially affordable housing options are produced, there is an issue of matching these to low-income households. This is, in part, an institutional or governance issue. In a market context, high-income households can outcompete low-income households for affordable housing options (Hulse et al. 2019). Moreover, the labour market trends towards casualization and underemployment exacerbates housing insecurity (Campbell et al. 2014).

The lack of affordable housing options for low-income households is thus a structural feature of Australia's housing system and labour market. This is not a problem that will go away as a result

of temporary reductions in population growth (e.g. post COVID-19), cyclical economic trends or even marginal increases in dwelling supply.

To address adequately the shortfall in affordable housing, new solutions to finance an ongoing program of social (SH) and affordable (AF) housing construction are required. The aim of such a program is to:

1. Increase the supply of social and affordable housing in priority development areas.
2. Ensure new housing construction is matched to low-income households.
3. Maximise societal wellbeing and reduce public sector costs associate with deteriorating housing affordability.

The following section briefly sets out alternative options to deliver a program of 50,000 social and affordable properties developed over nine tranches, in priority areas of Sydney and Canberra.

2.2 Initiative identification

Significant funding gaps for social and affordable housing is a barrier to pure market-based options that address the under-provision of social and affordable housing. Social and affordable housing is provided at below market rate. Social housing is typically provided as a fraction (25-30 per cent) of gross household income. Affordable housing rents are also typically discounted relative to market rents. The discount varies, but a common benchmark is 20 per cent below market rent. However, many community housing and charitable housing providers cannot charge above 74.99 per cent, of representative market rents, without losing preferential GST treatment status.

In practice, the revenue stream associated with construction of new social and affordable housing is insufficient to cover a fully (or even majority in the case of social housing) debt financed development project. The provision of social and affordable housing and matching to low-income households is thus contingent on public support that either addresses the cost of finance, total borrowing requirements, or ability to service ongoing debt.

The National Housing Finance and Investment Corporation (NHFIC) was set up by the Commonwealth in 2018 to lower the cost of finance in the provision of social and affordable housing. NHFIC uses a bond aggregator approach. The proceeds of bond issuances are used to provide lower-cost financing to community housing providers. NHFIC finance reduces the funding gap (enables a greater level of debt to be serviced by cash flow) but does not eliminate it. Additional support or mechanisms are required to ensure positive gearing.

Operational subsidies are another financial model that provide an annual operating payment. An example is New South Wales's (NSW) Social and Affordable Housing Fund. An operational subsidy model enhances the ability of social and affordable housing providers to meet operational expenses (including financing costs). However, value for money is reduced, with respect to new construction, if an operational subsidy is required to meet ongoing interest payments. Lawson et al. (2018) show that value for money would increase if ongoing payments were pooled as equity injections during the construction phase. For new construction, Nygaard (2018) shows that operational subsidy models reduce the proportion of developed stock that can be retained as social and affordable housing in the long run.

A variation of the operational subsidy model was the National Rental Affordability Scheme (NRAS). This provided an annual payment, or tax credit, to landlords and corporations for a

period of 10 years during which time properties were let at 20 per cent below market rent. Following the 10-year period, properties were eligible for market rents, improving the ability to service remaining debt and investment returns.

A reduction in total borrowing requirement – and so the ability of rental revenues to meet financing cost – requires equity injection during the construction phase. The cost of land is a key determinant of development costs. Leasehold arrangements or peppercorn rents provide a means of reducing the total construction cost. However, depending on the capital-land ratio the overall impact of a land contribution is contingent on property typology. Similarly, equity contributions by developers or development partners, and equity as well as land tax, stamp duty and infrastructure contribution concessions by State, Territory and the Commonwealth can further reduce borrowing requirements.

In practice, the ability of many Community Housing Providers or charities to inject equity is limited by existing financial reserves, as well as their asset base. Public sector equity contribution is likewise limited due the complex political landscape surrounding affordable and social housing. Additional policy levers include rate concession that would enable project cash flow to service a larger debt.

An alternative to equity injection is to cross-subsidise development cost through the market sale of properties. This provides development finance that reduces remaining project debt, but also reduces the number of dwellings that are provided as social and affordable rental properties *and* the income generating units to service remaining debt. The latter makes a cross-subsidy model highly sensitive to changes in interest rates. A market sales approach may also significantly affect who can provide social and affordable housing in Australia. For instance, for Community Housing Providers the ability to obtain short-term bridging funding may be constrained by assets available for collateral.

Finally, a tax credit or investment credit model provides a means of injecting equity during the construction phase without providing direct budget outlays for State, Territory and Commonwealth governments. The Low-Income Housing Tax Credit (LIHTC) in the United States provide an international example. In the Australian context a blueprint for a tax credit system was developed by the Community Housing Industry Association (NSW) in 2019 (Nygaard 2019a). A tax credit model can provide upfront equity injection but is underwritten through forgone public sector revenue. Since the public sector cost is spread across several years, the total foregone public sector revenue loss is greater than the ensuing equity injection in Year 1.²

Table 1 summarises and compares four aspects of the above funding mechanisms in relation to new construction and supply: i) the business model impacts of the different initiatives; ii) ability to provide supply at scale; iii) ability to match social and affordable housing to low-income households; and iv) overall feasibility given financial and asset capacity.

In the following sections a more detailed comparison of a Base case (Mechanism 1), a Market Sales (Mechanism 2) and Tax Credit (Mechanism 3) are provided. The financial assessment provides an intermediate step towards the overall objective of this report – the assessment of social costs and benefits associated with the provision of social and affordable housing (Section 5) – by comparing the financial feasibility of delivering social and affordable housing.

² The analysis in this report shows that the wider social and economic benefits generated by this form of public sector underwriting, in turn exceeds the total foregone tax revenue.

The operational subsidy is not tested as both Lawson et al. (2018) and Nygaard (2019a) conclude that, with respect to new construction, operational subsidies provide less value for money and a lower proportion of the stock retained as affordable housing. The cash equity model is also not tested separately based on the financial/asset base of conventional social and affordable housing developers and the political feasibility of large-scale public sector equity injections. Lawson et al. (2018) argue that upfront equity injection is more cost effective than operational or annual subsidies. Nevertheless, elements of this model are retained in our assessment of the initiatives in the form of a 10 per cent equity contribution by developers and/or public sector stakeholders. Finally, a pure land equity model is also not tested, as a land grant is insufficient to meet the funding gap in priority locations.

The funding mechanisms illustrated are thus:

1. New construction as a going concern – base case.
2. Market sale mechanism – cross subsidisation of SH/AH housing through sale of properties at market value.
3. A tax credit model with upfront pooling of tax credits. The tax credit is based on the Affordable Housing Infrastructure Booster proposal developed for the Community Housing Association NSW (Nygaard 2019a).

The three mechanisms are, in many respects, stylistic. They incorporate a mix of funding sources, but in practice, a social and affordable housing project may very well make use of an even wider mix of funding sources. For instance, a combination of land grant, sales, operational subsidies, other subsidies (such as the discontinued NRAS) and various policy concession (rates, land tax etc).

A change in the financing mechanisms (unsurprisingly) affects the financial characteristics of projects. The three stylistic mechanisms selected here are therefore chosen with respect to illustrating implications for assessing social and affordable as social infrastructure. That is:

- Financial viability: social and affordable housing may have the potential to deliver a range of private and public benefits but can only do so if the delivery of mechanism is financially viable.
- Scale of supply of social and affordable housing: the number of dwellings that are matched to lower-income households determines the magnitude of wider social and economic benefits. If dwellings are divested early on or cannot be retained beyond the project lifetime the, then the wider social and economic benefits decline.
- Distributional impacts: there is a current and projected future shortfall (Figure 1) of social and affordable housing for lower income households. If dwellings are sold at market rate at the beginning, throughout or at the end of the project lifetime, then the beneficiaries of social and affordable housing investment shifts from lower income households to mid and higher income households.

Table 1 High-level initiative comparison

Initiative characteristics	Business model impact	Increase new supply in priority areas.	Matching to low income	Maximise social wellbeing and public sector cost offsets	Overall aim feasibility
Market-based going concern (Base case) <i>[Mechanism 1]</i>	Negatively geared	Low	Low	Low	Low
Operational subsidy	Improves ability to meet operational costs (incl finance costs)	Medium: more effective in lower cost areas.	High	Medium: less effective for new build. Less scale.	Medium
Equity 1 (land)	Reduced total development costs.	Medium-high: depending on capital-land ratio; ownership of land. Opportunity cost of land greater in priority areas.	High	Medium-high: high capital-land ratios in priority (labour market) areas means land component is a smaller fraction of total development costs. Less scale.	Medium
Equity 2 (cash equity)	Reduced total development costs. Very limited capacity of existing community housing providers to support a large-scale construction program.	Low-high: depending on financial and asset base.	High	Low-high: contingent on financial/asset base of SH/AF housing developers and/or levels of government.	Low-high
Equity 3 (Market sales) <i>[Mechanism 2]</i>	Reduced total development costs. Limited ability of community housing providers to support large-scale construction program and exposure to market downturn risk.	Medium: cross-subsidy enables provision of SH/AF housing at low interest rate but reduces total new supply.	High for retained stock, low for sold stock	Medium: wider wellbeing and cost offsets potential reduced through sales.	Medium
Equity 3 (Tax credit) <i>[Mechanism 3]</i> – assumed upfront equity injection	Reduced total development costs.	High: all stock is retained as SH/AF for the lifetime of the project.	High	High: larger supply of stock to enable wider wellbeing and cost offsets.	High

2.3 Program description

The objective of this analysis is to undertake a social costs and benefits analysis of social and affordable housing investment to meet the current and accumulating shortfall in decent and affordable housing for lower-income households in Australia. To operationalise the analysis a program of dwelling construction is developed that delivers 50,000 social and affordable rental dwellings in priority areas of Sydney (42,500 dwellings) and Canberra (7,500 dwellings).

The modelling categorises 50 per cent of dwellings as social housing (rent set as a proportion of income) with the remaining 50 per cent set as affordable housing (rent set as a fraction of lower quartile market rents). New supply is aimed at households broadly falling into the Q1 and Q2 household income distribution. The illustrated construction program is only a proportion of the projected shortfall in Sydney (20 per cent) and Canberra (50 per cent), respectively.

Dwelling sizes are based on NSW SEPP 65 guidelines. All social and affordable housing dwellings are developed to the same standard to enable tenure neutrality and enhance residual asset value. Multi-unit dwellings are constructed in a combination of perimeter block apartments and courtyard apartments. All multi-units have balconies with sizes based on the NSW SEPP 65 guidelines. The share of parking spaces is set at 0.7 per unit.

Within Sydney, the 6-storey multi-family units have a site coverage of 65 per cent, building envelope of 75 per cent and plot ratio of 5.0. While the plot ratio is higher than the recommended NSW SEPP 65 guidelines, they fall within examples of multi-family units developed within in-fill sites in the targeted priority areas. Canberra multi-unit apartments have similar site coverage and building envelopes but have a plot ratio of 2.0. The exception is Woden Valley in which due to the lack of viable greenfield locations would be built as an in-fill development. In this scenario, a plot ratio of 3.0 was set to reflect the increased density of the local suburb.

Development is delivered over a 9-year period. Table 2 details priority areas and dwelling typologies. Priority areas in Sydney are based on the residential relocation patterns of key workers documented in Gurran et al. (2018). Priority areas in Canberra are based on the affordable housing location priority areas set out in the ACT Government's Affordable Home Purchase Scheme (2019).

Dwelling types are based on analysis of locational characteristics, dwelling needs assessment (Troy et al. 2019), *A Housing Strategy for NSW: Discussion Paper* (DPIE 2020) and input from the sector representatives in Sydney and Canberra.

- For Sydney, the resulting dwelling mix is based on multi-unit developments in infill/densification environments (middle ring suburbs).
- For Canberra, the resulting dwelling mix is based on a combination of house/townhouse developments in greenfield locations; and low-rise multi-unit developments in greenfield locations with the exception of Woden Valley, which is in an infill/densification environment.

Table 2 Priority areas and dwelling typologies

Sydney		Canberra	
Burwood	Multi-unit (6 storey)	Belconnen	Townhouses/houses multi-unit (3 storey)
Canada Bay	Multi-unit (6 storey)	Gungahlin	Townhouses/houses
Canterbury-Bankstown	Multi-unit (6 storey)	Tuggeranong	Townhouses/houses multi-unit (3 storey)
Georges River	Multi-unit (6 storey)	Weston Creek/ Molonglo	Townhouses/houses multi-unit (3 storey)
Inner West	Multi-unit (6 storey)	Woden Valley	Multi-unit (4 storey)
Parramatta	Multi-unit (6 storey)		
Ryde	Multi-unit (6 storey)		
Strathfield	Multi-unit (6 storey)		

Table 3 details dwelling and associated tenant characteristics. A key barrier to the provision of social and affordable rental options is that rents, on their own, are insufficient to fund new development. In subsequent modelling, we have followed the conventional approach of linking affordable rents to market rents, and social rent to income. Affordable rents are set at 74.99 per cent of representative area rent. Social housing rents are set at 25 per cent of gross household income. Representative area rents for Sydney are based on *first quartile* weekly rents published by Communities and Justice NSW for the March quarter 2020. Representative rents for Canberra are based on first quartile weekly rents published in REIA Market Facts for the March quarter 2020.

For social housing tenants, gross household income is overwhelmingly determined by social security and pension payments. In practice, this means that property characteristics and allocation policies determine obtainable rent. In modelling, tenant incomes are entirely based on social security payments.

Dwelling (and tenant) characteristics are based on the tenant profile of the Social Housing Survey 2018, *Housing Assistance in Australia 2020* (AIHW 2020), *State of the Industry: Community Housing NSW* (CHIA 2018), and Hulse et al. (2019) characteristics of Q1 and Q2 households in PRS. In dwelling characteristics reflect projected household growth and family characteristics to 2041 (ABS 3236.0). In terms of future projections there is some differences between Sydney and Canberra.

- One-parent HH are projected to rise disproportionately in Sydney.
- Couple HH without children are projected to rise disproportionately in Canberra.

In Table 3 the income profile of social housing tenants is based on priority allocations as detailed in *Housing Assistance in Australia 2020* (AIHW 2020) and characteristics of social and affordable housing tenants as detailed in *National Social Housing Survey 2018* (AIHW 2019) and *State of the Industry: Community Housing NSW* (CHIA 2018).

The distribution of household types to properties is based on current social housing and community housing allocations (AIHW 2019, AIHW 2020, CHIA 2018). Broadly, some 60 per cent live in single households, 10 per cent in coupled households, 10 per cent single parent (with the average number of children 1.5), 4 per cent are couples with children. The remainder are group households. These are not modelled in subsequent work and proportions have therefore been re-scaled accordingly.

Table 3 dwelling and tenant characteristics

		Sydney	Canberra	Canberra
	Type	Units (%)	Units (%)	Townhouses (%)
AF	1-bed	20.00	32.50	10.00
AF	2-bed	20.00	10.00	17.50
AF	3-bed	10.00	7.50	17.50
AF	4-bed	na	na	5.00
SH	1-bed	30.00	35.00	10.00
	Single adult	25.71	30.00	8.57
	JobSeeker	9.00	10.50	3.00
	DSP	10.28	12.00	3.43
	Pension	6.43	7.50	2.14
	Couple, only	4.29	5.01	1.43
	JobSeeker	1.50	1.75	0.50
	DSP	1.72	2.00	0.57
	Pension	1.07	1.25	0.36
SH	2-bed	10.00	10.00	17.50
	JobSeeker (Single), 1 child	4.00	4.00	7.00
	DSP, 1 child	4.00	4.00	7.00
	JobSeeker (Couple), 1 child	2.00	2.00	3.50
SH	3-bed	10.00	5.00	17.50
	JobSeeker (Single), 2 children	4.00	2.00	7.00
	DSP, 2 children	4.00	2.00	7.00
	JobSeeker (Couple), 2 children	2.00	1.00	3.50
SH	4-bed	na	na	5.00
	JobSeeker (Single), 3 children	na	na	1.00
	DSP, 3 children	na	na	2.00
	JobSeeker (Couple), 3 children	na	na	2.00

Notes. SH = Social Housing; AF = Affordable Housing; DSP = Disability Support Pension; na = Not Applicable

Proportion of age pensioners is based on Census data and the age distribution in social housing (25 per cent of social housing (SH) tenants in Sydney and 20 per cent of SH tenants in Canberra were aged 65 years or older). Approximately 40 per cent of SH tenants have a disability. JobSeeker allocations are effectively a residual category once age pensions and disability pensions are allocated.

