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Acronyms and abbreviations used in this report

ABS	Australian Bureau of Statistics
AIHW	Australian Institute of Health and Welfare
AHURI	Australian Housing and Urban Research Institute Limited
ASVB	Australian Social Value Bank
ATAP	Australian Transport Assessment and Planning
BCR	benefit-cost ratio
CBA	cost-benefit analysis
CGE	computable general equilibrium
CRA	Commonwealth Rent Assistance
DALY	disability adjusted life years
DCR	discount rate
ESE	economic, social and environmental impacts
HALY	housing adjusted life years
HILDA	Household, Income and Labour Dynamics in Australia
IA	Infrastructure Australia
LCC	life cycle cost
MARL	Melbourne Airport Rail Link
NAHA	National Affordable Housing Agreement
NDIS	National Disability Insurance Scheme
NPV	net present value
PPP	public-private partnership
SROI	social return on investment
WEB	wider economic benefits
WTA	willingness to accept
WTP	willing to pay
YLD	years of living with a disability
YLL	years of life lost

Glossary

A list of definitions for terms commonly used by AHURI is available on the AHURI website www.ahuri.edu.au/research/glossary.

Executive summary

Key points

Business cases and cost-benefit analysis (CBA) are conventional features of infrastructure decision-making processes in Australia, and are used to evaluate the societal benefit of proposed projects. However, business cases and CBA have been contentious in terms of design and deployment. Funding commitments are regularly made prior to the completion of business cases and CBA, diminishing their value as a decisive part of infrastructure development decisions.

For social housing, business case and CBA processes could provide useful evidence of the wider societal benefits of social housing provision, but the nature of contemporary policy decision-making means that political will remains an important factor in investment decisions.

The development of public infrastructure appraisal methods such as CBA can be understood as a consequence of long-term infrastructure investment creating a demand for improvements in assessment and increased analytical capacity in the public and private sector, in the context of competition for funding. This indicates a degree of circularity: ongoing funding to support sector expansion is important in promoting economic analysis in the social housing sector, which is also seen as a step towards increasing industry funding.

There is a presumed association between infrastructure provision and economic productivity within appraisal processes and infrastructure agency remits. This relationship is recognised by public servants and representatives from the social housing sector, indicating that infrastructure conceptualisations may not be appropriate for arguing for housing as a welfare intervention, but more apt for proposals that generate employment outcomes, such as key-worker housing.

Therefore, the pertinent question is not whether social housing is infrastructure, but whether such a conceptualisation is the best standpoint from which to found advocacy for increased social housing investment. The answer to this question depends on the purpose of the intervention. The resources required to develop appraisal methodologies and analytical capacities underscore the importance of choosing an appropriate basis for further development of social housing business case methodologies.

Alternatives to conventional infrastructure CBA methodologies include: avoided costs financial appraisal; a public welfare conceptualisation; and the proposition that the whole of society values providing for those in need. These examples provide a stronger conceptual link to the welfare focus of the social housing.

It is also possible that adopting social housing as infrastructure as a central argument for business cases may risk diverting funding to new areas of

intervention, rather than increasing funding for providing housing for those most in need.

Key findings

Business cases and cost-benefit analysis (CBA) fall within the broad terrain of evidence-based policy development, and they are used to outline a technical rational response to the problem at hand (Weimer and Vining 2017). There are two general resourcing claims that may benefit from the application of business cases: first, fiscal competition within limited government budgets; second, in decisions about alternative options for new government economic development expenditure. The first argument applies to the contested nature of government expenditure, particularly in portfolio areas that are considered to be welfare and where extensive social need is apparent and recognised. Treasuries tend to scrutinise expenditure claims by government agencies often with a focus to minimise new expenditure and achieve savings with existing expenditure. In this context, portfolios that are able to demonstrate fiscal savings across government may be in a stronger position to argue in favour of new or transferred funding for their area, such as social housing. Project respondents from state government agencies have observed that Treasuries have positively received these arguments. The second resourcing claim relates to decisions between alternatives in relation to infrastructure investment. This might include options for investment in social housing over other types of infrastructure, or between alternative projects within the social housing sphere, according to location, dwelling type or tenure model.

The starting point for this research was the conceptualisation of social housing as infrastructure. However, a key finding is that the usefulness of this conceptual basis for social housing is questionable, depending on the intent of the proposal being appraised. Infrastructure development is presumed to be associated with productivity improvements, which may not provide a strong argument for social housing as a welfare intervention, as decades of underinvestment in social housing within Australia's housing supply has meant that it is now a provider for only those with the greatest needs, and who have limited employment prospects. An infrastructure conceptualisation of social housing implies the introduction of wider non-welfare goals, such as providing better jobs access via well located housing for key and low-paid city workers (as could be the case with a road or rail link). Such productivity based arguments may distract from solving the gross housing deficits resulting from inadequate levels of investment in this sector in recent decades.

The emerging interest in social housing appraisal methodologies—as well as the need for research to develop the underpinning data and parameters—suggests that it is an appropriate moment to consider what economic assessment approach might provide the best outcomes for the sector. Previous applications of CBA in social housing contexts are either focused on specific benefits arising from housing, or omitted the range of non-market traded benefits that accrue from social housing, such as wellbeing, security of tenure and inclusion. Assigning a price to such qualitative factors is methodologically complex and requires further technical development. The variation and exploratory nature of the relatively few examples of social housing appraisal in the existing literature reflect that the sector is subject to a more complex range of benefits, target cohorts and questions than is the case with transport infrastructure appraisal; it also suggests that fewer resources are applied to the practice and development of social housing appraisal.

Policy development options

The central question raised by this research is whether infrastructure business case methodologies are the most appropriate for application to social housing. While there are arguments for considering that social housing is a form of infrastructure akin to road and rail infrastructure, the conceptualisation of it as such is not without risk, as this implies external productivity benefits as central to its justification. External productivity improvements are central to business case development and project appraisal processes for road and rail infrastructure because user charges are typically not sufficient to recoup project direct costs. Hence appraisal additional value is generally sought by governments beyond revenue from use charges. This value is calculated using CBA. Transport appraisal has also been largely reduced to the estimation of the value of travel time savings based on prevailing wage levels as a result of project implementation. The benefits, purposes and questions that may be considered within a social housing appraisal are complex, with extensive procedural refinement required before a similarly singular factor could be arrived at. This can be seen in the benefits regularly referred to as 'intangible', the use of appraisal in social housing policy analysis as well as project and program appraisal, and the different approaches applied to social housing appraisal.

There are alternate approaches to developing business cases for social housing. The 'avoided cost' approach to social housing business cases that has begun to be used by social housing agencies offers estimates of whole-of-government fiscal savings across portfolios other than housing, as a result of social housing provision, and thus avoids the issues of monetisation of 'intangible' dimensions of housing that a CBA would typically seek to calculate. Avoided costs are not founded in infrastructure appraisal, but are included in this project because—the method has been developed within the social housing agencies and has been positively received by Treasuries. For social housing as a welfare intervention, a conceptualisation as a public health intervention—or considering the value the wider community places on providing housing for those in need—may provide better outcomes than an infrastructure conceptualisation.

The study

This research is part of a wider AHURI Inquiry into Social Housing as Infrastructure. This is the second of three reports: Project A investigates the conceptualisation of social housing as infrastructure, while Project B assesses potential social housing investment pathways. The focus of this research is to investigate the business case frameworks for treating social housing as infrastructure, including frameworks for undertaking CBA for social housing. The purpose of the research is to develop stronger analytical methodologies and evidence-based arguments for investment in social housing.

There is a large and substantial literature, and extensive practice knowledge, of techniques for the economic appraisal of the public infrastructure investment, including wider economic benefits of public infrastructure investment and the use of cost-benefit analysis to determine net social benefit. Understanding the key features of these approaches is the focus of the first part of this project, followed by an investigation of how economic appraisal and CBA might be adapted to social housing appraisal.

The overarching question addressed by this project is:

> *How can a business case approach and cost-benefit framework be established for social housing investment?*

Three questions extend this focus for the project. These are:

1. What is the conceptual and practical basis for the use of business cases and cost-benefit analysis for public infrastructure investment in Australia?

2 What is an appropriate technical framework to apply a business case and cost-benefit analysis approach to investment in social housing as public infrastructure in Australia?

3 How might a business case appraisal and cost-benefit analysis approach be adopted to appraise social housing as infrastructure investment in Australia?

The questions respond to the core Inquiry problem of conceptualising housing as a form of social investment.

The methodology for this project included three stages, undertaken in 2017 and 2018:

1 A review of existing policy, guidelines and commentary material about the preparation of business cases for major projects within the Australian infrastructure field. This included the extensive appraisal documentation prepared by Infrastructure Australia, plus Commonwealth and state transport agency and Treasury documentation.

2 A review of business cases from the past decade from a selection of major infrastructure projects in Australian major cities.

3 Fieldwork involving interviews with 18 respondents sampled from a mix of public infrastructure, housing and economic agencies, including state transport departments and infrastructure assessment bodies. A focus group was held with housing providers, property developers, housing academics, and consultants engaged in infrastructure and housing developments to test potential future approaches and methods regarding the application of CBA to social housing.

1 Introduction

Social housing investment is conventionally treated as a welfare transfer that generates a net economic loss on government funding inputs. This perception is reinforced by the current positioning of Australian social housing policy development and investment within the welfare portfolios in government, rather than in the economic development and productivity portfolios (Ong et al. 2017). Although housing is recognised as having some economic benefits, the evidence base for the economic value of state housing investment is underdeveloped (Whitehead and Travers 2011). For example, Maclennan and More (1999) point to the absence of systematic cost-benefit analysis in UK housing policy investment to quantify economic benefits of social housing provision. Although the welfare dimensions of social housing investment are not commonly founded in a clear economic appraisal, the economic dimensions of other forms of housing investment, such as private provision, have been established. Likewise, there is a relatively settled literature on the costs and benefits of energy efficiency improvements in housing (Morrissey and Horne 2011), and there are similar appraisals of the health benefits of housing improvements (Chapman et al. 2009). Although a number of studies have sought to broadly identify the economic benefits of social housing, few have translated these insights into a robust and practical state investment appraisal framework (Kraatz et al. 2015; Ravi and Reinhardt 2011; Whitehead and Travers 2011).

The research into infrastructure appraisal has largely focused on transport, due to the predominance of rail and road appraisals in available materials, the detailed guidelines for CBA set out by the Transport and Infrastructure Council (2016) and the depth of literature and public discourse on infrastructure appraisal. To illustrate, while Infrastructure Australia's remit includes water, communications and energy as well as transport, 19 of the 20 projects on the *Infrastructure Priority List* (2017) are either road or rail projects. Other infrastructure projects have been included where information is available, such as recent stadium and museum proposals in New South Wales, and the business case prepared for the National Broadband Network (NBN).

Investigating business cases for social housing as infrastructure takes as a starting point that social housing can be conceptualised as infrastructure, which is founded in their shared attributes, as both are:

> *a form of spatially-fixed, materially-realised capital expenditure, the provision of which enables the delivery of a service (in this case, housing assistance) that could not otherwise be made available. (Flanagan et al. 2019: 67)*

As Flanagan et al. (2019) observe, the importance of this conceptualisation is how it is operationalised through appraisal. This can be seen as somewhat circular logic, in that the use of business case methodologies for social housing builds upon the infrastructure conceptualisation, but the outcomes of the investigation into appraisal methodologies provides the basis for the utility of the conceptualisation.

As this research into the application of infrastructure methodologies has progressed, questions have arisen regarding the practical usefulness of the conceptualisation. The first question is that transport appraisal is largely based on the single metric of travel time savings as a result of a project, which is then monetised through a range of parameters and algorithms. Essentially, whether the proposal is a freeway, railway line or bridge, the appraisal asks, 'What is the value of the travel time saved as a result of infrastructure investment?'

In comparison, there is a range of questions in social housing to which business case and appraisal methodologies could be applied. For example:

- Does increasing housing supply provide a better outcome than rental subsidies?

- Where should social housing be provided?
- What should be the mix of housing types and built form?
- What are the benefits of providing housing to specific cohorts?

Not only is there a range of questions that may be asked, the outcomes are more complex and multifaceted, as indicated by the metanalysis of Kraatz and Thomson (2016)—and the outcomes cannot be meaningfully condensed into a single proxy such as the travel time savings. This comparative complexity pervades the consideration of business case methodologies for social housing, impacting on the capacity to make concrete recommendations on frameworks, data requirements and methodological developments. This point is also underscored by the review of previous analyses of social housing, which focus either on specific outcomes such as health (Wood et al. 2016) or employment (Groenhart 2015; Productivity Commission 2015); or focus on the outcomes for a specific cohort, which reduces the generalisability of the outcomes (Johnson et al. 2014; Prentice and Scutella 2018; Witte 2017). The weak understanding of the economic benefits of social housing provision (Buzzelli 2012; Pawson et al. 2015) is also of note in this context, particularly in comparison to other forms of government capital investment in infrastructure.

The second question is whether the conceptualisation of social housing as infrastructure is the most suited basis for constructing arguments for increasing funding within the social housing sector. While CBA theoretically monetises the whole-of-society costs and benefits of a proposal, infrastructure conceptualisation and appraisal are primarily concerned with productivity, as indicated by the focus of Infrastructure Australia (2016b) on national productivity outcomes and the interviews carried out for this research and by Flanagan et al. (2019). However, in its current state, the Australian social housing sector is predominantly a welfare service, a provider of last resort for those largely unable to source accommodation within the private market, even with rental assistance programs. This indicates that while it may be possible to develop a business case and undertake a CBA of social housing as a welfare intervention, it is a conceptualisation removed and abstracted from the core purpose of the project.

Social housing may benefit from infrastructure arguments for proposals to improve employment access for key workers, who are being priced out of inflated inner city housing markets, where more efficient commuting patterns and wider economic benefits such as improved labour market sorting can be estimated using the infrastructure appraisal guidelines published by the Transport and Infrastructure Council (2016). This type of housing intervention would present a significant shift within the Australian social housing sector, which brings with it the risk that rather than the conceptualisation of social housing as infrastructure increasing funding for housing development, it leads to a repurposing of existing funding envelopes for welfare interventions being repurposed for more narrowly defined productivity outcomes.

A third point that adds greater weight to the previous two questions regarding social housing as infrastructure, is that there are substantial resource implications associated with developing infrastructure-style appraisal methodologies for social housing. Transport infrastructure appraisal has benefited from ongoing development since the 1950s, as ongoing and large-scale funding has created a demand for economic analysts, research and innovation in methodologies, including via the Transport and Infrastructure Council, a national body to oversee and publish guidelines. Therefore, as CBA itself would suggest, any increased funding as a result of implementing infrastructure appraisal needs to be considered alongside the costs associated with developing the methods, parameters and industry capacity required to do so.

These concerns do not mean that business case methodologies for use in developing social housing proposals should not be pursued, rather that there is a need to ensure that the conceptual basis and practical processes are fit for purpose, and that they provide benefits that are greater than the costs of development and commensurate with funding. Therefore, further

consideration could be given to alternative conceptualisations and approaches that—depending on the purpose of the intervention—may provide a better foundation for funding arguments than infrastructure. A notable example of this is the 'avoided costs' methodology, which is a financial assessment of the savings in the provision of predominantly health, justice and social services as a result of providing secure housing, particularly for the homeless or those with critical housing needs.

1.1.1 Research questions

The overarching question addressed by this project indicates a broad remit in terms of business case and cost-benefit frameworks, indicating the scope to consider alternative conceptualisations:

> *How can a business case approach and cost-benefit framework be established for social housing investment?*

Three questions extend this focus for the inquiry:

1. What is the conceptual and practical basis for the use of business cases and cost-benefit analysis for public infrastructure investment in Australia?
2. What is an appropriate technical framework to apply a business case and cost-benefit analysis approach to investment in social housing as public infrastructure in Australia?
3. How might a business case appraisal and cost-benefit analysis approach be adopted to appraise social housing as infrastructure investment in Australia?

These questions respond to the conceptualising of housing as infrastructure, particularly the practical outcome of the application of business cases and CBA methods in public decision-making processes.

1.1.2 Social and affordable housing

The term 'social housing' has been described as a 'floating signifier' as it doesn't have an agreed meaning, however it is widely understood to refer to housing that provides below-market rents to tenants who meet some criteria of need (Family and Community Services n.d.; Granath Hansson and Lundgren 2018; HousingVic 2018). In Australia, the term 'affordable housing' is widely used to refer to housing that meets the needs of moderate to low-income households, enabling them to meet other costs of living (van den Nouwelant et al. 2015). In recent decades Government housing interventions have mainly been targeted at homelessness as critical need, while also increasingly using rental assistance measures rather than housing supply to address issues for low-income households. Until recently there has been little evidence of policy concern regarding affordable housing, but it has become recognised as an issue in response to metropolitan house prices becoming unaffordable for many (Maclennan, Ong and Wood 2015).

1.2 Methodology

The research was undertaken in three stages that correspond to the sequence of research questions posed by the project research questions:

Stage 1. Conceptual, methodological and policy review of business case and cost-benefit analysis in public infrastructure project assessment.

This project stage reviewed the literature on the approach and application of business case appraisal and cost-benefit analysis in the planning and development of public infrastructure in Australia. Frameworks for business-case development in Australian public policy were reviewed, including the use of cost-benefit analysis in relation to large-scale fixed capital investments, focussing on road and rail projects. The review developed insight into the

applicability of the business case framework for social housing investment, with a focus on how external benefits or costs are appraised and the evidentiary basis for these, focussing on wider economic benefits and associated effects.

The emphasis in the review was on three aspects of CBA:

1. The approaches taken in preparation and content of business cases, including key information, data and cost analysis and the methods used to develop these.
2. The specific use of CBA to calculate a public return on investment, including the analytical methods and inputs.
3. The approaches taken to include wider economic benefits from infrastructure projects, including the economic justification for these and the analytical bases on which they are developed.

The review included the following:

- Policy, guidelines, commentary, reviews and scholarship on the preparation of business cases and CBA for major Australian infrastructure projects within the Australian infrastructure field.
- Survey of business cases and CBA from a selection of major infrastructure projects in large Australian cities from the past decade.
- Interviews with relevant analysts from public infrastructure and economic agencies, such as state and federal transport departments. The interviews covered business case approaches and cost-benefit frameworks, including their use in practice where described in the available documentation.

Stage 2. Development of options for applying business case and CBA frameworks to social housing infrastructure investment.

Options and frameworks for the development of business case appraisal and CBA for social housing as public infrastructure were developed to identify approaches to relevant to social housing investment and the modifications necessary to ensure this approach is valid. This included the following:

- The informational framework needed to prepare valid business case appraisal and CBA.
- Calculations of 'net present value' and appropriate discount rates in housing relative to other public infrastructure and conventional cash rates.
- Wider economic effects to be considered, including health and wellbeing benefits and labour market effects and the evidence base for these.
- Potential alternative methodological approaches to apply business case and CBA assessment to social housing, and their validity and robustness.

Stage 3. Testing of business case framework and practice adoption with key respondents

This stage presented the alternative business case and CBA frameworks for social housing infrastructure investment to sector expert respondents for appraisal. Interviews with 18 federal and state respondents involved in infrastructure and social housing provision, plus peak housing sector representatives. People interviewed included officials and representatives from infrastructure agencies, treasury departments, housing departments, private sector infrastructure consultants, scholars of CBA, and social housing agencies. To support the interviews, a focus group was held with a selection of respondents from the sectors listed above. The focus groups explored the application of business case and CBA frameworks to

social housing investment. The interviews and focus groups were analysed via key content analysis.

2 Background: Infrastructure business case methodologies

Business case and CBA processes are standard inputs into decisions for public infrastructure investment in Australia. Independent appraisal authorities such as Infrastructure Australia and its state equivalents prioritise projects based on business cases and CBA. The processes are similar across the jurisdictions, requiring problem definition and options assessment, through to detailed cost-benefit and financial analyses.

The business case process indicates an orderly and well-defined path to gain funding for major infrastructure projects in Australia, developed over decades of research and refinement, and supported by bureaucracies and experienced consulting firms. However, CBA in particular is not entirely procedural in nature, with process and outcome determined to some extent by the professional judgement of the individual analyst. Also, CBA is often just one of many inputs into decisions, as indicated by recent examples of decisions to proceed with projects that have a benefit-cost ratio of less than one such that their costs exceed their benefits.

Key elements of transport infrastructure CBA include:

- the base case, which is a 'business as usual' rather than 'do nothing' assessment
- the modelling of travel time savings as the key determinant of benefits
- the discount rate, which reflects preferences for consumption today over the future with a 7 per cent rate generally used
- the treatment of benefits as marginal over base case, and measured for the community, not solely the project proponent
- the calculation of costs as theoretically opportunity costs, the value of the best alternative use of the resources, but in practice are based on cost estimates
- the use, increasingly, of risk and sensitivity to parameter changes, such as testing outcomes using 4 and 10 per cent discount rates
- use of Monte Carlo techniques to test variations in costs and benefits probabilistically

Infrastructure cost-benefit analyses have been criticised in recent years, which is attributable to:

- the high levels of investment in Australia's major cities
- the selection of contentious projects

- the tendency for governments to announce and commit to projects prior to economic appraisal being undertaken, thus diminishing the import of any CBA assessment.

The framework used to assess infrastructure initiatives, outlined earlier, provides a guide to the appraisal of social housing. However, detailed methods need to be developed, particularly for the monetisation of benefits. An important element of the development of these processes has been the feedback loop of appraisal experience informing parameter and methodological updates to improve the process.

2.1 Introduction

This section introduces the methods and concepts used to develop business cases for—and cost-benefits analyses of—infrastructure projects. While these methods and concepts are widely applied, the discussion is mainly concerned with transport projects because of their prevalence on infrastructure priority lists and prominence in public discourse. The purpose of this review of infrastructure appraisal processes provides insights and frameworks for the development of appraisal techniques for social housing.

Business case and CBA processes are standard inputs into decisions for public infrastructure investment in Australia. In the past decade, Commonwealth and state governments have created independent bodies to oversee assessment processes and guidelines, and to maintain infrastructure priority lists. These agencies include:

- Infrastructure Australia
- Infrastructure NSW
- Infrastructure Victoria
- Building Queensland.

Within governments, funding proposals are managed through Treasury gateway review processes, which align with varying degrees to the stages of assessment carried out by infrastructure bodies.

2.2 Business cases

Business cases are widely used to support proposals for investment in the public and private sector. A business case 'articulates the impetus and business need for the project, together with an assessment of the project's likely costs, benefits and potential for success' (Department of Finance 2017: 42). For infrastructure project proposals in Australia, business cases address the strategic fit; economic, environmental and social benefits; feasibility; costs and affordability; and a plan for delivery with regard to risks (Building Queensland 2016a; Department of Finance 2017; Infrastructure Australia 2016a). The New South Wales Treasury (2017: 18) business case process lists three mandatory requirements for business cases, and provides an example of the core components:

- An economic appraisal (supported by financial analysis) to evaluate the costs and benefits of the options, and to determine which option offers superior value for money.
- A financial impact statement to evaluate the budget impact of the options and the preferred option. A financial impact statement template must be prepared for all submissions to

Cabinet. Submissions must be referred to Treasury for review and signed off prior to consideration by Cabinet.

- A financial appraisal for capital projects of government businesses and all projects of General Government agencies that involve a financing decision (e.g. outsourcing projects and joint public/private sector infrastructure projects). Treasury may also request a financial appraisal be undertaken for projects that are outside these categories.

The financial impact and appraisal elements of business cases for social housing are considered in detail in the other projects associated with this *Social Housing as Infrastructure* inquiry. Therefore, this report focuses on the economic appraisal dimensions. For infrastructure projects, CBA is the most widely used form of economic appraisal.

Business cases for infrastructure projects are typically large and complex documents. For example, the business cases for the Metro Tunnel in Melbourne and the WestConnex toll road in Sydney are both approximately 300 pages long, excluding the technical appendices. The June 2013 business case for the cancelled East West Link in Melbourne extends to more than 2,000 pages, including appendices. Despite the large scale of public funds contributed to these business cases, in many instances they are not made available because of claims of commercial confidentiality or, if released to the public, they are heavily redacted to maintain confidentiality. While business cases will include discussion of strategy and policy contexts and the issue addressed by the project and the options considered, they typically present an argument for implementing the preferred option rather than an objective weighing of alternatives. Often the business case is prepared after the government has announced that it will proceed with a project.

2.3 Cost-benefit analysis

Cost-benefit analysis (CBA) is typically the central technical economic appraisal component of a business case. CBA seeks to estimate the economic costs and benefits of a proposal over the life of a project to provide decision-makers with information to compare the return on investment and outcomes of a set of project options. Ideally:

> *It is a primary role of governments to direct social resources to where they will most benefit the community as a whole. Cost-benefit analysis (CBA) can be used to assist governments in making relevant decisions. While it should not be seen as replacing common sense, or political judgment, it is an important tool in ensuring that government is informed of the costs and benefits to society of proposed actions. (Dobes, Leung and Argyrous 2016: 1)*

For a project or policy to qualify as positive on cost-benefit grounds, its total social benefits must exceed its total social costs, typically measured by net present value (NPV), the benefits in excess of costs, and the benefit-cost ratio (BCR). The Handbook of Cost-Benefit Analysis used within the Australian Government distinguishes financial evaluation ('What is the net benefit to the individual organisation?') from cost-benefit analysis ('What is the net benefit to the community as a whole?') (Financial Management Group 2006, p. xv).

A CBA typically includes the following components:

- A description of the problem or opportunity being addressed by the proposal.
- A list of options assessed.
- A base case analysis, estimating the situation without the proposal at various future time points, taking into account current policy settings and confirmed projects.

- The costs and benefits of the proposal and the methods and assumptions used to estimate them, including the discount rate applied.
- Risk and sensitivity analysis.
- The efficiency of the proposal, reported as NPV and BCR, as well as reporting on the distribution and equity of the project.'

The list of standard inclusions outlined above should not be seen as an indication that CBA is standardised and procedural in nature. Such a sequence of analyses within the overarching process is not codified to any consistent degree within either the scholarly or practice literature.

A bespoke process

A key observation common to much of the literature on CBA is that the conduct of CBA is complex in both theoretical underpinnings and practical preparation, with variable factors such as discount rates, methods for estimating benefits and the scope of inclusions regularly contested. As one experienced practitioner interviewed for this study noted:

> *There can't be templating of CBA, it's not a precise exact model—it's constrained by data, to put a program in place or dream up a new policy or program you won't have relevant data, you need to look at it from a different perspective. (Interviewee 8)*

One consequence of CBA depending on decisions about particular components is that there is scope for judgement to be exercised by CBA practitioners regarding which specific instruments should be applied in particular situations given the type, scope, scale, form, location and design of a proposed infrastructure project. In part, this customisation is necessitated by the singular purpose and context of each major infrastructure project. Although, at a fundamental level, road or rail projects involve similar forms of engineering, their context—and thus their purpose and benefits—may differ widely. For example, a new link under a harbour where no current link exists will perform quite differently to the widening of an existing link. The crafting of the CBA will thus need to be undertaken differently for each project under consideration.

As an input to decision-making

CBA is not typically viewed as a singular determinant of government decisions to proceed with particular infrastructure projects. Accordingly CBA is seen as one of a number of inputs rather than an individually decisive input, for both infrastructure and policy proposals. In part this is because CBA is not able to capture and monetise all externalities from a given infrastructure project, nor are decision-makers solely swayed by economic appraisals. As one public servant versed in regulation assessment noted:

> *CBA is an input into decision-making, not a decision rule in and of itself. What we generally see, or look at, because you have a wide range of costs and benefits, and particularly benefits … the CBA plays an important part of that process but there are aspects that aren't able to be quantified, but it is still very important to apply a rigorous analytical framework to those non-quantifiable benefits and express them in a way that is useful for decision-makers so they can weigh them up alongside the results of the more formal CBA. (Interviewee 1)*

Thus, CBA can be seen as reducing the uncertainty in decision-making by clarifying the quantifiable costs and benefits, and it can form the basis of considering the qualitative benefits of alternatives (Ergas 2009).

