



Final Report

Making connections: housing, productivity and economic development

authored by

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ACRONYMS

CAAs	Central Activities Areas
CBC	Conference Board of Canada
COA	Council of Australian Governments
CRA	Commonwealth Rent Assistance
DIDO	drive-in-drive-out
FIFO	fly-in-fly-out
GFC	Great Financial Crisis
HILD	Household, Income and Labour Dynamics in Australia survey
LGA	Local Government Area
LSAC	Longitudinal Study of Australian Children
LSAY	Longitudinal Survey of Australian Youth
LSIC	Longitudinal Study of Indigenous Children
LVR	loan-to-value ratio
MCU	Major Cities Unit
MFP	Multi-factor Productivity
PC	Productivity Commission
SES	Socio-Economic Status
SIH	Survey of Income and Housing (ABS)
TFP	Total Factor Productivity
TWA	transient worker accommodation
WSM	Wimmera Southern Mallee

EXECUTIVE SUMMARY

This is a scoping study with the immediate aim of reviewing links between housing and productivity. It uses scans of existing literature, assessments of local strategies for planning, and interviews with key practitioners involved in metropolitan and local economic development strategies. Published research and practitioners' experiences are used to suggest new ways in which to construct an understanding of how housing might impact productivity and future economic growth. The longer, broader aim of the report is to encourage housing sector advocates, practitioners and policy-makers to become better equipped to argue economic cases for housing and for equivalent groups dealing with economic policy and local economic development strategies to be more aware of the economic consequences of housing outcomes.

There is a long understood and well-measured impact of housing investment on national income and employment in the short-term (multiplier effects), and a growing recognition of the potential of housing markets to reinforce cyclical instabilities. However, there are few well researched arguments on how housing impacts long-term growth and productivity. Growth cases for housing are rarely made in the policy context and this is in marked contrast to arguments frequently made in support of other forms of infrastructure investment.

This omission is surprising as housing constitutes such a large share of consumption, investment and employment in national and local economies. A range of housing processes, including construction and design, have a potential to impact national productivity and, importantly, the housing prices, rents and characteristics that prevail in an economy have a significant potential to impact growth.

Macroeconomic and regional growth studies of productivity are often highly reductionist (abstract) in their economic underpinnings. They typically focus on labour (human capital) and capital (business investment) as key sources of growth, with other growth factors treated as a statistical (and perhaps conceptual) 'residual'. Land-related activities are now largely included within the 'residual', so the contribution that homes, place and space make to economic growth falls outside the usual scope of macroeconomic policy thinking.

Housing policy related bureaucracies and lobby groups have, in the past, failed to challenge Treasury and Finance Ministries on these modelling approaches, and at the same time have systematically failed to make economic cases for housing investment and other policies. There is a tendency, despite the economic significance of housing, to see housing policy as simply social in its objectives and any public finance devoted to the sector as 'crowding-out' private investment. Housing, at national and state scales, has fallen between macroeconomic views that largely neglect housing outcomes, and policy advocates who make little use of the economic arguments, and instead invoke social and environmental cases for policy.

There is, however, a growing recognition by business and governments that housing outcomes may already be constraining national growth, or imposing undue expenditure costs on other public budgets (e.g. homelessness effects on health). A much more informed and coherent approach is therefore required to house likely future population growth, at the same time as there is a renewed imperative to raise total factor productivity. Governments at national/federal and state levels have narrowed the focus of housing policy, essentially to coping with homelessness and running ever smaller stocks of public housing. There has been a loss of bureaucratic, and perhaps political, capacity to understand and act upon wider housing system, market, and regulatory, failures that shape less than effective outcomes for future economic growth. No level of government appears to be asking the question as to which outcomes in the housing system will best fashion productivity.

The ways in which infrastructure, broadly defined, is argued to impact growth and productivity are quite different from those prevailing in the housing sector. Although macroeconomic

modelling has supported past infrastructure programs, recent research suggests that macro estimates have little general validity (even if they are still used in policy debate), and that more informed approaches at metropolitan and local scales are required, both for modelling and program/project evaluations. As cases for infrastructure's impact on the economy become more local, it is argued here that the housing sector should be a new, significant part of such modelling, audits and evaluations.

Housing processes as well as price outcomes and dwelling characteristics have potential productivity effects. A framework can be readily developed that connects housing processes, characteristics (including neighbourhood attributes, as housing and neighbourhood choices are inseparable) and market (price/rent/turnover) outcomes to key growth factors. These growth impacts can then be, at least logically, connected to effects on human capital, business investment and innovation. This may be done directly or through the filter of other local economic policy areas or tools, such as improving skills, growing home-based businesses or diversifying local economies. These logic chains for housing system/policy effects remain to be developed in most places. We also note that they can connect to wider sets of desired policy outcomes, including wellbeing, rather than solely GDP-related measures of progress.

Empirical research on housing in growth processes is often either missing or uncoordinated. Macro estimates of housing investment on growth are largely missing. However, there are strong arguments to suggest that future research on productivity and housing, and indeed infrastructure more generally, should be focused on metropolitan and local levels.

Currently metropolitan and local competitiveness studies seldom include housing variables and influences. There is an emerging literature assessing how housing price and cost outcomes have the potential to distort locational patterns within a state or nation in ways that drive firms and households to less than optimal productivity locations. For example, poor housing system outcomes can frustrate the potential for agglomeration economies to foster growth.

Within metropolitan areas, housing markets are key shapers of the geographies of different activities, patterns of population density and the concentration of different income groups into different places. These broad metropolitan structures emerging from the housing system play significant roles both in productivity and the ways in which economic surpluses are 'exhausted' by commuting and related costs. Commuting to work and labour market mismatch are concerns within city economic development, but they are too often seen in national overviews as transport problems rather than joint transport-housing outcomes. Neighbourhood spillover effects, as well as individual housing conditions, have discernible effects in some settings. This may apply not just to how children learn and transition to the world of work, but how households can use their home as a place of work and an asset to underpin investment in their own businesses.

Reviewing the published research pointed up the many potential housing-productivity connections, but also highlighted the absence of systematic knowledge on most of the key issues. The project then examined a large number of metropolitan and local area plans and strategies for housing, strategic planning and economic development to assess whether, despite the absence of research, practice had developed some workable ways of connecting housing and economic development that chimed with *prima facie*, conceptual cases for likely impact. More than 100 planning documents were assessed, some 27 localities (11 in Western Australia and 16 in Victoria) were assessed in depth, and interviews carried out with 18 policy-makers in 12 illustrative areas.

The key questions pursued in the local and metropolitan area studies were:

- Do housing strategies consider economic drivers of change and assess economic impacts, and do economic development plans link to housing provision?
- What are the key housing issues that are seen to affect economic development at the local area and metropolitan levels?

→ How is housing leveraged to promote local economic development?

The research at local scales indicated that, in many cases, there was little attention to interactions between housing outcomes and the local economy, but in some places, and in the minds of a number of planning officers, there was recognition that such issues could be important. It was quickly recognised that different kinds of areas experienced different sets of housing-economy growth problems. The study identified for illustrative purposes five key area types, namely: inner to middle metropolitan areas, where economic conditions are typically healthy; outer metropolitan areas, where economic conditions are less robust and expansion in employment opportunities would be welcome; regional tourism towns, marked by distinct seasonal peaks and troughs in economic conditions; regional resource rich towns, where the mining boom has contributed to labour shortages; and finally, regional slow growth areas, where labour markets are slack.

Within these areas there was not the breadth and depth of research that would allow researchers, or policy officials, to complete anything like a data-led matrix of housing to growth factor connections. As an alternative, and drawn from the plan assessments and interviews, a number of key themes were identified. These were: diversifying mixed land use activity centres; encouraging home-based economic activities; rising land values and displacement of economic activity; housing affordability, demographics and labour markets; changing house prices, debt and economic resilience. In some areas all themes were relevant and in others one or two themes arose.

The local area interviews revealed an understanding on the part of economic development practitioners that housing might be an important consideration in some contexts, but 'housing' was seen as being outside the locus of their portfolio. Furthermore, the connections are rarely monitored by local housing planners. Understandings were often intuitive rather than evidenced. Local housing planners, focused on dealing with acute shortages of housing for poorer households or particular needs groups, had little time or resources to devote to identifying housing constraints on the economy.

At more local and metropolitan scales, spatial planning has a more obvious role in policy processes than in national discussions. Planning, as a discipline, has a capacity to provide spatial perspective that is essential to locationally-fixed investment such as housing and infrastructure, and also the ability to take a holistic or integrated view of different sectoral activities. The evidence in this study is that the practice of planning is inadequate in relation to the contemporary tasks of understanding, guiding and regulating spatial systems that are primarily market driven. There is a tendency towards reliance on demographically deterministic models that offer firm annual forward estimates of housing investment requirements, but ignore the consequences for price, rents and other market signals of alternative ways of meeting these estimates. As a consequence, the economic implications of housing strategy plans are neglected.

The review also found that strategies were invariably unclear on the likely geographies of linkages between housing and labour markets that plans would shape. There is a very inadequate economic basis to plans and little attempt to monitor and adapt to their economic consequences. The adverse productivity outcomes that follow are often only slowly or partially recognised in local economic strategies. This is not an argument to abandon planning to the market. But it is an argument that productivity, like sustainability and equity, has to be recognised in public planning and investment strategies. Moreover, the techniques that planners use in their spatial analysis need to incorporate contemporary methods for the evaluation of economic impacts.

The study concluded that there is, based on research evidence, and local practice experience, a sufficient prima facie case that governance structures and competences at all levels of government in Australia should have more regard to the housing dimensions of productivity.

The focus has to be not simply on the poorest households, or expanding home ownership, but in shaping the housing system that will contribute to place competitiveness and national productivity gains.

The study uncovered a number of potentially important connections between housing and productivity that remain to be empirically explored in Australia. A data search identified various databases and statistical techniques that could be used to estimate the following links between housing and productivity:

- Housing effects on regional and local area economic performance.
- Housing effects through human capital channels.
- Housing effects through business capital and innovation channels.

PART 1

The scope of this study

The potential importance of housing in economic growth

There has been a growing literature on the role of housing in the economy (Smith & Searle 2010). However, most of that literature focuses on either short-term aggregate demand/multiplier effects of investment or housing roles in cyclical instabilities. (Maclennan 2008). Clearly the overall rate of employment in an economy and its relative cyclical stability are important economic policy concerns and they can also influence long-term productivity. However, there are few studies of how housing shapes productivity and competitiveness (Maclennan 1995).

This scoping paper addresses that gap in housing research and policy-making. It takes as its central issue the potential linkages between housing processes and outcomes with national and local, productivity and growth. Scanning key, if rather diffuse, academic literature to reveal major conceptual and empirical insights is supplemented in this study by assessing the insights, or omissions, on housing-productivity connections revealed in planning and economic development strategies and by interviewing professionals involved at the intersections of housing and economic policies about their practice-based knowledge of relevant relationships.

This effort is important because productivity sits beside income per capita, stability and inequality as a major concern of policies. It is a measure of how efficiently a nation, a city, a firm or a farm uses available resources. Productivity growth lies at the core of a nation's competitiveness (Porter 1985) and of its cities and regions (OECD 2006). Macroeconomic studies are usually based on conceptual models that explain productivity in terms of inputs of capital and labour and any unexplained residual effects are attributed to technical progress. In the early eras of formal economic analysis, when economies had large primary and agricultural sectors, land played an equally significant role in growth analysis. Over time, applied economists have revised concepts of 'labour' to incorporate variations in the skills and embedded knowledge of workers. It is time that 'macroeconomic' analyses rethought notions of land relevant to primarily urban economies and had regard to land and the embedded capital structures that exist upon it. Whether labelled as *land*, redefined, or some newer notion of 'place' capital, theoretical and applied economic analysis of growth and productivity needs to pay attention to *land* in the economy and the connected issues of place, connectivity, property, housing, and infrastructure. Empirical analyses typically bundle these inputs into 'the residual' and their contributions to economic growth are neither well understood nor measured.

This scoping study is concerned with identifying ways that begin to move 'housing' from a 'residual' to a 'central' position, not just in analytical thinking about how modern economies grow but also in public policy debates and decisions about the economy. In recent years a number of significant commentators have noted that Australia's future economic growth and population change will largely be within the existing set of major metropolitan areas and cities. Of course the functions, structures and connections of these dense areas of human settlement will change, challenging not just the ways in which urban systems are described, but also the ways in which they are governed and managed. Henry (2009) is one prominent contribution arguing that the ways in which infrastructure and housing are organised to absorb these changes will have significant effects on growth and productivity.