3 Business case development

The following section provides details on the economic assessment of the mechanisms identified in Section 2.2 to deliver the program set out in Section 2.3. The aim of this program is to increase the supply of affordable housing options (social and affordable housing), ensure that new supply is matched to low-income households, and maximise societal wellbeing and public sector costs offset. The economic assessment on a financial assessment and a Social Cost Benefit Analysis (SCBA) of provision of social and affordable housing under three different financing structures.

In making a business case for social and affordable housing there are two key barriers. First, a large funding gap inhibits market-based solutions. Cash-flow models of debt-funded social and affordable projects are therefore negative. Second, there is little consensus around the identification and measurement of wider social and economic benefits associated with the provisions of affordable housing options. In the following two subsections, we briefly discuss key data and input sources employed in developing this business case. Section 3.1 provides details on cost, revenue and benefits parameters. Section 3.2 provides a summary of the financial assessment. Section 3.3 provides a summary of the social cost benefit analysis.

Demand for any additional social and affordable housing is evidenced in recent research, which shows both a current deficit in supply and projects the growth in demand to 2036 (Lawson et al. 2018). Waiting lists for social housing in each of the States and Territories further provide evidence on demand for new construction.

3.1 Costing and cash-flow development

The project team is grateful to the University of New South Wales' City Futures Research Centre for making available their *Affordable Housing Assessment Tool* (AHAT) to the research team (Randolph et al 2018). AHAT formed the basis for the cash flow modelling of recurrent costs and revenues. Finance costs and Investing cash flows were modelled separately from AHAT to ensure comparability between the financing structures associated with the three mechanisms.

Cash flow modelling is critical to assessing and comparing the financial viability of the three mechanisms and provides important input to the SCBA analysis. However, these are not identical. Payments, such as rates, determine the cash flow of projects, but in terms of assessing the social benefit of investment in social and affordable housing are a transfer payment. They constitute project expenses, but public sector income.

3.2 Wider economic benefits

Unlike the economic assessment of more traditional infrastructure projects, social and affordable housing suffers from uncertainty around the evidence base and lack of standard ways in making better cases for investment (Denham et al. 2019).

An aim of this assessment is therefore to draw on available evidence to monetise wider social and economic benefits (WSEB) and incorporate these in the economic assessment. The assessment relies on two main evidence bases for this.

First, an overview of the Australian evidence base around monetary impacts and causality of social and affordable housing as social infrastructure undertaken for the Community Housing Industry Association in 2019 (Nygaard 2019b). This literature review discusses the Australian evidence base and set out a range of impact ratios relating to causal effects between access to social and affordable housing and monetary and wellbeing impacts. The study also identifies social and affordable housing as a platform (infrastructure) from which additional wrap-around services (e.g. in a housing-first style approach) or educational, employment and social capital enhancing initiatives can be coordinated. With the exemption of housing of people who are homeless, the economic assessment undertaken in this report does not draw on such additional service provision.

Second, the assessment utilises estimates of primary benefits (Wellbeing Values) and secondary benefits (public sector cost offsets) produced by the Australian Social Values Bank (ASVB). The ASVB Wellbeing Values and secondary benefit values adjusts for effects that might have been expected to take place irrespective of any intervention (e.g. deadweight). ASVB estimates are available across a range of social service dimensions, including housing and education. The ASVB's methodology recognised by several OECD governments and international organisations as a tool for estimating social impacts of programs.

There remains ongoing research, debate and uncertainty around the measurement of wider social and economic benefits. This is particularly challenging with respect to social and affordable housing where many housing and non-housing outcomes are difficult to measure, and causality is complex (Denham et al. 2019). In setting up this SCBA the research team is cognisant that decisions on inclusion,

exclusion, costs and benefits can be regarded as controversial. Care has been taken to err on the side of caution (take a conservative approach). Further research may very well result in a re-assessment of measurement and causality. Moreover, the exclusion of additional effects does not reflect any assessment on their potential validity or not, but rather the current state of the evidence base. Examples here includes benefits relating to dwelling design, outdoor/green areas, dwelling quality, tenure security etc. (Section 5.4 provides additional details).

3.3 Identification of costs and benefits

Table 4 Overview of cost and benefit parameters used in financial assessment and social cost benefit analysis

Variable	Included in financial assessment?	Included in SCBA?	Periods measured*	Source
<i>Private costs</i>				
Development capital cost (incl legal)**	Yes	Yes	Construction, 2 years	AHAT, CHIA, EPD 2018, microburbs
Project operating costs (recurrent)**	Yes	Yes	Annual	AHAT, CHIA, Zaretsky and Flatau (2013)
Maintenance and repair costs** (recurrent)	Yes	Yes	Annual	AHAT, CHIA
Financing cost	Yes	No	Annual	NHFIC
<i>Private benefit (ps)</i>				
Operating revenue (rent)**	Yes	Yes	Annual	REIA, NSW C&J (2020)
Property sales revenue**	Yes	Yes	Discrete time points	Domain, Real Estate.Com, REIA, AHAT
Tax credit revenue	No	No	10-year period	
<i>Private benefit (cs)</i>				
Retained asset value	Yes	Yes	Terminal value	AHAT
MPC adjusted rental discount	No	Yes	Annual	Nygaard 2019b
Service improvement (tenure stability-educational outcomes)	No	Yes	Annual	Nygaard 2019b
Service improvement (mental health related expenditure)	No	Yes	Annual	Nygaard 2019b
Wellbeing (tenure stability)	No	Yes	Annual	ASVB***
Wellbeing (reduced financial stress)	No	Yes	Annual	ASVB***
Wellbeing (tenure stability-educational outcomes)	No	Yes	Annual	ASVB***
Wellbeing (mental health related)	No	Yes	Annual	ASVB***
Wellbeing (overcrowding relief and parental stress)	No	Yes	Annual	ASVB***
<i>External costs and benefits</i>				
Public sector cost offsets (homelessness)	No	Yes	Annual	ASVB***
Domestic violence cost offsets	No	Yes	Annual	Nygaard 2019b
Public sector cost offsets (mental health)	No	Yes	Annual	Nygaard 2019b
Public sector cost offset (overcrowding relief)	No	Yes	Annual	ASVB***

Note: * Wider social and economic benefits are allocated to tenants in Yr 1 of the tenancy. Benefits in subsequent years are only assigned to new tenancies (assuming a 7 per cent turnover rate) or on a recurrent basis (see Appendix 2 for detail). ** Appendix 1 provides details on specific parameter values and assumptions. ***These estimates are based on calculations provided by the Australian Social Value Bank. The Australian Social Value Bank values used in these estimations are owned by Alliance Social Enterprises (www.asvb.com.au). They have been produced by Simetrica, using best practice methodology for policy evaluation. These values are **used under Licence # [P8Xw5y]** with expiry date [1/12/2020].

The following sections sets out and discusses included costs and benefits used in the financial assessment and social cost benefit analysis. A summary of the different variables, and their parameters, are presented in Table 4 (above).

Private cost estimates are based on data obtained through CHIA (funders) and the Affordable Housing Assessment Tool. Included private costs are:

- Development capital cost: Sydney land values are based on market value of \$ per square metre. Bulk land values are published by the Valuer General NSW.³ For the areas in Table 2 land values were also sourced from: www.microburbs.com.au. Land values for Canberra were more complicated to source. For sites listed in Table 2 we use the land value published in the ACT Land and Property Report (EPD 2018). Land values for multi-unit developments for all suburbs of Canberra are based on unimproved value given the amount of greenfield space available apart from Woden Valley. As Woden Valley is an in-fill development, prices were set from the low-range of Sydney land values as determined through the reported high land costs of Canberra combined with the premium attached to parcel assembly. Dwelling construction costs in AHAT are sourced from Rawlinsons' Construction Handbook ((Randolph et al 2018)).
- Recurrent cost include: repairs, operational maintenance, replacement/sinking fund, vacancy, bad debt provision, management costs (including homelessness provision), water rates, council rates, and insurance. Water/council rates are excluded from the SCBA. The recurrent cost of homelessness provision is sourced from Zaretsky and Flatau (2013).
- Sales and marketing costs: based on AHAT.
- Financing cost: each of the examined mechanisms uses a combination of NHFIC borrowing (up to 70 per cent of construction cost) and commercial lending. NHFIC lending is structured as a bullet bond (regular coupon payments, principal settled upon maturity). In the illustration the bond has a 22-year maturity. At the time of development of this report, recent NHFIC coupon rates had been around 2 per cent. Following peer-review the coupon rate was set at 3.5 per cent, with sensitivity analysis conducted at 6.5 per cent. Commercial lending is costed at 5.5 per cent interest and principal repayment. Sensitivity analysis is provided at 8.5 per cent. All scenarios assume a 10 per cent equity injection.

Private benefits (producer surplus) include:

- Recurrent revenue: tenants in social housing pay 25 per cent of income in rent. Affordable rents are set at 74.99 per cent of representative area rent. Representative area rents for Sydney are based on first quartile weekly rents published by Communities and Justice NSW for the March quarter 2020. Representative rents for Canberra are based on first quartile weekly rents published in REIA Market Facts March quarter 2020, for units and houses, respectively.
- Market sales: under Mechanism 2 some 35 per cent of the constructed dwelling stock is sold at market value to cross-subsidise social and affordable construction. Representative market values for 1-, 2- and 3-bedroom apartments in each of the areas listed in Table 2 were obtained from Domain and realestate.com.au. Representative

³ Website: https://www.valuergeneral.nsw.gov.au/land_value_summaries/lv.php

market values for 2-, 3- and 4-bedroom houses in Canberra were constructed from lower quartile sales values reported in REIA (2020). The lower quartile sales value was taken as representing 4-bedroom houses. Values for 2- and 3-bedroom houses are calculated as fractional to values of 4-bedroom houses. Fractions were derived from the relative construction plus land values of new build, 0.67 and 0.80 respectively.

- Revenue from tax credit sales: under Mechanism 3, a proposed tax credit policy is used. The Affordable Housing Infrastructure Booster was developed for the Community housing Industry Association (NSW) (Nygaard 2019a). Tax credits are issued to affordable housing projects or program that then can be sold to institutional investors. The proceeds generate an upfront equity injection that reduced borrowing financed out of recurrent revenue.

Private benefits (consumer surplus) include:

- Retained asset value: this is the terminal asset value after settlement of NHFIC bond and other debts. It proxies for benefits beyond the assessment period.
- Additional consumer surplus variables are listed in Table 4, methodology is discussed in the above subsection on 'Wider economics benefits'. ASVB values are proprietary data and for this reason not itemised in this report.

A key issue with respect to measuring the societal impact of social and affordable housing is the treatment of rents and rent discounts. Pugh and Catt (1984, in Denham et al. 2019) use an approach where estimated market rents are compared to rents paid in social housing. Carter et al. (1988, in Denham et al. 2019) similarly use a market value approach. In practice, a rent reduction constitutes a consumer surplus. Market rent approaches to estimating benefits further assume that market rents are indicative of willingness-to-pay for the bundle of property and locational attributes that is social and affordable housing.

In a partial cost-benefit assessment the reduction of rents benefit tenants by providing a higher disposable income. For a 1-bedroom apartment with a \$380 weekly market rent, the tenant benefit of 'affordable housing' (25.01 per cent) amounts to \$4,955 per annum. For social housing, the benefits are, depending on social security and pension benefits, are greater.

However, a rent reduction also implies potential forgone revenue. From a societal perspective, a reduction of 25.01 per cent of market rents also implies a reduction in producer surplus. Rental assistance, previous policies such as the National Rental Assistance Scheme (NRAS), compensate landlords/property investors for said loss of producer surplus. The net societal impacts are thus more difficult to assess.

The approach taken in this assessment draws on the market value approach but estimates a net economy benefit based on differential propensities to consume. Australian research shows that due to high housing costs many lower-income households forgo other consumption (ACTCOSS 2016). That is, higher housing costs crowds out other spending. This effect is asymmetric. Gillitzer and Wang (2015:28) show that an increase in wealth results in a larger increase in additional consumption for lower income households (25th percentile) than for higher income households (75th percentile), by a factor of 1.43. May et al. (2019) show that the *average* increase in consumption from a \$1 increase in find disposable income is an increase of \$0.45 in

consumption. A transfer of disposable income to lower-income households thus increases lower-income consumption by more than it reduces higher-income consumption. We use this differential as a measure of the consumer surplus. For a rent of \$380 per week, the annual social benefit is \$630 per annum. Ideally, we would have liked to have more detailed Australian empirical evidence on differentials in propensity to consume. On the other hand, our estimate is a more conservative estimate than alternative market rent approaches and considers the transfer of income that a rent discount implies. In our estimation of wider economic benefits, this consumer surplus is only applied to renters in the affordable rental stock.

Social housing tenants pay rents that are set as a proportion of income. In practice, new social housing tenants may previously also be tenants in private rented housing. Following peer-review and feedback from IA, AIHW SHS data was used to identify the number of SH referrals that came from a private rent paying background. This is approximately 1/3. In estimating the consumer surplus to social housing tenants the propensity to consume adjusted approach was utilised for 30 per cent of social housing allocations, after netting out allocations to people experiencing homelessness or fleeing domestic violence (approximately 1/3 under the modelled allocation rules).

External costs and benefits include:

- Public sector cost offsets: are based on ASVB estimates and Nygaard (2019b). The methodology for this is described in the section 'Wider economic benefits'. A distinction is made between recurrent effects and one-time effects. For instance, Australian research shows that public sector cost offsets associated with housing people who are homeless are ongoing and, in some cases, marginally increasing over time (Conroy et al. 2014, Johnson et al. 2015, Parsell et al. 2016, Seiwright et al. 2020). In our application we use a constant rate over time.

Wellbeing effects, on the other hand, are considered one-time effects. That is, over time (12 months) expectations are re-set. Wellbeing effects therefore are only applied in the year of entry into a tenancy. Overtime, wellbeing effects are therefore only applied to new tenancies (a function of tenancy turnover, 7 per cent per annum). Ongoing ASVB research is establishing wellbeing benefits from ongoing tenancies.

3.4 Tax credit primer (Affordable Housing Infrastructure Booster) (added after peer review)

The Affordable Housing Infrastructure Booster (AHIB) (Nygaard 2019a) is a policy blueprint for a tax credit-based model designed to target the funding gap that prevents investment in social and affordable housing on going-concerns principles (borrow to invest, pay off debt based on ongoing revenue). The blueprint was produced to inform Australian government policy making options. At the time (2019) there was no Australian government social and affordable housing funding model that could be used in a SBCA analysis.

AHIB works on reverse-auction principles. Developers identify the funding gap. Funding gaps can already be reduced based on existing policies, levers as well as own equity or philanthropic support. AHIB therefore incentivises crowding-in of additional sources of finance and partnerships for social and affordable housing.

Moreover, reverse auction principles work to identify project that genuinely require a Boost to achieve financial viability, rather than a blanket funding of gaps. Several design and tender principles are included to avoid a race-to-the-bottom (Nygaard 2019a). Successful bids would obtain tax credits (paid over 10 years) equal to the identified funding gap, plus a policy determined additional payment (investor return) also paid in the form of tax credits. Tax credits can be sold to individual investors or pooled through an aggregator mechanism to ensure that the 10-year flow of tax credits is transferred into an upfront equity payment equal to the funding gap. Consequently, social and affordable housing developments can go ahead based on on-going revenue considerations (cash-flow basis). The financial modelling of AHIB is based on a bullet-bond, settled through the sale of properties at the end of the 20-year affordability period.

AHIB adjusts to differences in rents and land values and is *not* a flat fee or payment. As a result, AHIB facilitates supply of housing that meets local and specific needs, rather than housing that conforms to any particular funding arrangement. Several allocation / design principles are included in AHIB (Nygaard 2019a) to ensure that allocation principles can meet local and state housing and urban development priorities.

Full details of AHIB are presented and discussed in Nygaard (2019a).

4 Financial assessment: summary

A detailed overview of the financial assessment for Sydney and Canberra and each of the mechanisms is provided in Appendix 3. Table 5 summarises the overall program financial assessment for each of the development mechanisms at two interest rate scenarios.