2.3.1 Foundations of CBA

This section outlines the theoretical foundations of CBA as a method to assess whether initiatives result in a net increase in social welfare. While these underpinnings are not without

critique—including the construct of an aggregate welfare function, the inherent biases associated with the 'rod of money' (Berry 2017), and its basis in addressing market failure (Kattel et al. 2018)—CBA remains a mandatory tool in much policy and infrastructure development.

Efficiency, welfare gains and distribution

The purpose of social CBA is to help decision-makers ensure public resources are used in the most efficient way. A positive NPV and a BCR of greater than 1 indicates that a project is of net benefit to society. However, the relative efficiency of a project means that the proposal represents the greatest excess of benefits over costs when compared to alternatives (Vining and Weimer 2013: 25, 26). The assumption that a positive NPV indicates an improvement to social welfare is based on the Pareto and Kaldor-Hicks conceptualisations of aggregate utility functions.

A Pareto improvement in welfare results when at least one person's utility increases from the project and no one is made worse off. This can be seen as an impractical standard, as for most public sector initiatives benefits will accrue to a select section of the community but typically be paid for through broadly applied taxation measures (Farrow and Zerbe 2013: 5). This leads to the Pareto improvement concept being supplanted by the Kaldor-Hicks criterion, which posits that social welfare is increased if, hypothetically, those who benefit from a project would be willing to provide enough compensation to those who lose to make the project proceed. (This is also known as potential Pareto, as it requires the potential for a Pareto improvement without it needing to actually occur.) The Kaldor-Hicks criterion is a fundamental foundation for welfare economics and CBA, as the strict Pareto requirements would prevent any project proceeding that didn't directly benefit those who incur the costs (Farrow and Zerbe 2013; Johansson and Kriström 2015; Layard and Walters 1994).

However, the Kaldor-Hicks notion of potential utility improvement and project efficiency do not take into account distribution of benefits. Such benefits are central to arguments promoting social housing provision. As Berry (2017: 93) observes, a project improves society's welfare according to the Pareto criterion if 'Donald Trump and Warren Buffett gain a few more millions each while everyone else remains where they are, including the homeless and starving'. The Kaldor-Hicks criterion assumes that the utility of compensation is the same for the payer and payee, therefore it is biased towards the wealthy who for the same payment can be expected to place a lower utility than those less well off (Berry 2017; Layard and Glaister 1994). Distribution is rarely dealt with in detail within Australian infrastructure CBAs, which may reflect the argument that CBA uses only gross efficiency criteria, as distribution is a function of government taxation and welfare payments (Squire and Van der Tak 1975: 4). However, trade-offs between efficiency and distribution are central to public policy, and the weighting of project outcomes 'makes explicit the value judgements regarding the priority of objectives' (Brent 2007: 7).

Consumer surplus and economic benefits

The consumer surplus is the excess benefit above what consumers are willing to pay (WTP) over what they have to pay for the product or service (Brent 2007). Consumer surplus is central to CBA and the differentiation between economic and financial costs, as it provides the basis for government interventions that would not be provided by the private sector (Bös 2012). In a CBA, the net total social benefits include the benefits to consumers that comprise the value of the service obtained in excess of the price that they pay for it. Thus for example if a community receives a better transport connection that costs $5 to use then all users of that connection who would be prepared to pay more than $5 to use the service receive a surplus in value above cost. The net of all individual consumer surpluses is the overall consumer surplus.

Mishan (1982: 22–3) defines the consumer's surplus as 'maximum sum of money a consumer would be willing to pay for a given amount of the good, less the amount he actually pays'. The

concept of WTP is central to CBA: it is the basis for the monetisation of benefits, representing the consumer surplus. Willingness to pay is most frequently assumed to be represented by the demand curve for the good or service being assessed. Its corollary, willingness to accept (WTA), differs, as it is used as a measure of the cost of impositions. For example, asking residents how much would they need to be paid to maintain their level of utility if a flightpath were to be introduced over their home (Brent 2007).

Opportunity costs

Opportunity costs comprise the relative difference in benefits (minus the costs) net of costs between the project selected and alternatives to the project. The use of opportunity costs in CBA is because the economic cost of the project is 'is the social benefit in the best available alternative, which has been lost in order to undertake the project' (De Rus 2010: 57). The opportunity cost reflects the value to society that has been lost by using the required resources for the proposal at hand, and is a measure of by how much society will be better off by using the resources for the project being analysed, rather than the alternative (Mishan 1982: 64; Squire and Van der Tak 1975: 75). As an input into decision-making, the importance of opportunity cost can be summarised as 'since you can't have everything, choose carefully' (Gittins 2015: 28), or as one interviewee with experience in CBA stated:

> *Opportunity costs enforces discipline, makes us think about the problem we are trying to solve. Without opportunity costs, it can result in throwing lots of money at a problem without thinking whether we are solving the right problems, people lose the rigour in actually identifying the problem. (Interviewee 5)*

Externalities

A major issue with the estimation of benefits from many public-policy related initiatives is that the benefits are not bought and sold in markets: social and environmental benefits are the primary examples of these externalities. Externalities are the effects of a transaction between two parties that impact on those not directly involved in the transaction and, as a result, the market will be inefficient because those factors are external to the price agreed in the transaction between the principal parties (Stiglitz 2000). For example, if a new road results in additional pollution, then there is a cost to society that is borne by the entire community, not just the road users. That wider community cost is an externality. A 'shadow price' may be calculated to include within the internal price of the good the externalities that would otherwise be excluded. Such a calculation helps to illuminate the benefits or costs of the externality beyond the market price of a good or service, and needs to be included in CBA if the externalities have an effect on society (Squire and Van der Tak 1975: 21). A comprehensive CBA would include shadow prices for a range of externalities related to costs and benefits, such as environmental degradation, crime reduction, productivity and employment improvement (Vining and Weimer 2013: 29).

Non-market benefits

Non-market benefits (or goods) are those that do not have a set price through market transactions and therefore require specialised methods for estimating WTP and WTA. The use of travel-time savings in transport appraisal is an example of a WTP for a non-market good.

There are three broad methods for estimating non-market based WTP or WTA:

- *Stated preference* is an experiment-based technique, where a representative sample is surveyed or interviewed to determine WTP.
- *Revealed preference* models use associated market values to infer a WTP for a non-market good, and can be estimated using hedonic price models, which decompose the overall value of the good into constituent factors and estimate the contributory value of each characteristic.

- *Benefit transfer* uses evidence of benefits from similar initiatives to estimate those for the project under analysis.

Benefit transfer is widely used because it is the least resource-intensive. However, its validity is related to the degree of similarity and rigour of analysis of the comparison projects. The use of *revealed preference* is limited to cases where there is an associated market: the classic example is valuing a national park through the costs people are willing to pay to visit it. *Stated preferences* are the most expensive method—however, it is the only method that can determine 'non-use values' if they have not been previously estimated.

Non-use values are related to people's preferences for something to exist, rather than to consumption or direct benefits or costs. Non-use values may be based on preferences to have something available as an option or future use, caring for others, valuing the ongoing survival of a species, and the warm glow of 'giving' (Johansson and Kriström 2015: 25, 26).

Net present value and discounting

The net present value (NPV) of a proposal is the benefits in excess of costs, which are discounted over time to reflect preferences for receiving them today rather than tomorrow. The NPV—along with the benefit to cost ratio (BCR)—is the primary decision factor resulting from CBA and project prioritisation, as De Rus (2010: 120) states:

> *A positive NPV is a necessary condition to undertake a project, but not a sufficient condition, since other projects with a positive NPV could be more socially desirable than the first in the context of limited funding.*

In practice, this maxim is regularly ignored, in some cases due to benefits being difficult to monetise, or for reasons that lie outside the purview of economic analysis.

Discount rates

Discount rates (DCR) reflect the extent to which 'individuals are willing to trade present consumption for future consumption flow' (Moore et al. 2004: 790). Typically, the discount rate is the interest cost of borrowing capital to fund the infrastructure in consideration by the CBA or financial assessment. Higher discount rates in turn require the project to pay back its capital cost over a shorter timeframe or, alternatively, raise the cost of capital. In general, the higher the discount rate, the greater the preference for lenders—or project proponents, in the case of infrastructure—for an earlier return on the investment.

Discounting also allows the appropriate comparison of costs and benefits over different timescales between different options and projects. However, the theoretical and practical basis for the DCR is contentious and the subject of a wide range of views, such as measures based on the marginal return on capital and the application of risk premiums to risk-free discount rates based on government bonds. There is also an argument that the DCR should be set from an ethical standpoint rather than economic grounds because current preferences for consumption today over tomorrow do not consider the preferences of future generations (Harrison 2010). In such cases where the value of an investment may grow over time—such as carbon abatement, educational improvement, or public health improvements—there is a case for a lower discount rate that spreads the capital payback over a longer time period. A more prescriptive approach to DCR may also lead to lower rates in order to promote infrastructure development as it results in more projects with a positive NPV and skews towards projects with upfront capital investment (Campbell and Brown 2016: 220; Stiglitz 2000: 284).

2.4 Infrastructure appraisal in Australia

2.4.1 Introduction

The previous section discussed the basic theoretical ground for the appraisal of major infrastructure projects in terms of their benefits net of costs. This section considers how CBA is used in practice in Australia, focussing on major infrastructure projects. CBA is widely used to assess infrastructure proposals in Australia, particularly major road and rail projects. Social infrastructure, such as hospitals and schools, is less frequently subjected to CBA than transport projects, as the former meet direct human needs and are generally provided on the basis of analysis of demographics and overt needs. By comparison, transport infrastructure typically has an economic role rather than a role in direct human need. Accordingly, understanding the economic value of transport infrastructure is an important dimension of decisions to proceed with major projects

Infrastructure Australia is the independent agency assigned by the federal government to evaluate proposals, develop infrastructure plans and advise governments on infrastructure needs—it is significant as the main conduit to federal funding. There are similar state agencies, such as Infrastructure NSW, Infrastructure Victoria and Building Queensland. In Western Australia, the recently elected Labor government has introduced a bill to establish Infrastructure Western Australia. While these bodies have responsibility for assessing and providing input into and prioritising proposals, the guidelines and methodologies employed are the purview of Treasury and Finance departments within these jurisdictions. The prevalence of transport proposals in infrastructure considerations is also reflected in the guidelines produced by Queensland's Department of Transport and Main Roads and New South Wales' Department of Transport.

Infrastructure Australia's *Infrastructure Priority List* (2017) includes 20 projects of national importance, with their inclusion based on assessment of cost-benefit analyses prepared by the project proponents. There is a prevalence of transport projects on the *Infrastructure Priority List*, with 19 of the 20 either road or rail projects. A further 80 initiatives are listed, indicating that Infrastructure Australia has undertaken preliminary assessment of the proposal and has recommended that CBA proceed.

In recent years there have been a number of infrastructure projects committed to by state governments that have BCRs that are less than 1, indicating that they are not of net benefit to the community, and contravening De Rus's view that a BCR of greater than 1 is necessary, as cited earlier (De Rus 2017). The Victorian Government endorsed Melbourne's East West Link in April 2013. However, the subsequently released CBA from March 2013 included a BCR of 0.45, rising to 0.84 with wider economic benefits (WEBs) included. A revised business case from June 2013 indicated an increase in the BCR to 1.4 including WEBs (Budget and Expenditure Review Committee 2013; PwC 2012; Victorian Auditor-General's Office 2015). However, the Victorian Auditor-General noted that the 'June 2013 business case did not fully explain the basis for these increases in claimed benefits' (Victorian Auditor-General's Office 2015: 25). Other examples include Victoria's Level Crossing Removal Project (Victorian Auditor-General's Office 2017), the rebuilding and refurbishment of Sydney's ANZ and Alliance stadiums (Infrastructure NSW 2018a, 2018b), and the relocation of the Australian Pesticides and Veterinary Medicines Authority to Armidale, which proceeded with the CBA indicating an economic cost of $23.19m (Ernst and Young 2016).

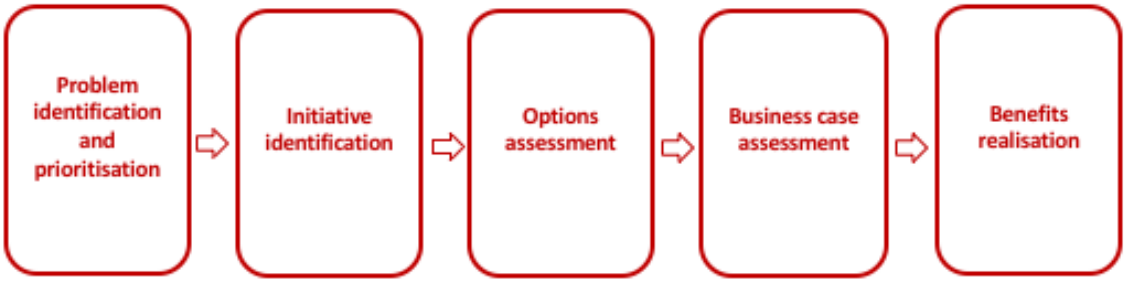
2.4.2 Australian business case processes

This section focusses on the Infrastructure Australia business case and appraisal processes, with reference to differences with the states' processes. Infrastructure Australia was established to evaluate 'proposals for investment in, or enhancements to … nationally significant

infrastructure' (*Infrastructure Australia Act* 2008: 4). There is an emphasis on productivity gains in the assessment of infrastructure proposals, which may be 'included' in the 15-year infrastructure plan (*Infrastructure Australia Act* 2008: 5). 'Inclusions' are where there is a problem or opportunity identified that 'when addressed, will result in a material improvement to national productivity' (Infrastructure Australia 2016a: 5). The processes are similar and follow the steps outlined in Figure 1. The Infrastructure Australia process is depicted as it applies to all states, and is an important step towards commonwealth infrastructure funding.

Infrastructure Australia uses a four-step process for assessing whether proposals should be included in the Infrastructure Priority List. The stages in assessing a proposal are depicted in Figure 1, including the additional post-implementation review stage *Benefits realisation*.

Figure 1: Infrastructure Australia project appraisal process



Source: Adapted from *Assessment Framework: Initiative and Project Prioritisation Process* (Infrastructure Australia 2016b)

Stages 2 and 4 are the stages where Infrastructure Australia formally assesses the proposal. Stages 2, 3 and 4 require the completion of Infrastructure Australia templates.

Stage 5 in the Infrastructure Australia process, Benefits realisation, is a post-implementation review and therefore not relevant to the decision-making process. As noted elsewhere in this report—and in the interviews undertaken to inform it—the failure to complete this ex-post analysis stage is a frequent criticism of CBA in Australia.

Stage 1: Problem identification and prioritisation

This stage is a collaboration between project nominators and Infrastructure Australia; it is a preliminary step to identify evidence-based problems of national significance. The primary context for identifying and prioritising projects is their impact on national productivity. This is similar to the state processes, where CBA begins with an investigation into the problem or opportunity to be addressed and making the case for government intervention (Building Queensland 2016a; Department of Treasury and Finance 2013; NSW Treasury 2017). The Victorian process requires that forms of government intervention other than investment and a 'market-based solution' need to be considered (Department of Treasury and Finance 2013: 6). This initial step can be seen as a filtering process to ensure that the projects that proceed to CBA are worthwhile, particularly as it is an expensive and time-consuming process.

Stage 2: Initiative identification

Stage 2 requires the completion of a template for formal assessment by Infrastructure Australia and is the first step in proposal assessment. Proposals are considered as having low, medium or high impact on economic, social and environmental (ESE) criteria.

The resulting ESE impact is assessed by the Infrastructure Australia Board, which considers whether proposals in this category:

- identify a nationally significant problem or opportunity, drawing on data including the Australian Infrastructure Audit
- demonstrate that problems identified are a constraint on the achievement of stated goals
- demonstrate with data-rich evidence that it is a priority to address the problem
- analyse the extent of problems and the root causes (Infrastructure Australia 2016a: 10).

In the Queensland process, this assessment stage is included in the Strategic and Preliminary Business Case stages. The Strategic Business Case considers whether a response to the issue identified is necessary, and the Preliminary Business Case addresses the need for, and constraints upon, intervention (Building Queensland 2016a: 12).

Stage 3: Options assessment

Options assessment consists of developing a longlist—although how long is not specified—of options to address the problem or opportunity identified in Stage 1. These options are subjected to a multi-criteria analysis by the proponent to develop a short list. The multi-criteria analysis is to include the following:

- The extent to which each option addresses the problems/opportunities.
- The timeframe over which the option is expected to address the problem/opportunity (i.e. the duration of time for which benefits will be sustained in addressing the challenge).
- Economic, social and environmental impacts.
- Indicative capital and operational costs of the initiative, as well as delivery risk and challenges.
- Other considerations for the initiative as appropriate (Infrastructure Australia 2016c: 2).

The shortlist generated by this stage in the process is then subjected to further analysis, a rapid business case for example, to determine which options proceed to the next stage—business case analysis.

The Victorian process states that 'government interventions other than investment-based solutions, and at least one "market-based solution"' should be considered in the options analysis (Department of Treasury and Finance 2013: 6). The Building Queensland (2016a) process includes a hierarchy of interventions, also indicating a preference for market and regulatory based solutions over infrastructure provision, which can be seen as an intervention of last resort.

Stage 4: Business case assessment

The business case assessment is the point where Infrastructure Australia determines when initiatives transfer into projects.

Infrastructure Australia assesses projects by:

- considering the proposed project's ESE value, taking account of the BCR
- making comparisons to previous, comparable examples of infrastructure projects for which robust post-completion reviews of the ESE value have been completed
- determining that the costs and benefits proposed are valid, appropriate and robust, including wider economic benefits (WEBs), if applicable
- considering the non-monetised benefits and costs, and the contribution these would make to the overall value of the project

- considering any equity and distributional impacts of the proposal, and ensuring that impacts on relevant social groups are properly accounted for (Infrastructure Australia 2016b: 8).

Discount rates

For assessment purposes and comparability, Infrastructure Australia requires appraisal summary results to be presented for the following real discount rates:

- 4 per cent per annum
- 7 per cent per annum (for the central case)
- 10 per cent per annum (Infrastructure Australia 2016a: 37).

The central case discount rate of 7 per cent aligns with rates used in state government infrastructure assessments within Australia. Infrastructure Australia (2016a: 37) notes that the 7 per cent rate is used in most Australian states and territories, as well as representing the private sector opportunity cost of capital. Queensland is an exception, where 6 per cent is cited as a standard but 'before any discount rate is applied in a CBA, it is advisable to seek confirmation of the appropriate discount rate from the relevant authority' (Department of Transport and Main Roads 2011: 2.9). Also of note, the Victorian Department of Treasury and Finance (2013: 25) lists three categories of discount rates:

- 4 per cent—for projects related to government services where the benefits are not readily monetised
- 7 per cent—for government services for that provide benefits that can be monetised (e.g. public housing)
- consultation with the department—for investments similar in risk to the private sector.

Distributional effects

Distributional and equity effects are central to social housing provision, as they assess who pays for the infrastructure and who benefits. Infrastructure Australia does not use distributional weightings in their CBA, requesting instead 'a breakdown of who is likely to bear the benefits and costs, and when' as part of the submission; this breakdown is considered part of the assessment process.

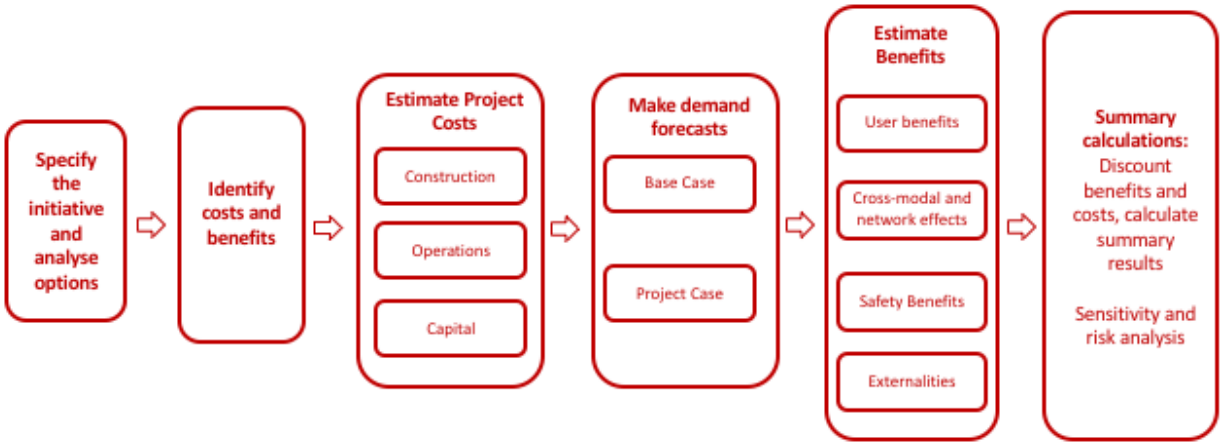
The Victorian process notes that distribution is a transfer effect, as it does not impact on the overall benefits of the project, but 'these impacts are still highly relevant for decision-makers and should be clearly presented along with the overall net impacts' (Department of Treasury and Finance 2013: 9).

2.5 An introduction to transport CBA

2.5.1 The process

The Australian Transport Assessment and Planning (ATAP) guidelines outline the process for developing a transport CBA, as depicted in Figure 2 and outlined below (Transport and Infrastructure Council 2018c).

Figure 2: Australian Transport Assessment and Planning guidelines CBA framework



Source: Adapted from Transport and Infrastructure Council (2018c: 3)

The ATAP process breaks the estimate benefits (panel 5 in Figure 2) into four steps:

- user benefits
- cross-modal and network effects
- safety benefits
- externality benefits and costs.

The ATAP process has been condensed in this figure for clarity. Also, the process includes an optional step—adjusted cost-benefit analysis—which is a method for reweighting or adding in additional costs and benefits to reflect 'non-efficiency objectives' (Transport and Infrastructure Council 2018c: 66).

2.5.2 Key elements of the ATAP process

The discussion of elements of the CBA process specified in the Transport and Infrastructure Council (2018c) is not exhaustive. A more detailed account is provided in Section 4.2.3 of this document, 'A CBA process framework for social housing'.

Objectives

The ATAP guidelines note the importance of identifying what is to be achieved by undertaking a project, with the following list provided as examples for transport projects:

- economic efficiency
- economic development and trade
- environmental amenity and sustainability
- safety
- security
- accessibility, social cohesion and equity (Transport and Infrastructure Council 2018c: 6).

The CBAs reviewed for this report rely predominantly on arguments related to economic efficiency, which may be a reflection of the Infrastructure Australia aim of improving national productivity (Infrastructure Australia 2016a: 5).

The base case

The base case provides the basis for the calculation of marginal benefits of a proposal. It is a 'do-minimum' assessment, including the need for:

- maintenance
- a minimum level of intervention to manage the problem
- modest cost
- allowing for minor improvements to infrastructure without significant capacity increases
- 'relevant initiatives elsewhere in the network … where funding for those initiatives is approved, committed or expected in the absence of the proposed initiative being appraised' (Transport and Infrastructure Council 2018c: 8).

Two important elements of this are the assumption that governments will intervene to not allow problems to worsen, and the inclusion of the impact of other projects in the network, either those that have been funded or are included in a 'planning reference case' of likely projects. They indicate that the project intervention will not occur within a static environment, and that the project needs to provide benefits over and above a 'business as usual' case, as well as the estimated costs.

Demand forecasts and data

The most frequently used method for modelling transport demand is the data and computationally intensive four-step model, which is applied to a defined study area that encompasses the impact of the infrastructure being modelled. Then the transport and activity systems are overlaid within the study area to produce a model of traffic flows, which is done without the proposed new infrastructure to produce the base case, and then done with the new infrastructure to provide the estimate of improvements to the system (Hensher and Button 2007). The four steps in the ATAP process are:

- Trip generation/attraction: estimates the demand per time period for trips originating and ending in each travel zone.
- Trip distribution: a matrix of origins and destination zones, categorised by trip purpose and time of day.
- Modal split/mode choice: the trip distributions are allocated between transport modes, based on modes available, socio-economic profiles and current preferences.
- Traffic assignment: motor vehicle trips are assigned to routes, based on minimisation of travel costs (Transport for NSW 2016: 117).

The purpose of demand modelling is to estimate the travel time savings as a result of the proposal, which is then monetised through the application of parameters set out in the ATAP guidelines (Transport and Infrastructure Council 2016).

This is an iterative process, whereby feedback loops are included and the model recalculated until it approaches a steady state of transport patterns. Other models used in transport planning include behavioural models, and linked and integrated land use and transport models. The complexity of modelling is frequently masked by commercial in-confidence considerations, as one public servant noted:

> *I know of one instance, in a State Government ... they have trouble even getting the consultants to give them details from their spreadsheets and in some cases, in urban transport, the consultants are running very complex 'black box' models and we don't really know what's going on inside them. (Interviewee 2)*

These modelling techniques have been developed since the 1950s, associated with the emergence of freeways in the United States, with the Chicago Area Transit Study of 1964 and early use of computers in modelling transport demand (Weiner 1997). During the 1960s, leading freeway experts from the United States visited Australia to advise on methodologies for modelling traffic demand as well as the advantages of freeways as a transport solution (Davison 2004). State governments have developed datasets to inform transport appraisal, such as the Brisbane strategic transport demand model, the Sydney Strategic Travel Model and the Victorian Integrated Survey of Travel and Activity. Also, specialists largely provide transport modelling in Australia, with Veitch Lister Consulting providing many CBAs with the foundational transport demand models, based on its proprietary Zenith model. Other consultants providing transport modelling include Parsons Brinckerhoff and Booz Allen Hamilton, who were taken over by PwC. The point of this is to illustrate that the current practices that inform the development of infrastructure CBAs have been developed over decades, across many countries, and supported by expert consultants.

Standard parameter values

In addition to the decades of development of transport methodologies, a similar process has occurred with the data used in transport appraisal. The ATAP guidelines 'provide a comprehensive framework for planning, assessing and developing transport systems and related initiatives' (Transport and Infrastructure Council 2016), which are used in all Australian jurisdictions. The guidelines include sets of parameter values for public, road, rail and active travel, as well as environmental impacts. For example, the Transport and Infrastructure Council (2016, n.p) calculates the travel time savings parameters for vehicle occupants thus:

> *Private travel time was valued at 40% of seasonally adjusted full time average weekly earnings (AWE) for Australia … or $14.99 per person-hour (i.e. 40% of the AWE) … For business car travel, the value of travel time was assumed to be 129.8% of AWE (135% of full time AWE less 5.2% for payroll tax), assuming a 38 hour week.*

As outlined above, these values and the method for calculating them have resulted from decades of research and review, led by precursors to the Transport and Infrastructure Council, such as Austroads and the Australian Transport Council.

There is a similar resource available for the appraisal of public health interventions: *Impact and causes of illness and death in Australia* (Australian Institute of Health and Welfare 2016). This analysis of the burden of disease is based on disability adjusted life years (DALYs), which are a combination of discounting the value of years of life while living with disability (YLD), and the years of life lost in comparison to the expected life span (YLL). The disability weightings and years of life lost are used in the regulatory assessment in Australia, and are monetised by the estimated value of statistical life (VSL) and value of statistical life years (VSLY), which were $4.2m for VSL and $182,000 for VSLY in 2014 dollars (Office of Best Practice Regulation 2014).

Estimating benefits

The calculation of benefits for a transport initiative, in comparison to the base case, is produced by estimating the following:

- Direct user benefits for the existing users based on travel time savings, which is the consumers' surplus of the willingness to pay for use of transport infrastructure above the actual or perceived cost.
- Changes to user costs, such as vehicle operating costs, reliability of service and reduction in accidents and damage.

- Benefits to induced infrastructure users, which is the consumers' surplus due to traffic that diverts from its current route, or additional travel generated as a result of the infrastructure.
- Considering whether the initiative will change land use patterns, particularly in the case of avoided costs of developing new outer suburbs where the 'governments meet some of the costs of establishing and maintaining new outer suburbs in the base case, there is a net benefit from not having to create these suburbs in the project case' (Transport and Infrastructure Council 2018c: 47).
- The comparison of the cost of crashes in the project and base cases.
- Externalities, such as noise, atmospheric and water pollution, climate change caused by greenhouse gas emissions, and severance (barrier effects) (Transport and Infrastructure Council 2018c: 51).