Australia is now in the frontline of nations where the effectiveness and flexibility of cities could be key shapers of productivity growth. Yet within both the research literature as well as Federal and State Finance Ministries there is no agreed understanding of the links between productivity and housing policies and outcomes. The recent report by Spiller (2013) is a major exception to these observations. The Productivity Commission have, from time to time, been charged with assessing specific housing-related issues ranging from first home ownership (2004) to the

infrastructure construction sector (2014a), labour mobility (2014b) and, most recently, housing assistance (2015). Surprisingly, given the weight of housing in the national economy, it has yet to be asked to engage with the question of how the present Australian housing system either favours or constrains productivity growth. Does the apparent scepticism about the productivity effects of housing that seems to prevail in the economic bureaucracies of Australia, and indeed the UK and Canada, need to change?

The case for better 'housing-economy' research and policy

This paper is aimed at both housing policy-makers and those involved in economic policy decisions. In consequence, the language has to be non-technical but at the same time economically convincing and more technical work is referred to and cited in relevant chapters.

In Chapter 1 different notions of productivity are outlined, and the emergence of productivity concerns in Australia discussed. The role of cities and infrastructure in shaping growth are then discussed in Chapter 2 and a case made for considering housing as infrastructure with productivity effects. A stylised framework for capturing potential productivity effects of housing is then outlined in Chapter 3. Chapters 4 and 5 review existing research evidence relevant to that framework and Chapter 6 reports on how practitioners at local, state and federal levels see housing-growth linkages. Chapter 7 offers a toolkit comprising databases and statistical techniques that could be used to build an Australian evidence base that informs housing policy development which promotes productivity and economic growth. Chapter 8 concludes and draws out some future directions for research and policy thinking.

PART 2

1 PRODUCTIVITY PERSPECTIVES AND AUSTRALIAN CONCERNS

1.1 Productivity: concepts and measures

There is near unanimity across different schools of economic thought on the importance of productivity in increasing incomes, wellbeing and public policy opportunities, and even broad agreement on how to define productivity. However, there is much debate about how to measure growth in outputs and inputs and how to provide causal explanations of how they change (Barro 1997; Barro & Sala-i-Martin 2003; Gordon 2000; Jones 2002; Kaldor 1957; Kendrick 1961; Myrdal 1957; Romer 1990; Solow 1956; Swan 1956). In this chapter, definitions of productivity widely used in economic policy are outlined, the broad conceptual approach of economic approaches to productivity measurement summarised and critiqued and a range of approaches to productivity assessment considered. This will be familiar reading to economists involved in housing issues. However, as the housing sector begins to tackle productivity questions, the chapter serves the purpose of introducing some of the main approaches that lie behind the work of government economists and their advisers and highlights the limitations of these approaches in relation to housing-related issues.

1.1.1 Defining productivity

Definitions of productivity have emerged from business and government statistical services as well as academia.

Investopedia, a business view: Productivity is an economic measure of output per unit of input. Inputs include labor and capital, while output is typically measured in revenues and other GDP components such as business inventories The productivity measure commonly reported through the media is based on the ratio of GDP to total hours worked in the economy during a measuring period. (Investopedia 2015)

The Australian Bureau of Statistics: Productivity is 'the efficiency with which an economy transforms inputs (e.g. labour and capital) into outputs (such as goods and services). When a nation achieves productivity growth, it is able to produce more goods and services from the same quantity of labour, capital, land, energy and other resources. In turn, improved production efficiency can generate higher real incomes and lead to long-term improvements in Australia's living standards. While education and training improve the quality of the labour force over time, and are a key input into productivity growth, lack of innovation, research, development, or investment in assets can reduce productivity growth and thus Australia's ability to compete in the international market.' (ABS 2012)

This ABS view is consistent with approaches used by national economic policy and statistical authorities in other OECD countries. For example, the RBA, the Bank of Canada and the UK Treasury agree that productivity measures how much output is produced per unit of input. They all recognise that there are different ways to measure productivity and that accurate productivity measurement is difficult and dependent upon clear definitions and credible data. For instance, the UK recently, retrospectively raised GDP per capita by including an output value measure for parts of the 'informal/illegal economy' that had previously been omitted. However, they also follow similar approaches that, by omitting 'land', arguably mask the potential effects of housing, and indeed infrastructure investments, as well as the spatial development of the economy.

All stress the important measure of labour productivity, or output per worker, which measures how much is produced per worker or hour worked. Over the last few decades there has been more debate about the causalities involved, with the recognition that investment in education

and skills that raises human capital may clearly impact productivity levels. However, as a synoptic ex-post measure it remains useful.

Obviously labour productivity reflects not just investment in human capital but the influence of other factors of production, and policy discussion mostly emphasises capital and technological change. The near impossibility of describing a nation's capital stock in physical terms means that estimates of stock value, which also entail well-recognised difficulties, are used in empirical work. In particular, sectoral studies where some proxy physical measures of capital stock can be derived and used: see Thoung et al. (2015) for a recent example of estimating infrastructure productivity. Estimates of capital and labour inputs are usually used in combination to assess the total factor or multi-factor productivity of an economy, not least to provide a broad indication of the relative effects of growth in inputs or factor supplies versus the effects of technological progress. Such estimates are usually calculated by government agencies, and estimated by models reflecting the conventional approaches in macroeconomics.

1.1.2 Conventional approaches to measurement

Core macroeconomics research uses well-established conceptual frameworks for estimating productivity, at national and regional scales, which primarily include the neoclassical and endogenous growth models. At the heart of that research paradigm it is assumed that the production side of the economy can be described by a production function that captures the relationship between well-defined inputs and measured outputs. Usually, to allow mathematical manipulation of the models involved, the production function is defined to be well-behaved (i.e. being mathematically tractable). The particular concepts of interest are the ways in which different factors of production are substituted for each other as their prices and availabilities change (the elasticity of substitution) and whether overall output rises faster or slower than equal proportionate increases in all inputs (returns to scale).

This broad class of models and approaches is well reviewed in Barro and Sala-i-Martin (2003). This conceptual approach is based in neoclassical (Solow 1956; Swan 1956) models that assume that growth is largely driven by changes in the supply of factors of production. Elaborations of this approach include modifications to allow for innovation and technical progress (that shift and change the production function). In recent decades neoclassical models have been adapted to allow for the role of feedbacks from outcomes (externality effects) that can recursively shape growth paths. These are labelled as endogenous growth theories (see Romer 1990; Jones 2002). Interestingly, given our concern with housing and land, and as noted in our introduction, the classical economists' interest in land as a driver of growth has largely disappeared in contemporary growth economics.

These models are both highly aggregative and abstract. They imply a quite simple, if powerful, theory of change (factor supply changes). They, as noted above, often simplify the measurement of different kinds of labour and capital into additive monetary amounts (so that single measures of capital and labour stock can be modelled). They are also based on assumptions of generally competitive and well-functioning markets for factors of production and of well-informed reactions to market price signals. Despite this high level of abstraction, these frameworks have been crucial within finance ministries and treasuries in modelling growth effects and attributing, or rejecting, productivity influencing effects of key, large categories of inputs. It is largely through this approach, albeit in more nuanced forms, that infrastructure has come to prominence in national productivity studies. This interest in infrastructure has not incorporated, nor been separately extended to, housing investments and outcomes. In the sections that follow, questions are raised about the extent to which this modelling approach both oversimplifies the outcomes that reflect the effective use of resources (notions of national wellbeing extending beyond GDP) and that envisage more complex influences on growth, including geography, infrastructure and housing.

Before turning to these critical concerns, it is useful to illustrate a modern application of the production-function growth framework to infrastructure investment. More extensive discussion of the evidence that arises from this approach is considered in Chapter 3.

In responding to criticisms of earlier production functions-based estimates of public infrastructure effects on growth the Conference Board of Canada (CBC) (2013) built on the earlier work of MacDonald (2008) to develop an effective regional-macroeconomic estimate of public capital/infrastructure productivity for the province of Ontario. They assume, as is typical in this research field, that the relationship between inputs and outputs is approximated by a Cobb-Douglas production function (for the business sector) in which GDP is assumed to be a multiplicative relationship between inputs of labour, capital and other key residuals (Total Factor Productivity, or TFP). Key parameters in the relationship are the extent to which output responds (other things held constant) to inputs of labour and capital, and these are called the elasticities of output for capital and labour. Where it is possible to establish a consistent time series for public investment in infrastructure then it is possible to model how such investment impact long-term outputs. This establishes productivity effects for public infrastructure investment. The conceptual logic of the approach, as summarised by CBC is indicated in Figure 1 below.

Figure 1: Production functions and the productivity effects of infrastructure: a recent, clear example

<p>Technical Notes</p> <p>Here we develop the framework that allows us to isolate the impact of public capital on total factor productivity.</p> <p>We start with an aggregate production function of Ontario's economy. We use the standard Cobb-Douglas production function:</p> $(1) \quad GDP_t = (TFP_t) * (L_t^{\beta_l}) * (K_t^{\beta_k})$ <p>Here, <i>GDP</i> is total output generated in the business sector, <i>TFP</i> is total factor productivity, and <i>L</i> and <i>K</i> are measures for labour composition and capital stock in the business sector. β_l and β_k represent the elasticities of labour and capital—in other words, the responsiveness of output to changes in labour or capital. The year is denoted by the subscript <i>t</i>.</p> <p>First, we estimate the elasticity of labour (β_l) as the proportion of nominal labour income in the business sector out of total income in the business-sector economy. From there, we take the standard economic assumptions of competitive markets and constant returns to scale to generate ($\beta_l + \beta_k = 1$).</p> <p>Second, we take the logarithmic difference of (1) and get:</p> $(2) \quad \Delta \ln(GDP_t) = \Delta \ln(TFP_t) + \beta_l \Delta \ln(L_t) + \beta_k \Delta \ln(K_t)$ <p>Total factor productivity is the only unknown variable in the equation, so it is calculated as the residual when all other changes in GDP are accounted for by labour and capital.</p> <p>Third, to estimate the contribution to labour productivity, we subtract the change in hours worked from the change in GDP in equation (2) to get:</p> $(3) \quad \Delta \ln \left(\frac{GDP_t}{Hrs_t} \right) = \Delta \ln(TFP_t) + \beta_l \Delta \ln \left(\frac{L_t}{Hrs_t} \right) + \beta_k \Delta \ln \left(\frac{K_t}{Hrs_t} \right)$ <p>This equation shows the relationship between labour productivity in the business sector (on the left-hand side) and the components that contribute to this productivity (TFP, labour composition, and business sector capital).</p>	<p>Note that public capital is not included in equation (3). Because TFP is calculated as a residual, public capital has been lumped in with it. Therefore, we separate out public capital from TFP:</p> $(4) \quad \Delta \ln(TFP_t) = \Delta \ln(TFP^*_t) + \beta_g \Delta \ln(G_t)$ <p>... where G_t is the public capital stock and β_g is the output elasticity of public capital.</p> <p>The unknown variable in equation (4) is the output elasticity of public capital, β_g. Measuring this is a challenging exercise because we do not know the market price of public capital and there are no close proxies where private companies have created public infrastructure in Ontario that would yield a market price. Macdonald points out that estimates of TFP and the elasticity of public capital are statistically very hard to disentangle in the traditional production function approach because both track trend GDP in a similar fashion.¹ Macdonald estimates β_g for Canadian infrastructure² to be around 0.1 and warns there is a considerable range around the estimate. We use this estimate for the output elasticity of public capital in this analysis, but we also provide estimates for $\beta_g = 0.06$ and $\beta_g = 0.14$ to assess the sensitivity of results under different assumptions.</p> <p>The analysis was based on the infrastructure investment data provided by the Ontario Ministry of Infrastructure over the 2006 to 2014 period. We utilized a modified version of our model's potential output block that separates the contribution of public and private capital based on the output elasticities presented here.</p> <hr/> <p>1 Macdonald. "An Examination of Public Capital's Role in Production."</p> <p>2 Macdonald's 2008 paper includes all investments made by the public administration sector defined as the North American Industry Classification System (NAICS) 91 industry in his definition of public capital. Our study uses a broader definition that includes schools and hospitals.</p>
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Source: Conference Board of Canada, 2014

The predominance of this emerging approach in estimating productivity effects for infrastructure is also reflected in the conceptual framework underpinning the work of Thoung et al. (2015) and it is quite apparent that the approach of the latter (with physical measurements for the stock of capital used in different sectors of infrastructure provision) could be extended to the housing sector.

Recent, and somewhat abstract, research within the framework of 'new urban economics' has reintegrated land and space into models of urban production using modified forms of still well-behaved production functions (Fujita1991). But these models have not been specified to incorporate residential investment nor have they been extensively empirically estimated. The absence of evidence on residential investment is noted in Chapter 3. Here we make the simple point that if land can be included in models of urban production, it should be possible to obtain better estimates of capital inputs that enable equivalent estimates for the housing sector, at national and regional scales.

Before addressing this issue further we consider perceived limitations to this standard neoclassical approach to productivity estimation. The caveats made below, importantly apply as much to widely-estimated infrastructure effects as they do to unmeasured housing effects.