From purely a financial assessment perspective, Table 5 highlights three key aspects. First, (and as is well known) the provision of social and affordable housing is not a financially viable going concern without some form of subsidy or financial assistance. Second, cross-subsidy through market sales provides a means of providing social and affordable housing, but the scale of provision is less than the alternatives *and*, in our modelling, only viable in a low interest environment. Even at otherwise – by historical standards – low interest rates, this mechanism is no longer viable without a form of subsidy or financial assistance. Third, an upfront equity injection ensures financial viability *and* a greater supply of social and affordable housing in the short and long term. Moreover, an appropriately designed financial support mechanism (in this case a tax credit) can also ensure greater financial resilience in light of a changing interest rate environment. **Importantly, this resilience is a policy design feature and contingent on additional tax credits. In practice, the tax credit policy blueprint (Nygaard 2019a) operates with marginality thresholds that would require developers to seek alternative forms of co-investment or policy support to finance investment, rather than switching all additional costs to tax credits.**

In the following section the social cost and benefits associate with the three mechanisms is analysed. While the tax credit option by design (and as a going concern) is a financially viable mechanism for providing social and affordable housing, the following section also show that the wider social and economic benefits generated through a tax credit option exceeds the foregone tax revenue to the federal government.

Table 5 Program Financial Summary

Details	Base Case (3.5% NHFIC)	Base Case (6.5% NHFIC)	Market Sales (3.5% NHFIC)	Market Sales (6.5% NHFIC)	Tax Credit (3.5% NHFIC)	Tax Credit (6.5% NHFIC)
Project Development Cost (Millions \$)	\$15,163	\$15,163	\$15,328	\$15,328	\$15,163	\$15,163
Develop Cost per Unit (\$)	\$303,263	\$303,263	\$306,569	\$306,569	\$303,263	\$303,263
Recurrent Surplus in Year 11 (Millions \$)	\$394.7	\$429.4	\$256.0	\$278.6	\$394.7	\$429.4
Financing Payments in Year 11 (Millions \$)	\$833.3	\$1,485.3	\$234.5	\$466.9	\$293.0	\$305.8
Average DSCR in First Year of Operation	0.43	0.26	1.09	0.53	1.31	1.49
Average DSCR operational period	0.37	-0.29	1.41	0.54	1.96	3.15
Stock Retained (% of Value Constructed)	57%	21%	54%	42%	94%	100%
Financially Viable	No	No	Yes	No	Yes	Yes
Tax credit (nominal)	Na	Na	Na	Na	\$15,573	\$30,639

5 Social cost-benefit analysis

This section details the social cost benefit analysis of the three mechanisms identified in Section 2.2. The SCBA is developed using a 4 per cent social discount rate (DCR) for the central case in each of the finance scenarios.⁴ To align the report with Infrastructure Australia's assessment framework, sensitivity analysis is conducted at 7 and 10 per cent, respectively. Results are also presented at 5 per cent DCR, following NSW Treasury (2023). All inputs are valued constant terms with prices adjusted to Q4 2019-Q1 2020 levels.

There is a variety of ways of establishing social discount rates and little consensus around which rates are the most appropriate (Harrison 2010). Infrastructure Australia's Assessment Framework suggests 4, 7 and 10 per cent, with 7 per cent recommended for the central estimate (IA 2018:104). NSW Treasury (2023) set 3, 5 and 7 per cent at the recommended values, with 5 per cent for the central estimate. However, unlike many transport infrastructure projects, the benefits associated with social infrastructure projects are a mix of monetary and non-monetary benefits, both of which might be difficult to identify. As set out earlier, the substantial under-provision and projected future need for social and affordable housing reduces the risks associated with a business case. The projected demand for units will exceed the supply even if several projects at this scale are completed simultaneously.

Discount rates are typically set to reflect the opportunity cost of capital but can also be set on ethical grounds (Harrison 2010). Social and affordable housing, and its social infrastructure dimensions, also reflect social good and societal values. These go beyond efficiency considerations and incorporate equity (contemporaneous and inter-generational) and social justice aspects of housing provision. These benefits accrue over a longer period.

Our central case is therefore assessed against a social discount rate of 4 per cent, but it is worth stressing that the cases presented in this report are highly sensitive to the choice of discount rate.

Discounting is critical to assessing the social value of decisions when cost and benefits accrue over time. Given the asymmetric nature of cost and benefits associated with developing new

⁴ Following peer review a 5 per cent DCR was added. This follows NSW Treasury updated CBA guidance (NSW Treasury 2023).

social and affordable housing the choice of discount rate is particularly important. Development costs are contained within the first few years, with benefits predominately accruing upon the start of tenancies and spread across many years.

Discounting reflects the opportunity cost of capital, either in the form of delayed consumption/welfare or forgone alternative investment opportunities. In order to assist the decision of how resources are spent *today*, the value of future cost and benefits are discounted back to present day values. A benefit-cost ratio (BCR) greater than 1 or a positive net present value (NPV) indicated that, subject to the incorporated risk, the value of investment exceeds the cost of their investment. BCR and NPV values are thus key indicators informing decision makers. Although the program is structured in nine tranches, the financing of each tranche is assumed separate. Hence, the discounting of each tranche commences in Year 1 of the tranche, rather than Year 1 of the program.

5.1 Mechanism 1 Base case: market-based going concern

Table 6 summarises key cost-benefit results from building 50,000 new social and affordable dwellings in Sydney and Canberra based on a 90 per cent debt funded model serviced only by rental income receipts (Mechanism 1). This is the base case and serves as a point of comparison for Mechanism 2 and Mechanism 3.

As summarised in Section 4 and detailed in Appendix 3 **Mechanism 1 meets neither financial viability criteria** nor prudential lending criteria. The cost of servicing the required debt exceeds recurrent revenues. In the absence of a 20-year operational credit facility, this mechanism remains negatively geared throughout the assessment period. The retained asset value that is included in the assessment only materialises as a function of an ongoing credit facility – or an operational subsidy that can part-fund ongoing interest payments – and a low interest environment. As discussed in Appendix 3 recurrent revenue is insufficient to service debt obligations. The results in Table 6-8 are included only for illustrative purposes. *In the absence of financial viability, these are not realistic scenarios.*

Table 6 – Cost-benefit assessment Mechanism 1, Program of 50,000 dwellings

	4% SDCR	5% SDCR	7% SDCR	10% SDCR
NPV discounted cash flow	-\$8,051,929,455	-\$8,395,870,243	-\$8,904,507,371	-\$9,346,625,650
NPV discounted cash flow + retained asset value	-\$1,088,929,649	-\$2,754,751,154	-\$5,179,846,483	-\$7,319,452,832
NPV discounted cash flow + retained asset value + wider economic benefits*	\$94,405,200	-\$1,677,662,972	-\$4,276,756,791	-\$6,607,179,191
NPV discounted cash flow + total asset value + wider economic benefits*	\$5,347,194,527	\$2,577,918,095	-\$1,466,924,892	-\$5,077,908,468
B/C discounted cash flow	0.55	0.52	0.47	0.40
B/C discounted cash flow + retained asset value	0.94	0.84	0.69	0.53
B/C discounted cash flow + retained asset value + wider economic benefits*	1.01	0.90	0.74	0.58
B/C discounted cash flow + total asset value + wider economic benefits*	1.30	1.15	0.91	0.67

Note: * These estimates include calculations provided by the Australian Social Value Bank. The Australian Social Value Bank values used in these estimations are owned by Alliance Social Enterprises (www.asvb.com.au). They have been produced by Simetrica, using best practice methodology for policy evaluation. These values are **used under Licence # [P8Xw5y]** with expiry date [1/12/2020].

Table 7 – Cost-benefit assessment Mechanism 1, Sydney

	4% SDCR	5% SDCR	7% SDCR	10% SDCR
NPV discounted cash flow	-\$7,103,391,216	-\$7,392,558,583	-\$7,818,846,320	-\$8,186,207,955
NPV discounted cash flow + retained asset value	-\$771,130,548	-\$2,262,436,864	-\$4,431,581,591	-\$6,342,665,364
NPV discounted cash flow + retained asset value + wider economic benefits*	\$253,926,812	-\$1,329,474,664	-\$3,649,435,277	-\$5,725,897,815
NPV discounted cash flow + total asset value + wider economic benefits*	\$4,839,356,951	\$2,385,441,063	-\$1,196,588,404	-\$4,390,918,697
B/C discounted cash flow	0.55	0.51	0.46	0.39
B/C discounted cash flow + retained asset value	0.95	0.85	0.69	0.53
B/C discounted cash flow + retained asset value + wider economic benefits*	1.02	0.91	0.75	0.58
B/C discounted cash flow + total asset value + wider economic benefits*	1.31	1.16	0.92	0.67

Note: * These estimates include calculations provided by the Australian Social Value Bank. The Australian Social Value Bank values used in these estimations are owned by Alliance Social Enterprises (www.asvb.com.au). They have been produced by Simetrica, using best practice methodology for policy evaluation. These values are **used under Licence # [P8Xw5y]** with expiry date [1/12/2020].

Table 8 – Cost-benefit assessment Mechanism 1, Canberra

	4% SDCR	5% SDCR	7% SDCR	10% SDCR
NPV discounted cash flow	-\$948,538,239	-\$1,003,311,660	-\$1,085,661,052	-\$1,160,417,695
NPV discounted cash flow + retained asset value	-\$286,508,092	-\$466,963,678	-\$731,526,647	-\$967,677,561
NPV discounted cash flow + retained asset value + wider economic benefits*	-\$128,230,603	-\$322,837,695	-\$610,583,269	-\$872,171,469
NPV discounted cash flow + total asset value + wider economic benefits*	\$507,837,576	\$192,477,032	-\$270,336,488	-\$686,989,771
B/C discounted cash flow	0.60	0.57	0.51	0.43
B/C discounted cash flow + retained asset value	0.88	0.80	0.67	0.53
B/C discounted cash flow + retained asset value + wider economic benefits*	0.95	0.86	0.72	0.57
B/C discounted cash flow + total asset value + wider economic benefits*	1.21	1.08	0.77	0.66

Note: * These estimates include calculations provided by the Australian Social Value Bank. The Australian Social Value Bank values used in these estimations are owned by Alliance Social Enterprises (www.asvb.com.au). They have been produced by Simetrica, using best practice methodology for policy evaluation. These values are **used under Licence # [P8Xw5y]** with expiry date [1/12/2020].

5.2 Mechanism 2 Market sales case

Table 9 summarises key cost-benefit results from building 50,000 new social and affordable dwellings in Sydney and Canberra where 35 per cent of dwellings are sold at market prices to cross-subsidise construction costs of the remaining social and affordable housing stock. This reduces debt carried over to the operational periods (Year 2 onwards), but also reduces the number of income-generating properties to service remaining debt.

As summarised in Section 4 and discussed in Appendix 3 Mechanism 2 is – at low interest rates – financially viable. With a 3-percentage point increase in NHFIC and commercial lending rates, Mechanism 2 is no longer financially viable without additional capital injection, sale of properties or subsidy. There may also be additional organisational capacity constraints for not-for-profit social and affordable housing providers in implementing this mechanism.

At a 3.5 per cent NHFIC coupon payment recurrent surplus from the first year of operation is sufficient to service remaining debt at NHFIC’s prudential lending standards. When assessed only based on the discounted flow of cash associated with construction and operation over a 22-year, the net present value remains negative. However, when accounting for the retained as social and affordable housing asset value in Year 22 and wider social and economic benefits accruing over 20 years of operation, there is a net positive value of \$1.26 billion and \$2 billion, respectively. In our central assessment scenario (4 per cent DSCR) the B/C ratio is 1.12 over the 22-year assessment period.

Sensitivity analysis at 7 and 10 per cent, however, change the NPV from positive to breakeven (7 per cent DCR) and a B/C ratio less than one (10 per cent DCR), see Table 9.

With respect to the aims of the program, Mechanism 2 delivers 32,500 social and affordable dwellings over the assessment period and \$770 million in wider social and economic benefits.

After settlement of NHFIC debt some 27,000 dwellings are retained to meet the needs of future generation and provide an asset base for further investment. At 5, 7 and 10 per cent DCRs the wider social and economic benefits delivered reduce to \$700 million, \$587 million and \$463 million, respectively.

The market value of dwellings is critical to the SCBA assessment in two ways. First, under Mechanism 2, properties sold in Year 2 enable a project income (early in the discounting period). This raises the basic NPV values by approximately 50 per cent. Notably, this is a benefit not accruing to either low-income households or public sector. Neither of the other scenarios have an equivalent source of income in Year 2. In terms of the NPV and B/C calculations, benefits accruing early in a project have a greater impact than benefits accruing later in a project. Second, the difference between NPV of the discounted cash flow and discounted cash flow plus retained asset value highlights the centrality of property values in enabling a positive outcome. Underlying the SCBA modelling in this report is an annual real house price appreciation of 1.5 per cent per annum (half the historic real house price trend).

The outcomes across Sydney and Canberra differ somewhat. Sydney outcomes are comparable to the program outcome (the majority of the program is based in Sydney), with Canberra outcomes for mechanism 2 generally just below a breakeven B/C ratio.

Table 9 – Cost-benefit assessment Mechanism 2, Program of 50,000 dwellings

	4% SDCR	5%SDCR	7% SDCR	10% SDCR
NPV discounted cash flow	-\$3,049,724,420	-\$3,347,151,451	-\$3,816,028,485	-\$4,291,032,370
NPV discounted cash flow + retained asset value	\$1,264,562,930	\$148,096,202	-\$1,508,221,821	-\$3,034,992,403
NPV discounted cash flow + retained asset value + wider economic benefits*	\$2,034,422,411	\$848,832,875	-\$920,686,438	-\$2,571,599,526
NPV discounted cash flow + total asset value + wider economic benefits*	\$5,709,556,080	\$3,826,266,060	\$1,045,222,943	-\$1,501,639,555
B/C discounted cash flow	0.82	0.80	0.76	0.72
B/C discounted cash flow + retained asset value	1.07	1.01	0.91	0.80
B/C discounted cash flow + retained asset value + wider economic benefits*	1.12	1.05	0.94	0.83
B/C discounted cash flow + total asset value + wider economic benefits*	1.33	1.23	1.07	0.90

Note: * These estimates include calculations provided by the Australian Social Value Bank. The Australian Social Value Bank values used in these estimations are owned by Alliance Social Enterprises (www.asvb.com.au). They have been produced by Simetrica, using best practice methodology for policy evaluation. These values are **used under Licence # [P8Xw5y]** with expiry date [1/12/2020].

Table 10 – Cost-benefit assessment Mechanism 2, Sydney

	4% SDCR	5% SDCR	7% SDCR	10% SDCR
NPV discounted cash flow	-\$2,556,145,590	-\$2,811,734,784	-\$3,215,472,497	-\$3,626,253,836
NPV discounted cash flow + retained asset value	\$1,300,119,524	\$312,443,207	-\$1,152,671,945	-\$2,503,560,164
NPV discounted cash flow + retained asset value + wider economic benefits*	\$1,966,859,755	\$919,280,639	-\$643,931,861	-\$2,102,389,712
NPV discounted cash flow + total asset value + wider economic benefits*	\$5,251,826,333	\$3,580,617,446	\$1,113,268,610	-\$1,146,021,029
B/C discounted cash flow	0.83	0.81	0.77	0.72
B/C discounted cash flow + retained asset value	1.09	1.02	0.92	0.81
B/C discounted cash flow + retained asset value + wider economic benefits*	1.13	1.06	0.95	0.84
B/C discounted cash flow + total asset value + wider economic benefits*	1.35	1.25	1.08	0.91

Note: * These estimates include calculations provided by the Australian Social Value Bank. The Australian Social Value Bank values used in these estimations are owned by Alliance Social Enterprises (www.asvb.com.au). They have been produced by Simetrica, using best practice methodology for policy evaluation. These values are **used under Licence # [P8Xw5y]** with expiry date [1/12/2020].

Table 11 – Cost-benefit assessment Mechanism 2, Canberra

	4% SDCR	5% SDCR	7% SDCR	10% SDCR
NPV discounted cash flow	-\$493,578,830	-\$535,416,667	-\$600,555,988	-\$664,778,534
NPV discounted cash flow + retained asset value	-\$103,411,740	-\$219,320,289	-\$391,847,078	-\$551,187,246
NPV discounted cash flow + retained asset value + wider economic benefits*	-\$292,490	-\$125,421,047	-\$313,051,779	-\$488,964,821
NPV discounted cash flow + total asset value + wider economic benefits*	\$457,729,747	\$245,648,614	-\$600,555,988	-\$355,618,525
B/C discounted cash flow	0.78	0.76	0.71	0.66
B/C discounted cash flow + retained asset value	0.95	0.90	0.81	0.72
B/C discounted cash flow + retained asset value + wider economic benefits*	1.00	0.94	0.85	0.75
B/C discounted cash flow + total asset value + wider economic benefits*	1.20	1.11	0.97	0.82

Note: * These estimates include calculations provided by the Australian Social Value Bank. The Australian Social Value Bank values used in these estimations are owned by Alliance Social Enterprises (www.asvb.com.au). They have been produced by Simetrica, using best practice methodology for policy evaluation. These values are **used under Licence # [P8Xw5y]** with expiry date [1/12/2020].