As indicated, the estimations are marginal benefits, based on the difference in between the project case and base case. The number and complexity of the benefits to be estimated, for both the base and project cases, provides insight as to why practitioners see CBA as a non-standardised process that cannot be consistently reproduced on a pre-prepared spreadsheet. The mix of benefits and methods for their calculation can be expected to vary depending on the distinct features of the initiative being appraised.

Adjusted CBA

Adjusted CBA is an optional step for use when considered appropriate by the jurisdiction considering the initiative. Adjusted CBA incorporates elements of multi-criteria analysis into the process, through applying negative and positive weights to costs and benefits considered to be more important than as represented in a straight efficiency-based analysis. It is also possible to add values for items not monetised through the standard process, which would be arrived at subjectively. A similar process of weighting is suggested for including the distribution of benefits within sections of society.

Examples of the use of adjusted CBA in Australian infrastructure appraisal were not found in the research, indicating that it is rarely applied, if at all. However, its inclusion in the ATAP guidelines can be seen as recognition that it is not possible—or the best approach—to monetise all costs and benefits associated with an initiative.

2.5.3 Wider economic benefits

Wider economic benefits have become regular inclusions in transport CBAs over the past decade. An early example of their use to justify a project is the business case for the Crossrail project in London, where the main reasoning for undertaking the project was to increase the access of workers to the highly productive areas of the city: the City of London, Westminster and Tower Hamlets (Buchanan 2007; Jenkins, Colella and Salvucci 2011). This presents a shift from considering transport projects for the effect on travel time to considering their capacity to shape and alter land use within cities.

Infrastructure Australia (2016a: 39) defines wider economic benefits (WEBs) as 'improvements in economic welfare that are acknowledged, but which have not been typically captured, in traditional CBA'. There are four effects considered within the assessment of WEBs, as outlined in a briefing paper prepared for the Bureau of Infrastructure, Transport and Regional Economics. They are:

1. agglomeration economies
2. labour supply deepening
    a. labour supply impacts

b move to more or less productive jobs

3 output change in imperfectly competitive markets

4 increased competition (KPMG 2015: 5)

These effects are discussed in detail in the following sections.

Agglomeration economies

Agglomeration economies are the benefits to productivity due to firms operating in close proximity, which includes the sharing of inputs and outputs, and knowledge spillovers. In a review of the application of WEBS to the North-West Rail Link (now called Sydney Metro) project in Sydney, the agglomeration effect as a result of reduced travel times was explained by Hensher et al. (2012: 293) as bringing about:

> *other 'adjustments' over time in other activities such as housing and employment redistribution and the associated physical housing and employment densities. It is through this latter effect that a transport improvement project can cause 'agglomeration' or dis-agglomeration in certain locations, and an impact on 'effective densities', and therefore impact on labour productivity.*

Effective job densities are central to the modelling of WEBs, which is a measure of employment distributions within a city, and how the travel times between them change as a result of transport projects. It is also interesting that within this quote there is a suggestion of losers—areas that experience dis-agglomeration—as economic activity may be drawn further away into central activity clusters.

Infrastructure Australia (2016a: 39) views agglomeration as providing the most substantial benefits of the four WEBs.

Labour supply deepening

While labour supply deepening is considered within the context of transport developments within the KPMG scoping study, the results are analogous to shifting workers closer to employment, in that the reduced costs, in time and money, of accessing employment by workers has workforce effects. There are two aspects to these workforce effects:

> *Increased labour supply is a result of reduced travel costs creating additional incentives for people to work, as costs are weighed against wages. For transport projects, the benefits are due to 'workers working longer or encouraging the under-engaged and disengaged workforce into active employment'. (KPMG 2015: 7)*

> *Move to more or less productive jobs refers to the better matching of labour to employment facilitated by lower transport costs. It is based on the assumption that people will be able to search a wider area to find employment that is a better match for their skills if they are willing to travel further to work. The end result is '(b)etter skills matching/ alignment … results in workers being more productive and able to produce the same or more output for a given cost. Ultimately, this will lead to an increase in GSP and GDP'. (KPMG 2015: 8)*

These effects are summarised as transport improvements bring a wider range of employment opportunities within individuals' travel budgets, which leads to increased participation and increased productivity through better matching of skills to employment.

Output change in imperfectly competitive markets

If markets were perfectly competitive, additional profits through reduced transport costs would be nullified through adjustments in supply and demand. In imperfectly competitive markets 'the reduction in transport costs allowing for an increase in production or output of goods or services

that use transport' (KPMG 2015: 8). Legaspi, Hensher and Wang (2015: 185) recommend that this effect be estimated at 10 per cent of the business-related travel time savings, based on a review of previous studies and the assumption that leisure travel does not have productivity outcomes.

Increased competition

By improving transport access in markets, competition may be increased and therefore prices may be lowered for consumers. However, this aspect of WEBs is widely assumed to have minimal benefits in developed economies and transport systems (KPMG 2015: 9), and is left out of WEB in some instances, such as an assessment of the Sydney North West Rail Link (Legaspi, Hensher and Wang 2015).

2.5.4 Criticisms

CBA as a rational input to decision-making is not without criticism. Berry (2017) points to flaws in the elemental concepts, such as the concept of an aggregate welfare function and the inequity inherent in the use of the 'rod of money', which is particularly relevant to the study of social housing. A critique of the practice is provided by Dobes, Leung and Argyrous (2016: 139) who remove the veil of objectivity in the process, stating:

> *It is possible at present to obtain virtually any desired result that one might wish from a cost-benefit analysis (CBA) study. Although the methodology and concepts in CBA are well established, their practical application leaves much to be desired, at least in some Australian jurisdictions.*

While not all consultants and public servants interviewed this inquiry agreed with this proposition, there was a prevailing sense that skilled practitioners can influence the outcomes of CBAs to suit clients. It was also noted that as the processes and resulting reports are long and complex, it could be difficult for peer reviews to identify where such manipulations may have occurred.

Ergas and Robson (2009: 2) place the problems with CBA for major infrastructure proposals in Australia with governments, concluding that 'high quality project evaluations will not be made if governments do not see value in them'. In order to improve CBA, they go on to recommend:

- making CBAs public, which will also highlight projects that have not been subject to economic analysis
- more auditing of CBAs prior to financing and post completion
- creating an independent centre of excellence for CBA (Ergas and Robson 2009: 4).

Transparency of CBAs is a regular criticism of infrastructure appraisals in Australia, as well as being promoted as a step towards improving the process. One public servant interviewed highlighted how this was impacting on the analysis of proposals within government:

> *There is a major issue here with the lack of transparency. Often in business cases you are not told about the options they have assessed, the details, a lot of the details are held confidential so it's very difficult for independent people to know what is going on. The Productivity Commission … strongly recommended that the details of CBA be made public, so people can review them and that is not being done and even in Government consultants are not even giving the clients full details at times … they give us with the CBA … we want more information and the consultant doesn't comply … they are a 'black box'. (Interviewee 2)*

Recent reviews of CBA from government authorities provide further insight into the issues with CBA practice. The Bureau of Infrastructure Transport and Regional Economics (2018b) have

undertaken ex-post reviews of the CBAs of smaller projects across Australia, finding a propensity to overestimate NPVs due to the overestimation of user benefits and overstating of the problems associated with base cases. The Victorian Auditor-General's Office (2015) reviewed the East West Link business case and subsequent contract cancellation, with the damning findings related to the politicisation of advice from the public service, the omission of key assumptions used to estimate travel demand and its monetisation and questioning of the extent of wider economic benefits. The Auditor General's Office concludes, 'limitations in the business case meant there was little assurance that the prioritisation of significant state resources to this project was soundly based'.

The Audit Office of New South Wales (2014: 3) concluded that the preliminary business case for the under-construction $16.8bn WestConnex project 'had many deficiencies and fell well short of the standard required for such a document'. In another example, the Senate's Rural and Regional Affairs and Transport References Committee (2016: 59) review of the Perth Freight Link business case—a project that was also cancelled—noted the lack of transparency as they were only granted access to the executive summary. The report also includes a conclusion that the business case was based on an 'incredibly generous and unrealistic estimation of the project's Business Cost Ratio [BCR] … significant uncertainties in the design, capital costs and economic modelling underpinning the Freight Link project make it impossible to have any confidence in the accuracy of the cost and benefit estimates'.

The prioritisation of projects and the closely related selection of alternatives for assessment has also been a feature of criticisms of the Western Distributor in Melbourne and the F6 Extensions and Western Harbour Tunnel and Beaches Link in Sydney (Martin and O'Sullivan 2017; McDougall 2017). These examples, as well as the East West Link, question the theoretical objectivity of CBA as it is applied: alternatives that may provide greater social benefit are excluded from analysis to ensure a politically preferred outcome. The Melbourne Airport Rail Link (MARL): Sunshine Route Strategic Appraisal provides an insight into the adaption of project appraisal techniques to meet announcement timelines. The appraisal consists of a series of multi-criteria or planning balance sheet assessment of options, beginning with a range of strategic interventions to deal with the projected airport traffic and ending up with a decision to progress to a full business case for the Sunshine Route, the preferred State Government outcome according to news reports from the previous year (SBS News 2017). It is of note that this preliminary appraisal rules out options that are within what could be regarded as a margin for error, such as: Airport mass transit at 3.3 compared to Pricing/productivity at 3.2; heavy rail at 4.0 compared to light rail rated at 3.9; and, the Sunshine route at 4.3 compared to the Craigieburn route at 4.1 (Transport for Victoria 2018). Given the additional detail of a full business case and CBA assessment, including project cost estimates, it is entirely likely that the result would be an entirely different outcome than the heavy rail route through Sunshine would result as the preferred option.

Ex-post reviews are rarely carried out in Australia, which means 'there is no systematic and objective collection of lessons learned from past projects, to better inform the planning and execution of future projects' (Victorian Auditor-General's Office 2018: 8). One example is the recent ex-post review of CBAs for Australian transport projects undertaken by the Bureau of Infrastructure Transport and Regional Economics (2018a, 2018b), which found significant overestimation of NPVs based on overstated road user benefits and inaccurate forecasts and methodological errors. The 12 infrastructure projects included in the review were for projects located in regional areas or on the outskirts of cities, as the review of large-scale urban project CBAs is complex and resource intensive (Bureau of Infrastructure Transport and Regional Economics 2018a: 4).

These conclusions may be seen as a result of optimism bias, one of the most frequent criticisms of infrastructure appraisal, particularly for large projects. This is associated with the 'planning

fallacy', which is the tendency for people to 'underestimate the costs, completion times, and risks of planned actions, whereas they overestimate the benefits of the same actions' (Flyvbjerg 2008: 8), a tendency also observed in Australia (Productivity Commission 2014). The recommended treatment for optimism bias is reference class forecasting, whereby analysis is based on the assessment of outcomes from similar projects—the reference class (Flyvbjerg 2008, 2009; Flyvbjerg et al. 2005). The recently published ATAP guidance on optimism bias views reference class forecasting as an important tool in project appraisal, noting that:

> *Robust cost and benefit estimation methodology, tested and validated over time, combined with a rigorous independent review process and policy settings providing incentives for project proponents to submit accurate and realistic benefit and cost estimates, are more likely to address optimism bias (and other biases more generally) in a proactive and constructive way. (Transport and Infrastructure Council 2018a: 3)*

As a lead infrastructure appraisal agency in this country, Infrastructure Australia (2018: 1) has also recognised the issues highlighted in this overview of critiques, particularly noting that:

- CBA would benefit from greater transparency, including the public release of analysis and processes that inform decisions.
- Not all options are considered, particularly the consideration of making 'better use of existing infrastructure through technology and data'.
- Projects are being committed to prior to the development of the business case and project appraisal and options analysis being undertaken.
- There could be a greater emphasis on community engagement to support and explain infrastructure decisions, as well as an input to the decision-making process.
- Post-completion reviews of more projects are needed.

This overview of the issues with CBA as it is applied to large infrastructure projects in Australia indicates that it is a contentious and politically charged process. However, it is still seen as an important and necessary part of the infrastructure investment process in Australia.

2.6 Implications for social housing

The purpose of this review of infrastructure processes and practices is to inform how similar approaches may be applied to appraising social housing initiatives. This section outlines the key points for consideration for the development of CBA methods for the social housing sector.

2.6.1 Learnings from infrastructure

A singular focus

A notable aspect of transport appraisal is the simplicity of the questions asked and the singular focus on transport efficiency as measured by the monetisation of travel time savings. This enables the same methodologies and frameworks to be applied to any transport proposal, given vehicle or passenger volumes can be projected from current levels and conventionally agreed assumptions made about the economic value of their travel via the proposed link.

A bespoke process

While infrastructure business cases and CBA are guided by the processes set out by the Commonwealth and state infrastructure agencies and treasuries, as well as the ATAP guidelines, it is a bespoke process, designed to fit the initiative being appraised. This can be seen as a central point, which underpins the other implications discussed here, because if it were procedural, transport and infrastructure CBA would not have developed into an industry of

itself, which includes the national transport bodies, consulting firms and continuing development of methods, parameters and guidelines to inform the practice.

CBA in decision-making processes

CBA is not the only input into decision-making processes, for infrastructure as well as in the appraisal of other projects and initiatives—other considerations are also taken into account. For social housing this is important, as it allows benefits and costs that are difficult to quantify to be included in the decision-making process even if they are not included within the CBA—for example, health and wellbeing.

It is also worth noting that in many instances CBA has been used to support decisions and political announcements that have already been made, as noted by Infrastructure Australia (2018). This suggests that CBA alone cannot be expected to change government policy on housing provision—there needs to be political support for change.

Productivity

The benefits attributed to transport infrastructure are largely associated with productivity, which as noted by this inquiry is strongly associated with perceptions of infrastructure. Infrastructure Australia's remit is to improve national productivity and there is a higher weighting for the monetisation of business travel and freight, which are productivity gains, than leisure purpose travel in the ATAP guidelines (Transport and Infrastructure Council 2018b). The inclusion of WEBs in CBA over recent years also skews the assessment towards productivity outcomes, as the benefits include agglomeration economies, improved labour market sorting and increased competition.

This focus on productivity outcomes may be of benefit when considering related issues such as key worker housing and ensuring that low-income workers have access to employment opportunities. However, for the focus on the provision of housing to reduce homelessness and to support those unable to find appropriate housing in the private rental market, productivity outcomes would be expected to be limited, as the people in these categories may also be unlikely to find employment.

This discussion of productivity outcomes is a separate argument to whether the provision of social housing leads to lower net costs to government. The conventional economic definition of productivity is the relative volume of outputs to inputs, whether in hours worked or capital. Lower net costs to government are not a productivity factor, except where public sector labour time or capital—but not necessarily expenditure—are reduced relative to outputs. The reduced net costs to government were a common line of argument in the interviews and workshop undertaken to inform this inquiry, as well as the basis for some recent arguments for increasing social housing supply (Parsell, Petersen and Culhane 2016; Witte 2017). However, in a basic economic sense, reduced net costs to government are not a productivity enhancement.

Long-term iterative development

The development of methods and parameters for appraising infrastructure have been developed over decades, beginning with freeway planning in the 1950s. This provides practitioners and reviewers with examples to draw from, standard parameters to monetise benefits, and set methods for calculation. There are also frequent updates to the practices, such as the development of WEB methodologies in recent years. There are regular updates and additions to state review processes and the ATAP guidelines, most recently on optimism bias and urban amenity and liveability.

The implications for social housing CBA are that there should not be an expectation that the methods will be complete from the start, that if the sector is to embrace economic appraisal, it is important to start and feed the experiences and outcomes back into the process to improve future attempts. However, it also implies the need for some kind of governance structure, at

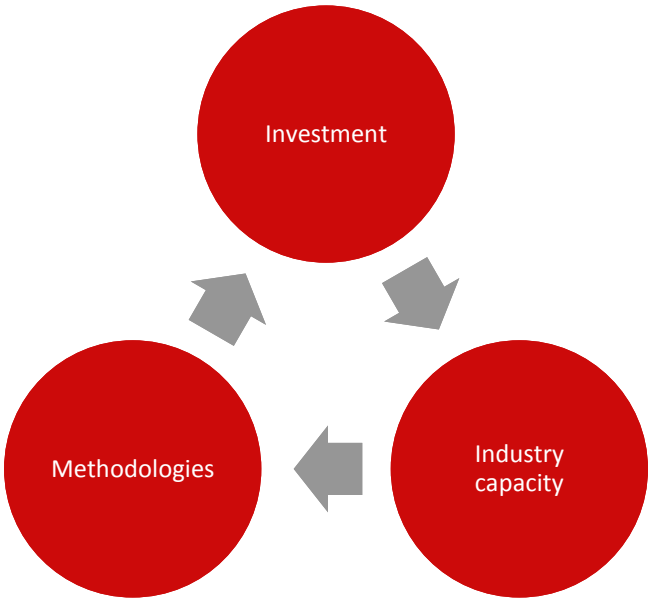
least an overarching body akin to the Transport and Infrastructure Council, to store and distribute the appropriate frameworks and datasets.

The infrastructure CBA industry

Infrastructure CBA can be understood as an industry, with specialised consultants competing for government and private-sector project assessment contracts. This includes traffic modelling, as well as the central aspects of benefit monetisation, cost estimation and NPV calculations. This can be seen as a response to the scale of infrastructure spending in Australia, as the Commonwealth alone has committed $70 billion for infrastructure from 2013–14 to 2020–21 (Department of the Treasury 2017), as well as the trend towards the outsourcing of policy appraisal, a trend recognised internationally and which has been questioned in Australia (Dingwall and McIlroy 2017; Perl and White 2002).

The state of refinement and capacity within the infrastructure CBA industry can be seen as a result of three interconnected and reinforcing factors underpinned by government preferences for CBA modelling to support decisions in investment, industry capacity and methodologies, as depicted in Figure 3. The greater the scale of investment, the greater the demand for high quality appraisals, such that the consulting sector responds and competes on improved assessment data and methods. This in turn leads to greater government expectation and expenditure on enhanced assessment.

Figure 3: CBA industry development



Source: Authors.

The self-reinforcing cycle of CBA industry development is important, as the expenditure on transport justifies the existence of the industry, research and development into appraisal methods, and the auspice institutions. This also suggests that the development of expertise, capacity and standards for the appraisal of social housing is dependent on the scale of investment recommended by Lawson et al. (2018) in a complementary AHURI report on the investment pathways for social housing as infrastructure. If, as Lawson et al. (2018) propose, there was a $9 billion commitment to a 20-year, Australia-wide social housing development program to meet the projected shortfall in supply, the scale of capital expenditure would justify the establishment of appraisal bodies, as well as provide the impetus for the consultancy industry to engage with and develop capacity in social housing.

2.6.2 A pathway for social housing

The foregoing discussion suggests that the development of business case approaches using CBA is a complex area of technical analysis that has developed over many decades in response to long-term high-value programs of government investment. Much of the rationale for contemporary major infrastructure project investment lies not solely in the service provided by the infrastructure for users, but by the additional economic benefits the project will have for society in general. Thus there has been relatively consistent government demand for expertise and methods that use CBA and its components to demonstrate economic benefits from infrastructure.

By comparison, social housing has seen very limited investment since the early 1980s, to the extent that it has become a largely residualised welfare-oriented sector. Establishing a framework for applying business case and CBA approaches for social housing within this context is likely to be more complex than simply applying infrastructure CBA approaches to the social housing sector. An evidentiary and methodological base that can provide the inputs into CBA appraisals of social housing does not yet exist to anywhere near the degree it does for conventional transport infrastructure—and it will need to respond to a broader range of questions and outcomes. Accordingly, the task of applying business case and CBA methodologies to social housing to support decision-making will need to be accompanied by an expanded research and technical effort.

Justifying a scaled-up research and technical effort to develop new business case and CBA approaches to appraisal of social housing may not be cost effective in the absence of a substantial long-term large-scale investment program being conceived. In the case of infrastructure appraisal, the long-run large-scale nature of investment has meant there is value in a proportion of that expenditure being allocated to improving knowledge and methods. This suggests that advances in business case and CBA are most likely to emerge and be justified where the scale of investment is large and sustained over a long time period.

3 An introduction to social housing appraisal

There is support within the social housing sector for the development of business case and economic appraisal methodologies to support funding proposals and inform investment decisions. The use of economic and financial methods by housing providers has been received positively by state Treasuries.

The conceptualisation of social housing as infrastructure implies productivity is a central consideration for its appraisal. As Australian social housing has been predominantly residualised and is effectively a provider of last resort to households in severe social need, productivity may not be the strongest argument for expanding supply, particularly in comparison to other forms of infrastructure. Therefore, social housing may be conceptualised as infrastructure—but it is not necessarily the strongest basis from which to develop arguments for additional funding, particularly given the current role the sector plays in Australian society.

This indicates a need for a multifaceted approach to developing appraisal methodologies for social housing that can accommodate welfare and productivity concerns, as well as reflect the range of benefits that are attributable to social housing provision. This is also evident in examples of social housing assessment reviewed in this report, where each employs different methodologies, which can be categorised into financial and economic appraisals. More broadly, there is not a single social housing question that business case methodologies may be applied to, and as such there is a need for a social housing appraisal toolkit, rather than a single instrument.

3.1 Introduction

This chapter builds on the conceptualisation of social housing as infrastructure (Flanagan et al. 2019) and is informed by infrastructure appraisal processes, as discussed in the previous chapter. It articulates the arguments regarding the application of business cases and CBA frameworks to social housing as a form of infrastructure. The importance of social housing and the application of business cases has been argued in the Australian context by Infrastructure Victoria (2016b: 5), which included social housing in its 2016 top three infrastructure recommendations. Infrastructure Victoria argued that social housing is a priority form of infrastructure as 'not acting [to build social housing] will come with even greater costs to society and the economy, which will be felt by generations to come'. Infrastructure Victoria has itself undertaken research into appraisal methods to improve the evidence for the benefits of provision of social housing that can inform future decision-making (Infrastructure Victoria 2018; Prentice and Scutella 2018).

Flanagan et al. (2019: 13) posit that a CBA method for social housing should be able to:

- Take account of the diverse range of 'outcomes' that social housing delivers.
- Accommodate the reality that many of these outcomes are not easily quantifiable or monetisable.
- Be applied to a diverse range of development contexts, including the development of discrete social housing projects (e.g. site-specific development), dispersed social housing

production (e.g. scattered-site development), and tenant-centred proposals (e.g. the provision of housing to an individual or group of individuals over an extended timeframe).

- Be inclusive of the perspectives of tenants (and applicants), the values they place on housing, and the housing and life outcomes they aspire to.

However, the consideration of social housing as infrastructure raises questions of productivity, which is not necessarily a result of the predominantly welfare interventions that comprise the social housing sector in Australia. It is also of note that productivity is central to infrastructure appraisal processes (Infrastructure Australia 2016b). This tension—in conjunction with the view from practitioners interviewed for this report that CBA is not standardised and procedural in nature, but needs to be customised to respond to the question and circumstances being investigated—indicates that a single framework cannot be expected to cover the entirety of social issues that may benefit from the application of business case methodologies.

The conjecture that a single framework cannot reflect the variation in the purpose of social housing and the possible questions that could benefit from business case methodologies is borne out by the review of previous appraisals of social housing, both internationally and from within Australia.

3.2 Why apply business case methodologies to social housing?

Business cases and CBA fall within the broad terrain of evidence-based policy development, and they are used to outline a technical rational response to the problem at hand (Weimer and Vining 2017). There are two general resourcing claims that may benefit from the application of business cases:

- First, fiscal competition within limited government budgets
- Second, deciding alternative options for new government economic development expenditure.

The first resourcing claim applies to the contested nature of government expenditure, particularly in portfolio areas that are considered to be welfare and where extensive social need is apparent and recognised. Treasuries tend to scrutinise expenditure claims by government agencies often with a focus on minimising new expenditure and achieving savings with existing expenditure. In this context, portfolios that are able to demonstrate fiscal savings across government may be in a stronger position to argue in favour of new or transferred funding for their area, such as social housing. The second resourcing claim relates to decisions between alternatives in relation to infrastructure investment. This might include options for investment in social housing over other infrastructure types, or between alternative projects within the social housing sphere, according to location, dwelling type or tenure model.

In the interviews conducted for this study, both arguments were apparent. One government housing agency representative who has developed an economic appraisal model for social housing identified the value of this model in preparing funding requests:

> *We find having an economic model quite useful in at least having an anchor in showing Treasury we've done some thinking about the ongoing benefits of housing investment and we use that quite thoroughly to articulate the case. (Interviewee 16)*

For the wider social housing sector, evidence of the financial and economic benefits of programs designed to alleviate homelessness or housing stress was similarly noted as offering important support in negotiations with Treasury officials, as one social housing sector representative noted:

> *People were ready to claim that the community housing sector had all sorts of benefits over state provision of public housing, but as far as Treasuries were concerned they couldn't see the evidence for it, nobody was providing the evidence for it. I think this kind of CBA is essential for building a case for central agencies for building social and affordable housing. (Interviewee 12)*

There is also a need for a greater understanding of the impact of and trade-offs between different interventions. This was seen as something that would be of great benefit to housing providers, as:

> *When you are putting money towards social change it makes sense to have some way of assessing whether comparatively it's good value, the programs you are delivering … comparing different programs, in a procurement process, the tendering phase, really the comparison between projects, that's the real strength. (Interviewee 14)*

A further point made by public servants involved in a wider spectrum of project appraisals than solely infrastructure, is that unquantifiable or intangible benefits are not excluded from the analysis, but considered in addition to the quantifiable benefits in decision-making. The quantifiable benefits can be seen as reducing the uncertainty associated with making decisions based on factors that cannot be readily monetised. This is important for social housing analysis, as the housing itself and many of its benefits are not traded in markets and therefore do not have available valuations to base willingness to pay estimations. This is redolent of the basic plausibility test used to assess the National Disability Insurance Scheme, where the quantifiable costs and benefits of the program per participant were estimated and then a judgement made as to whether the 'wider set' of benefits outweigh the net programs costs (Productivity Commission 2011).

While a business case for social housing may be based on different arguments, such as cost savings to government, increase in societal welfare or addressing systemic housing market supply issues, the overarching purpose is to support positive arguments for funding and policy, to external bodies and within the social housing sector. Also of note is that the strong support for the further development and application of economic appraisal techniques from within the social housing sector, as noted in the selected interview quotes above, and by workshop attendees. It is worth noting that the question of whether or not social housing is a form of infrastructure is somewhat of a sideline to these wider economic appraisal questions. Demonstrating the value to government of social housing investment does not rely on a definitional question of whether social housing certainly *is* a form of infrastructure. However, applying the techniques of business case and CBA to social housing does appear to strengthen the sectoral capacity to promote expenditure on this area of social need. While there is support for the application of business case methodologies to social housing, further development needs to take into account the substantial resources that have been—and continue to be—expended in the methodological development and implementation of CBA in infrastructure appraisals.

3.3 Social housing, productivity and welfare

The interviews undertaken for this project, as well as the analysis of Flanagan et al. (2019) and Maclennan, Ong and Wood (2015), indicate strong perceptual connections between infrastructure and productivity. This link is also evident in the focus of Infrastructure Australia (2016b) on national productivity, as well as the modelling of the productivity benefits of travel time savings and wider economic benefits within transport CBA (Transport and Infrastructure Council 2016). Therefore, it is important to consider the implications for social housing if productivity is to be a prominent criterion in decision-making within the sector.

While increasing productivity is seen as important for the Australian economy (Garnaut 2013; Productivity Commission 2017a) and there has been a focus on urban productivity in particular (Department of the Prime Minister and Cabinet 2016; Productivity Commission 2017b), the relationships between housing and productivity are underdeveloped. Nonetheless, a review of the treatment of productivity in housing policy by Dodson et al. (2017: 27) concluded that:

> *the economic productivity discussion around housing appears detached from anything more than a cursory consideration of housing as an economic issue, let alone as a factor in wider national economic productivity.*

While this suggests a need to establish concrete connections between housing and productivity, Maclennan, Ong and Wood (2015) construct an argument for housing as infrastructure, based on the relationships between housing, labour supply and productivity, particularly through the commuting costs and the influence of housing on wellbeing. This connection between housing and labour is most evident in the mid-twentieth century development of new suburbs to house workers for large-scale manufacturing, such as Elizabeth in South Australia, and Doveton and Broadmeadows in Victoria (Berry 1999; Troy 2012). Well located housing in relation to employment hubs may also improve productivity through labour market sorting, analogous to the wider economic benefits as a result of improved infrastructure.