1.1.3 Are we measuring the right outcomes?

The productivity paradigm discussed above focuses on the relationships between measured inputs and measured GDP growth. A number of caveats have been applied to that narrow focus. First, there is a well-established critique that measured outputs often exclude significant externalities and measured inputs exclude free, or environmental resources. The first issue has led to a wider critique of GDP as an economic progress measure. Stiglitz et al. (2009) have argued that national resource use is devoted not just to income and output growth but to other dimensions of wellbeing that might include more leisure, promotion of culture and sustaining the environment. Some governments, especially at sub-national levels have developed progress frameworks (in a sense a more generalised notion of productivity) that track the relationships between inputs and indicators of progress (Carnegie Trust 2014). The second problem is that unmeasured resource inputs, such as the use of environmental goods, the valuation of home work by women or even time spent in commuting, can disappear from the estimates of resources used.

Clearly housing and infrastructure more generally, have both these numerator and denominator difficulties. Housing impacts social and environmental outcomes as well as measured GDP and its production and its use may absorb uncharted natural and human capital. However, within these broader input-outcome frameworks for assessing major policy investment, it remains critical from a housing policy perspective to draw out, empirically, the connections between the housing sector and economic progress. Whether the housing sector leans to more general wellbeing or narrower productivity measures it has yet really to make a start on drawing out housing to outcome linkages. However qualified, the search for a better understanding of the relationships between economic growth and housing remains a major priority given our poor understanding of the relationships.

1.1.4 Are we assuming the right growth processes?

The estimates of macro and regional output elasticities (or how national or regional output responds to additions of particular resources) emerging from the 'conventional paradigm' are difficult to make and are much debated (see Chapter 3). However, there are criticisms of this approach that go well beyond highlighting estimation difficulties. A critical concern is that the conventional paradigm jettisons important influences on growth processes within any economy in order to achieve mathematical tractability and macro-scale results.

While remaining with the neoclassical growth framework, there is much disaggregated work that suggests ways in which the productivity and quality of human capital can be raised, or

lowered, by a wide range of economic and social processes that are amenable to public policy. For example, the quality of human capital can be eroded by long periods of unemployment and improved by the organisation and content of education programs for lifelong learning. The potential for investment to promote innovation may be fashioned by culture change, better university economy-links or transport system change. As for innovation, the exploration of national, regional and city innovations show that the so called 'residual' is far from that if viewed as an economic behaviour—arguably it is the most purposive of economic behaviours.

Similar remarks can be made in relation to the omission of land and spatially-fixed investment in current perspectives on economic growth. Historically, the classical economists were concerned with economies that had large primary production sectors and adopted a three-factor perspective in which land was given significant attention, along with capital and labour. It is arguable that much of the failure to design infrastructure, housing and city policies that foster the competitiveness of national economies (Maclennan 1995) has arisen because 'land' has not been conceptually modernised in the way that labour has become 'human capital'; instead it has been treated as a part of the residual, and hence as a minor influence within total factor productivity. We treat our modern economy as if it develops on the head of a pin with no production and consumption space requirements and, in consequence, we risk paying too little regard to place and space within economic development processes and outcomes. Housing lobbies, we argue below, fail to make the productivity case for housing. Treasury economists, arguably, stick to abstract neoclassical frameworks that typically omit land and housing as potential drivers of economic progress.

Economic understandings of what drives growth go well beyond the well-behaved neoclassical models of Solow (1956). At the abstract level of grand theory, models of cumulative causation such as those of Myrdal (1957) and Kaldor (1957) draw attention to processes of cumulative causation and disequilibrium rather than smooth market adjustment over time. The advent of endogenous growth models also emphasises externalities and spillovers in growth processes that draw attention to the path dependency of change. More recently, Piketty's (2014) theory of capitalist development develops similar lines of thinking and actually draws attention, in his empirical work, to the ways in which housing markets may drive an economy onto a rentier rather than an entrepreneurial development path. Piketty's work is the only major treatise on capitalism and growth that, since Engels (1872), considers how housing sector outcomes may have critical effects on the long run growth path of national economic development (Maclennan & Miao 2015a).

Our perspective is that these grand theories provide important insights about some of the broad processes that may promote more or less stable growth of an economy. But they do not explain what really drives growth and productivity. There is a host of applied economics studies at all geographic scales that draw attention to how technological change, knowledge creation, the nature of human capital, education and health expenditures, institutional conditions, agglomeration economies and infrastructure development impact productivity. These are well-established fields of applied economics research. Arguably, and we address these issues in Chapter 3, the effective route to understanding how housing impacts productivity is not to estimate models within the constraints of abstract growth models but to use an evidenced synthesis of how housing outcomes shape economic growth. Clear logic chains in the relationships identified and estimated will have more substantive meanings for policy than estimates of the output elasticities for residential investment.

The evidence (see El Makhoulfi 2011; de la Fuentes 2010) from meta reviews of growth studies, say for infrastructure, is that the estimated output elasticities from public capital investment vary substantially across studies and appear to depend upon the scale of analysis, the type or definition of capital used, the country or context type, and also the econometric specifications and types of data used. In fact the research evidence for infrastructure, see further below, appears to be less clear and firm than is often implied in high level government

policy statements (in the US, Canada, Australia and the UK; see MacLennan & Lutero 2008). This suggests that a more disaggregated approach to linking housing and productivity may be required. Other sectors, such as education and innovation, use sectoral studies and spatially-referenced research (usually to regional and metropolitan scales) to analyse and estimate linkages with productivity and growth.

1.1.5 More disaggregated approaches: sectors

Productivity estimates, for some economic sectors or activities, usually relate not just to some agreed measures of inputs and outputs but to some finite set of activities defined by a time period and for some aggregation of economic activity. This involves the use of different and more direct measures of productivity than in macro studies. When measures are applied to a single production entity then firm efficiency, including public and non-profit as well as private producers, is most likely to be the focus of concern. There are studies of the efficiency and effectiveness of housing producers and providers.

Wider aggregations may be applied to a whole sector of similar producers, so that industry productivity measures can be made and contrasted across different sectors. Productivity within the construction sector, in contrast to other sectors over time, is an important area that has attracted research interest and relevant evidence is reviewed in Chapter 3. We draw attention to it here, in Box 1, because the Productivity Commission have usefully described the different measures of 'productivity' that can be used in sectoral studies.

Box 1: Different notions of productivity in sectoral studies: the construction sector

In surveying international work on construction sector productivity, Best and Langston (2005, pp. 2–3) discuss the various definitions and points of focus that are commonly used:

Productivity, in a general context, may be defined as 'the degree to which the power to make or provide goods or services having exchange value is utilised as measured by the output from the resources utilised' (Davis 1951). In simple terms productivity is typically expressed as the number of units of output produced per worker (unit of labour input) or per day (unit of time input), or simply 'output over input'. The complexity and diversity of construction projects makes the quantification of outputs very difficult, and for any comparison exercise the problem of finding completed projects (units of output) that are comparable is an added difficulty.

Efficiency and effectiveness are not the same, although both may be seen as part of project success (Takim & Akintoye 2002). Efficiency may be linked to management and organisation (measured by factors such as adherence to schedule, budget and specification) while effectiveness is measured by client/user satisfaction. Project success can have two distinct components: project management success and product success (Baccarini 1999). The first focuses on time, cost and quality outcomes, the second to project delivery that satisfies the client/user.

Performance is not the same as productivity and may include factors that have no direct relation to conventional meanings of productivity, such as contractor/customer relations. Loosemore and McGeorge (2002) suggest that performance has four parts: productivity, time, cost and quality. Xiao and Proverbs (2002a) attempt to measure construction contractor performance by a comprehensive set of measures of time, cost and quality performance, and relate performance in many instances to client perceptions of contractors' performance.

Governments and site supervisors, then, are interested in productivity (at macro and micro levels); clients and their project managers focus on success, while firms like to gauge their efficiency, and may want to compare their efficiency to that of their competitors. Some combination of these parameters may be encapsulated in performance, and the term is often used in the literature, although not necessarily with any consistency.

Source: Productivity Commission, 2014, Chart 10.2

1.1.6 More disaggregated approaches: geographies

The levels of spatial aggregation in research related to productivity also vary across studies with regional research frequently conducted. This usually reflects the belief that markets, and indeed governments, have local as well as global dimensions. It is well established that housing systems and their outcomes may differ considerably across regions within nations and that even within regions there may be sustained periods of disequilibrium within local housing markets. That is, when housing impacts on growth are to be considered it may be important to specify the spatial context; growth processes in sparse rural markets within an Australian state are unlikely to function in the same ways as in inner capital city cores, or indeed outer suburbs (these heterogeneities are all too evident in the review of housing and economic development plans presented in Chapter 6 below). As housing systems have an inevitable local element, disaggregated geographies may be required to understand growth processes.

Getting the right spatial scale for the questions on hand is important to the kinds of effects that might be identified or understood. If research and policy were to adopt a microeconomic firm-by-firm, or individual-by-individual, perspective then the focus on individual behaviours and outcomes might lose sight of any wider spillover effects from housing markets. If a macro approach is taken, as demonstrated above, then measures and explanations would abstract from what cannot be easily aggregated into a single number for national/regional study, and as a result would exclude some of the potentially important spatial and geographical effects of housing outcomes.

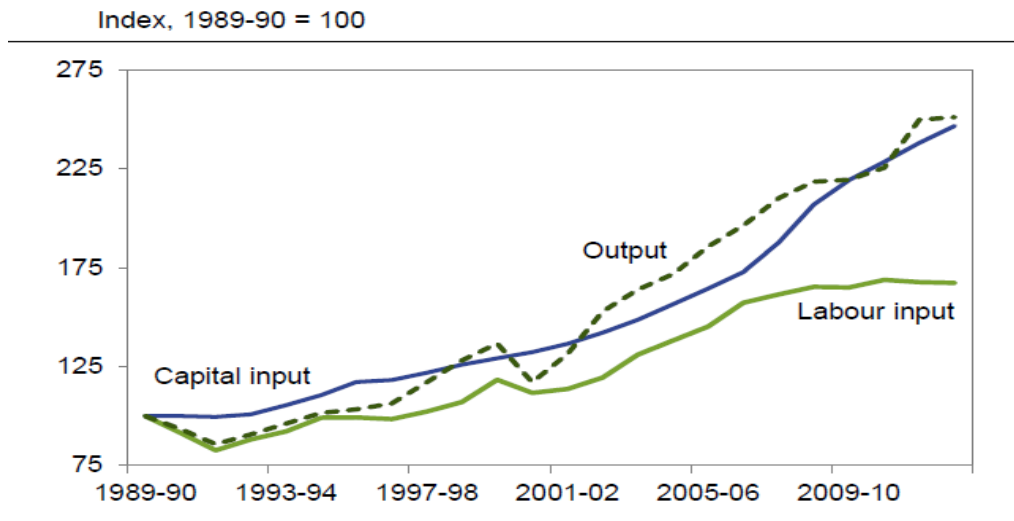
There is some agreement in economics research that housing markets and systems have a sub-national coherence at both metropolitan and neighbourhood scales. In assessing the broad sweep of productivity effects of housing, we proceed by developing approaches and ideas that have salience at metropolitan and neighbourhood scales. Working at these scales allows some generalisation but does not remove by assumption many of the economic effects that stem from housing activities and outcomes. Housing and other effects, in this approach, no longer fall into the large residual term in productivity estimation. However, it is not at all obvious that national, state or local governments actually undertake such assessments nor that housing policies are modified to better achieve economic productivity objectives. The next section outlines reasons why, in the Australian context, this should change.

1.2 Productivity—an Australian policy concern

1.2.1 Productivity change in Australia

Productivity increases are often key sources of growth in GDP per capita. But they are not the only drivers of real income growth. Eslake and Walsh (2011) note that growth in Australian GDP is increasingly being driven by population growth, favourable terms of trade and rising labour force participation rates rather than, in contrast to the 1990s, rising productivity. They also argue that Australian labour productivity increases are now due to increased investment growth leading to capital deepening (more capital per worker) rather than rises in TFP (innovation and other 'smart' changes). Capital deepening has been particularly marked over the last decade with the costs of capital at low levels since 2007, see Figure 2 below.