5.3 Mechanism 3 Tax credit case

Table 12 summarises key cost-benefit results from building 50,000 new social and affordable dwellings in Sydney and Canberra where upfront equity injection is enabled through a tax credit policy developed for CHIA NSW – the Affordable Housing Infrastructure Booster (Nygaard 2019a).

This reduces borrowing required to finance the program and debt serviced by rental income over the operational period (Mechanism 3).

As noted in the previous section, Mechanism 3 is a financially viable proposition in both the current lending environment and in scenarios with higher borrowing costs (a policy design feature). Recurrent surplus from the first year of operation is sufficient to service remaining debt at NHFIC's prudential lending standards. When assessed only based on the discounted flow of cash associated with construction and operation over a 22-year the net present value also here remains negative. However, when accounting for the retained as social and affordable housing asset value in Year 22 and wider social and economic benefits accruing over 20 years of operation there is a net positive value of \$3.5 billion and \$4.6 billion, respectively. In our central assessment scenario (4 per cent DSCR) the B/C ratio is 1.25 over the 22-year assessment period. Based on the asset value retained as social and affordable housing and WSEB, the tax credit mechanism has the highest B/C ratio of the three mechanisms under comparison.

B/C ratios remain positive at 5 per cent DCR. Sensitivity analysis at 7 and 10 per cent, however, change the NPV from positive to negative, and the B/C ratio from greater than one to less than one.

With respect to the aims of the program, Mechanism 3 delivers 50,000 social and affordable dwellings over the assessment period and \$1,084 million in wider social and economic benefits. After settlement of NHFIC debt some 47,000 dwellings (NIFIC coupon 3.5 per cent, commercial lending 5.5 per cent) are retained to meet the needs of future generation and provide an asset base for further investment. At 5, 7 and 10 per cent discounting the wider social and economic benefits (WSEB) delivered reduce to \$993 million, \$841 million and \$673 million, respectively. The higher WSEB estimates, compared to Mechanism 2, are a result of the larger proportion of properties that is retained as social and affordable housing throughout the assessment period.

This also has important distributional consequences. Whereas under Mechanism 2 a substantial proportion of the benefit (in the form of market sales) accrue to (typically) middle- and higher-income earners, the WSEB under Mechanism 3 accrue to very low- and low-income earners, as well as through increased public sector cost off sets. Total non-real estate related WSEB are 29 per cent greater for Mechanism 3 compared to Mechanism 2. The distributional implications are also tractable in the reversal of B/C ratio when considering *total* terminal asset value, compared to asset value *retained as social and affordable housing*.

Unlike Mechanism 1 and 2, Mechanism 3 is based on a tax credit model (AHIB). In this model, government foregoes future tax receipts as a means of enabling upfront equity injection to fund social and affordable housing. To illustrate this, Tables 12 through 14 compares both the NPV of wider social and economic benefits as well as the WSEB plus retained asset value, against the NPV of the foregone government tax receipts. In our estimate the WSEB generate by social and affordable housing equates to approximately 37 per cent of the foregone tax revenue.

Table 12 – Cost-benefit assessment Mechanism 3, Program of 50,000 dwellings

	4% SDCR	5% SDCR	7% SDCR	10% SDCR
NPV discounted cash flow	-\$8,016,617,883	-\$8,367,262,345	-\$8,885,618,439	-\$9,336,345,216
NPV discounted cash flow + retained asset value	\$3,466,223,904	\$935,635,801	-\$2,743,195,219	-\$5,993,288,288
NPV discounted cash flow + retained asset value + wider economic benefits*	\$4,550,458,731	\$1,928,208,204	-\$1,901,979,062	-\$5,320,379,237
NPV discounted cash flow + total asset value + wider economic benefits*	\$5,283,406,079	\$2,522,010,213	-\$1,509,909,495	-\$5,106,992,625
B/C discounted cash flow	0.56	0.52	0.47	0.40
B/C discounted cash flow + retained asset value	1.19	1.05	0.84	0.61
B/C discounted cash flow + retained asset value + wider economic benefits*	1.25	1.11	0.89	0.66
B/C discounted cash flow + total asset value + wider economic benefits*	1.29	1.14	0.91	0.67
WSEB as a share of tax credit cost (NPV basis), %	37%	37%	36%	35%
WSEB + retained asset value as a share of tax credit cost (NPV basis), x times	x4.31	x3.79	x2.95	x2.07

Note: * These estimates include calculations provided by the Australian Social Value Bank. The Australian Social Value Bank values used in these estimations are owned by Alliance Social Enterprises (www.asvb.com.au). They have been produced by Simetrica, using best practice methodology for policy evaluation. These values are **used under Licence # [P8Xw5y]** with expiry date [1/12/2020].

Table 13 – Cost-benefit assessment Mechanism 3, Sydney

	4% SDCR	5% SDCR	7% SDCR	10% SDCR
NPV discounted cash flow	-\$7,073,509,856	-\$7,368,350,006	-\$7,802,862,126	-\$8,177,508,446
NPV discounted cash flow + retained asset value	\$3,298,296,412	\$1,034,435,568	-\$2,254,756,105	-\$5,157,912,822
NPV discounted cash flow + retained asset value + wider economic benefits*	\$4,323,353,772	\$1,967,397,767	-\$1,472,609,791	-\$4,541,145,273
NPV discounted cash flow + total asset value + wider economic benefits*	\$4,869,238,312	\$2,409,649,640	-\$1,180,604,211	-\$4,382,219,188
B/C discounted cash flow	0.55	0.52	0.46	0.39
B/C discounted cash flow + retained asset value	1.21	1.07	0.84	0.62
B/C discounted cash flow + retained asset value + wider economic benefits*	1.28	1.13	0.90	0.66
B/C discounted cash flow + total asset value + wider economic benefits*	1.31	1.16	0.92	0.68
WSEB as a share of tax credit cost (NPV basis), %*	40%	40%	38%	37%
WSEB + retained asset value as a share of tax credit cost (NPV basis), x times*	x4.50	x3.96	x3.08	x2.16

Note: * These estimates include calculations provided by the Australian Social Value Bank. The Australian Social Value Bank values used in these estimations are owned by Alliance Social Enterprises (www.asvb.com.au). They have been produced by Simetrica, using best practice methodology for policy evaluation. These values are **used under Licence # [P8Xw5y]** with expiry date [1/12/2020].

Table 14 – Cost-benefit assessment Mechanism 3, Canberra

	4% SDCR	5% SDCR	7% SDCR	10% SDCR
NPV discounted cash flow	-\$943,108,027	-\$998,912,339	-\$1,082,756,313	-\$1,158,836,770
NPV discounted cash flow + retained asset value	\$238,161,450	-\$41,899,273	-\$450,869,433	-\$814,927,904
NPV discounted cash flow + retained asset value + wider economic benefits*	\$396,438,939	\$102,226,709	-\$329,926,055	-\$719,421,812
NPV discounted cash flow + total asset value + wider economic benefits*	\$513,267,788	\$196,876,353	-\$267,431,749	-\$685,408,847
B/C discounted cash flow	0.61	0.57	0.51	0.43
B/C discounted cash flow + retained asset value	1.10	0.98	0.80	0.60
B/C discounted cash flow + retained asset value + wider economic benefits*	1.17	1.04	0.85	0.65
B/C discounted cash flow + total asset value + wider economic benefits*	1.21	1.08	0.88	0.67
WSEB as a share of tax credit cost (NPV basis), %*	41%	40%	39%	38%
WSEB + retained asset value as a share of tax credit cost (NPV basis), x times*	x3.35	x2.96	x2.33	x1.66

Note: * These estimates include calculations provided by the Australian Social Value Bank. The Australian Social Value Bank values used in these estimations are owned by Alliance Social Enterprises (www.asvb.com.au). They have been produced by Simetrica, using best practice methodology for policy evaluation. These values are **used under Licence # [P8Xw5y]** with expiry date [1/12/2020].

However, when including the retained asset value the combined benefit equate exceeds the forgone tax revenue over 4.⁵ From a housing systems perspective the retained asset value also provides an asset base for social and affordable housing providers to leverage additional capital for investment, stock expansion or refurbishment. **Importantly, the estimated retained asset value and wider social and economic benefits continue to exceed foregone government revenue also at 5, 7 and 10 per cent discount rates.** This is also the case at the higher interest rate scenario where the tax credit approximately doubles. At the higher interest rate scenario, the WSEB exceed the cost of public support at the 4 per cent SDCR and breaks even at the 7 per cent SDCR.

The overall social cost benefit assessment across the Canberra and Sydney tranches are similar to the overall outcome. The B/C ratios in Canberra are marginally higher due to lower land values in, largely, greenfield developments.

5.4 Additional benefits

This section considers additional sources of benefits that are currently not monetised (or partially monetised) and included in the social cost benefit assessment: employment (in construction) and social and affordable housing as a platform for delivering additional services to vulnerable tenants. These are summarised in Table 15. Three of these sources are discussed further in the below. Of these, 'non-housing service enablement' and 'social justice' provide

⁵ Terminal asset value is here a proxy for future user benefits beyond the assessment period.

additional non-monetised benefit of providing social and affordable housing and complement the evidence in sections 5.1-5.3.

Table 15 – Additional (or incomplete) WSEB not included in the analysis

Benefit	
Ongoing wellbeing value (beyond Year 1) of affordable and secure housing	Omitted, lack of evidence
Employment/employability benefits	Omitted, lack of evidence in relation to SH/AF stock availability/entry.
Property and open space design, including landscaping, balconies, gardens, universal design	Omitted, lack of evidence
Construction standards, e.g. CO2 omissions, NatHERS rating	Omitted, lack of evidence
Construction related employment	Omitted
Non-housing services enabled through social and affordable rent (this includes employment/employability, social connectedness, volunteering, financial literacy, parenting, diet and health skills, education and youth-labour transitions).	Omitted. However, existing evidence base is available. Not direct effect of SH/AF stock availability.
Social justice	Omitted
Productivity gains based on well-located / connected development or land value uplift	Omitted

Note: entries in **bold** discussed in the below sections.

Construction related employment

In line with Infrastructure Australia’s assessment framework (IA 2018) and general guidelines on social cost benefit analysis (CoA 2006), multiplier effects arising from payment of salaries or additional income are not included in the analysis in this section. Nevertheless, a large construction program also provides a range of employment opportunities. Particularly in period of economic slowdowns, or recessions, the investment in social and affordable housing is seen as a potential counter-cyclical policy to stabilise employment and aggregate demand (Maclennan et al. 2019). For instance, the Victorian government’s recent announcement to build 12,000 social housing dwellings also stated that such a program would create 10,000 jobs over four years.⁶ A review of the Social Housing Initiative that took place as part of the economic stimuli following the Great Financial Crisis found that for each \$1 spent in construction activity, and additional \$0.30 was generated in economic activity (Davison et al. 2020).

From a social cost benefit perspective, second round and multiplier effects are difficult to include as they also contain (bundle within them) a range of transfer effects that can be difficult to assess. For instance, employment on construction projects will, at best, include a mix of workers who previously were unemployed and some that were employed; at worst, it will only include workers who otherwise would have been employed on other construction projects. From a social cost and benefit perspective, the inclusion of these employment benefits (and any resulting multiplier effects) is only relevant if the transfer of employment from a non-social/affordable housing project to a social/affordable housing project generates an additional effect.⁷

Given the very significant impact of Covid-19 on employment, it is at least likely that some additional employment arises from a 9-year social and affordable housing construction program. From February to August 2020, the number of construction sector jobs declined nationally.

⁶ <https://www.sbs.com.au/news/victoria-to-spend-5-3-billion-on-12-000-new-social-housing-homes-across-the-state>

⁷ This is the reasoning behind the marginal propensity to consume argument in Section 3.

However, there are also differences across the states. In NSW, the total number of construction employment *increased* between February and August 2020 while the number declined in the ACT (ABS 6291.0).

In relation to the three mechanisms discussed in Section 4 and 5, differences in any benefits arising from construction employment are expected to be negligible.

Tenant and non-housing services

The assessment in Section 5 focused on benefits derived from tenants entering into a social or affordable housing tenancy. In practice, many social and affordable housing providers also deliver a range of employment, education and health related services, each of which produce additional individual benefits, public sector cost offsets and wellbeing effects. For instance, according to the Productivity Commission, the lack of appropriate housing and support has resulted in additional costs to the public sector (PC 2019:548). Social and affordable housing can provide a cost-effective way of managing mental health related public costs. However, in practice social and affordable housing is not providing these services. The current state is driven in part due to both a lack of appropriate and available housing options as well as a lack of integration between housing and mental health services (PC 2019).

With respect to urban productivity, social and affordable housing can enable productivity gains in the short and long-term by providing a platform from where to address a number of the individual and area-based determinants employment and education outcomes:

- Provide housing at reduced costs that enables lower-income households to live closer to employment opportunities. This has a dual income (incentive) effect – more retained earnings, lower commuting costs. A detailed analysis and CGE modelling of potential productivity gains are presented in Maclennan et al. (2019);
- Many social and affordable housing providers provide additional employment, skills and financial literacy support to tenants;
- Provide family and parenting skills that enhance the home-learning environment;
- Engage in place-making activities that increase tenant's social networks and capital in mixed income neighbourhoods.

None of these potential benefits are included in Section 5 as they represent benefits associated with locational attributes, or specific programs or support packages. However, as per the conclusion from the Productivity Commission regarding housing and mental health, there is a lack of appropriate and affordable housing from which to deliver such services. In terms of estimating benefits and including these in a social cost and benefit assessment the Australian Social Value Bank provides a range of monetary estimates (Wellbeing Values and secondary effects) across a range of health, social and community, and sports related outcomes.

In relation to the three mechanisms discussed in Section 4 and 5, Mechanism 3 (Tax credit) is expected to generate a larger benefit than Mechanism 2 (Market sales). This is because Mechanism 3 enables a greater number of social and affordable dwellings in the short and long term.

Land value uplift⁸

Evidence from social and affordable housing investment projects domestically and internationally suggests that these can generate positive impacts on adjacent properties, resulting in land value uplift (Nygaard et al 2022). For specific housing projects and proposals land value uplift ought to be considered and, where relevant, included in the economic assessment. Guidance on its inclusion can be sourced from international practice, e.g. from the UK, the DCLG Appraisal Guide (DCLG 2016).

Achieving land value uplift will in some cases be contingent on specific design factors (location (e.g. the specific demand/market failure context), density, layout, provision of amenities, planning permissions, as well as mixed-tenure characteristics). For the purpose of this SCBA, and the attribution of benefits to the affordability and tenure status in new developments, we decided that the issue of attribution – at the general level of analysis undertaken here – was insufficiently clear to warrant inclusion. This will, however, differ in many specific cases and so should be considered as part of the economic appraisal of investment in social and affordable housing.

Social justice

Social and affordable housing can also generate a range of social justice outcomes that (currently) are difficult to valorise. Work by SGS Economics and Planning details the links between housing development and the social profile of Australian cities (SGS 2013). Their overall conclusions are that (SGS 2013:8):

- Lack of affordable housing can result in locational disadvantage and social polarisation within the city.
- Lack of affordable and diverse housing can create displacement of low-income households.
- A segmented housing market can create a city, which excludes some groups.
- A mix of housing and household types is critical to achieving demographic diversity within the city.

* * *

In relation to the three mechanisms discussed in Section 4 and 5, Mechanism 2 and 3 have different strengths and weaknesses. Mechanism 3 provides a larger number of social and affordable housing and thus a means of addressing social polarisation and exclusion. Mechanism 2, on the other hand, potentially provides additional tenure mix. A caveat here is that the sale of multiunit properties may go to private landlords, who then let properties out at market rates to other low-income households.

6 Conclusion

This report provides an integration of the existing Australian evidence base around wider social and economic benefits associated with the construction and provision of 50,000 social and affordable housing in a social cost-benefit analysis.

The provision of social and affordable housing is analysed through three financing mechanism – as a market-based going build-to-rent concern, with market sales that cross subsidises social and

⁸ This sub-section added after peer-review.

affordable housing construction, and with a tax credit policy that enables upfront equity injection. Of these mechanisms, only the market sales and tax credit mechanisms are financially viable means of providing social and affordable housing. The need for some form of subsidy to provide accommodation below market price is already well established.

Across each of the financing mechanisms, the inclusion of wider social and economic benefits results in a significant improvement in the respective benefit-cost ratios. At a 4 per cent social discount rate the B/C ratio increases from 1.19 to 1.25 under a tax credit mechanism; and from 1.08 to 1.12 under a market sales mechanism. In monetary terms, the NPV of WSEB under a tax credit mechanism is approximately \$1.1bn, substantially higher than \$770 generated under the market sales approach. The difference is due to a substantially higher share of dwellings retained as social and affordable *during* the 22-year assessment period, 100 per cent versus 65 per cent, tax credit and market sales, respectively.