The case for housing as infrastructure because of its productivity outcomes informs the consideration of social housing as infrastructure. While interviews conducted by Flanagan et al. (2019) suggest increased productivity as a result of social housing, other evidence linking social housing with employment outcomes in Australia has been equivocal. In particular, limited employment outcomes were identified due to the circumstances of those accommodated by the sector, unobserved factors that lead to sorting within study cohorts and the need for long-term studies to develop a better understanding of the relationship (Groenhart 2015; Johnson et al. 2014; Prentice and Scutella 2018; Productivity Commission 2015). Therefore, the welfare focus of social housing within the Australian context impacts on the argument that social housing contributes to productivity. As Flanagan et al. (2019: 54) note:

> *it is evident that the long-term residualisation of social housing, whereby accommodation is prioritised for disadvantaged households, is one of the most significant obstacles, not just to convincing policymakers that social housing can boost productivity, but to attracting significant private sector investment.*

The relationship between housing and employment outcomes is also central to the debate about increasing supply and rental assistance measures. Proponents of rental assistance argue that it provides greater mobility for people to respond to employment opportunities and is not prone to welfare locks (Productivity Commission 2015).

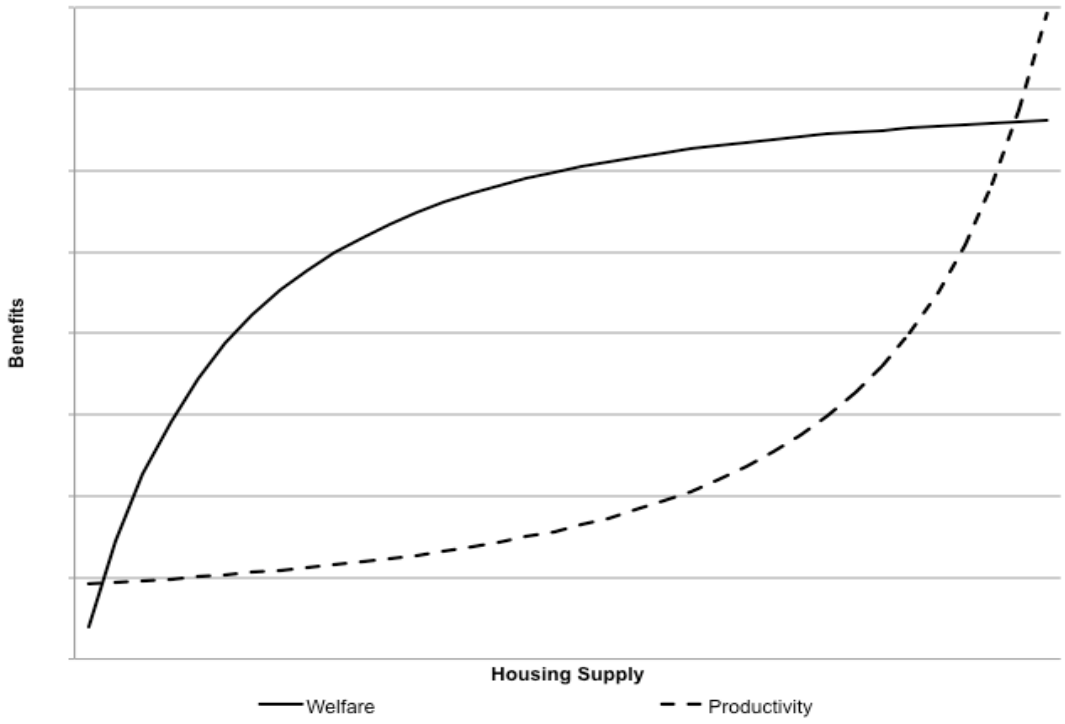
This does not mean that business cases cannot be applied to social housing, as one former property developer has noted:

> *Well placed, affordable housing for key workers, located in areas where society needs their services, and public housing, where tenants have ready access to existing infrastructure, services and jobs, also makes good and rational business sense. (Pradolin 2016)*

The different outcomes of housing intervention referred to above may be seen as occurring on a spectrum rather than as exclusive. A simplification of the two outcomes is depicted in Figure 4, with the strictly welfare public housing supply—reflecting the current Australian situation—to the left and key worker housing to the right. The welfare curve draws on prioritarian theories of welfare, where there are declining marginal benefits as the quantity of provision increases (Kolstad et al. 2014). Conversely, the employment and productivity benefits can be assumed to increase with supply in the prioritarian ordering of need, based on an assumption that recipients

are more likely to be able to participate in the workforce as their welfare needs decline. While a simplification of the diverse and complex nature of the cohorts involved, this notion of a trade-off between welfare and productivity benefits illustrates the point that housing provision that generates welfare benefits may not generate productivity benefits and vice versa. The greatest welfare benefit accrues to households that are the least well housed but this cohort is not necessarily in the labour market, whereas the greatest productivity benefit arguably accrues to households who are already housed and in the labour market.

Figure 4: The prioritarian welfare–productivity trade-off



Source: Adapted from Kolstad et al. (2014: 189)

Social housing may be considered infrastructure, but arguments for some social housing initiatives may benefit from the conceptualisation more than others. For example, there are links between housing interventions for the homeless and health outcomes (Parsell, Petersen and Culhane 2016; Wood et al. 2016), while employment outcomes are less clear (Groenhart 2015; Johnson et al. 2014). Proposals aimed at improving the welfare of the community, such as housing for the homeless, may be more suited to public health conceptualisations and appraisal methodologies, or provided on the basis of demography and needs assessments as with health, education and justice facilities.

While the prioritarian welfare–productivity trade-off is a simplification of the role and benefits of social housing supply, it provides the basis for proposing different approaches to business case development. This reflects the view of Dobes, Leung and Argyrous (2016) and CBA practitioners interviewed for this report, that even though infrastructure CBA has sets of guidelines and parameters for use, it is a process that requires considerable decision-making and application from skilled practitioners to respond to the question and distinct circumstances at hand. For social housing appraisal, this point was exemplified by a public servant engaged in developing appraisal methodologies, who noted that:

> *Specific estimates for specific cohorts … interested in the more vulnerable, broadly defined as homelessness, but there are also debates about key workers and low-income workers, if we were interested in that we probably would have used [different*

data]. The outcome would be quite different and the base case would be quite different and … what the focus is, the impacts you look at could be quite different. (Interviewee 10)

Two key points arise from this appreciation, which provide foundation for the subsequent consideration of the application of business methodologies to the sector:

- First, there is not a single 'social housing question' to apply business case methodologies to—the approach needs to reflect the intended outcomes of the project.
- Second, even though social housing may be conceptualised as infrastructure, it is not necessarily the best conceptualisation from which to develop business cases and advocate for more funding.

The second point is particularly relevant in the Australian context; as noted previously, social housing has become residualised, and a provider of last resort appraisal methodologies geared to productivity outcomes may not be a good fit.

3.4 Economic analyses of social housing

The preceding section has assessed the issues that need to be considered in applying CBA to social housing as a form of infrastructure. But how have such considerations been applied in practice? This section summarises previous appraisals of social housing from Australia, as well as select international examples. It is of note that the focus is on welfare interventions, as even though there are few examples of appraisals of this type, there is no evidence of economic appraisal of social housing interventions that address productivity or key worker initiatives.

A key point is that in theory CBA monetises all costs and benefits associated with a proposal; however, initiatives that are predominantly welfare interventions are likely to result in greater 'intangible' and non-market benefits that are not easily monetised (Chaloner, Dreisin and Pragnall 2015; Flanagan et al. 2019; Infrastructure Victoria 2016a; Johnson et al. 2014; Parsell, Petersen and Culhane 2016). Witte (2017: 16) addresses this disjuncture between theory and practice directly, providing a caveat to the theoretical position that CBA can account for the social, environmental and economic outcomes:

> *Not all costs and benefits can be quantified and then monetised (that is, expressed in dollar terms) precisely given their inherent intangibility, often forcing decision makers to integrate quantitative and qualitative results.*

This point was also made by CBA practitioners interviewed for this project, where quantifiable costs and benefits were seen as a basis for assessing whether the qualitative, or intangible, benefits of a project could be expected to overcome a negative NPV result. That is, the quantifiable aspects of a project could be seen as reducing the uncertainty in making decisions based on non-quantifiable aspects.

The range of approaches towards evaluating the costs and benefits of social housing investment indicates that the economic appraisal of social housing is still in a formative stage, in contrast to the settled methods, parameters and data collections that inform most major transport project appraisal. Section 3.4.3 introduces recent developments in appraising social housing, indicating both the timeliness of this report and that there is wide recognition that there is a need for economic appraisal techniques in this sector.

3.4.1 Australian examples

While there is an extensive literature on the general benefits associated with housing, and social housing, there are few examples of the specific application of CBA techniques to social housing, or even comparable efforts to monetise the benefits using like methods. This may

reflect the complexity of monetising the wide range of non-market traded benefits that result from social housing, such as wellbeing, inclusion and participation in education. Unlike transport projects, which typically generate revenue streams (via tolls or fares) based on discretionary user behaviour, social housing has an income-constrained user base that is not able to pay full market costs.

The problem of market-constrained users may also explain why CBA is not widely used for other forms of social infrastructure, such as health and education, where decisions are made on the basis of need, demography and funding agreements between the Commonwealth and states. This does not mean that there may not be financial or economic benefits from social housing. For example, Berry (2002: 5) opines that:

> *Sufficient evidence exists to suggest that by seriously attacking the issue of insufficient affordable housing … government can materially alleviate a range of economic and social problems, while reducing the cost to taxpayers, in the longer term.*

Such assessment indicates that there is much to be gained from promoting social housing investment in Australia. This view concurs with the Victorian Government's 30-year *Infrastructure Strategy*, which includes expansion of social housing stock among its top three recommendations, as 'not acting will come with even greater costs to society and the economy, which will be felt by generations to come' (Infrastructure Victoria 2016b: 5).

During the period from the late-1940s to the mid-1980s there had been regular government investment in social housing. However, as a result of increasing reliance on market mechanisms for resource allocation social housing has shifted from being, as Spiller (2017: 1) puts it: 'essential infrastructure, like education and health, to a residual safety net'. This transition, which began in the early 1980s, forms the background for the CBAs undertaken for the South Australian Housing Trust (Pugh and Catt 1984) and the New South Wales Department of Housing (Carter, Milligan and Hall 1988). Both of these analyses based their benefits of housing provision on comparable private market rents, although with different assumptions and applications. Pugh and Catt (1984) adapted a method developed by DeSalvo (1971), where benefits are a function of estimated market rents, actual rent paid in social housing, rent–income ratios of people not in social housing and the income of the tenant. Carter, Milligan and Hall (1988: 33) base their analysis on the assumption that:

> *public housing standards reflect the societal benefit accruing from public housing as a merit good, then the appropriate demand curve to serve as a surrogate for willingness to pay for public housing should be the market rental valuations of public rental stock.*

A report by Econsult (1989) compared rental assistance and housing provision by cost effectiveness analysis (CEA), which assumes that both options provide 'secure and affordable housing to low-income persons' (1989 i). That report, which informs the 1993 Industry Commission *Public Housing inquiry report*, concludes that over a 12- to 15-year time frame housing provision is more cost effective than rental assistance. While the intervening years diminish the currency of the Industry Commission (1993) finding, of note is that the central discount rate used in the analysis was 3 per cent, with sensitivity testing at 0 per cent and 5 per cent. Reasons given to justify using the lower rate for the public project proposal were:

- imperfect capital markets and their failure to consider externalities
- private capital having comparatively low regard for future generations
- taxation liabilities for private investment
- lower risk for public projects (Econsult 1989: 23–4).

The Industry Commission (1993: 147–149) also outlined the additional benefits of public provision of housing, as well as those for rental programs. The benefits of public supply over rental assistance programs included:

- Security of tenure for social housing tenants.
- Reduction in discrimination, due to the possibility that landlords will exclude sections of the community for private rentals.
- Better maintenance, as private landlords benefit from either delaying or not maintaining housing stock, but public provision benefits from accountability.
- Lower search and access costs for public provision as there are no bonds or rent in advance requirements.
- Choice, as people with low incomes can be provided with few choices that they can afford in the private market, which is contrary to the argument that rental assistance programs provide recipients with more choice.
- Market hedge, as Government provision can reduce profiteering, particularly at times of high demand. Government provision also provides a hedge against volatile movements in rental rates, which can be costly over time.

For rental programs, the Industry Commission noted that social housing could serve different needs, such as people who only need temporary assistance and people who are mobile. Public housing does not suit everyone, and rental assistance may be a more efficient policy in these cases. However, they did note that rental assistance is reliant on appropriate supply responses from the private market, and if prices increase there are financial risks to the government. It is also worth noting the pecuniary externality conclusion—that in the long run, it is cheaper for the government to directly increase supply than to stimulate additional supply through vouchers or allowances as additional rents resulting from the vouchers or allowances must also be paid to (or are captured by) existing landlords (Industry Commission 1993: 66–67).

In the first of more recent examples of Australian housing CBA is the assessment by Johnson et al. (2014) of the Journey to Social Inclusion (J2SI) program, which compared the outcomes for those involved in the program to a control group in order to provide an estimation of the marginal benefits of intervention. While the costs of the program were readily available, they find:

> *It was not possible to measure the monetary value of various 'intangible' benefits such as improvements to participants' self-esteem, or improvements in their sense of connectedness to the local community. (Johnson et al. 2014: 24)*

With intangible benefits excluded, the resulting appraisal is based on the comparative frequency of use of health, justice and social services. The analysis estimated that the program's BCR was 1.5 using a DCR of 4 per cent (Johnson et al. 2014, p. 24, 35).

There are other recent examples of estimating the net savings to government of providing housing, through lower costs in other areas of government service provision. Parsell, Petersen and Culhane (2016: 1547) estimated that in a 12-month period homeless individuals used $48,217 of state government health, criminal justice and housing services. For a similar period in supported housing, the estimated cost was found to be $35,117 including the costs of housing provision, indicating a significant saving to government. The authors note that there are limitations to the research, including that the results require further studies to become generalisable. Similarly, research using linked datasets of over 3,000 individuals from the Western Australian Departments of Health and Human Services coupled with a tenant survey to connect public housing provision with a reduced usage of health services, estimated savings of $4,486 per person per year. In particular, there was a reduction in 'people presenting to

emergency departments, people staying overnight in hospital, people presenting to ICU, people in psychiatric care, people accessing mental health services and people with prescriptions for opioid dependency treatment' (Wood et al. 2016: 76).

Witte (2017) assesses last-resort housing, using a cost-savings methodology in association with an estimation of benefits to the individual, finding that for every $1 invested $2.70 of benefits are realised over a subsequent 20-year period. The benefits assessed include:

- health cost savings
- improved quality of life
- reduced crime costs both as victim and perpetrator
- increased human capital
- avoided property deterioration and nuisance
- volunteering
- economies of scale and scope.

However, as last-resort housing is for short-term emergency relief that helps people transition into longer-term secure tenancies, it does not account for the additional benefits associated with secure tenure.

Kraatz and Thomson (2016: 24) reviewed the benefits of social housing to construct a 'composite return on investment', including social return on investment (SROI), wellbeing valuation, value to the individual and the value of equity, as 'a single method does not capture the complex nature of the value returned to society and the individual of having access to safe and secure housing'. The purpose of the composite return on investment is similar to the intent of the framework proposed within the present project—namely 'to establish a robust methodology for valuing the return on investment of providing social housing, in order to build the case for on-going investment'—but is different in implementation (Kraatz and Thomson 2016: 24). Ravi and Reinhardt (2011) also used the SROI method to evaluate the benefits of community housing in Australia, estimating that over a 5-year period, the benefits of Community Housing Services programs were worth approximately $665 million. These detailed investigations into the economic benefits of social housing provision provide valuable insights for housing investment decisions; however, for the CBA of social housing their methods are not directly transferrable. While SROI draws on CBA theory and techniques, it is not recommended that SROI be used for comparisons of different programs and with different stakeholders, limiting its usefulness for informing government investment decisions (Maier et al. 2015).

3.4.2 International examples

Internationally, some examples exist of efforts to apply CBA to social housing policies and programs. A comparison between Social Rental Housing (SRH) and Reconstruction and Development Programme (RDP) housing in South Africa, where SRH housing is for low-income workers who can pay rent and earn up to SAR7,500 per month, while RDP is restricted to households earning less than SAR3,500 per month. The RDP housing is provided in lower cost locations on the outskirts of cities. SRH is medium-density rental housing for low-income tenants, located within major cities. Data was collected by surveying residents of SRH and RDP housing, filtered so that there were comparable wages across the two groups. Key results from the analysis include:

- Education: Greater school retention rates for SRH, resulting in four years of additional education and 7 per cent higher income than an RDP resident.

- Health: Better access to health providers for SRH tenants was expected to translate into fewer days' work missed. However, other factors clouded this effect, such as informal employment.
- Crime: Reduced crime rates for SRH due to urban management, safety measures and higher density living
- Education: SRH is located closer to employment than RDP housing, therefore residents tend to find better jobs. This is assumed to lead to a 7 per cent increase in employment for SRH residents over RDP residents, qualified by the different circumstances of the different populations.
- Transport: There are savings due to the reduced distances needed to be travelled by SRH residents, which leads to savings in expenses and travel times (Rhizome Management Services/RebelGroup 2009).

The Canada Mortgage and Housing Corporation commissioned economic analysis of their Residential Rehabilitation Assistance Program, which provides support for the improving of substandard housing. It is an example of the application of a computable general equilibrium (CGE) methodology to a large-scale housing assistance program. The CGE model assesses the change to the economy as a result of a project, including direct and induced employment and gross domestic product. The two aspects of the program were found to have contributed an increase of $941 million in GDP and approximately 14,500 person years of employment (Audit and Evaluation Services, RA Malatest & Associates and Auguste Solutions & Associates 2003). While not CBA, CGE methods have become standard inclusions in the business cases for large-scale infrastructure projects, with the employment generation effects regularly used to promote the benefits of construction.

Grabka and Verbist (2015) used an imputed rent method to analyse housing subsidies in the European Union, where comparable rents in the private sector market were estimated using hedonic regression analysis, which is a standard technique for assessing dwelling-related factors in housing market analyses (Parmeter and Pope 2009; Rosen 1974). This is based on an opportunity cost approach, as the analysis indicates what value has been forgone through the housing subsidy. The results varied from tenants paying more than 70 per cent of the market value in Finland, Germany, the Czech Republic and Austria to less than 40 per cent in Ireland, Portugal, France and Latvia (Grabka and Verbist 2015: 14). The imputed rents are used to analyse the impact of the implicit income benefits of subsidies to tenants and, although the results vary by country, they conclude that social housing reduces poverty and inequality, particularly for those countries with 'a relatively high share of beneficiaries, as well as a large difference between private market and social rents' (Grabka and Verbist 2015: 29).

Chaloner, Dreisin and Pragnall (2015) provide an example of a budget impact business case, where they compare the fiscal impacts of providing an additional 100,000 social housing units per year in the UK to the costs to government under current policy settings. The number of additional homes is based on the 'broad agreement that the rate at which homes are being built is at least 100,000 units lower per annum than is needed to keep pace with rising demand' (Chaloner, Dreisin and Pragnall 2015: 5). While noting a short-term requirement for government borrowings to fund the scheme, the analysis concludes that:

> *A programme of building 100,000 new homes each year for social rent part-funded by government grant will deliver a sustained structural improvement to public sector finances—by reducing spending on welfare payments and stimulating higher tax receipts from a more vibrant home building industry. (Chaloner, Dreisin and Pragnall 2015: 6)*

The report does note that there are additional benefits to housing provision in health, wellbeing and education, but which are not included in the analysis as they are difficult to quantify (Chaloner, Dreisin and Pragnall 2015: 45).

Revealed preference methods were used to determine a willingness to pay for social housing in Amsterdam, based on the time spent waiting for public housing (van Ommeren and van der Vlist 2016). The system of allocation in Amsterdam enables this approach, as people can apply for housing as it becomes available, as well as decline housing offers without penalty. Therefore, the time people are willing to wait for a preferred dwelling type can be monetised and compared to the cost of provision. The results indicate that a 10 per cent increase in market value is associated with a 6 to 7 month increase in waiting time for tenants. The waiting time is estimated to equate to 5 per cent of the market value of the property.

While not directly appraising social housing, the comparison of the cost of remediating inadequate housing in Europe in comparison to the savings in health care alone indicate that for every €3 spent, €2 would be returned in the first year (Eurofound 2016). This is an example of the reducing costs-to-government approach to justifying investment in housing. Of note are the conclusions that more data is required to develop the analysis further, that there needs to be a standard set of metrics and parameters for use in evaluation, and that a 'value of life' indicator may be a useful tool for comparative evaluations (Eurofound 2016, p. 2).

3.4.3 Emerging methods for social housing benefits estimation

At the time of writing, interest in the development of improved methods to assist in making decisions about public housing was increasing in Australia. This section offers a brief survey of new approaches emerging in the scholarly and policy literature.

Alliance Social Enterprises (2017), a New South Wales–based social housing provider, have developed a tool for benefit analyses of social programs within Australia, based on econometric methods prepared by Fujiwara et al. (2017). The tool is called the Australian Social Values Bank (ASVB), and has been made available electronically for community and policy advocates and providers to support new proposals for the development of community and public housing (see https://asvb.com.au/). The ASVB is based on a wellbeing valuation methodology across 62 different social measures, broadly categorised as health, home, education, social and community, drugs and alcohol, crime and employment. Wellbeing valuation equates the changes subjective in wellbeing due to changes in peoples' circumstances and then uses the change in subjective wellbeing due to increased income to monetise the improvements. Secondary benefits are also included, such as reduced welfare payments and increased tax receipts. The ASVB benefit calculation method limits the propensity for double counting by limiting the number of benefits included to three, with explicit warnings included in the guide (Fujiwara et al. 2017: 19). This can be seen as a step towards the development of a standardised set of parameters for evaluating social programs, comparable to standardised transport parameters published by the Australian Transport Council (2006) for the assessment of transport infrastructure proposals.

Infrastructure Victoria (2018; see also Prentice and Scutella 2018) used an 'econometrics of program evaluation' approach to assess the marginal values from social housing by comparing the outcomes of a policy for a 'treatment' cohort to a similar 'control' cohort not included in the program, akin to a controlled clinical trial. The project did not produce a CBA, but was concerned with the preliminary step of assessing marginal outcomes from social housing. Data was drawn from the Journeys Home and Household, Income and Labour Dynamics in Australia (HILDA) surveys. However, Infrastructure Victoria (2018: 12) noted that there are problems with this approach such that 'differences in outcomes could result not from being in social housing but from the characteristics that meant they were selected into social housing'. It is also possible that some characteristics of the cohorts are not captured in the data, such as issues

with mental and physical health, or addiction (Infrastructure Victoria 2018), a problem identified in previous research into social housing (see Productivity Commission 2015: 26). As a precursory study in the application of econometric methods to social housing cohort outcomes evaluation, the most significant finding is the need for more longitudinal data, particularly tracking the benefits to children of secure housing over time. The research did find that social housing reduced homelessness, but outcomes in employment, education, health and incarceration were similar across both the treatment and control cohorts. This result was seen as a reflection on the use of averages in the analysis, which masks the impact of social housing on demographics within cohorts, and that the selection process for social housing means that they are more likely to have more severe experiences of disadvantage than the comparison cohort, due to factors not apparent in the datasets (Infrastructure Victoria 2018: 17). An advantage of this 'econometrics of program evaluation' approach is that in CBA terms the non-intervention cohort serves as the base case.

Discussion within the workshops and interviews conducted for this project indicated that fresh institutional effort is being dedicated to developing savings-to-government approaches for business cases for social housing intervention, although these are not yet in the public domain. Like the examples covered in this section of the report, the analysis compares the cost of providing housing to the reduced requirement for services in other areas of government, such as health and justice. As yet, there are no available examples from within the social housing sector, but the underlying form of this approach is evident in the work of Parsell, Petersen and Culhane (2016) and the use of linked datasets to estimate changes in the frequency of service use by Wood et al. (2016).

3.4.4 Summary

The small number of examples of economic appraisal of social housing indicates that this area demands further methodological development, while the clutch of recent publications indicates growing demand for economic assessment and business case methodologies for use in social housing. The examples presented use a range of methods, reflecting both the different questions being asked as well as the limited systematic agreement across the field about methods and parameters, in contrast to those used in transport appraisal where there is a high degree of homogeneity of approach and method due to the issuance of practice guidelines by national authorities.

The examples of recent efforts to assess the economic benefits from social housing demonstrate the methodological complexity in estimating the benefits to social housing tenants, as these benefits are either assumed to:

- be included with housing market values
- be discussed and not monetised
- result in a multifaceted conclusion when considered in detail, as in the example of Kraatz and Thomson (2016).

This complexity is also borne out by the Infrastructure Victoria (2018) study, which employs a detailed approach to a closely defined cohort, thus demonstrating the trade-off between assessing the benefits to a cohort in general versus specific sub-cohorts, as well as the frequent references to 'intangible' benefits (Infrastructure Victoria 2016a; Johnson et al. 2014; Witte 2017).

While there are a number of methods used in the assessments covered here, there are two broad forms of analysis apparent in the examples:

- Financial analysis, estimating the savings to government based on the difference between the costs of housing supply and the reduced frequency of use of other government services,

such as health, justice and other social services. This approach generally notes 'intangibles' as additional factors to consider, including wellbeing, security and social inclusion. Examples: Parsell, Petersen and Culhane (2016); Wood et al. (2016); and Chaloner, Dreisin and Pragnall (2015).

- Economic analysis, using experimental or abstract methods to monetise the benefits of social housing. Examples: Pugh and Catt (1984); Carter, Milligan and Hall (1988); Frick and Grabka (2003); and van Ommeren and van der Vlist (2016).

Other assessments employ a hybrid of the two approaches (Johnson et al. 2014; Witte 2017) or undertake the analysis to develop and test methods for use in future appraisals (Fujiwara et al. 2017; Kraatz and Thomson 2016).

An important point to take from this summary is that there is little evidence of underlying infrastructure conceptualisations. The method most redolent of infrastructure is the valuation of the housing asset, based on the equivalent market rents (Carter, Milligan and Hall 1988; Pugh and Catt 1984). The recent innovations in economic appraisal methodology are concerned with tenant welfare. The econometrics of program evaluation method used by Prentice and Scutella (2018) can also be seen as an investigation into avoided costs methodology, through statistical comparisons of treatment cohorts to control groups and evaluating changes in service usage. Also of note is that the employment outcomes are inconclusive, and that none of the examples included here have investigated productivity outcomes from key worker-type housing initiatives.

This review demonstrates a distinct contrast between the approaches used to assess the costs and benefits of social housing compared to transport project assessments. Infrastructure appraisal has been criticised for infrequent application of ex-post analyses (Infrastructure Australia 2018), whereas there is a predominance of ex-post evaluations of social housing in the recent examples (for example Johnson et al. 2014; Parsell, Petersen and Culhane 2016; Prentice and Scutella 2018). These can be ascribed to the need for developing methods and establishing an evidence base for future appraisals, as opposed to the ex-ante proposals that are arguments for interventions.

3.5 Conclusion

While it is obvious that the additional decision-making rigour resulting from the application of business case processes to social housing decision-making is positive, the interviews indicate that development of methodologies is needed by the industry to support funding submissions. However, the conceptualisation of social housing as infrastructure and the attendant appraisal methodologies introduce productivity outcomes that may not provide the strongest basis for funding applications. This infers that the conceptualisation of social housing may be theoretically sound, but other conceptualisations and appraisal methodologies may be more appropriate for housing as a welfare intervention.

It is also worthwhile to reflect on how this conclusion responds to the four considerations for social housing CBA methodologies proposed by Flanagan et al. (2019) and listed in the introduction to this chapter. By developing frameworks that are suited to welfare-based interventions and another to productivity outcomes, a wider range of social housing outcomes is catered for. The wellbeing valuation methodology of the Australian Social Value Bank is a constructive development towards monetising the intangible benefits of social housing. However, there is evidence that it is not necessary to monetise all benefits in business cases as exemplified by the National Disability Insurance Scheme (NDIS) assessment, based on a plausibility test (Productivity Commission 2011).