Figure 2: Input, output and productivity aggregates in construction



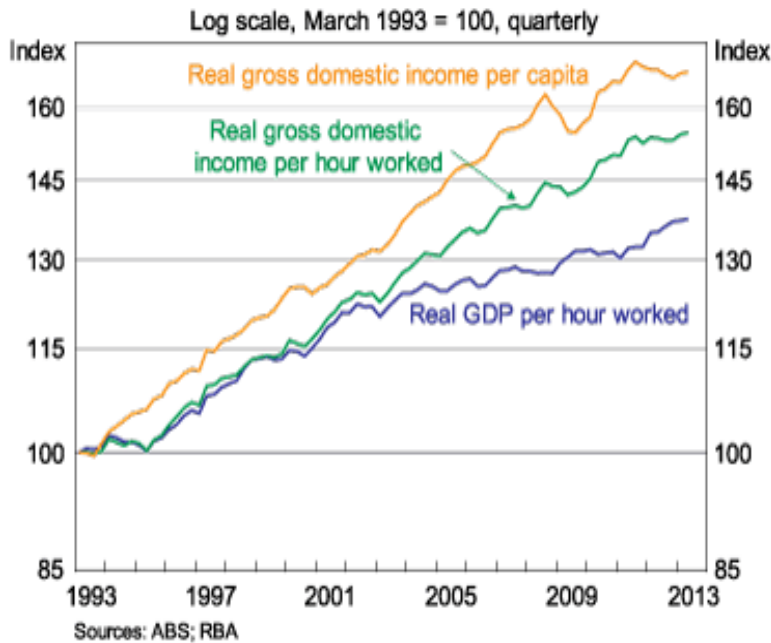
Source: ABS, Estimates of industry multifactor productivity, cat. no. 5260.0.55.002

This view is shared by key economic policy-makers. Speaking on behalf of the Reserve Bank of Australia, Lowe (2013) notes that while real income per hour worked in Australia has increased over the past two decades, over the same period real GDP (output) per hour worked (the conventional measure of labour productivity growth) initially also rose, but has been flat over the last decade. Over the past two decades Australia has experienced strong growth in the average real income generated by each hour of work in Australia, at 2.25 per cent per annum, or 55 per cent cumulatively since 1993, faster than in almost any other industrial country. But since 2001 this growth reflects the improvement in Australia's terms of trade rather than improvements in labour productivity.

Lowe (2013, para.7) notes:

It is this increase in the average *value* of what we produce per hour of work—not so much an increase in the average *amount* that we produce per hour—that has been central to the increase in our living standards over the past decade ... and the rise in real income per capita has been even faster than the rise in real income per hour worked, which has been faster than the rise in productivity. Since 1993, average real income per capita in Australia has increased by almost 70 per cent in contrast to 28 per cent for the G7 countries [see Figure 3].

Figure 3: Productivity and income



Source: Lowe 2013

It is clear that these very favourable decades of per capita income growth in Australia have been driven by strengthening international prices for the key, large export sectors of natural resources and food. At the same time sustained immigration of economically active households and their relatively high fertility has meant, despite the advent of population ageing, favourable demographics that have raised the share of the national population in work. The latter growth impetus will almost certainly dissipate over the next decade and the former is less certain. Lowe (2013, para.11) concludes: 'looking forward it is unlikely that these favourable developments will be repeated'. In short, if real income growth is to achieve anything like a similar performance in the decade ahead there is a major challenge of raising productivity growth.

This is not to suggest that Australian productivity is low, indeed the Productivity Commission (2014) have recently drawn attention to Australia's high productivity relative to the rest of the OECD. Rather, it emphasises that to maintain past income growth already high productivity has to rise further. The challenge faces not just individual workers and firms but all sectors of Australian life that are significant users of resources and shapers of how they are used. That includes the housing system and how and where, and at what cost, Australians live and work.

2 PRODUCTIVITY, CITIES, INFRASTRUCTURE AND HOUSING

2.1 Cities and economic growth

The geographic dimensions of economic change as a shaper (and reflector) of productivity change in Australia have recently been highlighted by the Major Cities Unit (MCU) (2012). They also draw attention to falls in the growth of Australian multi-factor productivity, indeed they note that post 2000 has been the longest period of static or falling productivity multi-factor (MFP) in 30 years. In contrast to other measures of change, MFP has been low relative to major competitors and the OECD average as a whole. This is indicated in Figure 3. They also note that as four-fifths of Australian economic growth occurs in major cities, then how cities are organised is likely to both affect and be affected by productivity rates. This chimes with the arguments set out in Henry (2009). The recognition of the potential importance of urban effects on MFP by the MCU, and their consequent work on transport and productivity, opens a Pandora's Box of questions for all levels of government to address.

In many nations the size of city municipalities is much larger than in Australia (in the UK for instance) and there has been in some countries the development of city-region partnerships, even around large core municipalities, that make the case for city-region or metropolitan economic development. In Australia municipalities at the heart of city regions, with the exception of Brisbane, are small, metropolitan governance is fragmented and it is left to the states to give shape and muscle to city-region arguments and programs. These features of Australian governance are apparent from our interviews with local and state government officials as well as our reading of strategy plans as reported in Chapter 6 below. But Australian governments, most notably the states with major expanding cities, increasingly share an emerging view in applied economic research that cities matter in economic growth processes. It is not just the local policy pressures that emerge from some 'aspatial' growth drivers, such as the land, infrastructure and housing pressures of rising real house prices, steeply rising affordability measures and homelessness that have been apparent in the majority of growing metropolitan areas within the OECD.

There is a growing recognition that cities are not a neutral medium for economic change; rather they have distinctive, and complex, agglomeration economies that have productivity effects on labour markets and innovation systems. There has also been a growing recognition of the importance of agglomeration economies in economic development, as reflected in Australian local government and state government initiatives to promote mixed land use and clusters of inter-linked businesses within precincts that have been deliberately targeted (see Chapter 6). Since the work of Marshall (1890) onwards, there has been a recognition that the 'concentrations' of particular kinds of activities and particular kinds of individuals shapes an 'atmosphere' that has productivity (agglomeration) effects for a range of factors and sectors of production. Now the work of Puga (2010), Glaeser (2010), Storper (2013) and others has given a new salience to this old idea for economic policy with agglomeration benefits from the functioning of skilled labour markets and the creation of new ideas seen as critical effects. Although this constitutes new conventional wisdom in urban economic development thinking it would not be unfair to observe that the number of cities claiming 'agglomeration economies' now substantially outstrips the number of detailed empirical studies of the nature and scale of such effects. Where they do exist, analysts and planners have tended to neglect the ways in which investment in infrastructure and housing could be the handmaidens of agglomeration. In Chapters 4 and 5 of this report evidence is noted about how city patterns of living and working can impact upon density, agglomeration effects and spillovers.

The recognition of these effects within economic policy-making means that space/geography matters in understandings of productivity growth (in explaining the 'residual'). And space is only

understood by recognising the spatially fixed investments that underpin and sustain these new economic geographies. With the growing recognition of the importance of spatial structures and the concentrations of jobs and homes in metropolitan development, it then becomes crucial to incorporate these factors into empirical approaches to the measurement of drivers of productivity in urban systems and regional economies. Fixed investment in place, including housing, is a potentially critical influence on where, how and when the economy develops. Yet infrastructure arguments for city development are not well informed by evidence of these influences.

2.2 Spatially fixed investment: infrastructure first

The productive role of infrastructure in development has long been, and remains, a strong policy argument in Australia. And the support for this perspective is commonplace across major economies. Infrastructure investment is widely held to be a major influence on economic growth and productivity. Such beliefs, for example, have driven the significant growth in Canadian federal government support for infrastructure since 2000, they prevail in the UK and they have been at the forefront of USA policy-making from the GFC through 2014.

There are strong and continuing assertions in the policy processes of all these countries that there are substantial, beneficial productivity effects of infrastructure (or public capital) investment. The belief that these relationships exist at the macroeconomic scale have prevailed since the seminal work of Aschauer (1989a, 1989b), Gramlich (1994) and others and are still most strongly held in the US (the US Treasury and Council of Economic Advisers 2010). We argue below that recent econometric estimates do not confirm such effects at the national scale and that it is despite, rather than because of, the evidence that over the last decade governments have placed infrastructure investment ahead of housing programs.

The US Treasury and Council of Economic Advisers (2010) illustrated the strength of this sentiment in relation to perceived deficits in transport investment when it stated:

A well-performing transportation network keeps jobs in America, allows businesses to expand, and lowers prices on household goods to American families. It allows businesses to manage their inventories and transport goods more cheaply and efficiently as well as access a variety of suppliers and markets for their products, making it more cost-effective for manufacturers to keep production in or move production to the United States. American families benefit too: as consumers, from lower priced goods; and as workers, by gaining better access to jobs.

The economic benefits of smart infrastructure investment are long-term competitiveness, productivity, innovation, lower prices, and higher incomes, while infrastructure investment also creates many thousands of American jobs in the near-term.

And there may well be evidence, other than macro-level estimates, to support some or all of these claims. And this set of beliefs, especially about transport investment, is widely shared internationally in the economic policy-making community. Lowe (2013, para.19) makes the Australian policy position apparent too in noting:

I suspect few of you would disagree with the idea that improving our infrastructure is important if Australia is to compete successfully in international markets in the years ahead ... Whether or not we can seize these opportunities depends critically on our human capital and our infrastructure.

But, typically the focus then falls on transport infrastructure, with residential investment ignored.

Lowe (2013, para.20) continued:

I find it difficult to escape the conclusion that we are falling short in some areas, particularly in parts of our transportation system—both private and public ... I can't help but think that surely there are investments in transport infrastructure that would yield a social rate of return greater than the cost of financing ... The benefits of investment in transportation infrastructure are well known.

Lowe, largely sharing the sentiments subsequently expressed in the US, notes that major gains from transport investment include beneficial social impacts through reducing travel stress and increasing the connectedness of communities. And there are environmental benefits as well. Again these arguments are valid. But does the stress in travelling have a relationship to housing affordability and locational choices? Is, for low-income households the stress of travel greater than the stress due to an inability to pay for decent, settled homes? Are travel choices not partly a reflection of decisions about where and what homes to build within metropolitan areas. Lowe also notes that transport investment is critical to fashioning agglomeration economies, not least where house prices are high. He notes (Lowe 2013, p.6):

Another less obvious effect of transportation systems is on the cost of housing. There are many factors that contribute to the cost of housing, but among these is the nature of a city's transportation system. When housing prices are high, it is largely because land prices are high. And, land prices are high when there is a 'shortage' of well-located land. We cannot do much about the physical supply of land, but investment in transportation infrastructure—by making it easier to move around the city—can increase the supply of 'well-located' land. And when supply increases, prices adjust. This means that underinvestment in transportation networks tends to put upward pressure on housing costs.

But even in standard models of worker location, transport choices and housing costs and qualities are two sides of the same coin; solutions to Australia's transport and commuting problems that are solely framed around transport investment are too narrow. Policies that raise residential densities, for example, could serve the same policy goal. Lowe's otherwise excellent analysis neglects the complementarity of residential and transport investments.

When we reflect on these high level statements on the productivity effects of good transport investment, there is then a temptation to ask: What about the houses? Is there nothing to support the idea that a well-functioning housing system, efficient in its processes and effective in its outcomes, would not also constitute smart infrastructure investments with the economic benefits of long-term competitiveness, productivity, innovation, lower prices, and higher incomes?

The housing sector, whether in research or policy-making, has much to learn about the ways in which the infrastructure sector in general has evidenced and sustained a more favourable position within the thinking of economic policy-making.

2.3 Fixed residential investment (housing): next?

As soon as economic policy-makers recognise that agglomeration economies as well as supply inelasticities are important in framing metropolitan and national economic strategies there is a recognition, at least implicitly, that place policies will no longer be dismissed as simply social policies with economic displacement effects. The geography of where development takes place will impact costs and productivity. Further, as soon as the productivity arguments for infrastructure have to be made at metropolitan scales, and we argue below that this is the operational scale where evidence of effects exists, then it makes little sense not to ask equivalent questions about the housing system, indeed to assess both sectors together. Housing can make a strong case to be seen as essential economic infrastructure, aside from its other social and environmental features.

The Major Cities Unit (2012) recognised, but only implicitly, the significance of housing infrastructure in city growth. They noted that while agglomeration economies have become generally more significant some sectors have been driven more by their salience than others. In modern Australian cities MCU argued that agglomeration economies matter most to creative industries and consumer-oriented urban services, than to financial and transaction-oriented services and least to manufacturing activities. Creative industries, consumer-oriented services and financial services have all grown as a share of Australian output in the last three decades while manufacturing has fallen.

These shifting patterns of production, and the employment patterns associated with it, have been the driver of recentralisation of employment, and higher income populations in Australian capital cities. The impacts of this shifting growth pattern on housing output, housing prices, rental shortages, and homelessness in particular places at particular times have been well documented in AHURI research. Further, there is a burgeoning literature that makes clear that the mix and volume of human capital flow to cities is strongly shaped by housing quality and variety (for instance it lies at the core of Florida's (2002) ideas on the creative classes), and Glaeser (2010) has set out a clear 'net advantages' framework for assessing influences on labour mobility that includes housing costs and quality.

However, the MCU did not follow up this important set of observations or on the questions of how inflexibilities in housing infrastructure would complicate or curtail the growth patterns of more flexible, metropolitan patterns of production. Instead they sought to assess transport infrastructure effects, and this is commonplace in thinking across governments. Often, in assessing the importance of transport congestion and the productivity of transport investments, there is a failure to recognise that they are in part the product of separation of homes and jobs and schools. However, the key challenges for commuting to transcend, are driven not just by transport decisions but the closely connected decision of where to locate homes and the mixes, densities and styles to be provided at different locations. However, as our review of planning strategies show (in Chapter 6), local and state governments are now more aware of these relationships; this is reflected in the growing emphasis on mixed land use planning strategies.