A tax credit model requires forgone commonwealth revenue. The WSEB generated by a tax credit model amounts to some 37 per cent of the foregone revenue. When including the value of any retained housing stock, after all debt is settled in year 22, the combined retained asset and WSEB value exceeds the forgone Commonwealth revenue 4 times. Under a tax credit mechanism some 94 per cent of the housing stock can be retained for further social and affordable housing purposes *after* the 22-year assessment period. Under the market sale mechanism this share is much lower, 54 per cent.

Finally, there are important distributional differences between a tax credit and market sales mechanism. Market sales generate a large positive benefit in Year 2 of the assessment period. This substantially improves the NPV and B/C ratio of this mechanism when considering *total* asset value after 22 years. However, a substantial part of these benefits do not accrue to low-income households or as public sector cost offsets, but to homeowners or investors. Under a tax credit mechanism the NPV of social and affordable housing construction accrues to low-income households or the public sector in the form of public sector cost offsets, improved household disposable income, and improved societal wellbeing (monetised through the Australian Social Value Bank's Wellbeing Values). When comparing B/C based on asset value retained as social and affordable housing, the tax credit mechanism generates the highest social returns.

Appendix 1 Operation, maintenance and real estate parameters

Table A1 Recurrent Cost Assumptions

Project operating costs (recurrent)	Sydney	Canberra
Repairs (% of Replacement Value)	0.1%	0.1%
Operating Maintenance (% of Replacement Value)	0.5%	0.5%
Replacement Sinking Fund (% of Replacement Value)	0.5%	0.5%
Vacancy Rate (% of Rental Income)	2.0%	2.0%
Bad Debt (% of Rental Income)	0.5%	0.5%
Management Cost (per unit)	\$1,600	\$1,600
Water Rates (per unit)	\$600	\$650
Council Rates (per unit)	\$1,000	\$2,200
Insurance (per unit)	\$500	\$500

Table A2 Market rent assumptions

Area - rents \$	1-bed	2-bed	3-bed	4-bed
Parramatta	\$400	\$410	\$500	
Burwood	\$399	\$510	\$708	
Canada Bay	\$460	\$550	\$680	
Hurstville	\$350	\$400	\$550	
Canterbury	\$310	\$360	\$450	
Concord	\$370	\$460	\$598	
Ryde	\$440	\$420	\$600	
Strathfield	\$400	\$460	\$550	
Belconnen (u)	\$360	\$430	\$480	
Belconnen (h)		\$420	\$480	\$590
Gungahlin (u)	\$360	\$430	\$480	
Gungahlin (h)		\$420	\$480	\$590
Weston Creek/Molonglo (u)	\$325	\$430	\$510	
Weston Creek/Molonglo (h)		\$425	\$520	\$640
Woden Valley (u)	\$325	\$430	\$510	
Tuggeranong (u)	\$345	\$440	\$445	
Tuggeranong (h)		\$400	\$470	\$570

Note: u= units/apartments; h=houses/townhouses. In modelling affordable rents are set at 74.99% of market rents.

Table A3 Market property value assumptions

Area - sales \$	1-bed	2-bed	3-bed	4-bed
Burwood (u)	320,000	472,000	576,000	
Canada Bay (u)	464,000	480,000	632,000	
Canterbury-Bankstown (u)	320,000	336,000	520,000	
Georges River (u)	356,000	422,400	512,000	
Inner West (u)	416,000	528,000	632,000	
Parramatta (u)	312,000	391,200	456,000	
Ryde (u)	392,000	408,000	576,000	
Strathfield (u)	360,000	488,000	672,000	
Belconnen (u)	310,000	375,000	430,000	
Belconnen (h)		375,000	448,000	560,000
Gungahlin (u)	275,000	320,000	460,000	
Gungahlin (h)		375,000	448,000	560,000
Weston Creek/Molonglo (u)	235,000	295,000	390,000	
Weston Creek/Molonglo (h)		435,500	520,000	650,000
Woden Valley (u)	220,000	250,000	445,000	
Tuggeranong (u)	265,000	320,000	475,000	
Tuggeranong (h)		375,000	452,000	565,000

Note: u= units/apartments; h=houses/townhouses

Table A4 Land value assumptions

Area - \$ sqm	\$ sqm
Parramatta	5,068
Burwood	7,702
Canada Bay	6,207
Hurstville	5,308
Canterbury	4,876
Concord	5,592
Ryde	3,381
Strathfield	4,533
Belconnen (grf, uv)	900
Gungahlin (grf, uv)	900
Woden Valley	3,600
Weston Creek (grf, uv)	900
Tuggeranong (grf, uv)	900

Note: grf=greenfield; uv=unimproved land value.

Appendix 2 WSEB parameter values and assumptions

Nygaard (2019b) summarises a range of wider social and economic benefits (WSEB) associated with the provision of social and affordable housing, their estimated monetary benefits (magnitude of effect) and the likelihood of effects taking place (incidence of effect). The review draws on a wider range of Australian research as well as estimates of wellbeing, cost offsets and private benefits produced by the Australian Social Values Bank. Subsection 'Wider economic benefits' in Section 3 provide additional information on these sources.

In terms of estimating the WSEB associated with any specific development a key consideration is the profile of tenants that will be occupying the properties. Following a payment-by-performance methodology developers and funders may want to set out specific targets and measurements to ensure that the tenant profile over time remains representative of WSEB estimates or adjust these on an ongoing basis so show positive or negative deviation from any initial projections.

Some benefits identified in the literature suggests a large WSEB. It may be tempting to extrapolate this to an entire development, but in practice the tenant profile will be mixed, and many tenants are not associated with any WSEB *as a result of moving to a social or affordable property alone*. As argued by Nygaard (2019b), social and affordable housing can also provide a platform from which to deliver additional wrap around services and tenant services more generally (education, employment, health etc.). If this is the case, then the social costs and benefits that arise should be attributed to the respective service or program.

This Appendix details the assumptions behind the tenant profile used in this analysis at the time of entry and over time. Table 4 (main report) provides an overview of the included WSEBs.

Turnover of tenancies

In 2018/19 there were some 42,300 new allocations of social housing. In total, there were 415,083 households in social housing (AIHW 2020). Exits and entries in public housing have remained stable since 2011/12, with approximately 20,000 new tenancies (out of 294,057 public housing households). This suggests an annual turnover of approximately 7 per cent per annum. In accordance with ASVB guidelines, wellbeing values should only be applied in Year 1, assuming a subsequent re-setting or adjustment of expectations (ASVB 2017). Overtime, therefore, wellbeing values are only applied to 7 per cent of tenants, based on the assumed 7 per cent turnover rate.

Year 12 students

According to AIWH (2020) there were 42,490 children aged 15-19. Proportionally this gives 8,498 of Yr 12 age. There was a total of 165,901 children aged 0-19. The proportion of Year 12 students in any given year is therefore approximately 5% of all children. This is a high benefit, low incidence WSEB.

Homeless

The majority of new housing allocations are provided to those 'in greatest need': according to AIHW (2020) data 76 per cent of new housing allocations in public housing, 60 per cent of allocations in SOMIH and 66 per cent of allocations in community housing are to those 'in greatest need'. The combined 'in greatest need allocation' in public and community housing is 71 per cent.

Greatest need applies to households if, at the time of allocation, household members were subject to one or more of the following circumstances:

- i. they were experiencing homelessness
- ii. they were at risk of homelessness:
 - a. including their life or safety was threatened within existing accommodation
 - b. a health condition was exacerbated by existing accommodation
 - c. their existing accommodation was inappropriate to their needs
 - d. they were experiencing very high rental costs.

In 2018/19, some 7,150 (47 per cent) out of 15,059 priority allocations were made to people experiencing homelessness. Combining the 'in greatest need' proportion and 'allocation to homeless proportion' gives a combined social housing allocation of 33 per cent. This is a high benefit WSEB, incidence is a choice variable. In modelling, the 33 per cent allocation was applied to all 1-bedroom dwellings. We further divided allocations to people experiencing homelessness into 10 per cent to rough-sleepers and 90 per cent to people in temporary accommodation. ASVB calculates different benefits for the two groups, with rough sleepers associated with the highest cost offset, but also the highest additional recurrent costs. The net (public sector cost offset less additional recurrent cost) ASVB effect for those transitioning from temporary accommodation to social housing is in line with Zaretsky et al's (2013) estimate of no additional service provision.

In terms of retention of benefit over time a number of Australian studies suggests that cost offsets last for at least 4 years, in some cases marginally increasing (Johnsen et al. 2015, Seiwright et al. 2020). These studies also suggest that some 8 in 10 people who are homeless retain their tenancy over this period. In estimating the over time social benefit arising from housing people who are homeless a constant rate is retained over 5 years, with an assumed annual 20 per cent drop out. By dropping out the vacated properties are, in our modelling, re-allocated to other people experiencing homelessness. Over time therefore, the impact ratio of 0.8 is retained annually. ASVB estimate additionally account for deadweight loss.

Domestic violence

In 2018/19 some 3,463 (23 per cent) out of 15,059 priority allocations were made to those at risk of homelessness due to 'life or safety at risk in accommodation'. We use this as a proxy for domestic violence allocations. Combining the priority allocations and 'life or safety' proportions gives an overall proportion of 17 per cent of all social housing allocations to this category. Note, as per homelessness, this is a choice variable.

Number of parents for anxiety/stress etc calculations

Approach here differs for social housing and affordable housing component.

- For number of parents in social housing stock the benefit allocations (single and couple benefits) in Table 3 are the basis for counting parents who might be experiencing stress/anxiety related to unaffordable housing. People experiencing homelessness and domestic violence are subtracted to avoid potential double counting of health benefits captures in homelessness/domestic violence estimates.
- For number of parents in affordable housing stock we assume that 1-bedroom dwellings house one parent, and that 2-/3-/4-bedroom dwellings house 50:50 single and couple households. There is a high proportion of one-person households in Q1 and Q2 income quintiles. However, assigning only one parent to 1-bedroom dwellings potentially underestimates total number of parents. The sample of affordable housing tenants who might benefit is then adjusted for the proportion of PRS tenants in housing stress,

excluding those who may more than 50% of income on rent on the assumption that the 25% discount would formally still leave them in rental stress. Per cent in rental stress is sourced from Hulse et al. (2019:55). This gives a ratio of .40 of parents in affordable housing tenancies that might benefit.

While the number of potential beneficiaries for this indicator is high, the incidence of the benefit is low (Nygaard 2019b).

Overcrowding

Some 10% of PRS experienced overcrowding (Nygaard 2019). In 2018, some 681 out of 15,059 priority allocations were made to those at risk of homelessness due to 'housing inappropriate to need'. If 70% of allocations are priority allocations, then 3% of all social housing allocations were to this category.

Spend on depression

Causality around mental health is difficult to establish. Nygaard (2019b) summarises estimates for the incidence of severe and other depression. Due to uncertainty around causality, only other depression, not severe depression, is used in this analysis. Incidence is established from AHURI research (see Nygaard 2019b). This impact ratio (0.06) is applied to all social housing tenants for whom benefits relating to homelessness or domestic violence has not already been allocated.

For AF tenants, sample of eligible tenants is adjusted for the proportion of PRS tenants in housing stress, excluding those who may more than 50% of income on rent on the assumption that the 25% discount would formally leave them in rental stress. Per cent in rental stress from Hulse et al 2019, p. 55. This gives a ratio of .40 of AF tenancies who could potentially benefit.

* * *

Table A5 provides an illustration of the calculation of wider social and economic benefits for Tranche 1 (Parramatta) in Sydney. ASVB values are proprietary and hence removed.

Table A5 Wider social and economic benefit calculation, real terms, Tranche 1 Sydney

Category	Tenant	Beneficiary	Benefit p.p	Impact ratio	Number of HH	Turnover	Total	Yr 3	Yr 4	Yr22
Cash benefits										
Housing	ASVB (public sector) to social hse	Public	-	0.80	-	7%	\$4,961,482*	\$248,074	\$248,074	\$248,074
	ASVB (public sec) temporary to social	Public	-	0.80	-	7%	\$20,575,636*	\$1,028,782	\$1,028,782	\$1,028,782
Household finances	Affordable rent (combined for SH, minus homelessness and DV)	Social	\$752,184 (total)	0.294	845		\$4,422,845	\$221,142	\$221,142	\$221,142
	1-bed	Private	\$832	0.98	500	7%	\$8,160,124	\$408,006	\$408,006	\$408,006
	2-bed	Private	\$853	0.98	500	7%	\$8,364,127	\$418,206	\$418,206	\$418,206
	3-bed	Private	\$1,040	0.98	250	7%	\$5,100,078	\$255,004	\$255,004	\$255,004
	4-bed	Private		0.98	0	7%	-	\$-	\$-	\$-
	ASVB make ends meet	Public		0.25	-	7%	\$3,284,138*	\$164,207	\$164,207	\$164,207
	Complete Yr 12	Private	\$263	0.05	88	7%	\$271,515	\$13,576	\$13,576	\$13,576
Health and DV	Pers spent other depression	Private	\$ 1,160	0.06	1702	7%	\$2,370,065	\$118,503	\$118,503	\$118,503
	Public spend other depression	Public	\$4,817	0.06	1702	7%	\$9,840,001	\$492,000	\$492,000	\$492,000
	Domestic violence	Public	\$24,294	1.00	143	7%	\$8,112,970	\$3,481,962	\$243,737	\$243,737
	Overcrowding relief	Public	\$36	1.00	113	7%	\$81,489	\$4,074	\$4,074	\$4,074
Total monetary	Combined						\$75,544,468	\$6,853,536	\$3,615,312	\$3,615,312
Wellbeing benefits										
	ASVB (public sec) to social hse	Private	-	0.80	-	7%	\$989,369*	\$424,622	\$29,724	\$29,724
	ASVB (public sec) temporary to social	Private	-	0.80	-	7%	\$4,670,277*	\$2,004,411	\$140,309	\$140,309
	ASVB make ends meet	Private	-	0.25	-	7%	\$5,926,786*	\$2,543,685	\$178,058	\$178,058
	Completed Yr12	Private	-	0.05	-	7%	\$104,994*	\$45,062	\$3,154	\$3,154
	Anxiety relief	Private	-	0.06	-	7%	\$2,694,809*	\$1,156,570	\$80,960	\$80,960
	Overcrowding relief	Private	-	1.00	-	7%	\$793,284*	\$340,465	\$23,833	\$23,833
	Parental stress	Private	-	0.06	-	7%	\$1,576,307*	\$676,526	\$47,357	\$47,357
Total wellbeing							\$16,755,827*	\$7,191,342	\$503,394	\$503,394
Total monetary and wellbeing							\$92,300,295	\$14,044,878	\$4,118,706	\$4,118,706
NPV @ 4%							\$68,127,217			

Note: There are no 4-bedroom properties in the Parramatta tranche. * These estimates are based on calculations provided by the Australian Social Value Bank. The Australian Social Value Bank values used in these estimations are owned by Alliance Social Enterprises (www.asvb.com.au). They have been produced by Simetrica, using best practice methodology for policy evaluation. These values are **used under Licence # [P8Xw5y]** with expiry date [1/12/2020].

Appendix 3 Financial assessment: details

As discussed in Table 1, the financial assessment explores three distinct scenarios: Market-based going concern (Base Case), Equity through market sales (Market Sales), and Equity through a tax credit (Tax Credit). Each scenario is described in further detail below. In brief, the Base Case explores the financial viability of the projects in the absence of any market sales, land equity contribution, or capital contribution from a government agency. The second scenario, Market Sales, allows for 35 per cent of the dwellings to be sold to assist in financing the construction. Sales are discounted by 15 per cent relative to market value. Lastly, we explore the use of a tax credit scenario, the Affordable Housing Infrastructure Booster, which models the equity investment as a capital grant into the project. The financial details of the scenarios are listed in Table A6. The analysis is undertaken in nominal terms and thus factor in cost, revenue and property value increases including general price increases.

All three scenarios set the developers equity contribution as 10 per cent of total development costs. In addition, each scenario allows the developer to cover any shortfalls in their cash reserves to pay the NHFIC bond principal payment through the sale of units. In the financial analysis in this section revenue and cost increases are indexed with inflation, and inflation is assumed to be 2 per cent per annum. The assessment further assumes that real property values increase by 1.5 per cent per annum.