A further observation, that the methodology be applicable to a 'diverse range of development contexts' (Flanagan et al. 2019: 13), is more likely to be resolved by an economic assessment

than an avoided costs method, which is unlikely to vary benefit estimations on location and built form. Avoided costs may be more suitable for proposals to house individuals or groups of individuals, as changes to service usage between treatment and control cohorts of similar interventions may be used to advocate for funding.

The final consideration is to include the 'perspectives of tenants (and applicants), the values they place on housing, and the housing and life outcomes they aspire to' (Flanagan et al. 2019: 13), which are benefits of social housing that would be included in the 'intangibles' of the examples summarised in this chapter. CBA theory indicates that these benefits can be monetised, using stated choice experiments to determine willingness to pay for social housing. However, if such a method for determining a willingness to pay by social housing tenants and applicants, the bias against people of low wealth and income needs to be accounted for in developing appropriate survey instruments. These methods are resource intensive (Infrastructure Victoria 2016a) and interviewees indicated that the results could be received with scepticism, indicating that while it is possible, hybrid approaches such as plausibility tests may provide a better outcome. This would also avoid reducing the wellbeing and quality of life of social housing tenants to a dollar value to be considered against costs. The use of market rents as a measure of the benefits of social housing can also be seen as addressing this final criteria, as an implied assumption is that the benefits of housing are the same irrespective of the tenant and that the market value represents the willingness to pay for the entire range of benefits of residence (Carter, Milligan and Hall 1988; Pugh and Catt 1984).

In light of this, the simplified model of the trade-off between welfare and productivity outcomes, and the previous studies summarised in this chapter provide the basis for developing two frameworks for appraising social housing:

- Avoided costs, which estimates the whole-of-government budget savings as a result of housing provision.
- Economic assessment, which draws on CBA theory and the methods used to appraise infrastructure projects, as discussed in Chapter 2 of this report.

These methods should not be seen as mutually exclusive, as implied by the notion of trade-offs and the examples that use a hybrid of the two approaches. The avoided costs methodology is not based on an infrastructure conceptualisation, but is included here as it is a business case argument evident in the literature, as well as in social housing organisations. The economic assessment methodology draws on infrastructure processes, but is readily adaptable to other conceptualisations.

4 A framework for social housing CBA

Economic appraisal of social housing provides an argument that social housing is of net benefit to society, based on the cost-benefit (CBA) analysis methods used to appraise infrastructure. This approach draws on infrastructure investment practices, whereby benefits are monetised and compared to the opportunity costs of development.

The application of business case methods to social housing can be applied to more questions than whether it is of greater benefit than other policy options. For example, there is a need for methods that provide insight into the trade-offs between high cost locations with ready access to services and low cost but remote locations.

Further research would be required to develop the standard processes and parameters for use in the economic analysis of social housing, similar to the ATAP guidelines used in transport infrastructure appraisal. This holds for any method and conceptualisation that may be used for social housing appraisal.

If economic appraisal became a standard process in social housing, it would require additional resources and analytical capacity, either within the social housing workforce or in specialised consultancies.

4.1 Introduction

The economic assessment approach to social housing appraisal is introduced in this section, drawing on CBA theory and infrastructure methodologies. While the economic assessment framework closely follows how infrastructure appraisal is undertaken, it is the detailed approaches within each stage and the supporting parameters that need to be resolved if economic appraisal is to be a useful tool to argue for increased social housing supply.

There is a wealth of research on the benefits of social housing, but a dearth of quantification, monetisation or economic assessment (Buzzelli 2012), and no agreement on appropriate methodologies to employ, as discussed in Chapter 3. In comparison, transport infrastructure appraisals are at an advantage by having an agreed set of parameters and methodologies, which provides the basis for preparation and consideration of CBAs. This indicates that—in addition to the criteria set out by Flanagan et al. (2019)—appraisal methods need to provide a theoretically sound estimation of the benefits that account for distributional effects and the inherent biases within CBA. Also, there needs to be consensus among government, the social housing sector and practitioners as to what is an appropriate and effective method for appraising social housing.

4.1.1 Issues in CBA application to social housing

Although social housing may be deemed to be infrastructure, it takes a differing physical and institutional form to conventional network infrastructure such as roads, rail, water, energy or communications infrastructure. Business case and CBA methodologies may therefore have different applications to social housing. For transport infrastructure, the question is typically whether the link should be built or, in some instances, what the best option among alternatives is to achieve the transport outcome. The overarching policy question of whether transport

infrastructure should be built, or whether transport infrastructure is a social good, is not typically asked. In contrast, social housing proposals typically face questions as to the need for social housing and its direct societal value. Housing proposals are also typically less spatially fixed than conventional network infrastructure, whereas the general location of transport proposals being proposed is known prior to appraisal. For social housing, there may be good land market reasons to avoid identifying specific land parcels on which social housing may be built, in order to avoid price escalation by landholders.

Ex-ante and ex-post assessments

The timing of CBA is a factor that deserves consideration. Ex-ante assessments are prospective, providing a case for proceeding with or for an option based on the estimated future benefits and costs that result. Ex-post assessments are retrospective, reviewing the outcomes of a project or program that has already been implemented. This can be understood as asking different questions:

- ex-ante assessments ask: 'Will this be worthwhile?'
- ex-post assessments ask: 'Was this worthwhile?'

While different in intent, the overarching framework for CBA applies to both ex-ante and ex-post evaluations. The main difference between the two analyses is that ex-ante has a base case, which is the expected outcome without the proposed intervention, while ex-post has a control group—which is a similar section of the community to those that participated in the intervention but did not—with which comparisons to the intervention community can be made.

Housing assistance comparisons

CBA may be useful in assessing alternative options for meeting housing needs, which was seen as a gap within the social housing sector. This theme appeared in the interviews conducted for this project, such that:

> *I don't think we have a good appreciation of the benefits, if they exist, of the community housing sector over say, the state government provision of public housing. Or, if the state government could get into the game, or re-enter the game, of a broader mixed tenure approach, as a lot of community housing providers build into their proposals, whether state governments are less efficient, less cost effective than community housing providers and not government organisations … we don't have any comparability between those things and a CBA would be really useful. (Interviewee 12)*

The Australian policy literature includes occasional instances of systematic economic evaluation of social housing as a form of public good. The most substantial is that of the Industry Commission (1993: 147–149), who note that while the rental assistance and direct supply may serve different needs, in the long run housing supply is more cost effective. However, we are not aware of a systematic CBA having been undertaken of alternative models of social housing provision in Australia, and these are rare internationally, partly because social housing does not typically need to justify its purpose in economic terms.

The location and type of investment

While the definition of infrastructure is varied (Steele and Legacy 2017), it can be considered 'spatially fixed investment' (Maclennan, Ong and Wood 2015: 20), a definition that is demonstrated by the CBA for infrastructure typically being for a specific project. To elaborate, CBA is undertaken principally for a proposal to upgrade or build new roads or rail lines, not for the policy position of building roads in general. One exception to this might be Australia's National Broadband Network where the case for universal (thus placeless) fast internet service was elemental to the evaluation of the technology to deliver that service. Nonetheless, previous

examples of CBA undertaken for social housing in Australia consider social housing provision in comparison to rental assistance policies (Econsult 1989; Industry Commission 1993; Productivity Commission 2016), with only Pugh and Catt (1984) considering the infrastructure aspects of the housing, such as location and built form.

Given the locational nature of social housing it would be useful to have a method that takes into account the difference between locations, which may be required on a number of scales from the land parcel, suburb, sub-region and metropolitan area as a whole. This issue was raised in the context of CBA supporting decisions by housing providers, as one interviewee noted:

> *whether delivering housing in inner Sydney has a different economic and social benefit than it does delivering it out in Blacktown, clearly there is but how do you monetise it? … I could deliver far more housing in regional NSW, but there may be more benefits in Sydney—there is no way to measure this. (Interviewee 11)*

The locational dimension is important because the hedonic bundle of goods that comprises a dwelling includes a locational dimension. Although it may be cheaper per unit to build social housing on the urban periphery than in middle or central urban areas, the social outcomes may be less advantageous if it leads to the concentration of relatively disadvantaged households on sites remote from labour markets and public services. The decline in political support for public housing in Australia in part reflects a reaction against the fringe suburban model pursued in major cities during the post-WWII period, which resulted in concentrated peripheral disadvantage (Badcock 1997; Maher 1994).

Life cycle cost of the development

CBA includes the elements of a life cycle cost (LCC) of the project, the estimates for the ongoing operation of the facility, as well as the construction costs. This is an important consideration for social housing, as the Australian Institute of Quantity Surveyors (2000) report that the initial capital costs of the development often represent less than 40 per cent of the total ownership cost of the building owners.

The objective of LCC analysis is to help determine the best decision through an ‘evaluation of all viable design alternatives’ based on the same set of assumptions, over the economic life of the building (Australian Institute of Quantity Surveyors 2000: 3). The LCC of infrastructure can be defined as its total cost over the operating life (Kirkham 2014), or over the appraisal period for use in CBA. Through LCC analysis, the running cost throughout the economic life of the building can be articulated. This fosters detailed studies of alternatives to determine the most cost-effective design option throughout the life cycle of the infrastructures.

Costing can be estimated under the following four categories:

1. Initial acquisition costs, including land cost, design and other professional fees, construction costs, holding charges, other charges, as well as other expenses related to the production of the end product.
2. Subsequent running cost, including occupancy costs, furnishing by owners or tenants, operating costs (including electricity, water supply, gas supply, etc.) and other support costs like insurance and asset management fees throughout the economic life of the building.
3. Maintenance and repair costs, such as cleaning, maintenance, repairing, alterations and replacements of parts/components of the building
4. Demolition and disposition cost, which is the expense for demolition of the building and disposal of wastes at the end of the life cycle. In practice, CBA appraisal periods do not extend to this stage, and a residual asset value is included in the final year.

Land cost data can be collected from the government valuations. Construction costs, including design and professional fees are available from construction cost handbooks and guidelines (Rawlinsons 2018; Rider Levett Bucknall 2017). These guidelines provide accurate cost per square metre data of all elements of the building, enabling cost adjustment and comparison for design options. Assumptions are needed for subsequent operational cost estimation. Detailed estimates can be prepared using data provided by component manufacturers, such as service life spans, rates of energy consumption, cleaning requirements and maintenances.

4.1.2 Wider CBA considerations

Non-infrastructure options and the case for intervention

As noted previously in relation to infrastructure appraisal, governments typically have a hierarchy where infrastructure investment is the least preferred intervention, after regulatory and market interventions (see Building Queensland 2016a). Therefore, to argue for increasing social housing supply, evidence is generally needed to show that under current policy setting the market is failing to provide adequate housing. While Kattel et al. (2018) question market failure as the basis for government intervention, it still appears to be a central requirement in the proposal appraisal process. Infrastructure Victoria (2016b) and Infrastructure Australia (2018) have each articulated a preference for greater efficiency in the use of existing infrastructure over decisions to construct new infrastructure.

This questioning of infrastructure interventions was highlighted by the experience of one public servant involved with social housing:

> *The hardest part is putting forward the case to government [as to] why they should invest in social housing at all … What we have found when we go to treasuries with a request for extra investment in social housing, until very recently, the response was, 'How are you managing your existing assets? Are you really utilising the full value of those assets and recycling them? What's your business model in terms of the operating side of the business … if you're asking us for more houses but you keep the same operating model, aren't you just accelerating the problem?' (Interviewee 16)*

Several respondents also indicated that the existing distortions in the housing market should be addressed before any government intervention, as described by Interviewee 5:

> *Without removing distortions, rental assistance could lead to higher rents akin to the first home owners grant. It comes back to very basic supply and demand analysis when it comes to restrictions and entitlements. We need to ensure that social housing investment doesn't exacerbate the problem.*

In making these observations, interviewees also noted the influence of wider policy such as negative gearing, capital gain tax exemptions and first home owner grants as distorting housing markets. Thus in applying the principle of improving use efficiency to existing assets, it may be economically more rational to remove market distortions before constructing new social housing. However, such a view is complicated by the political nature of housing subsidy instruments, which militates against their easy removal.

Wealth and income bias

Further concerns about CBA relate to wealth and income bias in determining benefits. A fundamental criticism of the use of the 'rod of money' to assess benefits is that it inherently favours those who have and earn more. The concept of willingness to pay is inherently dependent on the incomes of those who are being asked and is therefore biased against those of low income, such as those in social housing. In economic analysis there is also a bias towards providing infrastructure to places and for activities that are the most productive or for

people with greater wealth, as willingness to pay is correlated with income and wealth (Berry 2017; Guess and Farnham 2011).

This issue has proven problematic in infrastructure decision-making whereby the travel times of higher income groups, such as employed motorists, has been valued more highly than that of lower income groups, such as unemployed public transport users, thus biasing infrastructure decisions towards road projects. Therefore, approaches to monetising benefits that are developed from or compared to markets or segments of society other than social housing tenants can be expected to result in higher estimates of benefits than those focussed directly on the monetisation of benefits to social housing.

Cost effectiveness and resource implications

An important consideration is the costs and effort associated with preparing detailed CBA, with evidence that the complexity, level of detail and, therefore, costs have increased in recent decades (Carrigan and Shapiro 2017; Douglas and Brooker 2013). This indicates that a framework for social housing CBA needs to take into account the complexity and resources required to source and assess the data inputs. In one interview, this was seen as an implication of using CBA for social housing, in the context of whether there was capacity within the sector to undertake economic analysis of proposals including data availability:

> *We would strongly argue that it should be replicable, scalable and have a minimum transaction threshold, because to do it well, it doesn't make sense to do it for a 10, 20 30 million dollar project. The upfront–time and energy and external costs potentially– you need a hundred million dollars, potentially more, to make it attractive and also so you get that coalescence of smart folks such as consultants and advisors and there is a viable amount of work, that is the challenge we run into if we are trying to play in a space where bridges and hospitals are in a similar sort of market. (Interviewee 11)*

This reference to sectoral capacity can be also viewed as a reflection of the interaction between investment, capacity and methodological development that has been central to the development of transport appraisal. Therefore, appraisal methodologies for social housing are only fit for purpose if the resources required to undertake the analysis are commensurate with the scale of the proposal and the analytical capacity within the sector.

Discount rates for the appraisal of social housing

Discount rates are used to price social preference for immediate over delayed returns from investment. A higher discount rate implies a preference for shorter-term returns over longer-term. The setting of discount rates in a CBA appraisal can sharply affect the calculated net present value (NPV) of the proposal and, in turn, its economic worth. The interviews with CBA experts indicate that while there is a general consensus favouring a 7 per cent DCR in Australian infrastructure appraisal, there is a wide range of views about whether this is appropriate, as well as what approach should be taken to select and calculate alternative discount rates. There were opinions that lower DCRs should be considered for social housing projects on the basis that the gains from an expanded social housing sector are cumulative and thus greater in the future than immediately. However, others thought that DCRs should be consistent across projects and jurisdictions to enable comparability. Consistency was also suggested as reflecting the position that the social time preference of money is the same regardless of what project is being considered. A countervailing view is that DCRs should reflect the risk premium applied to the cost of capital, such that arguments could be mounted for lower rates being applied to social housing, as there is a high degree of certainty around demand over time. Other respondents considered the discount rate question as a distraction from more fundamental issues with the practice of CBA in the wider context of infrastructure project appraisal in Australia.

The interviews and focus group activity vented an array of views on an appropriate discount rate for use in social housing CBAs. Interviewees and workshop participants could see some merit in argument for a lower rate, such as 4 per cent, due to social housing not operating as a market good and that the benefits are accrued over long periods of time. One attendee noted that a museum refurbishment used a DCR of 4 per cent given that as there is no charge for entry it is not operating as a market good. The following comments from the interviews indicate the wide range of views on DCRs for use in social housing appraisal:

> *I don't agree that there should be a split for different types of projects, it enables comparison … You don't want to hide the sins by a lower discount rate, [they have] got to stand on their own feet. (Interviewee 3)*
>
> *Social housing? There is a case for a different discount rate. If social housing warranted its own discount rate, we would need to look at construction industry and social housing demand to work out a risk premium. In the environmental sector, there are irreversible outcomes, then there is a prima facie case for using lower discount rates. (Interviewee 5)*
>
> *7 per cent, 5 per cent–it doesn't make much difference … (Interviewee 6)*
>
> *The DCR should be [as] agreeable as it can be, as consistency across projects is the key … You can't have one project or jurisdiction halve its discount rate. (Interviewee 7)*
>
> *I'd start from a premise that it is useful to have some comparators across different types of social infrastructure. If largely the consensus coalesces around 7 per cent, then that would seem a reasonable starting point … When I think about the cost of capital, and what the expectations are when we talk to capital providers, there seems to be a sort of a view [of] hurdle rates that starts with that number and go up from there, and on the debt side it obviously is less, but for a range of reasons, the gut feel, it feels about right. (Interviewee 11)*

As social housing projects typically require large upfront expenditure with the flow of benefits extending decades into the future, the discount rate applied can be expected to have great influence on the NPV and BCR of a CBA. The arguments of Terrill and Batrouney (2018) regarding ongoing low central bank interest rates, as well as an argument that social housing presents low systemic risk given the chronic undersupply identified in this investigation, suggest that an argument could be made for a discount rate of considerably less than 7 per cent be applied to social housing appraisal. In this vein, the Victorian Department of Treasury and Finance (2013: 25) lists three categories of discount rates for cost-benefit assessment:

- 4 per cent for projects related to government services wherein the benefits are not readily monetised
- 7 per cent for government services that provide benefits that can be monetised, with public housing included as an example
- a third rate for investments similar in risk to the private sector that are set in consultation with the department.

The literature suggests that discount rates of less than 5 per cent have been regularly used in the evaluation of social housing provision (Carter, Milligan and Hall 1988; Econsult 1989; Witte 2017), indicating some justification for lower rates than the 7 per cent standard applied to other forms of infrastructure.

For reasons of consistency, we suggest that CBA for social housing should follow the 7 per cent standard, but with sensitivity analysis at 3 or 4 per cent and 9 or 10 per cent. The use of the 7 per cent standard rates makes the outcomes directly comparable to most other public

investment CBAs, with the caveat that 3 or 4 per cent is likely a better reflection of the low systemic demand risks and positive intergenerational benefits that accrue within the social housing sector.

Audience

As a public document, a business case and CBA has an audience to which it must be oriented. A project proponent thus needs to consider the audience for the business case and what arguments may be more persuasive. Several interviewees indicated that the assessment of benefits to government of providing social housing was a different question to the expected benefits to tenants, which may be of more interest to those implementing social housing programs. Interviewee 12 outlines these observations:

> *if we are asking what the most efficient spend for governments to make, in terms of subsidising housing, accepting that there has got to be a subsidy for social and affordable housing, then that's a different question to what is the best outcome from a user or tenant perspective.*

It is notable how this perspective contradicts the theoretical basis of CBA being a measure of benefits to society, not to the organisation promoting the project. In practice, the benefits to government objective is the avoided costs model discussed in Section 5.2, which is a financial analysis, whereas the benefits to tenants and the rest of society is the remit of CBA. This distinction is sometimes missed in the literature and in terms of current policy conversation there appears to be a degree of elision between avoided (fiscal) costs and economic gains from a project.

4.2 An economic CBA framework

4.2.1 The conceptual basis

An economic CBA framework can be used beyond avoided costs where the intervention, such as a social housing program, can have effects beyond the direct effects of relief of housing inadequacy and avoidance of costs to government. This includes but is not limited to housing or labour market dynamics or wider urban structural effects. The conceptual basis for the application of CBA to social housing reflects the purpose of CBA, which is to determine whether an initiative increases social welfare, and that social housing is a public and merit good, as explained by Oxley and Dunmore (2004: 101):

> *Social housing, education and health are considered public goods due to their use not excluding others, social housing as it is allocated on a needs basis, and merit goods as they are goods that society accepts are of benefit even if they are not wanted or used by everyone.*

Within the Australian political sphere, this view of social housing as a public good can be seen as contested and that rather than being a merit, good social housing (or an equivalent service) is often assumed to be effectively provided through the wider housing market. This can be seen in the ongoing decline in social housing as a proportion of total stock (Troy 2012), as well as the Productivity Commission (2016) investigating competition and consumer choice in the social housing sector. This indicates that a starting point for a business case for social housing is that '(m)erit goods may be provided by markets, but … merit goods will be underconsumed and underprovided in a market economy driven by consumer sovereignty' (Frischmann 2012: 58). This is an extensive area of debate, which this project does not seek to canvas at length. However, in summary the conventional argument is that if the provision of adequate and affordable housing is delegated to the private housing market, deficits will emerge such that remedial government intervention is required via direct housing provision.

In this context, CBA is a method of calculating whether a project, initiative or policy results in a net improvement in society's welfare. Therefore, conceptually CBA is an appropriate technique to assess the outcomes of social housing provision or, conversely, to appraise the social disbenefit associated with undersupply as a result of an over-reliance on market mechanisms. This foundation for the application of CBA to social housing is developed into the following arguments, which all reflect the underlying notion that government intervention and investment in social housing enhances aggregate community welfare. The following sections briefly review this debate.

4.2.2 Economic arguments for social housing

This section outlines arguments that may be used to underpin a business case for the provision of social housing.

Failure of supply

The proposition that the private rental market does not respond to the demand for affordable housing with increased supply is broadly, albeit unevenly, accepted, such that 'there is a level of supply that needs to be built that no level of Commonwealth Rent Assistance [CRA] will produce' (Interviewee 12), which is supported in the literature. Maclennan and More (1997) argue that in rising housing markets or situations of scarcity, for-profit providers are less likely to increase rents than supply. Whitehead (2003: 139) suggests that without intervention 'the private market will under-invest in both new development and improvement'.

Evidence of this proposition is provided by Yates and Wulff (2000), who found that in the decade to 1996—a period associated with sharp increases in rental assistance and minimal increases in public housing stock—there was a decline in the number of affordable rental properties in the private housing market. More recently, Hulse, Reynolds and Yates (2014: 48) concluded that even though social housing supply had increased as part of the Commonwealth's response to the 2008 Global Financial Crisis as well as other factors, this 'did not lead to an adequate supply of affordable dwellings for lower income households' due to insufficient private investment. Wood and Ong (2017: 201) found that the percentage of low-income households paying more than 30 per cent of their income in rents increased from 40.9 per cent in 1982 to 68.7 per cent in 2013, a period of increasing reliance on rental assistance measures. This indicates that the supply of affordable housing for low-income households has not kept up with demand and implies that the costs to governments of rental assistance programs will increase over time, providing a case for intervention.

Productivity and wider economic benefits

Further debate concerns the proposition that social housing can be considered as a form of infrastructure. The proposition that social housing is infrastructure leads consideration to questions of economic productivity such as the employment outcomes related to tenancy and discussions related to other forms of non-market housing—for example, key workers and low-income workers. While these issues gain in importance for cities to address as housing with good access to employment becomes increasingly unaffordable, the focus here is on responding to homelessness, and those at risk of becoming homeless.

There is some indication that the secure tenure provided by social housing has a positive economic effect on employment participation (Johnson et al. 2014; Productivity Commission 2015: 49), meriting its treatment as an economic good. However, this contention requires a more substantial evidentiary base that can clarify causality and deal with unobserved factors that act as a sorting mechanism between social housing and private rental tenancies (Groenhart 2015; Prentice and Scutella 2018). Further investigation into the relationship between housing and employment could also provide insights into how labour market access at a proposed

location for social housing influences the benefits to tenants, as pointed out by one social housing sector interviewee:

> *I think CBA could play a very powerful role in that we actually need [social housing] well located, everywhere along transport corridors so people could take advantage of other infrastructure as well, rather than be stuck in places, partly because of their spatial location, they don't have access to other opportunities. It makes it more difficult to be employed and be productive and be social and economic participants. (Interviewee 12)*

Caution needs to be taken though in making an argument for productivity benefits of social housing, as studies have found limited effects in this area. This is seen as a result of 'social housing increasingly being allocated to those with the greater needs that simply providing housing, while of benefit, is not enough in itself to translate into improvements in other outcomes' (Prentice and Scutella 2018: 25).

Pecuniary externalities

Pecuniary externalities are an economic externality that occur in markets, and therefore are reflected in prices. An example of a pecuniary externality is the purchase of a good by one agent that results in a market price gain for other agents wishing to purchase that good. Formally these effects are 'distributional', in that they are countered by the gains made by the producers of the good. In social housing pecuniary externalities apply where demand for affordable housing is met by increased rents in the private sector—that is, every additional purchase of an affordable dwelling for a given stock volume raises market prices. The pecuniary externality arises where increases in subsidies are not applied discriminately:

> *Governments wishing to attract more properties into private rental have to overcome this by outlaying additional amounts of rent assistance. When this happens existing landlords are unavoidably paid more, even though the additional payment is not needed to hold them in the rental market. This is one of the reasons for concluding … that provision of public housing is a cost-effective form of meeting government housing assistance objectives. (Industry Commission 1993: xxxviii)*

This argument is useful for comparisons between rental assistance programs and additional housing supply, and is comparable in effect to the avoided cost case, but has limited application for proposals to relieve homelessness or in deciding between locations or built form types.

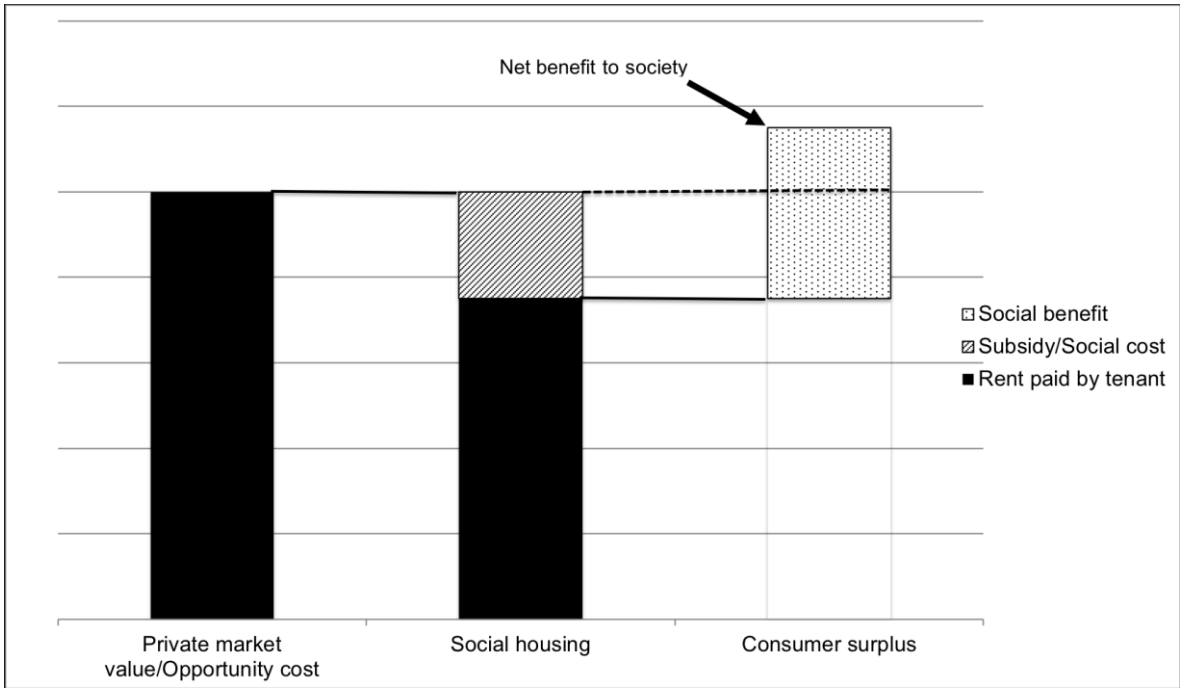
Opportunity cost assessment

The difference in relative value of alternative destinations for public spending comprises an opportunity cost. Stiglitz (2000: 284) offers an opportunity cost model for cases where a public project displaces an equivalent private project:

> *If a public project displaces a private project of the same size, then the net reduction in consumption today from the project is zero. If both the public and private projects yield all of their returns in the same period, then we can easily decide whether to undertake the project: we should undertake it if its output exceeds that of the private project. In this view, which, not surprisingly, is called the opportunity cost view –because the private project is the opportunity cost of the project.*

The opportunity cost view implies that for the social housing project to have a positive NPV, it is sufficient that the consumers' surplus must be greater than the government subsidies, using the market rate of return for real estate investment as the discount rate. Figure 5 depicts the relationship between private market rental, opportunity cost, social housing rental subsidies and the consumers' surplus.