Some Australian policy-makers are therefore starting to address the question of what set of housing outcomes and prices would best serve the growth and productivity goals of metropolitan economies. But too many of our policy-makers continue to ask how growth and agglomeration can best be promoted by public policy the infrastructure focus is upon transport, water and energy and not housing.

One way to re-scope this problem is to place more emphasis upon housing as infrastructure.

2.4 Redefining housing as infrastructure

Infrastructure can be defined in quite different ways. It obviously includes traditionally defined 'public goods' including bridges, transport networks as well as the distribution networks of traditional sources of power and telecommunications. Not all infrastructure, clearly, constitutes a 'public good' in the technical economic sense (non-rivalry and non-excludability in consumption), and infrastructure is now usually more widely defined to embrace most fixed investment, and indeed spatially fixed investment, in the durable structures required to provide public sector outputs. And that has ranged from transport systems, to public utility networks and public spaces and buildings (for instance, community ice hockey halls are currently treated as key social or public infrastructure in Canada). Increasing proportions of infrastructure investment are now private rather than public capital investment.

Over time both technologies and perceptions of what is 'appropriate' for the state to provide have changed. Private ownership of roads, with tolls, exists in many countries, as does private ownership of rail networks. Private ownership of cable television networks has become commonplace. Public spaces have been widely privatised and urban infrastructures of various

kinds, Sydney's lamp posts for instance, are being moved from public management and ownership to private ownership. We often change the items that are categorised as infrastructure. A more appropriate catch all definition of urban infrastructure may now be the investment in durable, spatially fixed capital that comprises structures and spaces for urban activities, as well as the built physical systems that connect them.

Infrastructure then needs to be specifically defined within different settings. Further, it is vital to recognise that a rising share of spatially-fixed investment is not public but private in its ownership and management. Central to the contemporary notion of infrastructure from the standpoint of economic analysis, are the ideas of spatial fixity and that infrastructure supply may often be complex, lumpy and involve significant lags.

There is an additional fundamental characteristic of infrastructures that requires policy action. Most infrastructure investments are likely to create, for a whole range of private and community users, a series of externality, spillover or network effects. These effects may imply complex patterns of beneficial impact (and complicated tax and pricing) and are likely to feature market failures. These market failures and spillovers attract public policy interest precisely because they may impact, either beneficially or adversely, a wide range of producers and consumers within a metropolitan economy. Of special interest in the present context is that infrastructures can have a significant 'externality' effect on productivity and growth outcomes.

With this sense of infrastructure it is then important to ask: Where does housing fit in? When academics and policy-makers use the term 'built environment' it invariably includes residential structures (houses) and is tantamount to a reasonable conception of infrastructure. In cities, housing typically forms three-quarters of the built environment. But when we get to public policy on infrastructure, the residential sector largely disappears from view. This simply reflects the ways in which housing policies, and the academic emphases in studying them, have evolved.

Housing is not now commonly owned or constructed by the public sector, though non-profit sectors that achieve public policy goals through regulatory and subsidy arrangements commonly provide up to a fifth of homes in OECD countries. Production and consumption choices are increasingly market driven. However, the spatial fixities associated with dwellings and the externalities they generate through a range of mechanisms (see below) mean that they constitute an infrastructure investment of considerable weight and interest. Housing policy is not simply a matter of ensuring that adequate housing is affordable to poorer households. Nor is it simply about seeing that market systems respond as flexibly as possible to consumer and producer signals. It also involves maximising the flow of beneficial externalities that arise from housing outcomes and minimising those that are adverse. Clearly housing outcomes may have externality effects that are as significant as other forms of infrastructure. Yet such potential effects are not included in academic research, or in public commentary on infrastructure decisions and they are not much discussed in housing policies either.

In most advanced economies, for the last two decades at least (Maclennan & Miao 2015a), national governments have increasingly focused policy efforts on targeting public spending on housing to deal with homelessness, and meeting the housing needs of the poorest segments of the population. Meanwhile the balance of housing support has shifted away from construction to rebated rents (in public housing) and means tested housing allowances (Commonwealth Rent Assistance). For a few years after the GFC, as in Australia, production support rose then fell as new attempts to reduce public debts and spending ensued (Maclennan & O'Sullivan 2011). But there has been a narrowing agenda in relation to housing policy, away from the policy challenges that arise in planning, provision and management, and instead there is a focus upon the acute issues of homelessness and the provision of adequate, affordable housing for the poorest fifth of households. That is, housing policies have come to be concerned with primarily social outcomes. However, there are early signs of housing

advocates beginning to raise the possibility of productivity aspects of housing investment as in Box 2 below.

Box 2: The current social policy view

The Australian Council of Social Service has welcomed Kevin Andrew's first speech as Federal Housing Minister, and is calling on the new government to work with the states and territories to improve the supply of affordable housing and address homelessness as an urgent joint priority.

'We were pleased to hear the Minister acknowledge the scale and seriousness of the housing supply and affordability crisis and the clear link between lack of supply and homelessness,' said ACOSS CEO Dr Cassandra Goldie.

'With poverty and homelessness at unacceptably high level, and a need to increase productivity, we must address a key obstacle to getting and keeping a job—which is Australia's housing affordability crisis.'

'Working with developers, investors, and the community, the Federal Government has a great opportunity to play a major role in encouraging investment in new and affordable housing. Increasing the supply of affordable housing would not only address our most pressing cost of living problem, but would also support increased employment participation and productivity. Housing is essential social infrastructure.' Dr Goldie said.

Source: ACOSS, November 2013

Housing policy debates in the advanced economies are now increasingly focused upon 'affordability' issues. Although policy initiatives often stress the creation of more efficient or flexible 'housing systems', there is little attention paid to spillover effects from housing outcomes or processes. In this millennium, environmental arguments related to better energy efficiency of dwellings or denser forms of development have been slowly quantified, and now have some weight in housing policy cases debates. Policy arguments, from Housing Ministries (where they still exist) have, in contrast to transportation, contributed little to the discussion of housing as a potential source of productivity. Both housing lobbies and housing ministries have well developed, and evidenced, arguments that pro housing measures have relatively favourable (Keynesian) 'jobs now' effects through multiplier processes and contribute to 'social benefit/justice' later. In the last decade in refinements to the conventional multiplier arguments for housing policy, it has also been recognised that housing markets can reinforce instabilities, of boom, bubble and bust, reinforcing cyclical upswing and prolonging recession. With the GFC an understanding of the importance of the housing sector to the overall functioning of the economy has become more widespread. But growth effects have not been a central concern.

The absence of coherent growth and productivity considerations for housing policy investment cases has influenced at least some Treasuries/Finance Ministries to dismiss housing as a source of productivity and to see housing spending by government as socially driven and, often, displacing more productive investments. Looking across the OECD, infrastructure funding cases, that are assumed to have productivity benefits, have displaced housing spending in public-led investments.

2.5 Beginning to make the housing productivity case

The rhetoric of the housing lobby is now changing (see Box 2 above). In the UK the Chartered Institute of Housing has begun to argue a case for seeing housing as essential infrastructure. All these arguments have, currently, a weak and fragmented empirical evidence base. That said, increasing numbers of major business and city development leaders are expressing concerns about housing-related impacts on labour mobility, wage costs and the costs of doing business in particular places. There is then a growing sense that housing outcomes are limiting long-term growth prospects in some places. This paper scopes out the arguments that need to

be made and measured to make these cases more than casual empiricism or a priori theoretical thinking.

This then raises the question as to whether high level assumptions about the relative productivity effects of housing versus other infrastructure investment are valid. And this argument needs to be approached from two directions. First, in the next chapter, we scope out a range of housing outcomes and processes that on the basis of conceptual thinking and prima facie evidence deserve some productivity audit. Second, the housing evidence is set in the context of evidence that supports the infrastructure investment case. There is a growing awareness that the evidence that shaped infrastructure policy over the last 20 years is now redundant, if still used and, more positively, that new metropolitan-regional evidence is shaping better infrastructure investment strategies. This offers the prospect of a convergence of frameworks or paradigms for researching, planning and delivering housing and other infrastructure.

One key aim of this scoping project is to set out a broad framework in which to capture housing effects on the growth of the economy. This involves providing some sense of the key housing sector outcomes that need to be captured and understood, and an assessment of what is possible to research.

3 HOUSING AND PRODUCTIVITY: A FRAMEWORK FOR CAPTURING EFFECTS

3.1 Beyond the ideas to evidence

How can a broader conception of housing policy, that considers the economic dimensions of the sector, begin to capture productivity effects? In this section we first define 'housing' and then consider the housing and productivity relationships, at different geographic scales, that policy might have regard to.

Maclennan and Miao (2015b) have set out an economics-oriented, definition of housing. They argue that:

Economists, whilst recognising the importance of home and community, have well developed definitions of what constitutes housing and neighbourhood. Housing is seen as a geographically fixed, durable asset with multiple attributes or characteristics. These attributes are used in conjunction with household time and other resources and generate streams of different 'housing services'.

These different housing services contribute to a range of key activities that influence the wellbeing of individuals and households. Typically, the physical characteristics of the dwelling, including its design, size, layout and internal amenities provide shelter, privacy and comfort (or lack thereof). Emphasis on these physical attributes of homes is still at the forefront of housing policy assessments of housing needs and although they are essential and relatively easy to identify they fail to take account of other housing attributes that might reflect or reinforce poverty. Regarding housing and housing policy as primarily about shelter is not enough.

Housing and neighbourhood choices are immutably joint, so that choosing a home sets a household in the context of the private amenities, public services, physical environments and social networks that revolve around the dwelling. Home provides the opportunity for strong and weak connections with neighbours. It also shapes the time and cost of connections that household members make to travel to connect the different, often widespread, locations at which they pursue different consumption and production activities. The home is a long recognised key focus within social and spatial connections networks of the household. In this millennium housing policies have been more carefully constructed within neighbourhood and locational settings, rediscovering some of the drivers of poverty that Octavia Hill and Joseph Rowntree recognised long ago.

Other dimensions of connection have come to play an increasing role in the ways in which homes are used. Connections over time, as well as space matter. Memories play a key role in reshaping house into home. Past housing choices create a path dependent set of current choices. Expectations about future house prices play a key role in housing decisions as home ownership has come to constitute the major source of both wealth and debt for majorities in many advanced economies. And looking to the future, home that quintessential, element of privacy, is increasingly becoming a wired hub for household activities that spread well beyond the neighbourhood into the global. Emerging homes with energy and movement sensors will increasingly shape energy use and the delivery of care and health support for elderly populations. Faster and better internet, embedded in the physical structures of the home, will place the household in a home surrounded by a world of accessible information and the connectedness to global social and economic networks. Increasingly the home will become a place to learn and work as well as rest and play. Connection as much as shelter and location should lie at the core of better housing for the poor and it will

increasingly drive the future concerns of housing policies and perceptions of what constitutes adequate housing.

This definition reflects how housing economists emphasise housing as a set of attributes or characteristics that, in turn, are associated with a vector of price, rent, debt and equity variables that reflect ownership structures and market conditions (inter alia). The different attributes, or mixes of attributes, shape for the household the different desired service outcomes (e.g. shelter, comfort and accessibility) as well as the set of costs and returns associated with securing these outcomes.

It would be extremely difficult to argue that many of these attributes directly enter the production function but, at the same time, it would be equally difficult to make a case that none of them impact human capital formation, investment in business and innovation. Although a macro-specification of residential investment and its direct impact on productivity and growth impact may be technically possible, this study takes the view that, as for other forms of infrastructure, more convincing (causally argued) links between housing and productivity are best seen as primarily operating through business and human capital.

Before beginning to set out a matrix of possible effects flowing from housing characteristics and price outcomes to the economy, it is also important to recognise housing as an economic activity (a verb) and not simply a set of physical attributes or characteristics (nouns). Housing is designed, planned, financed, built, and sold, rented, resold, maintained and remodelled. All of these activities, at some given productivity level, require inputs of land, labour and capital. These are not small economic sectors, especially in growing metropolitan contexts. Housing construction may, from time to time, absorb half of the construction effort in an economy, with overlaps into markets for labour and materials into other sectors, not least commercial property and infrastructure provision. Financing, valuing and selling houses similarly entails a significant share of employment in the finance and real estate sector.