Debt to finance the land purchase and construction can be raised in one of three ways for each tranche of the development. The first is the use of a 22-year NHFIC bond, a bullet bond with annual coupons in which the principal value is due on the maturity date. Bond conditions are based on NHFIC's Project Finance Model. This allows for gearing levels up to 85 per cent (debt or debt+equity), provided minimum Debt Service Coverage (DSCR) standards are met. DSCR vary for social and affordable housing projects. For a combined (50:50) social and affordable housing project, as illustrated here, a combination of NHFIC's DSCRs is used. Based on an average of the expected DSCR ratios, projects are financially viable if the DSCR exceeds to the range 1.23-1.38.

Following peer-review the coupon rate was set at 3.5 per cent in the central analysis. Where the project involves market sale of units, the developer may take out an additional two-year bridging mortgage. The nominal commercial interest rate is set at 5.5 per cent. Lastly, any remaining debt requirement will be financed through a 20-year fully amortized mortgage with a nominal interest rate set at 5.5 per cent. Sensitivity analysis is provided at a NHFIC coupon rate of 6.5 per cent and commercial lending at 8.5 per cent.

Table A6 Assumptions used in scenarios, nominal values

Details	Base Case	Market Sales	Tax Credit
Developer Cash Equity Contribution (% of Development Cost)	10%	10%	10%
Development Period (Years)	2 Years	2 Years	2 Years
Infrastructure Contribution Rate (% of Construction Costs)	1%	1%	1%
Stamp Duties Concessions / GST Rebate on Land	Yes	Yes	Yes
Land Prices	Market value	Market value	Market value
Cost and Revenue Index, p.a.	2% (3%)	2% (3%)	2% (3%)
Real property Value Index, p.a.	1.5%	1.5%	1.5%
Cash Interest Rate, p.a.	3.5% (6.5%)	3.5% (6.5%)	3.5% (6.5%)
Market Sales (End of Year 2)	No	Yes	No
Market Sales to cover Bond Principal (End of Year 22)	If necessary	If necessary	If necessary
AHIB Equity Investment	No	No	Yes
Land Equity Contribution	No	No	No
Finance Terms:			
NHFIC Interest Rate/coupon payment (sensitivity value)	3.5% (6.5%)	3.5% (6.5%)	3.5% (6.5%)
NHFIC Term (Years)	22 Years	22 Years	22 Years
Commercial Mortgage Interest Rate (sensitivity value)	5.5% (8.5%)	5.5% (8.5%)	5.5% (8.5%)
Commercial Mortgage Term (Years)	20 Years	If necessary, 20 Years	If necessary, 20 Years
Bridging Mortgage Interest Rate (Inflation Adjusted %)	Na	5.5% (8.5%)	Na
Bridging Mortgage Term (Years)	Na	2 Years	Na
AHIB Interest Rate	Na	Na	4% (7%)

4.1 Sydney

The scenario in Sydney involves the construction of 42,500 units in 6-storey apartment units built across nine tranches in eight suburbs. The selected suburbs have access to public transportation, health and education services. However, the suburbs remain sufficiently distant from the premium prices that land near the CBD of Sydney can command. Within the scenarios, land values range from \$3,381 per square metre in Ryde to \$7,702 in Burwood. The average land value is \$5,333 per square metre. Rental prices were based on the lower quartile rents within the specified suburb. The average rent within our selected suburbs was \$391 per week, \$446 per week, and \$579 per week for a 1-, 2-, and 3-bedroom unit respectively. Sale prices for units varied across the suburbs, but the average was \$459,000, \$551,000, and \$715,000 for 1-, 2-, and 3-bedroom units respectively.

4.1.1 Mechanism 1 Base case: market-based going concern

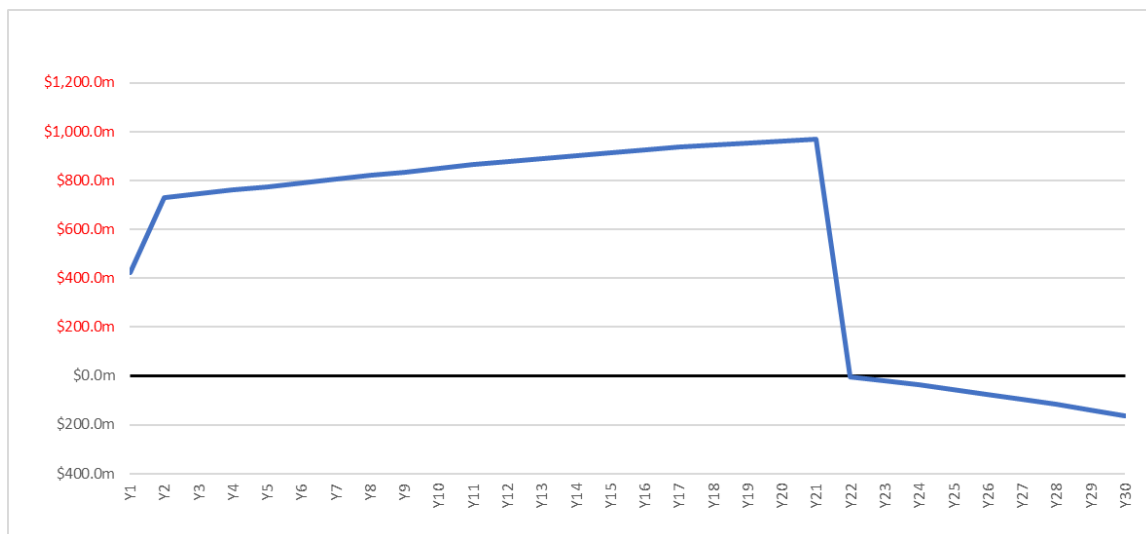
The base case explores the financial viability of the housing project in the absence of any market sales or tax credits. The only financial assistance will be access to the lower interest rates offered through the NHFIC bonds.

In a specific example, we have selected the first tranche, Parramatta, as the example before presenting the full financial summary. Parramatta's 2,500 units would require 16.6 hectares of land, costing approximately \$205 million with construction costs adding an additional \$565 million. To finance these costs, the developer would borrow \$389.6 million from NHFIC as part of the 22-year bullet bond with another \$352.7 million fully amortized 20-year mortgage through a commercial lender. However, based on the income of the tenants, costs to maintain the

properties, vacancy rates, etc., the debt service coverage ratio (DSCR) of the development would sit at approximately 0.29 over the 22-year period. This indicates that the net recurring revenue of the project would be insufficient to cover the interest costs of the debt.

In our base case scenarios, we implicitly make the assumption that any shortfall in available cash reserves is provided as loans at the prevailing commercial interest rates that is required to be settled at the time that the bond matures. In the case of Parramatta, that would require the sale of some more 51 per cent of the housing stock to settle any of the remaining debt obligations. As we can see from Figure A1 which showcases the debt less cash reserves, the debt continues to rise over the life of the project until the majority of the project is sold to settle the nearly \$800 million in debt.

Figure A1 Cumulative Net Debt Balance of Base Case for Tranche 1 - Parramatta



Note: Net debt balance is the sum of outstanding debts (NHFIC bond, commercial lending) and cash reserves (recurrent surplus/deficit and interest earned/owned).

Similar financial results hold for the remaining eight tranches. In each case, the interest payments to service the debt exceeds the net recurrent revenue received from the projects. Overall, we found that the average DSCR for the program as a whole in the first year of operation (over 9 tranches in Sydney) 0.42. Remaining largely unchanged until the end of the 22-year period. In relation to NHFIC's lending benchmarks this mechanism is therefore, unsurprisingly, not financially viable. Ongoing revenue is insufficient to service the required borrowing.

Combining the nine Sydney tranches, some 42 per cent of the assets would be required to be sold to settle both the initial financing as well as the debt and interest accumulated to meet the annual budgetary shortfalls. Thus of the 42,500 units developed in Sydney, approximately 24,650 would be available for social and affordable housing after the full 22-year period for each of the nine tranches.

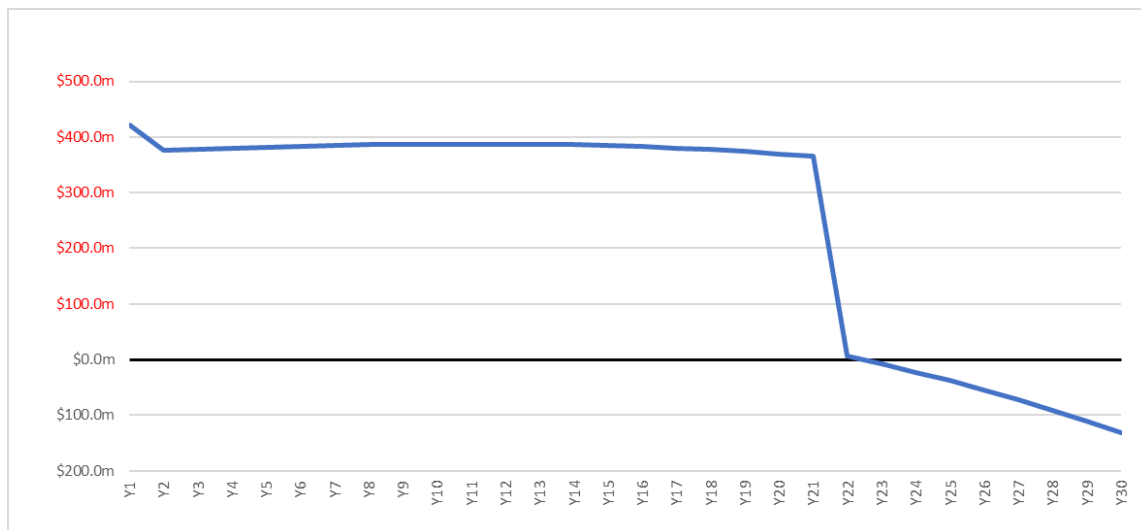
4.1.2 Mechanism 2 Market sales case

In the second scenario, the same 42,500 units are constructed across nine tranches within Sydney. However, to lower the financing costs associated with the construction, 35 per cent of units are sold at the end of construction. The market sale of these units also allows the use of a two-year bridging mortgage that reduces the principal required from the full 20-year commercial loan.

Returning to the Parramatta case study, the land costs increase slightly to \$208 million, and construction costs increase marginally to \$572 million. The difference in construction cost arises from the composition (1-, 2-, 3-bedroom properties) mirroring the affordable housing composition, rather than the overall program composition. Overall, the NHFIC borrowing requirement decreases to \$380.7 million, with \$346.3 million generated by sale of properties and \$78 million in own equity injection. Of the 2,500 units constructed in this tranche, 875 would be for market sales.

In this scenario, the recurrent operating profit \$11 million in Year 3 (first year of operation) is less than the \$13.6 million in debt service costs. Overall, access to liquid funds (operating profit plus interest earned) is marginally below the debt service costs in Year 3 (DSCR 0.83), but incrementally rises over the project lifetime (DSCR 1.34 by Year 21). Despite the developer's cash reserves increasing throughout the period, these remain insufficient to pay the full principal of the bond upon maturity. Thus, the developer would be required to sell an additional \$364.7 million of the remaining stock to settle outstanding debt. After settlement of the bond obligation, approximately 46 per cent of the original investment is retained beyond the 22-year period. Retained stock is, beyond cash accrual also a function of increases in property values. The overall debt plus cash profile for the tranche is shown in Figure A2.

Figure A2 Cumulative Net Debt Balance of Market Sales Case for Tranche 1 - Parramatta



Note: Net debt balance is the sum of outstanding debts (NHFIC bond, commercial lending) and cash reserves (recurrent surplus/deficit and interest earned/owned).

The financial viability of each of the nine tranches is similar. Overall, the land acquisition and construction costs for the entire project is estimated at \$13.3 billion to develop the full 42,500 units in Sydney. With all tranches having completed construction by the end of Year 10, the project would be expected to have funds available for debt service amounting to \$218.2 million per year, with debt service costs amounting to \$196.7 million. The DSCR is 1.02 in Year 1 of operation (year 3 of development), and 1.44 as an average for the Sydney tranches as a whole.

In the modelled interest rate environment this mechanism thus meets NHFIC lending criteria. However, at a somewhat higher NHFIC rate of 6.5 per cent the Year 1 DSCR declines to 0.53 with an average DSCR over the project lifetime of 0.55.

Notwithstanding a positive and accumulating cash position over the lifetime of the project, an additional 11 per cent of the stock needs to be sold at Year 22 to settle the NHFIC principal. Under the assumption of the higher NHFIC rate (4 per cent), an additional 22 per cent in the value of required property sales in Year 22 would be required to settle the debt. Under Mechanism 2, around 54 per cent or 43 per cent of the housing stock is retained at the 3.5 per cent and 6.5 per cent coupon payments, respectively.

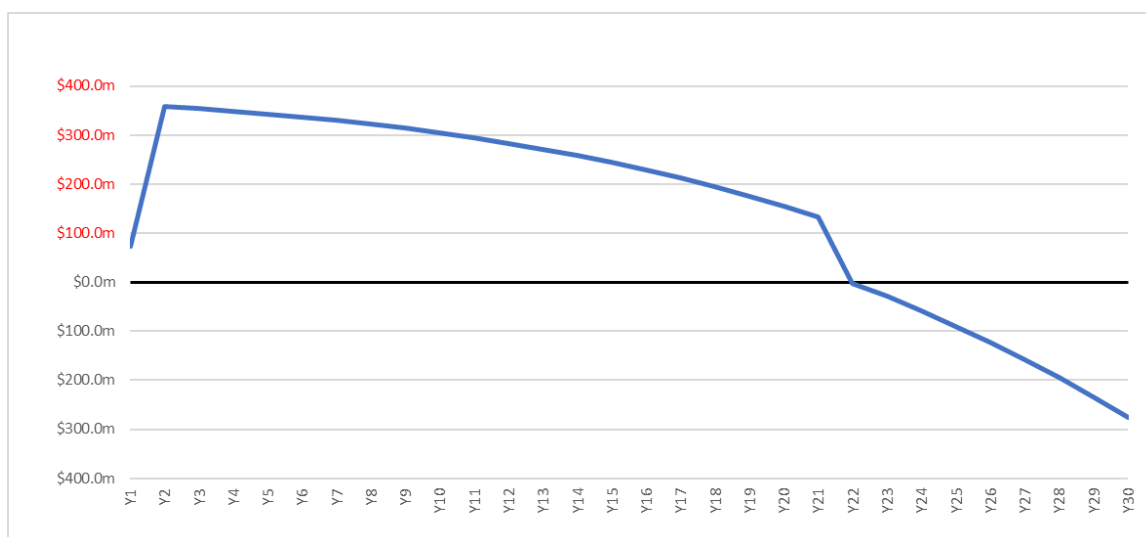
4.1.3 Mechanism 3 Tax credits case

In the final scenario, we model the use of a marketable tax credit that is available for entities that inject equity into a housing project. As the details of the tax credit is discussed above and the impact it has on the social-cost benefit in Section 5, we limit the discussion only to the financial viability of the project.

The required tax credit (equity injection) is a function of the financing gap (difference between the development costs of the project and the borrowing capacity of the developer). As market sales are not available in this case, all borrowing is done through a 22-year NHFIC bond.

In the Parramatta example, the 2,500-unit development would require \$389.6 million (or 51 per cent of construction costs) in a NHFIC bond. Taking own equity into account, this leaves a gap of \$331.4 million required to be financed through the tax credit. We model this as a capital injection available at the start of the project.

As a result of the equity injection, the Parramatta project at Year 3 would have an operating profit of \$17 million and interest payments of \$13.9 million. The initial DSCR (based on operating profit plus interest received) is 1.31, rising to 2.58 by Year 21. Similar to the market sales scenario, the accrued cash position is insufficient to cover the principal of the NHFIC bond without sales when the bond maturation. In this tranche, the developer would be required to sell \$114.9 million in stock or approximately 6 per cent of the stock in Year 22. Compared to Mechanism 2, no initial markets sales are used to offset the initial project development costs. This leaves some 94 per cent of the market value of the project to be retained for social and affordable housing. Moreover, this Mechanism provides a larger number of properties available for social and affordable rental during the project lifetime. Figure A3 shows the debt and cash position of the Parramatta tranche.

Figure A3 Cumulative Net Debt Balance of Tax Credit mechanism for Tranche 1 - Parramatta

Note: Net debt balance is the sum of outstanding debts (NHFIC bond, commercial lending) and cash reserves (recurrent surplus/deficit and interest earned/owned).

The nine Sydney tranches as a whole display similar financial characteristics as the Parramatta case study. The Year 3 DSCR (first year of operation) is 1.31, with an average DSCR for the operational period of 1.97.

In nominal terms, the required tax credit per dwelling is \$16,300 per annum (for 10 years). Adjusting the forgone tax revenue by a 4 per cent discount rate (opportunity cost of capital) results in a tax credit NPV of \$12,000 per annum (for 10 years).