Figure 5: Opportunity cost and private market substitutes



Source: Authors.

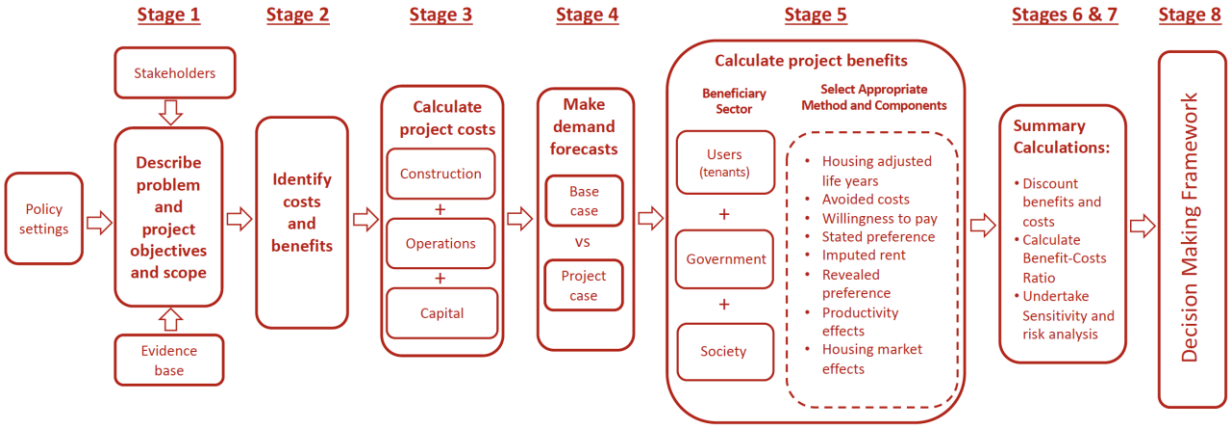
This model aligns the CBA of social housing as infrastructure to social housing as public policy. In this framing the value gained from social housing investment is the value of the social benefits over the opportunity cost of the subsidies. In these circumstances, Stiglitz recommends the use of the *producers' rate of return*, which is the before tax market rate for capital.

4.2.3 A CBA process framework for social housing

CBA is a process as much as a technique. Thus the arguments and approaches discussed above need to be converted into a stepwise process. There are reasonably established sequences for CBA analysis that can be applied to the case of social housing. The ATAP guidelines for CBA offer a generally suitable procedural framing that can be adapted for the appraisal of social housing interventions, as described below. The major alteration is in the *estimate benefits* stage, where transport consideration such as network effects and safety benefits have been replaced by housing market effects and productivity. The other stages in the process are similar to those for transport. The following discussion considers the applications of each of these steps to the appraisal of social housing.

The description of the stages below draws on the ATAP guidelines, adapted for the social housing sector. It is also similar to the process outlined by Witte (2017: 17) to appraise last-resort housing provision.

Figure 6: Social housing CBA framework



Source: Adapted from Transport and Infrastructure Council (2018c: 3).

Stage 1: Specify the initiative and analyse options

For social housing, this stage would include a description of the proposal, including the objectives, staging, constraints, specification of the base case, identification and analysis of options, consideration of private funding opportunities and financial analysis.

The description should detail:

- the location and type of housing to be provided
- how much it is expected to cost (land and construction)
- when it is to be delivered
- what the benefits of the project are expected to be.

It is likely that these details will become more precise as the analysis proceeds, but the level of detail in this stage can be seen as providing the basis for a preliminary business case as is standard in Commonwealth and state investment guidelines.

Objectives and the base case

The ATAP guidelines list economic, environmental, safety, security and accessibility, social cohesion and equity as objectives for transport that 'contribute to achieving government transport system objectives' (Transport and Infrastructure Council 2018c: 3). Application to social housing suggests that the objectives set out for social housing projects should reflect governments' housing objectives, which may be similar to those listed for transport.

The base case is an assessment of the plight of the intended cohort for the housing intervention under a 'do minimum' scenario. As discussed previously, this is not a 'do nothing scenario', as it needs to include the effect of projects already confirmed as well as an expectation that governments will not allow a deterioration from the current situation. In the recent Infrastructure Victoria (2018) example, the base case is referred to as the 'control group', which is a cohort with similar attributes to those placed in housing that is used to assess marginal benefits of the housing intervention.

Stage 2: Identify costs and benefits

The identification of costs and benefits should specify what is to be measured in the CBA, including the geographic reach of the impacts and the period over which the costs and benefits are to be appraised.

The ATAP guidelines, as listed below, categorise the costs and benefits by how they will be accounted for in the process. These include:

- Monetised benefits and costs, which are always included within the CBA.
- Non-monetised benefits and costs, which are considered impractical or too expensive to monetise and are described within the CBA to inform decisions.
- Secondary or flow-on impacts, which 'are benefits and costs that are passed on, or redistributed, within the economy' (Transport and Infrastructure Council 2018c: 11).

This establishes a framework for preparing the CBA by working through the costs and benefits and how they fit into the broad categories. For social housing, the example provided in Box 1 indicates how this categorisation may occur.

Box 1: Identifying costs and benefits examples

In *The case for investing in last resort housing* (Witte 2017), the results of identifying costs and benefits can be seen:

- Health and crime costs are monetised, based on change in the frequency of use of services.
- Quality of life is monetised, assumed to be equivalent to private boarding house rents.
- Employment outcomes are monetised, assumed 10 per cent of tenants will access employment as a flow-on effect of accommodation.
- Avoided property and nuisance costs, not monetised but assessed qualitatively.
- Community engagement and social benefits are also assessed qualitatively.
- Increased likelihood of volunteering is monetised, based on estimated hours and ABS published wage rates.
- Economies of scale and scope are monetised.
- Costs of supplying, maintaining and administering last-resort housing beds are monetised.

Stage 3: Calculate costs

Once costs and benefits have been identified they should be enumerated. Cost estimation should include the construction, maintaining and administering of the proposal. Theoretically this represents the opportunity costs of the resources used in implementation. However, in practice infrastructure project CBAs typically use the estimated financial cost (Budget and Expenditure Review Committee 2013; Building Queensland 2016b; Department of Economic Development Jobs Transport and Resources 2015, 2016; Department of Transport and Main Roads 2013; Meyrick and Associates 2008; PwC 2012).

Transparency of costs

While the estimation of construction costs is a standard procedure, interviewees noted that the costs of maintaining and operating social housing were not clear within government accounting processes. This includes the value of the rental subsidy to social housing tenants, which can be seen as a forgone rental payment. The lack of transparency of ongoing costs in state and Commonwealth budgets was raised on several occasions during the interview process:

> *We cannot even see what social housing costs State governments, you can't extract it from their budget papers and since we've had a NAHA [National Affordable Housing Agreement] which removes output measurements and relies on amorphous outcome*

measurements it allowed the States to make it more obscure in their budget papers (Interviewee 12).

Another interviewee noted that in New Zealand, proponents of new housing units were provided with detailed construction and ongoing cost estimates for proposals, data that is not readily available in Australia.

Land costs

Land costs are a necessary component of most social housing projects. How land costs are dealt with in CBA is not necessarily straightforward, as it is likely to involve opportunity cost considerations—as in what is the best alternative use of the resource. The guidelines indicate that land that is used for a proposal should be costed at its market value, regardless of whether it is gifted, already owned or needs to be acquired (Department of Treasury and Finance 2013: 48; Transport and Infrastructure Council 2018c: 20). The New South Wales CBA guidelines provide an example to illustrate the principle of opportunity cost, as 'cost of urban parkland is the value of housing land that is forgone' (NSW Treasury 2017: 32). It is reasonable to include the market value of land within CBA as this reflects an actual cost to government of either acquiring land, or of alternative uses for the land, or of its cash value if disposed of.

Stage 4: Make demand forecasts

All CBAs require projections as to future demand in order to calculate the anticipated revenue stream to the project, offsetting capital costs. Demand forecasts for social housing are less complex than transport infrastructure, where high levels of unmet demand for adequate and affordable housing persist. Demand projections should reflect the community that is the focus of the housing intervention, which may include geographic areas or housing interventions that target specific sections of the community. Social housing has lengthy long-term waiting lists, with prospective tenants waiting years to be allocated housing, and this inquiry has indicated increasing unmet demand over the forthcoming years. Hence calculating demand for social housing is relatively straightforward. As one public servant indicated:

> *There are strong demand driven cases for social infrastructure, so CBA is not a blocker for major social housing investment. The demand information is there in wait lists. (Interviewee 7)*

Transport is more complex, its demand is derived from travellers' propensity to pay for faster access to employment, services and activities and therefore complex modelling techniques have been developed to estimate demand. A major feature of transport analysis comprises estimation of sensitivity to pricing regimes, especially where alternative routes exist. Such considerations do not generally apply to social housing, which is assumed to deliver a higher quality service to users, via locational, design, and tenurial status attributes, than the most equivalent market provided housing. However, one issue is the declining marginal gain from social housing provision at scale—as the most needy households are housed, the next most needy household derives a lower marginal utility from being housed in social housing. This effect may be considered to be minor, except at scale, given the great extent of housing need.

For ex-post analysis, this stage would involve estimating the proportion of the community that the outcomes of the CBA are relevant to, for extrapolating the outcomes of the comparison between control and intervention cohorts.

Stage 5: Calculate benefits

The estimation of the benefits stage is the most complex and nascent element of the social housing CBA appraisal framework. While there is weighty literature on the benefits that have been attributed to social housing, as summarised by Kraatz and Thomson (2016), it is largely from a social science perspective rather than an economic perspective. Therefore, the

development of parameters and methods for estimating the benefits of social housing, or proxies for these benefits, is an area for future research focus. A detailed consideration of possible methods for the monetary enumeration of the benefits of social housing is presented in Section 3.5 of this report.

Stage 6: Discount benefits and costs, calculate summary results

As per the avoided costs framework, after applying the DCR to the flow of costs and benefits over the appraisal period, the standard summary results of CBA can be calculated and used for reporting outcomes:

BCR=Marginal benefits/Costs

NPV=Marginal benefits – Costs

One interviewee with extensive experience in CBAs in a range of applications recommended that NPV be used in preference to BCR, as 'negative benefits instead of costs change BCRs' (Interviewee 12). For example, the residual value of an asset is included in the cost estimation stage of the ATAP guidelines but could also be included as a benefit at the end of the appraisal period. Depending on the values, this shift could lead to an increase or decrease in the BCR, but will not change it from being less than or greater than one.

Stage 7: Assess risk and uncertainty

Following appraisal of the benefits and costs of a project, a sensitivity test should be performed as part of the CBA to assess the risks associated with the proposal. There are usually two stages to this: discount rates and Monte Carlo analysis. The Infrastructure Australia (2016a: 16) guidance states that the purpose is to 'ensure that the appraisal process is robust to potential changes'.

As noted earlier, 7 per cent is the standard discount rate used in Australian appraisals. However, sensitivity analysis is also regularly undertaken with Infrastructure Australia (2016a: 37) recommending the use of discount rates of 4 per cent and 10 per cent.

Monte Carlo methods have increasingly become standard practice in measuring risk in infrastructure CBA, to capture the possibility and impact of parameters changing over the appraisal period. The Monte Carlo procedure is as follows:

1. A probability distribution is specified for each of the parameters within the CBA, which may also have flow-on effects through the model.
2. The model and probability distributions are tested by choosing a single value within each of the distributions.
3. Once the test indicates that the model is functional, the net benefit of the CBA is re-calculated using random values from within the probability distributions. This process is repeated using statistical software, usually many thousands of times, and the resulting net benefits tabulated. For the Brisbane Metro business case 10,000 iterations were calculated (Brisbane City Council 2017: 4).
4. Summary statistics are then calculated, based on the cumulative probabilities of outcomes. It is standard to report the P50 and P90 net benefits, where P50 is the central point in the distribution: 50 per cent of the iterations estimated greater net benefits. P90 is the value that 90 per cent of the calculations are greater than, providing a conservative scenario (see Vining and Weimer 2013: 43).

Stage 8: Incorporate CBA into decision-making framework

This stage involves taking the results of the CBA and incorporating within the overall decision-making framework for the project under analysis. Such a framework typically involves a formal institutional process which includes the business case and CBA as well as a range of further factors.

The foregoing discussion offers a broad framework for the application of a CBA approach to social housing as a form of infrastructure. However, as previously noted, there are knowledge gaps concerning the estimation of social benefits from social housing provision. The following section offers potential approaches that could be applied to estimate such benefits.

4.3 Housing benefit estimation methods

4.3.1 Introduction

This section discusses possible methods for the establishing willingness to pay estimates and therefore the monetisation of user benefits in social housing. The lack of methods for the monetisation of the benefits is a major impediment to the application of economic appraisal of social housing. It is also where CBA departs from the avoided costs model, as the benefits are a measure of societal welfare, not financial returns limited to a section of society, such as government departments. This has been recognised as an issue for some time, as an example of social housing appraisal from 1984 stated:

> *It is relatively uncontroversial to specify the capital and current costs of housing programmes. But it is more difficult to find widespread agreement on the way the benefits should be reasoned, measured, and enumerated. (Pugh and Catt 1984: 28)*

The difficulty in benefit estimation is due to social housing not being a freely traded good, therefore market prices adjusted for externalities are not available to use in determining user willingness to pay (or government willingness to pay the gap between user capacity and market price). This is similar to other forms of public infrastructure such as non-tolled roads and bridges, which has motivated the institution of assessment techniques that use proxies and parameters for monetisation of indirect benefits such as travel time savings and accident reduction.

4.3.2 Benefit synthesis methods

Benefit synthesis refers to methods that estimate aggregate benefits from constituent elements. While a benefit synthesis approach is conceptually simple, based on placing values on the myriad of benefits associated with social housing from previous research, in application it may be time consuming, be difficult to distinguish between the component benefits, and is subject to the criticism that it is a ‘result of attempting to combine incommensurables in a single metric’ (Farrow and Zerbe 2013: 267). If used in social housing appraisal, the background literature and government reports would be used to collate the benefits to tenants of social housing, such as physical and mental health, access to education and employment opportunities and social inclusion. However, previous studies have indicated that better data is required to provide an evidentiary basis for robust decisions, including both long-term longitudinal studies and cross-departmental linked datasets (Buzzelli 2012; Johnson et al. 2014; Parsell, Petersen and Culhane 2016; Prentice and Scutella 2018).

For example, Kraatz and Thomson (2016) provide a metanalysis of research into the benefits of adequate housing across nine domains—community, economy, education, employment, environment, health and wellbeing, housing, social and urban amenity—with 53 outcomes and 180 indicators. This breadth of scope indicates the complexity of this area of analysis, as well as the risk of double counting benefits that sit across domains: economy, education and

employment for example. Not all of the outcomes or indicators have been enumerated in monetary terms, which is reflected in the authors' recommendation for a composite return on investment framework (Kraatz and Thomson 2016: 24). This conclusion, as well as the use of qualitative assessments for some benefits in the appraisals summarised in Section 3.2, demonstrates the difficulty in applying a synthesis approach to all aspects of social housing.

A notable recent development is the Australian Social Value Bank, which has developed a tool for monetising the impact of social programs that mitigates issues with income distribution. The benefits of social programs are measured through subjective wellbeing valuations, which are then compared to the change in wellbeing associated with increased income from the general population to monetise the outcome. An important part of the process is the development of values for project outcomes, such as employment and health, based on Australian data. To mitigate risks of double counting, program assessors are restricted to selecting at most three program outcomes, with guidance on selecting an independent set of benefits (Fujiwara et al. 2017). However, one problem with this particular example is the proprietary nature of the analysis that was conducted by a private econometric company and thus less available to methodological scrutiny than might be the case for a scholarly or public sector report.

Summary of benefit synthesis methods

Advantages:

- Provides a detailed representation of the benefits of housing provision.
- Conceptually clear and easily communicated.
- Significant and growing body of literature on the benefits of social housing.
- Once parameters and methods are established, this could become the standard.

Disadvantages:

- Risk of double counting due to the interconnectedness of benefits.
- The difficulty in valuing 'intangibles', such as community pride and social justice (see for example Witte 2017).
- The availability of data, particularly for long-term effects such as employment participation and the outcomes for providing stable housing for children.
- A governing body may be required to ensure that the values are kept up to date and used appropriately.
- Global parameter values may not be useful in assessing location or building type options.

4.3.3 Housing adjusted life years

An approach based on 'housing adjusted life years' (HALY) may offer a potential approach to enumerating the benefits of social housing. The HALY construct is based on the conceptualisation of homelessness or inadequate housing as a public health issue, which reduces life expectancy and quality of life. The construct is inspired by public health and policy analogues such as the disability adjusted life years (DALY) or value of statistical life (VSL), which are used in the CBA of government programs that may impact on the length and quality of life of people within society (Australian Institute of Health and Welfare 2016; Office of Best Practice Regulation 2014). The connection is evident in the research connecting housing issues with mental health problems (Bentley et al. 2011; Pevalin et al. 2017), as well as the numerous studies cited here that indicate a lower rate of health service usage as a benefit of secure housing.

The World Health Organisation established the DALY method for the Global Burden of Disease study, with four objectives that are similar to the purposes of applying CBA to social housing provision:

- To aid in setting health service (both curative and preventive) priorities.
- To aid in setting health research priorities.
- To aid in identifying disadvantaged groups and targeting of health interventions.
- To provide a comparable measure of output for intervention program and sector evaluation and planning (Murray 1994: 428).

The DALY indicator is based on the costs of the burden of disease, which:

> *quantifies the gap between a population's actual health and an ideal level of health in the given year—that is, every individual living in full health for an ideal life span. To quantify this gap, it uses a summary measure of health called the DALY. The more DALY associated with a disease or injury, the greater the burden. (Australian Institute of Health and Welfare 2016: 6)*

DALYs are calculated by adding the years of life lost (YLL) and the years of living with a disability (YLD). Quality Adjusted Life Years are an associated, and relevant, metric that addresses issues that may not lead to mortality, but reduce quality of life (Vergel and Sculpher 2008). DALYs produce a disability weighting, which is multiplied by the Value of Statistical Life to monetise the estimated reduced life expectancy or quality (Office of Best Practice Regulation 2014). A practical and relevant example of this method is found in a PwC (2015: 49) study of the economic costs of domestic violence against women in which DALYs were used to calculate the cost of pain, suffering and mortality due to domestic violence.

A Housing Adjusted Life Years (HALY) indicator based on the evidence of the deleterious health effects associated with inadequate housing could be cross-referenced with DALY data. Additional measures for the effects not included within the Australian Institute of Health and Welfare guidelines would need to be developed, such as employment and social inclusion.

At this moment the HALY concept remains speculative. The does not appear to be a current use of this notion in the housing literature. Although the analogy with DALYs seems reasonable, a research effort would be needed to expand upon and validate the HALY approach and to convert it into a useable metric for housing CBA.

Like transport, public health has a body responsible for updating and publishing the parameters and guidelines for the use of DALY methods in the appraisal of health related programs—the Australian Institute of Health and Welfare (AIHW). If the HALY approach were to be developed as a standard method, it would likely require a responsible body such as the AIHW to lead development and preparation.

HALY method summary

Advantages:

- Basic DALY method is widely understood in social policy circles and easily communicated.
- It portrays housing as a public health issue, not an economic one.
- HALY parameters could be used to assess a range of different housing questions.
- It may fit into existing parameter governance structures, such as the AIHW.
- Once established, processes to continually refine and develop the parameters could be instituted.

Disadvantages:

- As a novel approach, it is not yet conceptually or empirically validated.
- The development of the initial set of HALYs may require extensive research.
- In the absence of testing there may be significant and unknown barriers to implementation.
- HALYs may not offer insights into location and housing type questions.

4.3.4 Stated preference

Stated preference, also referred to as contingent valuation, is a widely used survey or interview-based approach to developing estimates of demand and willingness to pay for goods or services, either through experimental or survey methods (Guess and Farnham 2011: 324). This method has been used in the assessment of health, environmental and social policy (Vining and Weimer 2013: 49). A recent example of stated preference of non-use values is a valuation of the Great Barrier Reef, which reported a non-use value of $24 billion to Australians based on a global survey of willingness to pay (Deloitte Access Economics 2017: 34). While stated preference experiments are widely used in determining willingness to pay, it is costly to design processes that mitigate bias, and costly to implement (Infrastructure Victoria 2016a).

Willingness to pay, or willingness to avoid negative effects, is problematic for the assessment of the benefits of public housing as the value of outcomes are related to the finances of the survey respondents. This is a fundamental critique of CBA with implications for social housing, as Berry (2017: 112) explains:

> *Projects with the highest net social present value will tend to be those that favour the wealthy since, by definition, they are in the best position to be willing and able to pay the most for outcomes that benefit them and to avoid the costs imposed on them.*

Closely related to this critique is the debate about the validity of stated preference as an estimator of benefits, particularly that there may be a bias in the resulting estimate as it is a hypothetical process, without actual payments required (Guess and Farnham 2011: 325; Johansson and Kriström 2015: 162). Stated preferences are thus considered to be weaker assessment instruments than revealed preferences as there is typically less at stake for respondents than instances where they have to make a (revealed) material selection. Yet revealed preference analysis requires adequate data that demonstrates the choices between alternatives that subjects have made, and is thus difficult to obtain.

Social housing may also be valued by the non-tenant members of society as well as tenants, thus complicating stated preferences as an approach unless wider social preferences for social housing are assessed. This indicates that in light of the bias due to the financial circumstances of tenants, experiments could be undertaken to determine wider societal valuation of social housing. This could take two forms:

- Non-use values, where social housing is valued as a paternalistic good, for the benefits to others, and an option good, valued because it may be needed at some time in the future (Johansson and Kriström 2015: 25,6; Whitehead 2003: 141).
- Stated preference or discrete choice experiments to determine society's willingness to accept, or be compensated for, problems associated with not increasing social housing supply (see Farrow and Zerbe 2013: 271). Avoided costs assessments could form the basis for discrete choice experiments.

While these methods are supported in the literature, interviews with public servants indicate a degree of scepticism about the outcomes of stated preference models, highlighting an important aspect of choosing appropriate methods—they need to meet the expectations and preferences of the intended audience.

Stated preference analysis summary

Advantages:

- Depending on method, it could provide a valuation of housing to the tenants, or provide evidence of wider community support of social housing.
- It is a method that has been developed over some time and is widely used to evaluate non-market goods.

Disadvantages:

- Can be costly to implement.
- There is some scepticism towards validity of this method.
- The results may not be generalisable—that is, the willingness to pay calculated for one proposal may not be transferable to another.

4.3.5 Revealed preference

Revealed preference is based on the assumption that 'the price elasticity of demand is … revealed from the data on the actual purchases made by consumers' (Brent 2007: 25). First employed by Hotelling (1947) to value a national park, the principle of revealed preference analysis is that the value of a non-market good is represented by the cost of the market goods required for its consumption. For national parks, the costs included an opportunity cost of time—such that time spent attending a park is not time spent working and earning—as well as direct expenses related to the travel required to visit a national park. This still forms the basis for the economic appraisal of travel demand, which is based on the assessment of demand and a valuation of the associated time savings (Johansson and Kriström 2015: 170). A shortcoming of revealed preferences is that they cannot be used to determine non-use value, as these values are not represented in market prices (Johansson and Kriström 2015: 161).

Revealed housing choice has been an area of investigation in housing research, but has tended to focus on explanatory models of household decision-making, rather than seeking to enumerate the relative value weightings of these choices and methods to calculate them (Jansen, Coolen and Goetgeluk 2011; Taylor, Meng and Scrafton 2017). The monetisation of waiting times for public housing allocation in Amsterdam is an example of a revealed preference method (van Ommeren and van der Vlist 2016). However, the allocation systems in Australia, which vary by state, are generally more dictatorial in their allocation models, with limited discretion or choice by tenants as to dwelling and location such that those who reject two offers, and sometimes one, may lose their place at the front of the queue (Productivity Commission 2016). This indicates that waiting times are not a suitable revealed preference market for Australian appraisals and there is not an obvious alternative for use here indicating limited scope for using this method.

Revealed preference summary

Advantages:

- Related markets have established prices and values.

Disadvantages:

- Dependent on identifying an appropriate proxy market for social housing.
- Data and methods may not be available.

4.3.6 Market values

House prices offer a revealed market valuation of housing, which may be analysed to calculate effective valuations of social housing. This model for estimating user benefits is based on the

contention that the economic benefits of additional social housing provision can be estimated by the price of an equivalent dwelling in the private market. Microeconomic theory posits that in an efficient market the price reflects the benefits of consumption of that good, therefore the price the market is willing to pay for an equivalent property represents the benefits of the social housing provision. This also aligns with the theoretical position that for projects small in comparison to the market for their output, the 'market price is a good approximation of the social cost resulting from its use' (De Rus 2010: 57).

Pugh and Catt (1984) adapted a method developed by DeSalvo (1971), where benefits are a function of estimated market rents, actual rent paid in social housing, rent–income ratios of people not in social housing and the income of the tenant. Carter, Milligan and Hall (1988: 33) also used a market value model, based on the assumption that:

> *If it can be assumed that public housing standards reflect the societal benefit accruing from public housing as a merit good, then the appropriate demand curve to serve as a surrogate for willingness to pay for public housing should be the market rental valuations of public rental stock.*

In addition to these two earlier examples, Witte (2017: 19) used an average cost of boarding house accommodation as a monetised value to improved quality of life as a result of last-resort housing. This was in addition to other effects that could be assumed to be included within the value of housing, such as health costs, improved employment outcomes and reduced likelihood of being a victim of crime. This is not to suggest that this example is double counting the effects; because last-resort housing is short term, it may be that these additional factors are less likely to be built into rental prices. However, for application to longer-term tenancies, the 'bundle of goods' that are included in a property rental needs to be unpacked if market rental is going to be used in conjunction with other benefit measures.

An issue with this model is the imperfections and distortions in the property market. In well-functioning markets, price reflects the marginal benefit of consumption received from the purchase of an additional unit (Stiglitz 2000: 62), which provides a basis for using market valuations. However, as economists interviewed for this study indicated, the housing market is distorted by government subsidies and taxation systems. Property markets are also seen as inefficient, or exhibiting market failure, due to the heterogeneous nature of property. This conclusion is supported by the finding that hedonic models tend to only explain 90 per cent of the variation in property values, and professional valuers achieve a similar level of accuracy (Evans 2008). However, the question is whether this level of market failure and associated variation between value and market price leads to higher inaccuracy than other measures of monetising the benefits of housing. Also, property markets are complicated by their dual nature as they are purchased both as investments and for personal consumption. As noted earlier in this report, there are well documented flaws in the standard methods used for transport analyses, indicating that the use of comparable housing market prices should not be totally discounted on the basis of property market inefficiencies. It is possible that Monte Carlo risk analysis could be used to account for the inaccuracies in housing estimates.

This model also addresses the criticism of CBA that it is biased towards those with higher income (Berry 2017; Guess and Farnham 2011: 324), as it is based on the wider housing market. By using market value of the dwelling, the benefits attributable to housing are unrelated to the circumstances of the resident or their wealth. A further benefit is that it includes the benefits of location in the model, as noted by Carter, Milligan and Hall (1988). This addresses the problem that if the benefits are not differentiated by location, then the outcome would be that the highest BCRs would occur for the lowest cost locations, which may be sub-optimal for tenants where wider effects such as labour market or service access are considered. A CBA methodology that could provide insights into the trade-offs between costs of provision and location in regards to service and employment access was seen as useful by the social housing

sector representatives involved in the present study. However, public servants interviewed expressed doubts that Governments would accept that market values are a measure of the benefits of occupancy to social housing tenants.