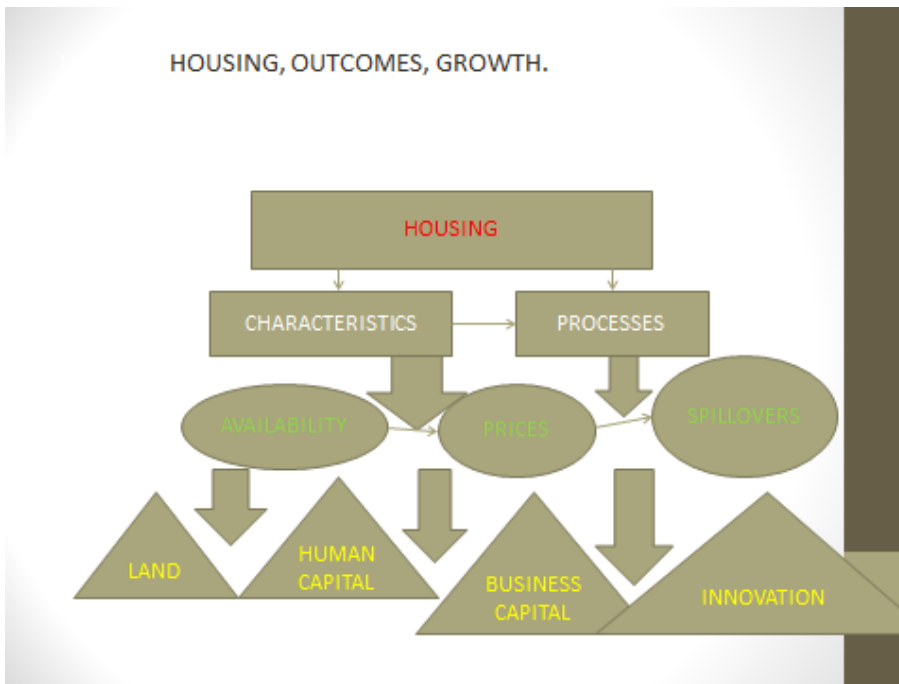
These different 'sectors' of housing processes may impact productivity. Do any of these activities contribute to cultures and places conducive to innovation? For instance, it can be argued that the presence of a significant design and architecture sector in a local economy may promote the 'atmosphere' of innovation and creativity. Or do high levels of employment in an economy, boosted by construction sector jobs, fashion development in human capital, for instance through training and apprenticeships? Somewhat more obviously, there has been a long sustained argument that construction is a sector beset by tradition that tends to lag behind productivity gains in other sectors. In that case large housing programs, given some level of housing production costs, will slow national productivity growth. We return to these arguments, and the somewhat patchy evidence associated with them in the next chapter.

3.2 A framework for evidence and policy

The essence of the approach adopted in this report is to point the way towards a framework for research, planning and policy-making that allows, at worst, a discussion and, at best, an empirically informed audit of how housing characteristics and housing system processes impinge upon the growth drivers of human capital, business capital and technical change/innovation.

The framework of ideas we use in this report is indicated in Figure 4 below. It frames simple linkages between housing processes, characteristics and market outcomes. It also recognises that some effects on productivity may be incurred directly by the household inhabiting a particular home but that outcomes also may be externalities, positive or negative, that may affect the productivity of other households or enterprises in the economy (and that make housing similar to other forms of infrastructure in this regard).

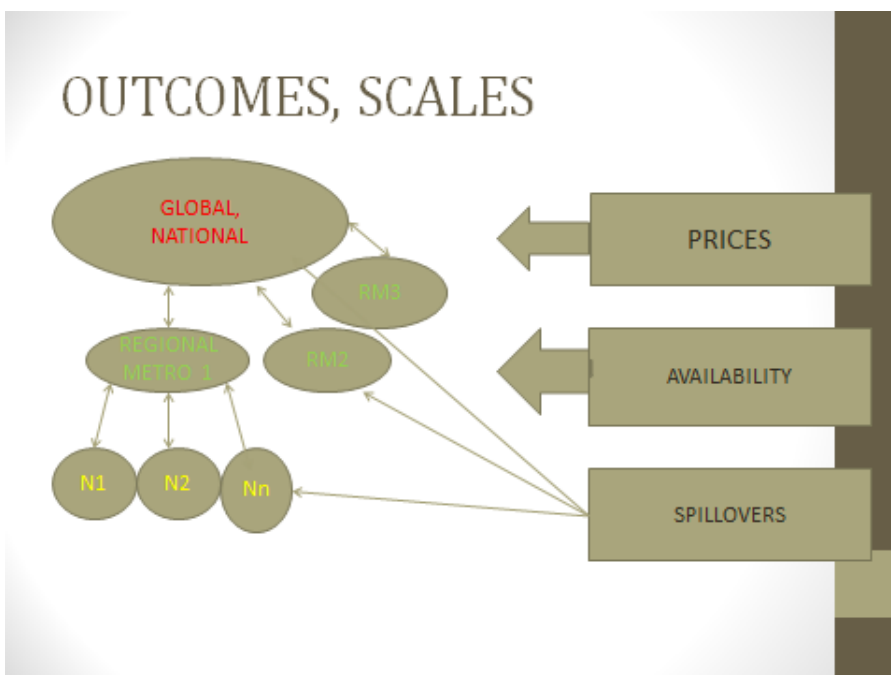
Figure 4: Linkages between housing process, characteristics and economic growth



Put another way, the evidence base we seek would be a robust matrix that had productivity drivers as rows and housing attributes, processes and market outcomes as columns. Empirical research is a long way from completing such an array of information, but the illustrations in the next chapter suggest areas where there is some knowledge.

The framework can be applied at different scales and to individual sectors. In the previous chapters we have indicated that macroeconomic, metropolitan-regional, neighbourhood, sectoral and individual studies exist for infrastructure and housing (although in a scattered and unsystematic fashion). The framework of different levels is indicated in Figure 5 below (with the neighbourhood scale denoted by Ns).

Figure 5: Housing processes within different spatial scales



In the next chapter we present evidence that relates to housing, and infrastructure, that follows a spatial logic, and is sourced from macro studies, metropolitan areas, neighbourhoods and individual effects in that order. It should be noted that the issues discussed here enter the realms of housing, planning and local economic development practice on a recurrent basis, at least at local levels, in Australia (and elsewhere). In the absence of empirical research knowledge to guide action professionals, and politicians, are often guided by tacit knowledge. That tacit knowledge implicitly assumes linkages between policy 'cause' and real world 'effect'. This project took the view that understanding that knowledge in practice, and how it meshes or otherwise with reasonable a priori economic thinking, also constitutes an important 'practice-based' evidence array. In Chapter 6 we assess such evidence across a significant number of local governments within two Australian states. Both kinds of evidence need to be considered to understand how evidence, and policy, might be improved.

4 METROPOLITAN AND MARKET SCALE EFFECTS

4.1 Metropolitan and city-region perspectives

'Macroeconomic', production function modelling approaches to assessing the impacts of infrastructure on productivity are now being developed for regions in countries such as the USA, Canada, Spain and France. The regional dimension of these models reflects the multiple regional economic systems operating within a nation. However, regional modelling of that kind is still abstract, aggregative and, while regional, is still aspatial. Regional perspectives reflect variety rather than the spatial effects of geography on the economy. That approach fails, then, to capture the spatial, or locational, embeddedness of infrastructure and housing investment.

Disaggregating regions into metropolitan economies, with the possibility of several major cities within the same regional economy, and their connected rural hinterlands, would improve the incorporation of spatial factors in modelling. However, such approaches rarely exist. More commonly, research is conducted and evidence gathered in the functional labour and housing markets around a core city, that is, the metropolitan area or the city-region. We take the city-region, broadly defined, as the sub-national scale most likely to reveal housing and productivity effects.

Research and modelling in economics at the metropolitan scale can be of two kinds. One is simply to take the data for the overall city-region, or for a set of city regions, and pursue productivity modelling via econometric analyses of production functions to deduce productivity implications of metropolitan scale outcomes for investment in fixed spatial capital for labour and business productivity. The problems of identifying appropriate outcome and input measures for defined metropolitan areas are so daunting, that formal metropolitan economic models with production function effects are difficult to implement in practice.

The estimation of macro-productivity effects of investment in metropolitan areas then largely becomes a less formal assessment of input to output effects. But this approach may still, other than via rather simplistic synoptic measures, disregard the spatial patterns or geographies of investments, processes and outcomes within metropolitan areas.

In the next chapter the report looks at effects that arise within local neighbourhoods and individual homes. Here the scrutiny is on the overall city region and its big geographic structures. This division is not unimportant in policy spheres. There is, as governments devolve more responsibilities to metropolitan areas, increasing attention to how the key structures for economic development, such as the labour market and the housing and transport systems cohere at the metropolitan scale. At the same time social policies, hopefully connected to labour market policies, increasingly contain measures to integrate housing and other activities, including health, safety and education, at more local neighbourhood and community scales. Housing policy thinking has to play into both these metropolitan and neighbourhood, economic and social policy perspectives. And it has to link them.

In this section, housing-productivity issues at the overall metro scale are discussed, and particularly the impact of market outcomes related to prices, turnover and supply, and then spatial structure and process effects considered.

4.2 Housing market outcomes and productivity effects

4.2.1 Productivity and house prices

There are 'pessimist' and 'boosterist' views on the role of housing in the economy prevalent in public debate. There are some financial commentators who regard housing as inherently unproductive and others who attribute critical productivity effects to the housing sector (housing driving the economy). These polar views, usually applied to capital city house prices, can have

significant roles in public, political and business perceptions of the housing sector. They need to be challenged and refashioned.

At one end of the spectrum there is an argument (quite widely expressed on Australian economic blog sites, e.g. Cameron K. Murray) that housing production adds nothing to output. At its simplest, the argument goes that housing investment requires capital and labour and that following the construction of more homes the efficiency of manufacturing, say turning metal into cars, will not change at all. This argument is erroneous at two basic levels. The first is that the stock of homes is an asset that is valued because it produces real services to households (the flow of housing services) and augmenting that flow increases output. As long as, at the margin, households value additional housing more than cars then the home production decision adds to GDP. The second is that additional housing may be required to shelter and give comfort and work access to additional, say, car workers. Expanding housing is one of the costs, reflected in the acceptance wage of mobile workers that allows plants to expand and capture scale economies. That is, it is well housed, accessible labour that builds cars and maintains human capital and not workers in shacks located long commutes away. Housing is one of a number of 'infrastructures' that allow labour to be productive, that is, there is a supply chain for skilled labour flows that involves more than numbers of people and years of training.

These arguments assume, broadly, that housing markets are well organised and responsive to demand pressures and those markets are close to equilibrium. A more legitimate concern about the productivity effects of housing investment are where the supply of housing is inelastic, or where housing becomes a speculative asset class for the majority of households. Where housing supply is inelastic, even in the absence of land use restrictions, then rising house prices will reduce household expenditures in other, tradeable sectors of the economy. Where these sectors have higher productivity than housing construction, the switch in spending will lower aggregate national productivity. Land and housing command huge economic rents that will increase wage rates and, unless there is an inelastic demand for the commodity produced, eat into profits as well as reduce wage rates. The value of net output per worker may fall. We need to recognise that housing, like infrastructure, may have negative as well as positive effects on metropolitan productivity. Rising house prices, rather than driving economic growth and simply reinforcing boom (the boosterist view), may erode productivity growth. In this logic, rarely exposed in housing policy debate, unaffordable housing may impair overall metropolitan and national economic growth. Yet these concerns are expressed by local government as our interviews reveal (see Chapter 6).

Where rising real housing prices become disconnected from structural drivers such as strong population growth and are driven instead by self-reinforcing expectations of the attractiveness of housing investment, then rising investment in housing is more related to hope and fear than to increased shelter, comfort or access. It will not enhance human capital inputs and it will displace flows of savings and investment from productive sectors of the economy as well as put upward pressures on wage costs. This is an aggregate version of the Krugman/Hseih argument expressed below.

The key issues involved here are the forces driving the demand for housing, whether it is additional skilled workers seeking to move into the market because high wages arise from their high productivity, or whether it arises from simply speculative motives for holding housing. These motives, in the long term, may be fulfilled or they may induce bubbles, but in either instance they will reduce macro level productivity. That is, if a nation or a state or city invests a rising share of GNP in existing housing assets (without quality improvement), then it is likely to be deploying less capital in other sectors and encouraging a rentier rather than an entrepreneurial basis for income growth and progress. This is not simply a theoretical observation as the different investment patterns and real house price effects in the UK and German economies between 1990 and 2010 illustrate the point well. The housing case in this

argument is that rising real house prices and the higher costs associated with them, can lower the productivity growth path of a metropolitan economy.

A closely related discussion is the extent to which growth boundaries and land supply restrictions reduce supply, inflate house prices and, as argued above, impair growth. We do not explore this argument, recently espoused (somewhat simplistically) by *The Economist* (2015) as the major explanation of the real house price rises and housing wealth shifts identified by Piketty (2014) in this report. It is a major area of debate, and has its own extensive literature. We simply note here that the Productivity Commission in New Zealand (2012) have argued that growth boundaries, especially around Auckland, lie at the core of New Zealand house price and affordability issues. We make no comment on the validity of that conclusion but simply note that even if it were to be true of New Zealand, there is a host of conflicting evidence across major Australian cities. For example, Ball et al. (2014), Buxton and Taylor (2011), and Woodcock et al. (2011) illustrate the variety of ideas even for the single locality of Melbourne.