In terms of program aims, Mechanism 3 (tax credit) provides a larger number of social and affordable properties in the short and long run and is financially viable. A summary of the mechanisms described for Sydney is summarised in Table A7.

Table A7 Financial Summary of cases in Sydney

Details	Base Case	Market Sales	Tax Credit
Project Development Cost (Millions \$)	\$13,172	\$13,329	\$13,172
Develop Cost per Unit (\$)	\$309,934	\$313,627	\$309,934
Recurrent Surplus in Year 11 (Millions \$)	\$336.7	\$218.2	\$336.7
Interest Payments in Year 11 (Millions \$)	\$730.5	\$196.7	\$249.7
Average DSCR in First Year of Operation	0.42	1.02	1.31
Average DSCR operational period	0.35	1.45	1.97
Stock Retained (% of Value Constructed)	58%	54%	95%
Financially Viable @ 3.5% NHFIC, 5.5% commercial	No	Yes	Yes

4.2 Canberra

The scenario in Canberra is smaller in scale than Sydney. The project is a mixed set of 7,500 houses, townhouses and low-rise units spread across nine tranches in five suburbs. Due to the lower density requirements for Canberra, sites were selected in part due to the availability of greenfield development sites. The exception is Woden Valley, which is largely developed and represents an in-fill development. The tranches are split between 3-floor, low-rise apartments

which have units ranging between one- and three-bedrooms and townhouses ranging between one and three bedrooms. In the tranches with townhouses, we further allow for the construction of four-bedroom detached housing to reflect the different demographics in Canberra relative to Sydney.

As the selected suburbs in Table 2 are greenfield sites, we set the land value at \$900 per square metre to reflect a slight premium to typical unimproved land values available across Canberra. However, land values for Woden Valley were set to \$3600 per square metre to account for the in-fill development requirements for the suburb. While rental rates were set separately between units and townhouses in each suburb, the average value for the bottom quartile ranged between \$348 per week for one-bedroom unit/townhouses and \$598 per week for four-bedroom detached homes. Likewise, the average sale price of the bottom quartile for one-bedrooms are \$284,000 and four-bedroom detached houses are set at \$584,000.

4.2.1 Mechanism 1 Base case: market-based going concern

As in Sydney, the base case for Canberra explores the financial viability of the housing project in the absence of any market sales or tax credits. The only financial assistance will be access to the lower interest rates offered through the NHFIC bonds.

As case studies, we have selected Woden Valley (Units) and Gungahlin (Townhouses). The former is a tranche of low-rise units and the latter a mix of 1- to 3-bedroom townhouses and 4-bedroom detached houses. The Woden Valley tranche is 425 low-rise units requiring 10.5 hectares of land with total development costs around \$105 million. The Gungahlin project is slightly larger in scale with 675 dwellings planned, but the low-density nature of the project requires 64.8 hectares of land with total development costs of \$168 million. While the land requirements for Woden Valley are significantly lower, the higher land values remove any cost savings per unit, leaving both tranches with similar development costs per unit.

As in the Sydney scenario, the base case for Canberra is not financially viable in either of the two case studies. With a mix of NHFIC and commercial mortgages to fund the development cost, both cases have a resultant Debt Service Coverage Ratio of approximately 0.48 over the 22-year period. Thus, these projects would have insufficient revenue to cover ongoing debt servicing (interest and instalment payments).

As stated earlier, we implicitly assume that revenue shortfalls before Year 22 are provided as loans at the prevailing commercial interest rates. This debt alongside the principal of the NHFIC bond is required to be settled at the time that the bond maturation. In order to settle that debt, 67 per cent of the market value of the units in Woden Valley unit tranche would be required to be sold.

Overall, the nine Canberra tranches would require \$1,991 million for the development of 7,500 units and homes across the five suburbs and split across nine tranches. The average development cost of \$265,000 reflects the lower land values for the greenfield sites. 10 per cent of the development cost is assumed as own equity, with remaining debt drawing on NHFIC and commercial borrowing. The overall financial viability of the Canberra tranches (Mechanism 1 mirror those of the above Sydney tranches. The Year 3 (first operational year) DSCR is 0.52, the average DSCR over the operational period is 0.48. Like the Sydney tranches, the Canberra tranches are not financially viable. At NHFIC coupon rate of 3.5 per cent, commercial lending at 5.5 per cent, and a real property price inflation of 1.5 per cent per annum some 51 per cent of

the stock is retained beyond Year 22. At a higher interest rate (NHFIC 6.5 per cent, commercial 8.5 per cent), the retained share falls to 16 per cent.

4.2.2 Mechanism 2 Market sales case

In the Market Sales Case, a developer in Canberra would construct 7,500 units over nine tranches. To help finance the construction, 35 per cent of the units would be sold at the end of the construction period in each tranche. That would require a total of 2,625 to be sold at market rates. Similar to the Sydney scenario, the developer would use a two-year bridging mortgage to help offset the required interest paid to finance the construction.

Two case studies highlight potential challenges in the design of social and affordable housing in Canberra. In the case of the Woden Valley units, the \$105 million development costs would be financed by \$66 million of NHFIC borrowing, own equity and \$32.8 million in property sales. In this case, no ongoing additional commercial borrowing is required throughout the operational phase. The DSCR for Woden Valley in Year 3 (first operational year) is 0.74, below the combined benchmark for a 50:50 social and affordable housing project. The average DSCR for the entire period also remains low, 0.86. The DSCR can be improved by greater density of development. Unlike the remaining Canberra tranches, and to account for higher land prices in the Woden Valley tranche (e.g. this is not a greenfield development), the apartment complex was increased to four stories. This is set at three storey low-rise apartments in the other Canberra tranches. Given that new apartment complexes, including high-rise apartments, have been recently constructed in the suburb, it appears reasonable that a four-story apartment block is feasible.

Similarly, for the townhouse scenario in Gungahlin, the relatively higher sale prices for townhouses and homes coupled with the lower land costs for greenfield sites helps to offset the financing requirements and the resultant DSCR for the \$221 million development. However, the Year 3 (first operational year) DSCR remains low 0.83. The project average DCSR is only marginally better at 1.02. *It should be noted, we have assumed the developer is able to acquire land at unimproved prices. The land requirement for the townhouse tranches is substantial. To construct 675 townhouses requires 65 hectares of land and while we have attached a premium to current land values to reflect the costs of land assembly, these costs may be conservative if Canberra continues to experience population growth.*

As in the Sydney tranches, the recurrent surplus in both tranches is insufficient to cover financing cost and consequently the bond principal at maturity so both suburbs will require subsequent sales of properties when the bond matures. In the case of Woden Valley, the tranche ultimately retains 27 per cent of the stock for social and affordable housing, while Gungahlin retains 40 per cent of the stock.

The overall financial assessment for the nine Canberra tranches reflects the somewhat improved financials of the Gungahlin case study (as eight of the nine tranches use greenfield sites). Overall, the land acquisition and construction costs for the entire project is estimated at \$1,999 million to construct 7,500 units, townhouses and detached houses. The overall financial viability of the Canberra tranches (Mechanism 2 are similar to those of the above Gungahlin tranche). The Year 3 (first operational year) DSCR is 0.95, the average DSCR over the operational period is 1.23. Additional sales are required to settle outstanding bond principal at Year 22. At NHFIC coupon rate of 3.5 per cent, commercial 5.5 per cent, and a real property price inflation of 1.5 per cent per annum some 46 per cent of the stock is retained beyond Year 22. At a higher interest rate (NHFIC coupon 6.5 per cent, commercial 6.5 per cent), the retained share falls to 31 per cent.

4.2.3 Mechanism 3 Tax credits case

In the final scenario, we model the use of a marketable tax credit that enables upfront equity injection. As market sales are not available in this case, all borrowing is done through a 22-year NHFIC bond covering 61 per cent of the development costs. In order to meet NHFIC prudential lending standards no additional commercial borrowing is feasible. Net of own equity, the remaining costs are therefore covered through the tax credit/equity injection.

In the case of Woden Valley, the \$104 million development would require a capital injection of \$24.6 million, whereas the \$221 million development of Gungahlin requires a \$51.8 million equity investment. As in the previous cases at 3.5 coupon rate, the accumulated recurrent surplus less interest payment remains insufficient to fully pay the bond principal without market sales in Year 22. Additional sales are therefore required in Year 22. The Woden Valley tranche would require sales of 11 per cent of the housing stock, the Gungahlin tranche would require 8.5 per cent of dwellings to be sold. Both tranches are financially viable with Year 3 (first year of operation) DSCR of 1.30; and average DSCRs of the operational period of 1.81 and 1.83 in Woden Valley and Gungahlin, respectively.

Overall, the land acquisition and construction costs for the entire project is estimated at \$1,999 million to construct 7,500 units, townhouses, and detached houses. Financing of the Canberra tranches would require \$1,215 million (61 per cent of development cost) of NHFIC borrowing. The remaining costs are covered by tax credit enabled equity injection and own equity. The overall financial viability of the Canberra tranches (Mechanism 3) mirror those of the above tranches. Year 3 (first operational year) DSCR is 1.32, the average DSCR over the operational period is 1.89. Additional sales are required to settle outstanding bond principal at Year 22. At NHFIC coupon rate of 3.5 per cent and a real property price inflation of 1.5 per cent per annum, 91 per cent of the stock is retained beyond year 22. At a higher interest rate (NHFIC 6.5 per cent), the retained share increases as borrowing from NHFIC reduces to 34 per cent, and upfront capital injection (tax credits) increases substantially.⁹ In the base case scenario the annual (nominal) tax credit requirement is \$11,460 for the Canberra tranches combined. At a higher interest rate (6.5 NHFIC coupon payment) the annual (nominal) tax credit increases to \$25,290 for the Canberra tranches.

The overall financial summary of all three mechanisms for Canberra is summarised in Table A8.

Table A8 Financial Summary of cases in Canberra

Details	Base Case	Market Sales	Tax Credit
Project Development Cost (Millions \$)	\$1,991	\$1,999	\$1,991
Develop Cost per Unit (\$)	\$265,465	\$266,574	\$265,465
Recurrent Surplus in Year 11 (Millions \$)	\$57.9	\$37.76	\$58.0
Financing Payments in Year 11 (Millions \$)	\$102.8	\$37.85	\$43.3
Average DSCR in First Year of Operation	0.53	0.94	1.32
Average DSCR operational period	0.49	1.23	1.89
Stock Retained (% of Value Constructed)	51%	46%	91%
Financially Viable @ 3.5% NHFIC, 5.5% commercial	No	Yes	Yes

⁹ Note: this outcome is an outcome of the modelling assumptions. In practice, the tax credit policy blueprint operates with marginality thresholds that would require developers to seek alternative forms of co-investment or policy support to finance investment.

Appendix 4 – Peer Review

RESPONSES TO PEER REVIEWS

The authors are grateful to both peer-reviewers for their valuable feedback, suggestions and reflections. Both reviewers found the assumptions, evidence and decision-making rules compelling, conservative and convincing.

Reviewer 1: “I found this to be an interesting and compelling analysis of a rich and carefully constructed financial simulation of a large scale social and affordable housing investment in Sydney and Canberra under three alternative financial design or business model scenarios[.]”
“This is a good, strong technical piece of work.”

Reviewer 2: “Quantifying the social benefits that can be attributable to social housing requires judicious application of evidence, and the inclusion of a mix of monetary and non-monetary benefits. While several issues are raised below overall, the SCBA is conservative in its attribution of benefits, ensuring that the findings are robust.”

Particularly the observation that the approach taken is conservative and convincing is important to us from a methodological and professional perspective. We have put a lot of emphasis on avoiding double counting; over estimation of benefits; and distinguish between effects attributable to the affordability or tenure status of social and affordable housing and those that might arise from additional services provided by the operators of social and affordable housing. We feel that this distinction is particularly important to ensure that what is assessed are plausible estimates of any direct effects attributable to the housing of low-income households in newly constructed social and affordable housing.

The peer reviews themselves are added in full at the end of this chapter. In the following we set out specific responses to points and issues raised. Text **in bold** is copied from the peer reviews. Our answers follow in standard font.

REVIEWER 1

Helpful early to set out the rationale clearly for the duration of the period covered for the assessment of costs and benefits (22 years?) – several time periods are mentioned in different places, and it would help the reader to be clear what the terminal date is and why.

The analysis is structured on a 22-year basis. The analysis compares the simulated construction projects under three different financing models. The Booster model (tax credits) is a policy that works over a 20-year period – from occupancy. We have assumed a flat 2-year construction/development period, before occupancy. Consequently, the analysis is performed over 22 years. Under the Booster model properties must be retained as affordable for a minimum of 20 years. Tax credits would, however, flow for the initial 10 years of the period. This generates reference to four time periods:

2 years of construction

10 years of tax credits (Booster model only)

20 years of housing affordability (from occupation)

22 years of analysis

The tax credit (booster model) – presentationally and tactically, it would be helpful to explain this in more detail in the text, I had to go to the other 2019 publication to get my head round it. I think the analysis maybe assumes too much detailed knowledge and prior reading on the part of the reader. This is especially an issue for a non-Australian based reader, but I would of thought it assumes housing finance and housing policy knowledge on the part of the infrastructure economists who might look at this.

A summary explanation of the Boost has been included as Section 3.4. The reviewed analysis was initially written for a particular audience and for the purpose of inclusion of Infrastructure Australia's priority list. A number of documents and pieces of analysis precede, and were shared, prior to putting together this SCBA. The inclusion of Section 3.4 is, however, valuable particularly, as pointed out by the reviewer, to make the analysis more accessible to a wider audience.

[Section 3.4 insert]

“The Affordable Housing Infrastructure Booster (AHIB) (Nygaard 2019a) is a policy blueprint for a tax credit based model designed to target the funding gap that prevents investment in social and affordable housing on going-concerns principles (borrow to invest, pay off debt based on ongoing revenue). The blueprint was produced to inform Australian government policy making options. At the time (2019) there was no Australian government social and affordable housing funding model that could be used in a SBCA analysis.

AHIB works on reverse-auction principles. Developers identify the funding gap. Funding gaps can already be reduced based on existing policies, levers as well as own equity or philanthropic support. AHIB therefore incentivises crowding-in of additional sources of finance and partnerships for social and affordable housing. Moreover, reverse auction principles work to identify project that genuinely require a Boost to achieve financial viability, rather than a blanket funding of gaps. A number of design and tender principles are included to avoid a race-to-the-bottom (Nygaard 2019a). Successful bids would obtain tax credits (paid over 10 years) equal to the identified funding gap, plus a policy determined additional payment (investor return) also paid in the form of tax credits.

Tax credits can be sold to individual investors or pooled through an aggregator mechanism to ensure that the 10-year flow of tax credits is transferred into an upfront equity payment equal to the funding gap. Consequently, social and affordable housing developments can go ahead based on on-going revenue considerations (cash-flow basis). The financial modelling of AHIB is based on a bullet-bond, settled through the sale of properties at the end of the 20-year affordability period. AHIB adjusts to differences in rents and land values and is *not* a flat fee or payment. As a result, AHIB facilitates supply of housing that meets local and specific needs, rather than housing that conforms to any particular funding arrangement. A number of allocation / design principles are included in AHIB (Nygaard 2019a) to ensure that allocation principles can meet local and state housing and urban development priorities.”

The blueprint is available here: <https://www.communityhousing.com.au/wp-content/uploads/2019/12/Affordable-Housing-Infrastructure-Booster.pdf?x59559>

The discount rate is set at 4% whereas it seems that the orthodox infrastructure Australia social discount rate is set at 7%. The authors do use 7% in their sensitivity analysis, but it is not the central estimate. Clearly, the higher discount rate reduces the BCR and the

overall NPV. I think therefore if I was an analyst reading this report, I would want a really strong argument in favour of using a beneficially lower discount rate compared to their orthodox position. I suspect this may be the most important challenge the analysis faces.

Setting of discount rates is always contentious. Clear instructions, such as those set out by Infrastructure Australia, to some extent alleviate choice making. However, clear instructions do not necessarily alleviate the responsibility of researchers to reflect on these choices. In Section 5 we set out the case for our choice. A 4% SDCR is not without precedent in Infrastructure Australia submissions. In fact, one of the resources available to assist preparations of bids uses a 4% SDCR – the Inland Rail Project Business Case Evaluation proposed by the Commonwealth (2016). For the Inland Rail proposal, a 4% SDCR is the basis for the central business case, with 7% presented as sensitivity analysis.