Market values summary:

Advantages:

- The market valuation can be undertaken for specific development sites and proposals; it is not a generalised benefit of the social sector.
- Benefits reflect the location of provision.
- Property values are readily available from government valuers' reports, private practitioners and can be modelled using hedonic valuation techniques.
- This method values the infrastructure; it does not attribute a value to the person using it and therefore avoids wealth bias issues.

Disadvantages:

- It is an abstract argument, and may not be accepted by government.
- It is not clear what attributes are included within the housing 'bundle of goods', indicating risks of either underestimation or double counting.
- Property market imperfections may disconnect the market value and the benefits of that good.

4.3.7 Imputed rent model

Imputed rents offer a further potential mechanism to evaluate the benefits of social housing. Imputed rents are used to calculate the housing related income of owner-occupiers for inclusion in national accounts, as well as estimating income distributions that take into account housing status (Yates 1994). This is similar to tenants who pay below-market rents, because full value of their housing is not apparent in standard accounting procedures (Grabka and Verbist 2015). For social housing, imputed rents can be interpreted as the government's willingness—and therefore society's willingness—to pay for the provision of social housing.

The inclusion of imputed rents in the standard system of national accounts was proposed by the United Nations in 1968, as cited by Yates (1994: 44):

> *The total of owner occupied dwellings which is to be included in gross output should, in principle, be valued at the rent on the market of the same facilities. It may be necessary to approximate the market rent by an estimate, which should cover items such as operating, maintenance and repair outlays, water charges, insurance service charges, taxes, depreciation and mortgage interest in addition to interest on owner's investment in the dwelling and other elements of net return.*

The imputed rent of social housing represents government's, and by extension society's, overall willingness to purchase social housing, tempered through democratic processes. This comprises a form of collective revealed preference, albeit through fiscal rather than market processes.

Frick and Grabka (2003: 517) suggest three methods for calculating imputed rents:

- Market-value approach: Rental statistics are used to create an average rent to be applied to homeowners, which includes additional expenditures associated with household occupation.

- Capital-value approach: As homeownership means that households have forgone alternative investments, the imputed rent is the real income flows from the possible alternative investments, including interest and dividends.
- Opportunity-cost approach: Owner-related costs are removed from calculated average rents or comparable rents, including operating and maintenance costs, interest payments and property taxes.

As comparable market values are used as the basis for these imputed rent calculations, there is a connection between this model and the market rents as an estimation of household consumption benefits.

Imputed rents can illustrate how CBA is not a standardised process, the assumptions and outcomes are dependent on decisions made by analysts (Dobes, Leung and Argyrous 2016). While in this instance imputed rents are a measure of willingness to pay, it could also be argued that at the same time they are the opportunity cost of social housing provision. This is because the imputed rent is a measure of the forgone revenue of non-market rents, which can be considered an alternative use of the resource. Another application would be in the Stiglitz (2000: 284) opportunity cost view model, where a social housing project would be worthwhile if the estimated benefits to residents were greater than the imputed rent, which indicates the implicit subsidy in the non-market housing. The interviews undertaken for this study returned mixed appraisals of imputed rent models, one respondent saw them as an avenue worth pursuing, along with market value models (Interviewee 11), while another 'had never met anyone who wasn't an economist who understood imputed rents' (Interviewee 3).

Imputed rent model summary:

Advantages:

- Imputed rents make explicit the government subsidy to social housing.
- May be applied to a range of situations, based on available housing data for small or large proposals.
- The outcome will vary depending on the location and type of the project.
- Like market valuations, imputed rent avoids wealth bias issues.

Disadvantages:

- Imputed rents are not a widely understood concept.
- The connection between imputed rents and the government's willingness—and therefore society's willingness—to pay may not be accepted by funding agents.
- Possibility that imputed rents can be interpreted in different ways.

4.3.8 Other benefits

A variety of other benefits may be deemed to accrue from social housing and may be able to be enumerated in a monetary sense. Some of these benefits are briefly summarised below.

Externalities

The reflected value of property improvements is a well-understood housing market externality. The externality arises as improvements to one property will improve the amenity and environs, which will translate to higher property prices nearby. Therefore, if investment in social housing includes refurbishment, it is likely that surrounding landowners will benefit (Ihlanfeldt and Boehm 1987; Whitehead 2003: 140). Other externalities as a result of housing improvement may include reduced pollution due to more efficient utilities, such as conversion from septic tanks to sewers.

There have been few studies of the reflected values of social housing projects. The most relevant being the reflected value of improvements in housing stock as a result of an urban renewal project in Richmond, Virginia, which focussed on areas with high rates of poverty and empty buildings. The study found that the 'housing externalities are large, fall by half approximately every 1,000 feet, and considerably amplify the effects of revitalization programs' (Rossi-Hansberg, Sarte and Owens III 2010: 528). To some extent urban renewal programs may be viewed as exercises in reflected value, particularly where they involve mixed-tenure models, on the assumption that the higher social value of homeowners 'reflects' onto the social tenants. Conceivably reflected values could be obtained via matched-pair comparisons of house prices in social housing estates that have undergone renewal to include a tenure mix contrasted with comparable estates where such intervention has not occurred.

Economies of scope and scale

New housing provision may reduce the per-unit costs of existing social housing through economies of scope and scale. An increased number of units (scale) or adding new housing types (scope) enables a more efficient use of existing resources, through increased specialisation and declining marginal costs. This is an externality, as the savings are realised in existing housing provisions.

Residual value

This is the value of the remaining asset at the end of the evaluation period, and is either included as a benefit or a negative cost in the appraisal. This can be based on either a straight-line depreciation of value based on the expected total lifespan of the asset or an estimate of the benefits that can be attributed to the asset for its productive life after the appraisal period. Victoria has a slightly different treatment of residual value, as it is the lower of either the replacement cost or the discounted estimation of the post-appraisal period benefits of the project (Department of Treasury and Finance 2013: 10).

Given the current state of urban land and housing markets, residual asset values may be instrumental in developing strong business cases for social housing.

4.3.9 Summary

The approaches to housing benefits estimation presented here should be assessed on factors such as:

- The costs and resources required to develop methods and parameters.
- The costs and resources required to undertake appraisal.
- The efficacy of the method.
- Transparent alignment with the outcomes of social housing, which may vary depending on the proposal, which can also be seen as their level of abstraction or conceptual complexity.

For example, benefit synthesis is conceptually transparent, but previous studies indicate that in order to monetise the entire suite of benefits attributable to social housing would be costly to develop and also to implement. Given the predominance of 'intangible' benefits of social housing, attempting to value all of them may lead to discrepancies in the result, particularly due to double counting. In the Australian Social Value Bank benefits estimation calculator, the number of benefits per program is limited to three to mitigate double counting (Alliance Social Enterprises 2017). This suggests that arriving at an all-inclusive benefits monetisation method for social housing is problematic, as can be seen in the recommendation of Kraatz and Thomson (2016) for a multifaceted approach.

Stated preference experiments are costly and the results are seen with some scepticism, but the concept is communicable and once procedures are established the costs of undertaking appraisal should reduce.

For a conceptualisation of social housing as infrastructure, methodologies based on the equivalent private market rental value of the housing may provide the most pragmatic way forward. A connection to infrastructure is made through the value of the asset created, and the benefits to tenants are assumed to be monetised by the market rental, an assumption that mitigates the inherent income bias in CBA and has been used in earlier appraisals (Carter, Milligan and Hall 1988; Pugh and Catt 1984). Housing valuations are readily available through Valuers' General reports and are also the subject of a substantial body of literature, particularly in the field of hedonic pricing, indicating that as a method it is cost effective to develop and implement. The main concern with this approach is that it may be too abstract to be readily accepted by government agencies.

The HALY and stated preference methods are discussed in more detail in Chapter 5, as alternatives to an infrastructure conceptualisation. A HALY approach is indicative of a conceptualisation of social housing as a public health intervention. Stated preference also presents an alternative to infrastructure methodologies by estimating the community value of social housing rather than focussing on direct user benefits.

4.4 Conclusion

The earliest business case assessment of social housing included in the summary of examples in this study was completed in 1984, nearly 35 years ago. The intervening years have seen sporadic applications of economic techniques to questions of social housing, with little continuity or cross-referencing, which has meant that each example is essentially starting the process afresh. The very low level of investment in social housing over the past three decades has also meant that there has been little demand from government for CBA appraisals. This means that the iterative development of the processes that occurs with sustained application has not occurred. This situation contrasts with the transport sector where there has been a sustained development of transport appraisal models over more than five decades, resulting in extensive and sophisticated technical and institutional knowledge of assessment techniques, as well as the capacity to undertake detailed appraisals.

While this section provides a framework for the application of infrastructure CBA methods to social housing, it also brings to the fore pertinent questions, as raised in the previous chapter. In theory CBA can be used to assess any proposal or program, which implies that as a methodology the question is not whether it can be appraised but what is the most suitable approach, particularly for the monetisation of benefits. This is also reflected in the view of interviewees, who stressed the importance of practitioners selecting appropriate methodologies for appraisals. Therefore, while the framework indicates that appraisal based on infrastructure processes is possible, it is not the only approach, or necessarily the most felicitous. This is compounded by the multifaceted nature of social housing benefits and questions that appraisal methodologies may be applied to.

4.4.1 Benefit estimation methods

The recent establishment of the Australian Social Value Bank (Alliance Social Enterprises 2017) and the application of econometrics of program evaluation methods by Infrastructure Victoria (2018) and Prentice and Scutella (2018) are notable progressions in benefits estimation for social housing. However, this is an area that needs further attention if CBA of social housing is to become an input into social housing investment decisions.

While there was some support for the benefit synthesis and stated preference models, the feedback from CBA practitioners and sector representatives indicated interest in developing the HALY methodology. The basis for this preference is that it is a method widely understood in government and the public service, and the processes for developing parameters are well established through public health measures. Conceptually, it provides a more direct connection to the current welfare intervention purpose of social housing in Australia.

In some circumstances, the best approach to CBA for social housing may be to apply a combination of assessment methods. For example, HALYs and the ASVB to measure wellbeing benefits to tenants, imputed rents to reflect housing quality and location, and a stated preference experiment to determine a non-use value from the overall community. Hybrid approaches present a risk of double counting, indicating caution should be taken when designing these approaches. This inclusion of multiple techniques would reflect the evolution of CBA in the transport sector, where a mix of appraisal is increasingly used, including traffic-volume-revenue assessments, reduced vehicle costs, and wider economic productivity gains.

4.4.2 Data and background information

CBA calculations depend on the availability of high quality data from which assessments can be confidently made. However, it is not possible to make specific recommendations for collating and improving data for social housing, as the requirements are dependent on the question posed and the methodologies applied for monetising. The complexity of questions and cohort outcomes is a pivotal distinction between transport and social housing. To draw out the comparison, in transport generalised average values of travel time are used for personal travel, business travel and high- and low-capacity freight vehicles, as set out in the ATAP guidelines (Transport and Infrastructure Council 2016). The assumption that average values are a useful estimator holds because they are applied to large-scale, high-patronage projects such as freeways. While similar assumptions could be made for assessments of state or Commonwealth housing policies, smaller social housing proposals may be aimed at specific cohorts, or have limited geographic reach, which impacts on the relevance of averages and requires cohort-specific estimation techniques, such as those used by Prentice and Scutella (2018).

There are data that can be used in appraising social housing initiatives, as indicated by the review of previous economic analyses of social housing. This includes:

- Centrelink Income Support Payments and state-based public housing administrative data (Productivity Commission 2015).
- Housing Income and Labour Dynamics Australia (HILDA) and the Journeys Home survey (Prentice and Scutella 2018).
- Australian Bureau of Statistics [ABS] Survey of Income and Housing and Census data (Groenhart 2015).
- Valuers'-General reports and housing market data (Carter, Milligan and Hall 1988; Pugh and Catt 1984).
- Wood et al. (2016) using linked data from the Western Australian Department of Housing and Department of Health.
- Kraatz and Thomson (2016: 42) provide a detailed summary of data that may be useful in social housing analysis.

Given the difficultly in delineating many of the outcomes expected from social housing, such as education and employment, it is worth noting the Australian Social Value Bank approach to reducing the prospect of double counting by restricting proponents to the value of three outcomes (Alliance Social Enterprises 2017).

Two broad recommendations for improving data for social housing appraisal can be made. The most substantial gap in understanding and evidence is in the long-term, multi-generational benefits of social housing. It is likely that the long-term security of tenure that the social housing system provides will have benefits for children through, for example, consistency of schooling, particularly if the shorter-term leases available in private rental market lead to frequent changes in location and schools. However, the effect of housing security over extended periods is unknown and unquantified and, as well as education, may also provide improved outcomes in social inclusion, employment, health and justice. The second is in linking cross-departmental and cross-jurisdiction datasets. While there are privacy and administrative difficulties with linking datasets (Wood et al. 2016), the alternative method for obtaining data is through survey methods, which can also be difficult to administer, and may provide less generalisable results (Johnson et al. 2014; Prentice and Scutella 2018).

4.4.3 Location and building form appraisal

The interviews with people engaged in questions of social housing provision indicated that there is a need for better tools for making decisions about the location and structure of social housing provision. However, the previous analyses have not addressed how location may influence the quality of the lives of tenants, let alone monetisation of the benefits. This is an important question, given the sharp land price gradients in Australian cities may lead to housing provision being concentrated in areas with poor access to services and employment, as well as amenity. At its core, this is a trade-off between quantity and quality: is it better to provide more housing in a low-cost location, more remote from services, employment and with low amenity, or fewer dwellings with good access but at a higher cost?

Three methods for distinguishing benefits between location are included: the market values and imputed rents models discussed previously, travel time savings and an approach based on the connections between health, wellbeing and urban environments.

Market values

The previous discussion on market value models, and the closely associated imputed rents, was based on the assumption that the market price represents the willingness to pay for the bundle of goods that housing provides, either by the government or the community. While this assumption was seen as being difficult to get support for within government, it may be useful in deciding between locations once a decision has been made to proceed. The difference is that the location question is one of marginal benefits of location once a decision to proceed has been taken, not whether housing provision is a better outcome than a rental assistance program.

Using estimated market values to decide between locations would make the decision-making process similar to standard real estate investment decisions, based on the difference between construction costs and expected market returns. The use of imputed rents, which estimate the difference between market and discounted rents as well as costs, may provide a more realistic measure than a pure market rent model.

The comparison of costs and estimated market values may also provide some insight into the relative benefits of dwelling mix within a social housing development. However, the dwelling type should reflect the cohort that is intended to reside in the housing development, based on analysis of waiting lists and the household structure of those in need of housing assistance. There may be benefit in considering mixed housing types that enable tenants to remain in the same place, but shift between dwellings as their households change over time, which could increase utilisation rates and improve the return on investment.

Travel time savings

Transport appraisals include a monetisation of the time saved by travellers as a result of changes in infrastructure, based on travel mode, average wages and business productivity (Transport and Infrastructure Council 2018c). These parameters could be used in comparing prospective social housing locations, by estimating the travel times to services and amenities frequently used by tenants, such as shopping precincts, medical centres and health care facilities, community facilities, parks and reserves and public transport networks. Public transport is included here as a separate category, as it is its own benefit by providing connections further afield.

A travel time-savings approach would also need to factor in the costs of each type of transport, ensuring that the time savings of different modes are also respective of their costs—for example, the use of, and requirement for, travel by car in a location without considering the costs and affordability is factored into the appraisal.

As a method, this has the advantage of having well developed and widely accepted methods and parameters, as discussed earlier in this report.

Health, wellbeing and urban environments

There is a substantial body of literature relating urban environments to health and wellbeing outcomes. This includes studies relating physical and mental health to access to green space (Sugiyama et al. 2008), and how city design impacts on non-communicable diseases, social inclusion and crime rates (Giles-Corti et al. 2016). Turrell et al. (2013: 97) also find that 'increased transport walking may serve to contain or reduce health inequalities between advantaged and disadvantaged neighbourhoods, by protecting residents of the latter against even higher levels of chronic disease'. In essence, the connections between accessibility, active transport and health outcomes indicates that location can be connected to a HALY approach to benefits estimation.

Redevelopment externalities

Another prospective area for further research is the reflected value externalities that result from urban renewal projects. Evidence of neighbourhood real estate price changes as a result of the redevelopment of social housing precincts may provide further support for investment in housing projects. In particular, a study of reflected values resulting from the substantial redevelopment of estates in Melbourne's inner north could prove useful for subsequent projects.

4.4.4 Constraints to application

Political willpower and decisions

One of the main conclusions from the review of infrastructure business case processes was that CBA rarely changes entrenched decisions and policy, as one public servant noted: 'in 15 years, I would struggle to get to one hand when CBA has been a decisive factor' (Interviewee 1). In a practical sense, this means the purpose of infrastructure CBA is to affirm and refine initiatives that governments have already committed to. For social housing, in the current climate the purpose is one of advocacy, to convince decision-makers and funding bodies that increasing social housing supply is of benefit. The interviews with representatives from social housing providers and departments indicated that the avoided costs argument is well received by treasuries, indicating that as an advocacy tool it may provide greater results than the more esoteric economic appraisal arguments.

Competition with other infrastructure

A concern with using infrastructure appraisal techniques for social housing is that it needs to compete with other infrastructure proposals for funding. Competition with other infrastructure on

the grounds of NPV can be expected to result in fewer successful funding proposals, particularly as the various infrastructure bodies have a focus on productivity. This competitive outcome of considering social housing as infrastructure is an example of one of the arguments put forward by the literature and advocates of CBA, that one of its benefits over other appraisal methodologies is that it enables comparison of disparate initiatives.

The lack of well defined methods for monetising the benefits for social housing is an important consideration as well, as:

> *you are at a disadvantage to other areas where it is much easier to quantify. Transport is probably a good one where there is a really well developed methodology for CBA … a lot of that is because the benefits are a lot easier to measure. (Interviewee 10)*

Another consideration is the difference in the processes for decisions to provide other forms of social infrastructure, as illustrated by a state treasury official involved in these processes:

> *For social infrastructure, the discussion is around need, not so much benefits. What is the minimum to meet demand over the forthcoming decades? Improving infrastructure allows more volume to be processed, but also allows us to introduce better models of care to decrease readmission, or in justice, recidivism. (Interviewee 10)*

This constraint is a caution about prosecuting arguments about social housing as infrastructure and the subsequent application of economic appraisal techniques. The result may be that in a funding competition social housing may not be successful, as the methods are underdeveloped in comparison to other forms of infrastructure, the benefits are largely non-market and therefore require innovative modelling techniques, and the productivity benefits to the occupants are expected to be limited.

Data

A major impediment to the widespread use of economic appraisal for social housing is the limitations of the data available. There are two aspects to these limitations:

- linking data across agencies
- longitudinal data.

Linking data across government portfolios is important for housing studies, as the effects are expected to occur in health, education, employment and social services, but there are concerns regarding privacy, and also the delays and difficulty in obtaining approvals from the respective agencies (Wood et al. 2016).

Longitudinal data is available through the HILDA datasets, but as it is a sample of the Australian population it provides a small sample for use in social housing studies. The Journeys Home data, collected over a two and half year period beginning in 2011, included a sample of 2719 people selected from Centrelink databases and interviewed in three waves (Scutella, Tseng and Wooden 2017; Wooden et al. 2012). While this is an important survey and source of data, it does not provide the longer-term effects of housing—for example, the benefits for children placed in secure housing to when they reach adulthood, or the change in employment. Studies such as the J2SI program indicate some employment benefits, but include too small a sample and only cover two years (Johnson et al. 2014).

This issue of suitable data being available applies broadly to the analysis of the benefits of social housing, as well as for economic analysis and monetisation. The results of which can be seen in the examples of economic analysis presented in this report, which list factors that they have not monetised, such as community connectedness and self esteem (Johnson et al. 2014), improved community pride and social justice (Witte 2017) and, as Parsell, Petersen and Culhane (2016) note, the social benefits of reduced crime and victimisation are greater than just

the savings in the criminal justice system. The data for social housing appraisal is not just an issue in Australia, it is a constraint on analysis internationally (Buzzelli 2012).

Access to longitudinal data for developing estimates of social housing benefits, as well as the base case for comparison is important:

> *Longitudinal data on social housing, not just people in social housing but ideally also people in control groups, that's what you need to do. You need a significant quantity because you want to try and get estimates of cohorts as well. There are enough people in social housing and on waiting lists as well, so the Journeys Home draws people on Centrelink benefits, and that requires both state and federal approval to match the data, and deal with peoples' privacy … people have valid concerns about giving data to central agencies and researchers … that's all got to be worked through. (Interviewee 10)*

Unobserved characteristics are another issue for analysis of social housing data, which refers to factors that may influence the outcome of an analysis, but are not captured in the data. This is important in social housing analysis, as the allocation process prioritises those with the greatest needs, which can be seen as a sorting process. Unobservable characteristics may include drug and alcohol problems, mental health issues and criminal records (Groenhart 2015; Parsell, Petersen and Culhane 2016: 1536). Using panel data is the standard method to mitigate the effect of unobservable impacts as it focuses on changes over time by individual record but, as noted previously, this is not readily available in Australia (Prentice and Scutella 2018).

4.4.5 Capacity and resources

A considerable constraint in applying CBA to social housing is in the capacity within the industry to undertake economic analysis, and also the cost of hiring consultants in comparison to the scale of investment for most social housing initiatives. One representative from the social housing sector discussed these issues at length:

> *The more complex transactions with government have tended to be resourced differently, out of treasury or out of specialist units, not the broader housing policy or public housing authority areas. It's no critique of the people in those areas, they have a fantastic skill set for what they have been asked to do to date, but if we are going to shift, I think there is a step change in the industry as a whole that would be needed and capacity within government would have to be one of the first things addressed, in terms of who is sitting at the other side of the table designing and leading transactions. (Interviewee 10)*

This problem reflects the long lacuna in investment in social housing in Australia, such that a body of professional expertise and knowledge does not exist at a scale that is able to undertake the economic appraisal of future projects. In contrast, production of infrastructure has been largely continuous over many decades, such that there is an extensive professional cohort that is able to undertake CBA appraisal of project proposals. Although there are some complementarities between appraisal of conventional infrastructure CBA and social housing as a form of infrastructure, it is likely that professional upskilling would be needed to appraise the latter effectively. This in turn would likely only occur where a large-scale and consistent program of social housing investment was undertaken.

Independence and transparency

As noted in the discussion about issues with transport appraisal practices, there is a view that appraisal is not objective and independent—it is undertaken to support decisions already announced and is therefore designed to support the preferred position of the project proponent.

For the CBA of social housing, where the current purpose is providing sound arguments for investment independence and objectivity is vital:

> *I think governments always receive stuff that's commissioned by our sector with a grain of salt, I know I've had conversations with former ministers for housing and welfare who say that 'Yeah, if we added up all the benefits of cost benefit analyses we would never have to spend a cent over the long term'. (Interviewee 12)*

The adoption of the peer review process, as used in infrastructure, would provide assurance of the CBAs' rigour and objectivity. The recurring criticism of the lack of transparency in infrastructure appraisal is also of note, as it has resulted in a deficit of trust in the outcomes. If the purpose of undertaking CBA for social housing is to provide convincing arguments for funding, making the analysis publically available for scrutiny is crucial. An additional benefit of transparency and review is that it provides feedback that leads to process improvement. Ex-post reviews comparing the estimates included in ex-ante CBA with actual outcomes would also engender greater confidence, as well as providing insights for improving appraisal methodologies.

5 Alternative approaches to social housing appraisal

The avoided costs approach is a whole-of-government financial appraisal of a proposal; it estimates the savings in areas such as health, justice and social services and compares them to the cost of housing provision. It is based on marginal changes to the frequency of service usage, between control groups and participants in the program being assessed. Average service costs are then applied to the difference in usage, then compared to the cost of intervention. This method has been used in research and is in development within social housing agencies.

Further development of linked databases, in order to draw stronger conclusions on service usage as well as allow for greater detail in applying costs, would improve the application of avoided costs methods to social housing. It may also be extended to include savings to the Commonwealth, as to date state housing agencies have been largely focussed on savings within their own jurisdictions.

Alternatives to infrastructure approaches to social housing appraisal include:

- Housing as a public health intervention, which is particularly relevant to housing provision as a welfare intervention.
- Community valuations of social housing, whereby stated preference or discrete choice modelling is used to estimate the value society places on providing adequate and secure housing for those in need.

5.1 Introduction

As this research has proceeded, alternative approaches to developing business cases for social housing provision have arisen. The first, an avoided costs methodology, is a financial assessment that compares the financial costs of housing provision to the reduction in service usage—and therefore costs—in other government services—particularly health, justice and social services. This whole-of-government budget savings approach is notable in that it is being developed within the sector, has been positively received by Treasuries, and has no relationship to the methods used in infrastructure appraisal.

Two alternative economic appraisal methods are also considered. The first, treats social housing as a public health intervention, and draws on the HALY appraisal methodology discussed in Section 4.3.3, and provides a more coherent foundation for housing as a welfare intervention than an infrastructure conceptualisation. The second appraisal method is based in contention that the whole of society values the provision of housing for those in need, not just the tenants. This can either be estimated through stated preference experiments to determine non-use values, or through discrete choice models where respondents choose trade-offs between the costs of housing provision and the outcomes of not providing housing.

While out of the scope of this research, it is worth noting that interviews with public servants indicate that other forms of social housing are provided on the basis of assessment of demographic indicators and demand projections rather than business case approaches—for example, schools, hospitals and justice facilities. Also, mechanisms to include affordable and public housing in development proposals have been included within state planning schemes (Department of Environment Land Water and Planning 2018; Department of Human Services

2018; Planning and Environment 2018). As well as highlighting that other forms of social infrastructure don't require business cases, it also means that there hasn't been the need to develop methods for monetising social and wellbeing outcomes from public projects such as schools and hospitals that could be used in the appraisal of social housing.

5.2 Avoided costs

This section provides a framework for an avoided costs approach to social housing appraisal. As a cost savings approach, it is essentially a financial appraisal within the standard structure of a business case, providing an estimate of the budget impact of the initiative being considered. Where this differs from a standard financial appraisal within a business case is that the savings are likely to occur in different departments and tiers of government than where the costs are incurred. There is evidence that providing social housing has a positive effect on whole-of-government expenditure, when the costs of providing health, justice and homelessness services to inadequately housed populations are compared to the costs of providing housing (Chaloner, Dreisin and Pragnall 2015; Johnson et al. 2014; Parsell, Petersen and Culhane 2016; Witte 2017; Wood et al. 2016). Parsell, Petersen and Culhane (2016: 1548) note that the utility of this model, as it is:

> *consistent with social work's focus on social systems and people interacting within an environment. All of our lives are interconnected; the problems we experience and the solutions required must work from a premise of interconnected lives.*

In addition to the examples cited above, discussion of this approach in the workshop and interviews conducted for this project indicates that avoided costs can provide a compelling counter to critical Treasury querying of social housing investment in departmental budget submissions.

While the costs to government of investment in different modes of transport is widely discussed, the cost-saving approach lacks a suitable analogy within infrastructure appraisal, where financial analysis assesses cash flows and budget costs within the department responsible for implementation. In transport the provision of new rail or road projects is assumed to offer generalised public welfare benefits through such effects as reduced travel times or improved accessibility, which in turn improve aggregate economic productivity and thus potentially raise taxation revenue, rather than achieving benefits through an internal saving to government. The principal exception is in relation to road safety, where transport improvements may reduce crash rates and thus permit savings on emergency and health services. Rather than the social welfare and productivity benefits used to appraise and justify transport infrastructure, avoided costs is reminiscent conceptually of the cost effectiveness approaches to assessing public health initiatives, where it is assumed interventions have the same outcomes and decisions are based on costs (Muennig and Bounthavong 2016). Although at the current level of methodological development avoided costs frameworks do not comprise a full CBA approach to appraising the economic effects of social housing, these approaches appear to offer a fruitful improvement to the social housing evidentiary base.