If land zoning restrictions drive up housing costs then they will impair growth and productivity. But other explanations of house price growth might plausibly include the conduct of monetary policy, first-buyer subsidy schemes prevailing in tight markets, failures to build connecting infrastructure and construction sector performance that does not maximise output without significant cost increases. Future work needs to develop a coherent, considered view of what matters in Australian contexts. Our focus here is on the productivity effects of housing outcomes. In rejecting the a priori housing 'pessimist' and 'boosterist' views, we return to the same question: What's the evidence? How do housing system outcomes appear to impact the productivity drivers of metropolitan human and business capital?

4.2.2 Housing, migration and productivity

There is a longstanding strand of research in housing and labour economics that acknowledges, and provides evidence for, how housing outcomes impact labour mobility and particularly mobility between cities and regions. The economics literature going back to Sjaastad (1962) recognises that movers take account of housing costs and opportunities as well as job certainties and wage rates in making non-local job moves involving residential relocation (that may be intra as well as inter-metropolitan). The roles that housing transaction costs (that should include the search costs associated with more or less tight markets) and housing tenures play in residential mobility have attracted significant attention, and the Productivity Commission (2014b) has identified them as a hurdle in impeding labour mobility in Australia.

In different contexts, researchers have identified significant labour market effects of housing outcomes in rental and owned markets. Hacker (2003), in researching moves in the last years of socialist Poland, argued (on a priori theoretical grounds) that a low per capita housing stock would be expected to have a negative effect on labour productivity. Low per capita housing stock is likely to lead to greater difficulty in finding housing, which in turn leads to reduced labour mobility and a less productive allocation of labour. He developed and tested a model (with 1989 data) that demonstrates how per capita housing shortages negatively impacted inter-regional migratory flows that could have been induced by regional labour productivity differentials. Muellbauer and Murphy (1997) identified how differential regional house prices frustrated equilibrating labour market mobility between cities and regions in the UK.

The recent Productivity Commission (PC) study of migration in Australia, already noted above, made important observations on the effects of housing outcomes and processes. They found that around three-quarters of all moves are intra-state. Nearly two-thirds were from a major city to another major city. The PC note, as in the Muellbauer study in the UK, house price differentials negatively impact inter-regional migration flows. This is a major rather than a minor effect, indeed the second most important influence on migration, with the implication that house

prices in booming regions deters in-migration. Once again, local governments in some regional areas of Australia express some concern on this matter, as reported in Chapter 6 below.

Australia has, by international standards, high rates of residential mobility. The pattern is that the capital cities, and Sydney, Melbourne and Adelaide in particular, are experiencing negative net internal migration. However in Melbourne, for example, there is still population increase but due to natural increase and positive net international migration. The recent work of Krugman (2014) and Chang-Tai Hsieh and Moretti (2014) are of relevance to these Australian patterns. They note that households are moving from high wage and high productivity locations with high house prices, notably New York and San Francisco, to live in other metropolitan areas, such as Atlanta and Houston with lower house prices and wage rates. This is interpreted to mean that very high housing costs are driving households out of high wage/high productivity locations and inducing firms as well as skilled labour to move to less than maximum productivity places. That is, restricted housing output is reducing overall productivity by inducing shifts in production capacity. Krugman concludes that this represents a loss of productivity and calls for more growth-sensitive housing supply programs (not to be interpreted as simply land use deregulation), to increase the elasticity of housing supply in metro areas.

The PC findings (2014b) are consistent with Krugman's interpretation. Its report identified the need for reform including changes to stamp duty, regulation of fly-in-fly-out (FIFO) in pressured rural markets, provision of affordable rental housing and the structure and level of CRA.

4.3 Housing, economic and social structures within metropolitan areas

Households make choices of where to live and work within city geographies that have well defined structures. And the myriad of choices made by thousands of people each week, say the 100 000 new people who come to live each year in Melbourne, can either reinforce these structures, or create new ones. These big structures of the metropolitan economy, and society, 'emerge' from the decisions of large numbers of individuals. The geography of these structures reflect, inter alia, the price of housing, wage rates, job locations, housing choices etc. Urban economists have paid particular attention to patterns of land use, patterns of residential choices and job locations and shown how they are related to commuting patterns, land use values and density. In this section, attention is drawn to a number of key city geographies that may impact productivity and change.

4.3.1 Size, density and agglomeration economies

The importance of agglomeration economies in shaping productivity was noted in Chapter 2. The effects of proximity and density of different producers and consumers take different forms and are well described in Rosenthal and Strange (2004) and Glaeser (2010) but this study considers only high level outcomes that are either driven or mediated by housing system effects. Empirical evidence related to labour market aspects of agglomeration in Australian cities is reported in Spiller (2013).

Residential markets play critical roles in accommodating growing city populations and workforces. Housing market processes shape not only stocks of homes but they create fixed physical, spatial structures. There has been accumulating evidence on city density related effects on productivity, usefully reviewed in Puga (2010), since Ciccone and Hall (1996) reported that labour productivity increased with city scale. A number of US studies (Abel et al. 2010; Melo et al. 2013; Berthaud & Brueckner 2005) indicate significant effects of density on productivity. Abel suggests that, for US metropolitan areas, if density doubles, overall labour productivity rises by 2 to 4 per cent. Melo et al. (2013) provide more fine grain analysis for US urbanised areas and conclude that while the effects of agglomeration on labour productivity are significant they have a steep, non-linear distance decay function and have limited effects beyond 20 minutes travel time. The decay function varies across different cities. The Berthaud

and Brueckner study, examining one US metropolitan area, noted that floor size regulations for dwelling sizes were a binding constraint in the numbers of homes developed in a quarter of the urban area and that if they were removed the city area would be 10 per cent smaller (more compact), commuting costs would be reduced by 1.5–3.5 per cent of average incomes and that agglomerations benefits would rise. Rice et al. (2006), at the regional scale in the UK, also provide evidence for the importance of economic mass and density in shaping productivity.

In short, there is growing evidence to support the proposition that productivity tends to be higher in larger urban agglomerations and that greater residential density within them both further raises labour productivity and reduces the extent to which higher wages are consumed by commuting costs (and indeed the extent to which growth induces negative carbon externalities). Litman (2015) highlights the range of negative effects from low residential densities that may emerge as unintended policy side effects that hamper real income growth. But there are also counter arguments, largely still requiring empirical testing, that agglomeration economies in the labour market arising from proximity may fall as home-working increases, as automation reduces demands for labour and as new communications technologies support more effective clusters of like activities and producers without required spatial proximity. These possible futures for the location of economic activity within metropolitan regions and their hinterlands currently receive little attention in planning for the provision of housing now that will last well into new eras of economic development provision. The evidence regarding current agglomeration economies and debate about the likely future spatial patterns of economic activity need greater attention in the risk assessments of major housing strategy decisions.

4.3.2 Housing, jobs and commuting

The growing geographic size and population of Australian cities has been accompanied by changing patterns of income segregation. Compared to three decades ago, there is a greater concentration of individuals with formal qualifications and higher incomes in city centres and, with rising housing costs, a rising proportion of less affluent households in the suburbs. Marcus Spiller (Queensland Shelter Conference, Brisbane, 13 June 2013) recently argued that the internal housing market structures emerging within Australian cities are shaping labour market mismatches with productivity effects. Indicators for skills, commuting and residence data for metropolitan Brisbane for 2011 were used to highlight the marked income/skills polarisation emerging in Brisbane. This segregation, leaving aside any adverse social consequences, is shaping mismatches between the needs of the knowledge economy and the location of vital human resources. He also argues that this fragmentation of labour markets reduces the potential labour market agglomeration benefits of larger cities. Similar patterns have been observed in Melbourne and Sydney since the start of the millennium.

These arguments, if sustained, contain a number of key 'productivity' issues. First, they imply longer commutes for households and that implies both lost time (although capacities to work 'on the move' may be rising in some sectors), and reduced disposable (post travel cost) incomes and consumption. Second, and not noted above, they have a very significant negative effect through greenhouse gas production as well as other pollutants. Third, they may deter low-paid workers from job seeking and, as Spiller notes, may contribute to labour market mismatch so that certain skills become unavailable in production locations (and that forces adjustment onto the firm rather than the household). Randolph (2015) reinforces Spiller's evidence by looking at patterns of work and residence for different skills categories for workers in central Sydney.

However, there are different views regarding the novelty and severity of these patterns. The MCU (2012, p.92), in pursuing their understanding of how infrastructure in transport is needed in Australian cities, argued that in relation to travel to work times, and travel distances:

... analysis of commuting patterns in Perth, Melbourne and Sydney shows a remarkable uniformity of commuting times across and between cities of between 30 and 35 minutes ... [In Melbourne,] these times have not changed much for at least the last 30 years despite the major changes in urban geography structures and the rise of women as a major transport user group with different travel patterns over that time.

They take the view that it seems to be some prior household setting of travel time budgets, rather than city structures, that is fashioning travel choices and that there may be sub-optimal densities of employment at key locations within metropolitan areas (and this chimes with Spiller's conclusions about density and agglomeration, although reached in very different fashion). While Spiller's view also allows for productivity effects through travel burdens imposed on commuters, the MCU position appeared to be that the real cost of inefficient transport networks is not in loss of time to individuals but, rather, suboptimal employment densities leading to lower industry productivity, particularly in the growing transaction industries.

While Spiller correctly discusses these commuting issues in terms of the need, *inter alia*, for more responsive housing policies, not all policy-makers make this connection. In their 2012 report, the MCU resolutely advanced transport rather housing solutions to the problems identified and that so manifestly demonstrated the influence of both sectors.

The nexus of connections between home and work, through the transport system, is widely believed to have significant implications for individual, metropolitan and national productivity. However, the empirical evidence for effects remains diffuse, and the policy framework for addressing both the problems and their solutions needlessly fragmented.

The Productivity Commission have added additional important insights about commuting effects in Australia. They note that long distance commuting related to housing costs and choices has also risen in rural and regional Australia, and Chapter 6 indicates that this issue was raised in interviews by officials. They also note (in line with MCU's analysis of commuting patterns) that average commuting times do not vary significantly with residential location within metropolitan areas (a finding not uncommon in advanced economies).

There are, as noted above, a number of 'future' issues that require attention in the 'commuting-productivity' debate. These revolve around whether future automation, over the next quarter century, will challenge the work opportunities and geographies of households with 'repetitive' skills suitable for automation. The interviews conducted in this project also suggested that with exception of a brief period after the GFC, there has been little recessionary 'testing' of the robustness of the economic base of the outer suburbs. Little attention has been paid to the concentration of the residential locations of construction workers within particular outer suburbs and how they might fare in a sustained housing market downturn (with a potential for knock-on productivity effects).

There also needs to be a new attention in housing research and policy and local economic policy to the growing importance of home-working and self-employment. The Productivity Commission noted that home working is increasing. The development of improved information technologies and broadband speeds provides new opportunities to work at home, reducing worker commuting costs and employer space costs, and it may be important in rural as well as metropolitan Australia, as our interviews with regional local government officers reveal (see Chapter 6). Similar technologies, with additional business support services, also facilitate the formation and growth of small businesses (Reuschke & Maclennan 2013). This raises questions about the design of IT facilities within homes. But it also raises other housing questions that need more attention in enterprise policies. Do households have adequate space to start a small business? In particular is this opportunity available to tenants, and especially in the non-profit and state sectors? How do housing lending and equity extraction policies tie in with business formation and growth. Studies of equity release in Australia indicate some use of

funds for business purposes, what are they and do they add to productivity? This discussion started with looking at how housing structures within cities influence labour productivity, but clearly questions and linkages also run through to increasingly important issues of capital and business formation within Australia.

4.3.3 Productivity, disadvantage and location

The interaction of housing choices, job locations and land values is a major 'sorting' system within metropolitan areas. Income, with age and ethnicity, are major shapers of the residential geographies of cities. In particular, there is a tendency for the poorest people within a city to be located within areas, or neighbourhoods, which are primarily inhabited by other poor people. Where such income-based sorting occurs there is a potential for reinforcing, or 'neighbourhood', effects that either reduce the productive and innovative capacities of the workforce and/or add to the fiscal costs of dealing with, for example, adverse health, education and security outcomes. Through these direct productivity and fiscal cost effects, concentrations of disadvantage may reduce overall metropolitan and national growth and productivity. The salience of such effects is discussed in the next major section. Here we note the changing geographies within Australian housing markets that might fashion them.

Recent AHURI work on the growth and patterns of poverty concentrations (Hulse et al. 2014) have highlighted new geographies of disadvantage in Sydney, Melbourne and Brisbane. They identified disadvantaged suburbs in clusters, or corridors, which were predominantly in middle and outer suburbs, and peri-urban areas. In 2011, 1.7 million people lived in these disadvantaged suburbs (16% of the total population of the three cities). Changes in these areas between 2001–11 saw the proportion of low-income households rise disproportionately but, reflecting the long boom, both unemployment rates and early school leavers fell faster than elsewhere. Hulse et al. (2014, p.3) concluded that: 'Over this time period, therefore, there was no clear trend of 'ongoing polarisation' between such areas and remaining areas of respective 'parent cities' in terms of socio-economic factors'.