That said, the reviewer is absolutely right that contestation of discount rates quickly can derail perceptions and acceptance of analysis. We have retained the 4% SDRC as the central business case but have added an additional sensitivity analysis at 5%. We have retained the 4% SDCR because of the expected growing need for social and affordable housing – benefits considerations presented here are thus likely an under-estimation of the social cost over a 20-year period and seen from the vantage point of today. Moreover, investment in social and affordable housing goes beyond standard (transport) efficiency considerations and incorporate equity (contemporaneous and inter-generational) and social justice aspects of housing provision. These benefits accrue over a longer period.

The inclusion of a sensitivity analysis at 5% is based on updated SCBA guidance in NSW (NSW Treasury 2023). The updated guidance suggests that central business cases might be based on 5% SDCR, with sensitivity analysis conducted at 3% and 7%, respectively.

The analysis of the WSEB is framed in terms of distributional analysis. This can be thought of as an add on to the BCR and NPV estimates that drop out of the different financial models in order to capture the fundamentally distributional targeting of social and affordable housing (and their intangibility within the standard framework). In our recent work on tenement retrofit we did a sensitivity analysis that weights the comparative BCRs and BNPVs according to the income profile of the property users i.e. are they social tenants or higher income tenants – this is a perfectly standard feature of Green Book SCBA. Could it be done here with the different mixes of tenants implied by the different models?

Unfortunately, this kind of welfare weighting is not accepted practice in Australia. Our propensity to consume based consumption benefit does reflect a similar motivation to the one described by the reviewer. The 2023 CBA update includes the following statement on welfare /distributional weighting: “This Guide does not recommend the use of distributional weights. That is, increasing or decreasing the value of costs or benefits depending on what group they accrue to. Distributional weights involve a high degree of discretion over equity judgements that are better placed in the hands of decision-makers” (NSW Treasury 2023: 87).

We do, however, entirely agree with the reviewer that when it comes to social infrastructure projects, such as social and affordable housing, the inclusion of welfare or distributional weights ought to be common practice also in Australia. In a submission to the Commonwealth Treasury’s consultation on ‘Measuring what matters’ the lead author of this report made the case for the

inclusion of welfare weights as a means of improving the assessment, and strengthening the economic case, for investment in social and affordable housing.

Part of this submission is included below. This illustrates the significant welfare benefits that currently are ignored by Australian CBA practice and guidance. The illustrations compare welfare weighting, propensity to consume based benefits (as applied in this SCBA) and conventional Australian practice.

Welfare Weights (this section is based on Nygaard 2023)

Welfare Weights more accurately capture the societal wellbeing impacts of policy, program or social infrastructure developments. There is a large body of research (e.g. Layard et al 2008, Fujjwara 2010) and international practice (e.g. UK Green Book, HM Treasury 2022) that recognises that the impact – or value – of government programs, policies or social infrastructure varies substantially across different societal groups. Use of Welfare weights is currently not recommended in Australian practice (CoA 2006, NSW Treasury 2017, OBPR 2020).

The implication of this is that Australian SCBA practice does not capture/measure the full societal impact from decisions around resource allocation. This is a major omission when the aim of SCBA is to systematically assess what the overall societal gain from programs, policies or social infrastructure might be.

Differences in SCBA practices can be illustrated by considering how to account for the social value of investment in affordable and appropriate housing options for low-income households. Two models for delivering affordable and appropriate housing in Australia are social housing (public sector or community housing sector, CHO), where rent is set as a function of tenants' income; and affordable housing, where rents are set as a discount to comparable market rents. Consequently, tenants have more money than they otherwise would living in the private rental sector (PRS). However, landlords also have less money than they otherwise would if letting their property at the market rent. In Australian CBA practice these two income changes cancel out.

In Australian SCBA practice affordability thus generates no additional social wellbeing as a result of changes in incomes. Based on the existing evidence on the marginal utility of income, the Australian SCBA practice underestimates the impact on societal wellbeing as a result of affordability for low-income households.

This is illustrated in the below Table 1a and 1b. These tables compare the measurement of the annual societal benefit for a single affordable tenancy using three methods, and based on the two affordable models in Australia:

- a) Current Australian SCBA guidance and practice (COA 2006, NSW Treasury 2017): a dollar has the same worth to lower and higher income households.
- b) An approximation of the marginal propensity to consume (MPC) (Nygaard 2019): lower income households spend more of each additional dollar than higher income households. A transfer of dollars from higher to lower income groups thus generate a net positive consumption impact.
- c) Welfare weights as per UK Green Book guidance (HM Treasury 2022): the marginal utility of a dollar is greater to a lower income household than higher income households, due to diminishing marginal utility of income.

The results in Table 1a+b illustrate how the social welfare effects that arise from more affordable housing options are recorded under different SCBA approaches. The results are illustrated assuming tenant did not receive Commonwealth Rent Assistance (CRA) while living in private rental housing, and assuming they did receive CRA and thus potentially experienced a decline in CRA payment as a result of change in rent expenditure. The results are highly contingent on the institutional arrangement associated with the affordable tenure.

Under Australian practice there is no social gain (including public sector gains, the net effect is zero). This is different for both the MPC and Welfare eight approach where the net effect (including public sector savings) is always greater than zero.

Table 1a CBA annual input comparison: social rental housing (CHO) tenancies v private rental sector

Income pth	A: Australian practice		B: MPC approach		C: Welfare Weight	
	No CRA	With CRA	No CRA	With CRA	No CRA	With CRA
20 th percentile (CHO)	\$0	-\$305*	\$1,664	\$1,501*	\$9,480	\$8,478*
20 th percentile (public hse)	\$0	-\$4,628**	\$1,664	-\$812**	\$9,480	\$374**

Note: With CRA the public sector would make an annual CRA related saving of \$305* or \$4,628**.

Table 1b CBA annual input comparison: affordable rental housing tenancies v private rental sector

Income pth	A: Australian practice		B: MPC approach		C: Welfare Weight	
	No CRA	With CRA	No CRA	With CRA	No CRA	With CRA
20 th percentile	\$0	\$0	\$832	\$832	\$4,524	\$4,524
30 th percentile	\$0	\$0	\$832	\$832	\$2,392	\$2,392
40 th percentile	\$0	\$0	\$832	\$832	\$1,040	\$1,040

Note: Calculations in this section are based on one single parent with 1-2 dependent children transferring from paying market rent in private property, to either social or affordable tenancy assumptions, with and without being a recipient of Commonwealth Rent Assistance. Their main income is government benefits. Illustrations are based on a weekly market rental value of \$400. For social rental dwellings the discount to market is assumed to be 50 per cent. The average weekly housing cost for someone in public housing \$189 in 2019/20 (ABS 2022; Table 3.1) or 53% of the illustration market rent. For affordable rental dwellings the discount to market rent is assumed to be 25 per cent. In practice this means that social housing tenants are \$200 better off each week than under a private rental sector tenancy; affordable housing tenants are \$100 better off each week than under a private rental sector tenancy. An additional consideration is that low-income households' ability to pay rents in the private rental sector is severely constrained. Approximately 1.35 million Australians therefore receive Commonwealth Rent Assistance (PC 2022), the value of which is linked to private sector rental payments. A 2002 PC report found that 'About 850 000 households in the private rental market satisfy the income eligibility criteria for social housing'. Public housing rentals are on a social housing basis and state housing authority tenants are ineligible for CRA. This transferring from a private market rental and receiving CRA to public housing would mean a complete loss of CRA income. The primary function of the CRA is as an income supplement (PC 2022). Consequently if a tenant changes from paying rent in the private rental market a change to affordable may or may not entail a reduction in CRA payment; a change to social housing rental provided by a Community Housing Organisation similarly may or may not entail a reduction in CRA payment; finally, a change to state housing authority social housing rent will entail a loss of CRA payments.

The above results illustrate three important points for Australian SCBA practice. First, Compared to international practice and academic research Australian SCBA practice underestimates societal gains and benefits. Second, Welfare Weights capture the marginal value of income to

different social groups. Welfare Weights based estimates of benefits to society are thus independent of value judgements on distributional issues. Instead they reflect empirical regularities in the calculation of the value of money. Third, where target groups are precisely identified (such as under priority list allocations to social housing, or income requirements in affordable housing) Welfare Weights allows for more accurate measurement and systematic summation of societal value/impacts from public policy, programs or social infrastructure projects.

The above results illustrate three important points for Australian SCBA practice. First, Compared to international practice and academic research Australian SCBA practice underestimates societal gains and benefits. Second, Welfare Weights capture the marginal value of income to different social groups. Welfare Weights based estimates of benefits to society are thus independent of value judgements on distributional issues. Instead they reflect empirical regularities in the calculation of the value of money. Third, where target groups are precisely identified (such as under priority list allocations to social housing, or income requirements in affordable housing) Welfare Weights allows for more accurate measurement and systematic summation of societal value/impacts from public policy, programs or social infrastructure projects.

In measuring what matters the use of Welfare Weights is consistent with the philosophy and purpose of social cost-benefit analysis, and wellbeing frameworks. Updating Australian guidance would bring practice in Australia in line with the empirical evidence and international practice, and more accurately capture societal wellbeing, impact of public policy and social infrastructure.

The full document is available here: https://treasury.gov.au/sites/default/files/2023-03/c2023-379612-centre_for_urban_transitions_swinburne_university_of_technology.pdf

In our work we face issues of optimism bias, the reality of delays, cost overruns and sub-optimal components and repairs performance. We have therefore included in our sensitivity analysis elements of different performance relative to the assumed projections. This is easier for us to do because we have the actuals not simply a simulated projection, but I did wonder if the analysis in the report might more explicitly consider optimism bias, again a standard element in Green Book financial appraisals.

These are, for specific housing projects, important additional pieces of analysis. The level of analysis conducted for this particular SCBA followed Infrastructure Australia's Stage 1/Stage 2 guidance. Costing of projects was based on Affordable Housing Assessment Tool (Randolph et al 2018), rather than specific analysis of site/locations (beyond incorporation of variations in land and rental values). P50 and P90 analysis was not undertaken and was considered outside the remit of the initial submission to Infrastructure Australia.

In a related way, the English housing ministry has a technical appraisal guide for housing investment (MHCLG 2016, 2017 – attached with the covering email) and it lays out guidelines for key benefits based on land value uplift in financial appraisal as well as quite a lot of detail on their baseline assumptions, one of which is that the greater the market failure the higher the additionality of social housing investment, which is normally taken to be 50-100% additional depending on (i.e. a positive function of) how efficient the response from social providers/developers would be and how weak demand is in the private market is. Might this be helpful or something that can be done in parallel here?

The issue of land value uplift was considered. We agree that for specific projects its inclusion might be considered – both the international and domestic evidence suggest that careful refurbishment or development of social and affordable housing projects can have land value uplift benefits. These benefits are, however, often contingent on specific design factors (location (e.g. the specific demand/market failure context), density, layout, provision of amenities, as well as mixed-tenure characteristics). For the purpose of this SCBA analysis and the attribution of benefits to the affordability and tenure status in new developments we decided that the issue of attribution – for this type of general analysis – was insufficiently clear to warrant inclusion. We have, however, added to section 5.4 the following text:

Land value uplift

Evidence from social and affordable housing investment projects domestically and internationally suggests that these can generate positive impacts on adjacent properties, resulting in land value uplift (Nygaard et al 2022). For specific housing projects and proposals land value uplift ought to be considered and, where relevant, included in the economic assessment. Guidance on its inclusion can be sourced from international practice, e.g. from the UK, the DCLG Appraisal Guide (DCLG 2016).

Achieving land value uplift will in some cases be contingent on specific design factors (location (e.g. the specific demand/market failure context), density, layout, provision of amenities, planning permissions, as well as mixed-tenure characteristics). For the purpose of this SCBA, and the attribution of benefits to the affordability and tenure status in new developments, we decided that the issue of attribution – at the general level of analysis undertaken here – was insufficiently clear to warrant inclusion. This will, however, differ in many specific cases and so should be considered as part of the economic appraisal of investment in social and affordable housing.

REVIEWER 2

Authors decided to not include the cash equity model despite citing evidence that it is more cost-effective than operational or annual subsidies. Political considerations are cited as a reason for not including, and while elements are retained in models tested it would have been preferable to include this model as a comparator.

The cash equity model has been shown in earlier research to have efficiency and implementation benefits compared to alternative approaches (Lawson et al 2018). The cash equity approach was nevertheless not included for specific analysis due to a perceived lack of political feasibility. In terms of a cost-benefit analysis of a cash equity model the outcomes will most strongly resemble the Mechanism 3. Subsidies and transfer payments are ignored in SCBA so that, functionally, Mechanism 3 (tax credit) and cash equity injection share similarities. Depending on the design of a cash equity model the SCBA side of the analysis might become very similar – for instance, if equity injections are based on similar principles to the reverse auction principles that Mechanism 3 is based on.

Financially, the results could, however, be quite different. Under a cash equity model government could borrow at its standard rate. Investment in social and affordable housing would become a budget expenditure item, as would payment of interest on any borrowing. (Should government decide not to borrow, but instead redirect spending then no additional borrowing might be required – the redirection of spending might, however, also have welfare implications that then would need inclusion in any SCBA analysis).

If government borrows to finance the investment, then a cash equity model would financially be superior to Mechanism 3 in an order of magnitude similar to the difference between government borrowing cost and the policy determined rate of tax credit scaling (return). This assumes that settlement of government debt on this investment follows a similar model to Mechanism 3 – outstanding debt is paid off through sale of properties in year 20. Government may of course also assume the debt in which case the proportion of housing retained as social and affordable housing would exceed that of Mechanism 3 (any of the mechanisms). In this case too the redirection of spending (debt) might have welfare implications that then would need inclusion in any SCBA analysis.

The illustrative construction program is realistic and probable (including incorporation of local factors), however some sensitivity analysis around nature of program to ensure it does not impact outcomes of the SCBA would be beneficial.

This point was also made by Reviewer 1. We agree that these are, for specific housing projects, important additional pieces of analysis. The level of analysis conducted for this particular SCBA followed Infrastructure Australia's Stage 1/Stage 2 guidance. Costing of projects was based on Affordable Housing Assessment Tool (Randolph et al 2018), rather than specific analysis of site/locations (beyond incorporation of variations in land and rental values). P50 and P90 analysis was not undertaken and was considered outside the remit of the initial submission to Infrastructure Australia.

The analysis looks at a sensitivity analysis of interest rates increasing 1.5 per cent. However it maybe more prudent to use the APRA guidelines on lending and look at 3 per cent increase to gauge sensitivity. However the assumed cash rate in the analysis of 3 per cent remains well above current level (0.85 per cent as of 27 June 2022)

In the updated analysis we have reflected the changing financial and economic context. In the updated analysis the financial parameters are set at 3.5% (NHIFIC lending rate), CPI 2%, property value escalation 3.5%, tax credit scalar 4%, and private 5.5% In addition, we have followed the advice and increased all lending costs by 3% for the sensitivity analysis.

The financial assessment was undertaken assuming a general inflation rate of 2 per cent. While the current level of inflation is above this, a long-term average is appropriate – although 2.5 per cent could be considered a more standard base case.

For the financial sensitivity analysis (+3%) we have increased the inflation rate to 2.5%, this results in a property escalation of 4% (1.5% property escalation in real terms).

Could be worthwhile to look at updating rental information given time lag and change in market, with rents going backwards in some markets and growing much faster than inflation in other markets.

Projection of rental values over a 20-year period is uncertain. The analysis was initially completed in early 2021. For the purpose of this update we have retained the original rental values on the basis that any changes in 2023 may no longer (in relative terms) be accurate in 2-years' time either.

Employment effects of construction have been quantified by NHFIC and these could be cited to strengthen the argument regarding these benefits.

In line with Infrastructure Australia's assessment framework (IA 2018) and general guidelines on social cost benefit analysis (CoA 2006), multiplier effects are not included in the analysis. Multiplier effects would only be appropriate if the additional employment was additional to existing employment. It is not clear that construction programs, like the once analysed here, truly would result in additional employment. An equally plausible outcome is that whilst construction workers put up social and affordable housing, some other construction projects await commencement. In other words, while the employment in construction of social and affordable housing is real – including any purchasing, procurement and networked effects – a SCBA would have to consider whether these are greater or smaller than in their alternative (waiting construction) use. Australian and NSW guidance caution against the use of multipliers in assessment of social welfare (NSW Treasury 2023). We do think there is a case for multiplier in some forms of economic assessment but would argue that for the general case analysis undertaken here we cannot appropriately assume that any employment effect is additional to existing employment effects.

References

- [ABS] Australian Bureau of Statistics. (2020) Table 5 Employed persons by State, Territory and Industry division of main job (ANZSIC), Cat. No. 6291.0.
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