Sector support

The avoided costs framework is appealing to proponents of social housing investment and government budgetary assessors and decision-makers. Interviewees and the workshop attendees indicated that there is some merit in the avoided costs approach, particularly for specific cohorts with high needs that are expensive to service, such as persons escaping family violence or persons experiencing homelessness:

> *we think it stacks up very well in terms of savings to government of housing people, particularly when you look at the hospitalisation of the homeless and the*

criminalisation of a whole bunch of people that don't have housing. There would be huge savings to government in providing more social housing … (Interviewee 12)

However, an issue to contend with in making this argument is the siloed structure of government: the departments responsible for housing will meet the costs of housing provision, while the benefits will accrue to other departments, such as health and justice:

The primary advantage is that it can cut through the government side, the nature of treating it as a service intervention. It's a very complex space that has a range of impacts across departments; it cuts across departments with costs. (Interviewee 11)

This observation signals a further consideration in the development of CBA approaches to social housing. Although frameworks to assess and enumerate the avoided costs from social housing investment can be developed if effort is expended to do so, their application depends on cooperation across government agencies. The tendency within government is for agencies to seek to protect their own budgets rather than allow their spending to be allocated to other agencies. Accordingly, there may be reluctance for health and justice agencies to transfer budget allocations to housing agencies even though in the long run the aggregate gain for those agencies may be positive in terms of costs avoided.

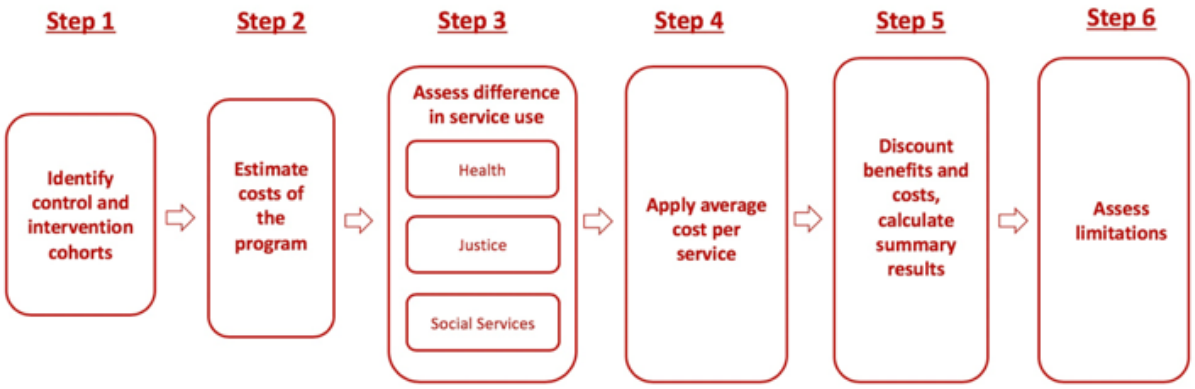
Social impact investment

Social impact investment is an emerging financial instrument for solving social and environmental problems, and provides 'opportunity to increase capital for the supply of affordable housing and fit-for-purpose social housing' (Muir et al. 2018: 4). Social impact investment combines financial and social benefits, and is based on the value of outcomes rather than the cost of inputs. In this sense, avoided cost methodologies can provide the basis for social impact investment, through estimating a return on investment through government cost savings (see Appendix 2, Deloitte Access Economics 2016).

5.2.1 A framework for avoided costs analysis

What might a general framework for avoided costs analysis look like? The examples of the Johnson et al. (2014) evaluation of the J2SI program, the Witte (2017) study of last-resort housing, and the Parsell, Petersen and Culhane (2016) analysis suggest a generalised framework for undertaking a cost-savings to government analysis, as depicted in Figure 7.

Figure 7: Avoided costs framework



Source: Authors.

Step 1. Identify control and intervention cohorts

The first step is to identify a control group from those included in the intervention that are willing to be surveyed on their use of government services, and a similar group from those who are not involved in the program. Both cohorts should be unbiased; in the J2SI example, the two groups were selected by random sample from the same overall pool.

Step 2. Estimate costs of the program

The costs of the program being assessed need to be estimated. Parsell, Petersen and Culhane (2016) use an estimate of the average costs to government of supported housing, while Witte (2017) used an estimate of $60,000 per bed, which was also used as a basis for calculating operational costs and depreciation. In contrast, the J2SI by Johnson et al. (2014) analysis was an ex-post evaluation of the program, so the costs were based on estimates of program operating costs supplied by program officers.

Step 3. Assess difference in service use

The difference in service use between control and intervention cohorts then needs to be assessed. As the appraisal is based on marginal cost savings, this stage compares the frequency of use of government services by each of the study and control cohorts. This includes:

- Health services, comprising hospital nights, ambulance call-outs, GP and specialist visits, emergency and outpatient visits.
- Justice services, comprising police charges, court appearances and incarceration.
- Social and housing services, comprising nights in short-, medium- and long-term accommodation and ancillary support services.
- Employment, comprising the benefit (or negative cost) of increase in participants that are employed.

This stage provides an estimation of the differential propensity to incur costs to government per individual, over a given period of time. By comparing the outcomes between the cohorts, the marginal benefits attributable to the intervention should be evident.

Step 4. Apply average cost per service

The next step is to translate the marginal benefits into government cost savings by the application of average costs per service. Average costs per intervention can be obtained from state government reports, Medicare statistics, the Productivity Commission reports on Government Services, ABS databases, and from social housing providers.

This method would enable savings to be attributed across departments and also to state and Commonwealth departments, which may be useful in developing cases for funding.

Step 5. Discount benefits and costs, calculate summary results

The next step is to apply an appropriate discount rate to temporally differentiated costs and benefits. After applying the DCR to the flow of costs and benefits over the appraisal period, the standard summary results of CBA can be calculated and used for reporting outcomes:

$$BCR = Marginal\ benefits/Costs$$

$$NPV = Marginal\ benefits - Costs$$

Step 6. Assess limitations, risks, sensitivities and uncertainties

A final step in the analysis that should accompany reporting is an assessment of the limitations of the study. For example, Parsell, Petersen and Culhane (2016) list five limitations in their study, including:

- issues with gaps in cohort records
- accuracy of the average service costs
- variation between services demands within the cohorts
- results that are not generalisable
- variations in the accuracy and consistency of data, particularly in light of the processes required to be authorised to use it.

In addition to methodological limitations, the risks, sensitivities and uncertainties applying to analytical should also be addressed. Risk analysis identifies the potential for losses as a result of the project, which may reflect assumptions and projections used to formulate the analysis. Uncertainty relates to not knowing what may happen in the future, such as changes in government policy that cannot be assigned probability and therefore quantified as risks Sensitivity analysis concerns the differential apportionment of uncertainty to elements of the analytical framework.

5.2.2 Future development

As Wood et al. (2016) note, the analysis of social housing outcomes would benefit greatly from the linking of datasets across departments, enabling greater understanding of the outcomes of social housing. This is central to the avoided costs methodologies, given it considers cross-departmental savings as a result of housing interventions. Data linkages would also enable tracking different outcomes, providing treatment and control cohorts to assess the marginal benefits of interventions, as discussed in Section 4.

Wood et al. (2016) also suggest that there could be greater detail applied to the average costs of service used to calculate interdepartmental savings within avoided costs frameworks. This includes distinguishing between the levels of services—for example, there may be a large variation in the costs of emergency department presentations, as well as the likelihood that there are different costs for services based on location. The aggregated data available for use by Wood et al. (2016) did not allow for this level of detailed analysis, which may lead to more robust estimates of potential cost savings.

While the estimation of construction and lifecycle costs of social housing provision may be estimated through standard quantity surveying processes, interviewees from the social housing sector commented that state government spending on social housing is obscured within budgets, for instance:

> *one of the points I would make is that we cannot even see what social housing costs state governments, you can't extract it from their budget papers, and since we've had a NAHA which removes output measurements and relies on amorphous outcome measurements it allowed the states to make it even more obscure in their budget papers … I suspect that the states put in a lot more than the Commonwealth does, but you can't see it. (Interviewee 12)*

A further aspect of wider fiscal and taxation settings bears attention in terms of avoided costs, which echoes the Industry Commission (1993) report findings on the benefits of public housing. In interviews, the state agencies that had developed avoided cost models had only considered savings within their own jurisdictions, not Commonwealth budgets. In addition to savings on services, wider analysis might assess housing costs and subsidies within the taxation system,

as one interviewee noted. This, it was suggested, could be seen as an additional subsidy to the private rental market, on top of direct income support payments paid to tenants, and in turn should be viewed as a further cost to government that could be avoided were an effective social housing system housing in place. There is merit in this argument, however some work would need to be undertaken to evaluate the value of avoided costs through conversion of negative gearing to direct social housing investment (see Dodson 2016).

5.2.3 Summary

It could be argued that avoided costs approaches are not founded in the conceptualisation of social housing as infrastructure, as it is about efficient use of government funding rather than estimating net benefits to society. The complex conceptual questions such as placing values on the wellbeing of tenants, as well as other non-market traded outcomes of housing supply, are not considered within this approach.

By focussing solely on government expenditure impacts, avoided costs are readily implementable, as indicated by the method already being developed and in use within social housing agencies. This indicates that while avoided costs is a pragmatic solution to the need for frameworks for appraising social housing initiatives, it does not provide a holistic account of the environmental, social and economic benefits of social housing. As Parsell, Petersen and Culhane (2016: 1549) argue, cost-savings arguments should not be the only reason for investment in social housing:

> *We stress that a downtrend and any associated cost offsets are only one potential argument for the justification to respond to people who are chronically homeless with supportive housing … Although we believe that cost offsets ought not to be the primary motivator for ending chronic homelessness, the evidence about cost offsets does indeed strengthen and give additional credibility to moral arguments for supportive housing.*

While there are areas for further development, such as linking datasets across departments, developing more detailed estimates of service usage and costs, and considering implications for Commonwealth and state budgets, avoided costs is a pragmatic and readily implementable approach to arguing for social housing investment.

5.3 Economic approaches

5.3.1 Social housing as a public health intervention

The HALY approach to benefits estimation reflects the conceptualisation that social housing is a public health intervention rather than an infrastructure development. This can be seen as an outcome of the continued marginalisation of public housing as part of the total housing stock and the concomitant allocation to only the most needy. As a result of this, the assessments of programs targeting the homeless largely address health and wellbeing outcomes, with limited productivity gains that are central to infrastructure justification processes (Johnson et al. 2014; Parsell, Petersen and Culhane 2016; Prentice and Scutella 2018). This public health view of social housing shouldn't be seen as refuting the conceptualisation of social housing as infrastructure, rather it is a result of aligning the methods for assessing what the literature suggests are the core benefits of housing provision.

This research indicates one of the risks associated with an infrastructure conceptualisation of social housing is that it introduces non-welfare goals, such as well located housing for key and low-paid city workers. These productivity based arguments distract the considerations from solving the housing issues that have resulted from the low levels of investment in recent

decades, whereas public health provides a positive and easily communicable approach to arguing for greater investment in the sector.

In practical terms, a public health approach would require further research to estimate parameters for use in appraisal, following the methodology of the AIHW (2016).

For housing projects or programs that are oriented to other housing segments, such as affordable housing for low-income workers, further benefits may accrue from the wider economic connections that can be made, such as closer proximity to a larger pool of higher paid or better skill-matched employment opportunities. However, care needs to be exercised in this context in terms of the methodology selected. Depending on the approach and method taken, it could be argued that the opportunity cost of a non-market affordable housing development is of a market-priced development housing a higher-wage cohort where the productivity gains from their efficient labour market access is greater than for the lower-income cohort. Understanding the dynamics of economic process in CBA assessment and having clear rationales—ideally with social values identified—for selection of project attributes would need to be a key element of the rollout of CBA to social housing programs.

5.3.2 Community valuation of social housing

The value the wider community places on providing housing for those in need has not been explored, and may provide useful evidence in arguments for housing investment. This is an assessment of the value people place on caring for others—and also that it is there in case they need it in the future. These valuations are estimated through stated preference experiments, where surveys are used to investigate willingness to pay.

Stated preference—also referred to as contingent valuation—is a widely used survey or interview-based approach to developing estimates of demand and willingness to pay for goods or services, either through experimental or survey methods (Guess and Farnham 2011: 324). This method has been used in the assessment of health, environmental and social policy (Vining and Weimer 2013: 49).

Stated preference may be used in determining society's willingness to pay for social housing as a non-use good, or willingness to accept the disbenefits of not providing social housing. Non-use values are not related to consumption or direct benefits or costs, but to people's preferences for something to exist. Johansson and Kriström (2015: 25, 26) provide a categorisation of non-use values, with the following with relevance to social housing:

- Option value: Someone may positively value the option to consume something in the future.
- Altruistic values: May care about others being able to consume a resource, either now or in the future.
- Paternalistic values: Concerned with how a proposal may affect those less well off.
- Impure altruism: 'the warm glow of giving'.

Another approach would be to undertake discrete choice experiments, which could draw on avoided costs methods to compare the costs of providing and not providing social housing. Discrete choice provides options to survey respondents, providing greater rigour to the experiments through modelling trade-offs between costs and benefits. Examples of the use of this method include estimating values of housing type and location (Kelly, Weidmann and Walsh 2011), and the willingness to pay in a CBA of the NBN (Department of Communications and Vertigan 2014).

These methods are subject to criticism, particularly around bias and that the valuations are hypothetical as payments are not actually made (Guess and Farnham 2011: 325; Johansson and Kriström 2015: 162). As a result of this, stated preference experiments can be costly to

design in order to mitigate bias, and also to implement (Infrastructure Victoria 2016a). However, stated preference is the only method that can provide an estimate of non-use values. The results of robust survey instruments designed by experienced practitioners would indicate public support for social housing and may prove useful in gaining political support given their basis in public preferences.

5.4 Conclusion

This chapter has introduced alternative methods for developing business case arguments for use in the social housing sector, which may provide better bases for the interventions that have welfare outcomes in particular. The avoided costs methodology is a significant development, as it has arisen from within the sector and directly responds to the balanced budget orthodoxy of contemporary governments. It is also a financial rather than economic analysis: it does not estimate net benefits to society through monetisation and therefore avoids the complexities and abstractions inherent in CBA.

There are also alternative conceptual bases for undertaking CBA of social housing, such as the public health and community valuation methodologies presented here. These approaches provide alternatives to an infrastructure conceptualisation and provide a more direct connection to the welfare and social benefits of housing provision; they are also more likely to meet the criteria for social housing appraisal set out by Flanagan et al. (2019: 13).

6 Conclusion

There is a demand from within the housing sector for better methods for appraising social housing decisions. An important aspect of this is that there is a need for methods that provide insight to a range of decisions relating to social housing, which may include:

- Comparisons between housing supply and rental assistance programs.
- Ex-post reviews of housing assistance programs.
- Comparing the costs and benefits of social housing location alternatives.
- Prioritising cohorts for social housing interventions.
- Built form and housing mix alternatives.

While preliminary in development, there is evidence that avoided costs models have been positively received by state treasuries, indicating value in further development. Also, it is simple in terms of conceptualisation and implementation, and the capacity already exists within housing agencies. Further development may benefit from drawing on linked datasets across welfare, housing, health and justice departments.

The application of public infrastructure CBA to homelessness and chronic housing stress intervention would require significant resources to develop appropriate methodologies. It may be more applicable to outcomes with stronger productivity benefits, where the frameworks and methodologies for transport appraisal have greater resonance. This also presents a risk of changing social housing priorities from welfare to productivity outcomes.

Based on the transport example, the scale of housing investment is an important factor in developing methodologies and industry capacity for social housing appraisal. The complexity and resources required to undertake housing appraisals need to be of a scale commensurate with the level of investment in the sector.

Social housing may be considered infrastructure, but it is not the only conceptualisation that may be applied. At this juncture, when development of methodologies would require significant resources and capacities, there is a question as to whether it is the most appropriate conceptualisation to increase investment in the sector.

6.1 The need for appraisal methods

The interviews with social housing sector representatives undertaken for this project indicate that the development of economic and financial appraisal methods is seen as advantageous for increasing investment in the sector. In particular, avoided costs arguments have been positively

received by treasuries as inputs into budget processes. The need for better appraisal methods is also underscored by the interest of Infrastructure Victoria (2016b, 2018) in the sector.

It is evident that a single methodology cannot meet all the needs for appraisal in the social housing sector, which is part of the reason why two frameworks have been provided in this report. How a business case is developed needs to take into account:

- the nature of the proposal
- the intended cohort that it is to be provided for
- the requirements as well as preferences of the decision-makers
- the reality of what can be delivered given the resources and data available.

These factors can be seen in the development of the avoided costs methodology.

6.1.1 Unintended consequences

The purpose of conceptualising social housing as infrastructure is to form a basis for arguing for increased funding and social housing supply, but changing the decision-making processes for the sector is likely to change the priorities of housing provision. The close association of infrastructure with productivity benefits indicates that an unintended consequence of an infrastructure conceptualisation will change the purpose of social housing provision; the end result may be more funding provided to the sector, but less for welfare purposes as productivity and employment outcomes are given increased priority. This risk is also associated with fundamental critiques of CBA—that it is biased towards those that are better off and as a rational and modernist process, to the costs and benefits that are quantifiable.

As social housing in Australia has become a provider of last resort, principally for those in greatest need, public health conceptualisations may provide a clearer understanding of the purpose of intervention, as well as provide better methodologies for appraisal; this is a subject for further research. Infrastructure methodologies may more applicable to government interventions in key worker housing, which can be seen as a return to the Fordist links between production and labour supply (Berry 1999; Troy 2012). This is a recurring theme also referred to in Flanagan et al. (2019), that infrastructure is closely associated with productivity. This draws a distinction between the case for affordable and key worker housing and housing provision as a welfare intervention.

A salient question is if the social housing sector, with its current focus on housing as welfare, is the appropriate sector to prosecute this argument or whether adopting infrastructure methodologies will further spread already stretched resources. While the case has been put forward for housing as infrastructure because of its effect on labour productivity (Maclennan 2015), the application to social housing needs to be approached with caution given the possibility that rather than increasing sector funding, it reduces the funding available for fulfilling its current role as a welfare provider.

6.2 A pragmatic view of social housing appraisal

This report follows *A conceptual analysis of social housing as infrastructure*, which concludes that while this conceptualisation can be argued:

> *the claim that social housing is infrastructure is merely rhetoric, unless it is translated into practice by establishing the benefit of the social housing service, relative to the cost of providing it via an enabling asset, and expressing this benefit-cost argument in the format of a conventional business case analysis. (Flanagan et al. 2019: 67)*

This research can be seen as the pragmatic adjunct to the theoretical consideration of social housing as infrastructure. In essence, if the infrastructure appraisal methods are not readily applicable, then the conceptualisation of social housing as infrastructure has little practical benefits for the sector. A pivotal point that this research draws out is that while it may be possible to use infrastructure appraisal techniques for social housing, to do so would require substantial resource commitments within agencies, as well as for housing provision. As noted in Chapter 2, transport methodologies have been developed over decades as a result of ongoing funding for construction, which has created demand for practitioners and research to improve appraisal methods.

While progress has been made in developing appraisal methods for social housing, there are still questions that remain unanswered and that require substantial effort to resolve, such as the longer-term and multi-generational outcomes of social housing provision. CBA theory posits that these, as well as the 'intangibles', can be monetised and provide the base for investment decisions, but that does not mean it is a worthwhile endeavour. Therefore, the two pragmatic questions require further consideration.

- First, would monetising the full range of benefits that can be attributed to social housing improve funding outcomes more than an approach that monetises the aspects most suited to that form of estimation, and uses qualitative assessment or the plausibility test as the basis for funding proposals.
- Second, whether infrastructure conceptualisation provides the best theoretical underpinning for developing social housing methodologies—particularly when the focus of the proposal is improving welfare.

6.2.1 Funding and capacity development

There is circularity to the relationship between investment programs and business case methodologies: consistent investment creates the demand for appraisal and the development of guidelines and parameters required to justify the initial investment. For a project the size of the 20-year development project recommended by this Inquiry, the allocation of resources to undertake a detailed CBA as a precursor to any investment decision would provide the resources to further develop appraisal processes for use in other sector proposals.

This relationship between methodological development and the scale of investment is seen in the transport sector. Public sector agencies with involvement in transport CBA include the Bureau of Infrastructure, Transport and Regional Economics, the state and Commonwealth infrastructure bodies, and the Transport and Infrastructure Council. In the private sector, there are specialised consultancies providing traffic modelling and land use and infrastructure benefit estimations, as well as specialists within the 'Big 4'. At present there are few agencies either within government or in the research or consulting sectors that possess the background research and technical knowledge to be able to respond immediately and systematically to demand for social housing appraisals.

This indicates that in addition to the conceptual and methodological questions for the consideration of social housing as infrastructure, the resourcing and development costs need to also be considered. There is little use in adopting an appraisal methodology for the sector that uses too much of the limited resources in developing business cases.

6.2.2 Alternative approaches

While the primary focus has been to develop a framework for the application of public infrastructure business case processes to social housing, alternative approaches and conceptualisations have arisen as the research proceeded. These approaches are of note, as they have support for—or have been developed from within—the social housing agencies, are

more clearly connected to social housing as a welfare intervention and mitigate the biases and criticisms inherent in CBA.

The alternative approaches include the following:

- Financially beneficial, as indicated by the avoided costs methodology.
- Social infrastructure, where education, health and justice facilities are allocated on the basis of needs, can be included in master plans and funded through development contribution levies.
- Public health intervention, as indicated by the HALYs benefit estimation methodology.

The avoided costs method is based on the notion that social housing provision providing net savings through reduced demands on health, criminal justice and social services is also supported by recent publications (Chaloner, Dreisin and Pragnall 2015; Parsell, Petersen and Culhane 2016). This argument has different conceptual underpinnings to infrastructure appraisal: CBA draws on welfare economics, notions of aggregate utility functions and potential Pareto principles as opposed to the more prosaic cost-accounting methods of avoided costs. It is of note that respondents to this study reported that several state government housing agencies are working on avoided costs models for social housing and have been given a positive reception from Treasury departments. While this is a positive advance on the preceding period where there were systemic knowledge gaps about avoided costs, Parsell, Petersen and Culhane (2016: 1549) caution that avoided costs models miss the central moral argument for social housing.

6.3 A framework for social housing appraisal

The central purpose of this study has been to develop a framework for appraising social housing, based on the processes used for CBA in the development of infrastructure business cases. While the research questions this approach and economic foundations of CBA have been criticised, as noted earlier in this report, CBA can theoretically include the welfare outcomes of social housing within a rational decision-making framework. At the least, CBA would add a consideration of the benefits to tenants as well as the broader community to arguments regarding cost savings.

The general structure of the framework for economic appraisal is based on the following steps, regardless of the conceptual underpinnings:

1. Define the base case or control group to use as the comparison point for the marginal benefits of intervention.
2. Develop lists of costs and benefits attributable to the program being assessed.
3. Estimate the costs, including construction or set-up costs, maintenance, administration and opportunity costs (if applicable).
4. Monetise the benefits of the program, based on the difference in outcomes for the base case and project case.
5. Apply the discount rate to the flow of benefits and costs over time, and calculate the NPV and BCR.
6. Undertake sensitivity and risk analysis.

Note: This simplified outline of financial and economic analyses of business cases belies the underlying complexity and constraints in application, particularly for CBA.

6.4 CBA within decision-making processes

6.4.1 Evidence-based advocacy

Business cases have largely become an afterthought in infrastructure decision processes, with alternatives ruled out and funding commitments made prior to the completion of in-depth CBA. Major projects committed to by state and Commonwealth governments in recent years indicate a relationship between the political will to undertake a project and the rigour of the economic assessment. Examples of less rigour in project appraisal include:

- multi-criteria analysis being used at project announcement (Development Victoria 2018; Transport for Victoria 2018)
- the plausibility test for the NDIS (Productivity Commission 2011)
- continued development of business case justification after funding commitments (Victorian Auditor-General's Office 2015)
- the commencement of construction (Infrastructure Australia 2016d).

In the literature, CBAs have been categorised as either ex-ante, to provide input decisions to be made, or ex-post, to review the outcomes of a project after completion. The recent preference for CBA to be undertaken post-funding commitment but pre-implementation indicates a new categorisation is required: it is neither ex-ante nor ex-post in timing or purpose.

The relationship between the importance and validity of detailed CBA in the decision-making process and the political will—or expectation of political advantage—associated with the initiative is an important point for social housing. The purpose of business cases is clear: to advocate and evaluate claims or calls for funding, not to provide coverage for commitments already clearly made, as analytical rigour and objectivity are important in developing economic evidence to support funding submissions. Funding for infrastructure has not suffered as a consequence of these criticisms of infrastructure appraisal: the WestConnex project underway in Sydney is the most expensive project in Australian history, and could be superseded by either a suburban rail loop or regional fast rail in Victoria. For social housing, this indicates that the use of business case processes and CBA as decisive elements in project development requires a higher standard of analysis than confirming decisions already made.

A further point related to the use of business cases in decision-making processes is aligning the methods used to reflect the purpose of the analysis and its audience. The decision between avoided costs and CBA should be made by understanding which method is the best fit for the argument being made, and the audience that it is intended for. Regardless of which methodology is adopted for widespread use in social housing appraisals, each of the options for monetising the benefits of CBA outlined in this report may have applications in social housing assessments, such as the previous discussion regarding the use of market values or imputed rents as an input into choices between locations.

6.5 Final observations

This report provides support for the application of business case methodologies to social housing, but cautions on the use of infrastructure conceptualisation as a foundation. Arguments for investment in social housing supply can benefit from economic and financial analysis and, according to interviewees, have been seen as valuable by Treasuries in budgeting processes. An important observation from the review of transport practice is that as the scale of investment proposed increases, there is justification for greater resources allocated to improving appraisal methods and industry capacities. There is also a benefit in expanding the economic knowledge base, allowing for robust social housing decision-making, based on clear, rational and

sophisticated analyses. However, the costs of undertaking such analyses need to be scaled to the likely level of funding.

Irrespective of technical effort involved, and justifying and rationalising the value of public investment in major infrastructure, in recent years these decisions appear to be more political than technical. The plausibility-based CBA for the NDIS and the experience of the NBN appraisal exemplify the relationship between political will and the rigour applied to economic analysis. The prospect of political advantage through infrastructure announcements can be seen at the forefront of major party funding announcements in the lead up to the 2018 Victorian election, particularly the government's $50bn suburban rail project, which received no input from the state Treasury and transport departments, nor from Infrastructure Victoria (Terrill and Ha 2018). This shows that major infrastructure decisions can be made without technical accoutrement; as a process, it is closer to the demographic- and needs-based assessments that guide public investment in schools and hospitals than the optimistically rational processes outlined by the Transport and Infrastructure Council (2016). The question is that if decision-making processes involving billions of dollars in government expenditure do not depend on detailed economic assessment are tolerable in the realm of transport, or other forms of social infrastructure, why not in social housing?

This question leads to a key point arising from this research. Appraisal methodologies should reflect the intent of the intervention: if the purpose is to increase funding for housing those most in need, then it is unlikely that infrastructure conceptualisations are the most felicitous. Alternatives to infrastructure conceptualisation will provide a better basis to 'take account of the diverse range of "outcomes" that social housing delivers' and 'accommodate the reality that many of these outcomes are not easily quantifiable or monetisable' (Flanagan et al. 2019: 13). Further to this, changing decision-making processes and assessment methodologies can change the resulting outcomes and priorities: each process comes with its own set of inherent biases. To elucidate, there is a difference between using economic analyses to argue that more funding is needed so the social housing sector can consider where low-income workers can afford to live, than arguing for funding, as there are significant unmet housing needs and a growing homeless population.

There are alternatives to public infrastructure appraisal methodologies: the conceptually transparent avoided costs fiscal method is already being developed within state agencies and has been well received by Treasuries. Although preliminary, the HALY model provides a better fit with the benefits associated with social housing and appeals, as it is founded in welfare rather than productivity considerations. If the central aim of this inquiry is to increase housing provision for those most in need, approaches that provide a greater resonance with the benefits of secure housing are likely to provide better outcomes than the abstracted conceptualisation of housing as infrastructure.

Finally, we would observe there is a contradictory circularity to the need for CBA in relation to a large-scale social housing program. To the extent that conventional CBA may be developed for social housing, a vast methodological and technical effort is likely necessary to develop appropriate data, methods and techniques for this task. Such a program would likely only be justifiable if a very large-scale investment program were anticipated. But if the political decision to proceed with such an investment program has already been determined, then the need for CBA is largely obviated. In this sense, a determined political appetite for social housing investment must precede its economic evaluation.

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