The characteristics of poorer housing and places that may reinforce poverty geographies and reduce productivity of human capital, in particular, are discussed further in Chapter 5 below.

4.4 Housing sector processes and productivity

The sections above have, both explicitly and implicitly, focused upon how housing and neighbourhood outcomes at the metropolitan or regional scale may impact productivity. Housing processes, as major sectors of economic activity, may also influence productivity. We have already noted some possible consequences of housing planning, but design, financing, sales and repair and construction also have significant implications. We believe that a sector-wide audit of 'process' economic effects from housing, ranging across all these activities, would be worthwhile for the housing sector. Here we concentrate on the effects noted for the most widely researched sector, namely construction.

The productivity features of the construction industry have long troubled governments (MacLennan 1982) and they are still regarded as problematic in most major economies. It may well be the nature of the task, of assembling land, multiple trade skills and materials across multiple construction sites that slows productivity growth in the sector. But the productivity challenges in the sector and what they mean for the economy remain important. The Productivity Commission (2014a) has a very firm handle on assessing construction sector productivity in Australia. A brief review of Australian work on construction suggests that there is some (weak) evidence that levels of productivity and efficiency in the Australian construction sector lag behind those of some comparator countries, such as the United Kingdom. It is also clear that studies within the sector, at industry and firm levels, suggest that there is a plethora of potential productivity increases. These range from management and labour use improvements but also focus on technological change and greater prefabrication (allowing factory-based economies of scale), and possible changes in regulatory regimes. There is a

commonly expressed view that many of these changes have to arrive through competitively driven firm changes, and cannot be driven by policy change.

The Productivity Commission also sounds a cautionary note about the limits to overall productivity levels in the sector. They point to problems in the aggregation of construction data (with, in this instance housing lumped with infrastructure construction) and they also document considerable regional/metropolitan variations in performance. For instance, in the period 2005–11, both Victoria and South Australia experienced declines in construction industry MFP, though there was an improvement nationally. New South Wales and Queensland had strong MFP growth over the same period. The PC reiterates data aggregation and quality caveats in relation to these conclusions. They also suggest that there is a need to be sceptical about overall sectoral productivity measures and their growth connections. Loosemore (2014, p.9) argues that:

Past research has shown that deterministically attempting to prove a relationship between productivity and any single variable is fraught with problems because of the number of potentially intervening variables, many of which are unmeasurable.

While accepting these expert and practiced PC views, we believe there is scope to bring together evidence and possible research on the broadly defined housing sector. There is little sense of how housing trading may also be low or high productivity, for example. But if the housing sector, as a set of processes, lags behind general productivity increases then the size of the sector will undoubtedly impact how national productivity unfolds. This is an old problem, but we know relatively little about its wider causes and how to resolve low productivity within particular markets at particular times.

4.4.1 Last word on the metro scale

Internationally, major cities and metropolitan areas are showing interest in tracking their successes and understanding their competitive positions. Whether in Australia or Canada, or the UK or Europe more widely, there is a growing understanding that productivity and competitiveness stems from more than human capital and the scale and quality of local capital investment. The emerging perspective from Canadian business is that infrastructure underinvestment, inadequate transit systems, and shortages of affordable housing are constraining competitive growth in Canadian cities. Yet studies of regional and city competitiveness, usually exclude housing indicators except where house price rises are included as a sign of economic success. That inclusion misses the point about housing and productivity in the longer term, and the exclusion of other housing concerns denies real growth limiting issues encountered by businesses as well as households. The evidence cited here, however far from complete in coverage, makes a prima facie case that the supply of accessible, well-connected spaces to live, work, and shop affects the capacity and efficiency of production processes in any economy. Yet there are few modern systematic studies of how the spatially fixed investment sectors of residential property shape rates of local economic growth.

5 NEIGHBOURHOODS, SPILLOVERS AND PRODUCTIVITY

5.1 Small and local matters in global growth

It was noted above in both the macro and metropolitan sections that public investment in infrastructure, and this includes housing, can have subtle, sometimes small but catalytic effects for people and places. These often take the form of spillovers or externalities, and they may arise from the attributes of the dwelling itself (favourable 'appearance'), the way in which it is used by the household (accessing work or greenhouse gas outputs from residential heating and cooling) or the neighbourhood clustering effects associated with housing market (or public system) sorting of different income, age and ethnic groups.

Empirical research on the existence and intensity of these spillover effects has accelerated in this millennium and the field is recently reviewed in three volumes by van Ham et al. (2012a, 2012b, 2013). A Google search on neighbourhood effects can generate up to a quarter of a million references, but despite this profusion of interest there are few clear conclusions about the salience of neighbourhood effects in general. The existence of externalities, with growth implications for individuals or assets, depends on the particular context, the time period, the geographic scale, the age group and other socio-economic realities as well as the data, statistical methods and disciplinary perspectives deployed (Maclennan 2013).

Although the overall research field lacks firm conclusions it is important that these potential spillover effects are not ruled out of productivity assessments, as they often currently are. Clearly the range and complexity of the housing outcomes, stemming from a wide range of dwelling, locational and neighbourhood spillovers are difficult to capture in macro-econometric model estimates of productivity. Their lack of visibility, small scale and interdependence with other sectoral and spillover influences make them difficult to capture and isolate empirically. However, if we move beyond very top-down and abstract perspectives on how economies grow and instead consider how economic change can be path-dependent, and influenced by complex economic, social and cultural interactions in places, then a more complex developmental framework emerges. And if economic change at the metropolitan and neighbourhood scales is to be understood then some sense of the range and weight of key spillovers needs to be considered. Whether the focus of research is on traditionally defined productivity growth, or more widely defined 'wellbeing outcome' indicators, the housing spillovers that shape change need to be identified.

This section of the report does not provide a concise estimate of the scale of spillover effects. Nor is it in any way a complete review of the growing literature in this area. Rather the section is intended to be illustrative, drawing on Australian and other literature, to indicate why this perspective matters, and needs further refinement, in policy development as well as academic research.

This section focuses on the impact of housing and neighbourhood attributes on shaping human capital outcomes. We have already touched upon wider, emergent metropolitan effects on commuting behaviours, but there may also be neighbourhood effects arising from discrimination by employers, as part of job applicant screening strategies (van Ham et al. 2012a, 2012b, 2013). These, and other, housing interactions with human capital formation need to be part of a wider audit of housing outcomes for human capital. To illustrate the kinds of arguments that need to be made we use Australian, and overseas, evidence on the potential effects of homes and neighbourhoods on child development and learning, and on health and productivity. The aim here is to highlight ways, discussed further in Part 4 on how governments might move towards an accounting framework, to capture such housing-productivity effects for policy-making.

5.2 Housing, children and learning

In a previous paper, Maclennan (2008) drew together North American and other evidence on how housing and neighbourhood outcomes appear to influence the capacity of children to learn and develop a stock of human capital by school leaving age. Care was taken to emphasise that housing affects specific population groups in two ways: through the direct impact of poor-quality housing, and its concurrence (and therefore heightened impact) with other challenges—particularly low socio-economic status (Carter & Polevychok 2004). Cooper (2001) cites three conditions for securing children’s wellbeing—adequate incomes, effective parenting, and a supportive community environment—and notes that the relationship between housing and these factors is bi-directional; good housing both affects and is influenced by these enabling conditions. In this study it is the additional reinforcing effects that are attributable to ‘housing’ or neighbourhood, rather than low income or other selection effects, that are argued to be effects on ‘productivity’ arising from residential choices.

The evidence available suggested that there are:

- Strong negative relationships between poor housing and the educational performance of children arising from frequent residential mobility (unsettled ways of living and consequences of short rental tenancies); Mueller and Tighe (2007) cite reading and math scores 41 per cent and 33 per cent, respectively, below average scores among third graders attending three or more schools since first grade. Children who changed schools four or more times by eighth grade were at least four times more likely to drop out than those who remained in the same school; the odds of dropping out are significant even after controlling for family characteristics and prior academic involvement.
- Negative impacts of overcrowding and disrepair on a range of health, education and behavioural outcomes for Canadian households with children, (CMHC 2000):
 - Lower educational attainment at age 25 has been linked to crowding; high school students in crowded housing demonstrate weakened motivation and persistence. Citing a study of 4000 residents aged 19 to 22 in New York, Mueller and Tighe (2007) found reduced high school graduation rates—11 per cent for males and 6 per cent for females—when residents lived in crowded housing.
 - Gagné and Ferrer (2006) note the adverse effects of housing disrepair on children’s math scores, while Evans (2006) cites a range of adverse impacts on social and academic competency in elementary-school-age children, and on adolescent absent-mindedness and forgetfulness.
- Boyle and Lipman (2002) cite inadequate housing as a strong, reliable predictor of behavioural problems for children aged 4–11.
- Higher rates of accidents and school absence among children in poor housing arising from poor heating, electrical deficiencies, and fires. Evans (2006) also points to an association of lead poisoning with IQ deficits in grade-school children, reading and language deficits, elevated high school drop-out rates, and socio-emotional development difficulties through adulthood. He also notes that living in a noisy environment is associated with lower reading levels, heightened blood pressure, and reduced motivation.

There are other important studies in North America and elsewhere that can be cited, but there is also Australian evidence. For instance, Dockery et al. draw on Bronfenbrenner’s ecological model (Bronfenbrenner & Ceci 1994), which proposed ‘that the material, spatial and symbolic aspects of a child’s physical home environment’ matters because a child’s development is embedded within a set of social settings (Dockery et al. 2013, p.8). They note that the aspects of the home that have been empirically identified by the existing literature to influence children’s development include:

- environmental allergens

- toxicants
- cleanliness, housing disrepair and safety
- building height and opportunities for outdoor play
- crowding
- housing affordability
- home ownership (also identified as important in North America but so collinear with income and other household cultural factors that its effect is largely non-separable)
- Frequent residential moves and homelessness.

Each of these housing characteristic is not everywhere and always important in shaping child learning outcomes. But they can add up for particular groups in particular settings. Dockery et al. (2013) also note the significance of neighbourhood as well as housing effects. A more recent study of neighbourhood effects on school student performance by Johnstone (2014, p.37) 'investigated the effects of neighbourhood characteristics on young Australians' educational outcomes at age 15, 17 and 19 years' (for 2003). Again, after emphasising and controlling for the 'confounding' effects of other influences, they suggested that:

- Neighbourhood characteristics were found to have small but significant effects on student outcomes in models that included individual and parental characteristics as controls.
- Neighbourhood characteristics were generally found to be statistically insignificant in explaining student outcomes in models with school fixed effects (though neighbourhood effects are captured by school fixed effects in such models).
- Student aspirations developed at an early age are important in predicting the post-school destinations of young people, with VET aspirations significant in predicting a VET outcome and university aspirations for predicting a university outcome. Mentoring efforts that help to shape the aspirations of children at an early age are likely to return a positive payoff later in terms of improved post-school outcomes. The result is of particular relevance for young Indigenous children who often lack appropriate role models.
- Their careful work indicates how difficult it is to pin down plausible neighbourhood and housing effects even when good data exists. But this should not mean that such effects are dismissed from policy thinking.

There are earlier studies of neighbourhood effects on children and education in Australia that are also relevant. Overman and Heath (2000) examined the effect of neighbourhood socio-economic profiles on the educational dropout rates of teenagers observed in the Australian Youth Survey 1989–94. They allowed effects to operate at two spatial scales of neighbourhood—the wider public school catchment area and the smaller evidential neighbourhood. They concluded that: 'Negative neighbourhood feedbacks would appear to occur at the small neighbourhood level acting through the socio–economic composition of that small neighbourhood'. They also note that:

... policies placing small clusters of low socio-economic status (SES) families in better neighbourhoods may have little significant impact on dropout rates. 'Forced' mixing through government housing programs may need to ensure that low SES families are well dispersed throughout more affluent neighbourhoods, rather than concentrated in 'sink' estates. (Overman & Heath 2000)

Wider influences of neighbourhood contexts on children's pro-social behaviour was also investigated by Edwards (2005) in a nationally representative study of 4983 four to five years old children growing up in 257 neighbourhoods in Australia. They found that, after controlling for family-demographic effects there were neighbourhood effects on the conduct of children,

their sense of safety and belonging and their pro-social behaviour. These are potentially significant influences on learning behaviour and human capital outcomes.

The conclusion from the research task of Dockery et al. (2013, p.51), that had the purpose of reviewing the 'present empirical evidence on the importance of housing-related factors in the wellbeing and development of children using Australian specific data' was that:

The findings are consistent with a large overseas literature that has found associations between housing circumstances and a range of child outcomes. The key finding of the analysis is that there are highly statistically significant relationships between a range of aspects of young children's housing and their outcomes. (Dockery et al. 2013, p.51).

They also note, and this is an important consideration that needs to be applied more widely across other studies:

In terms of their magnitude, however, the effect of housing variables appears to be quite modest. While the large samples available in the LSAC (Longitudinal Study of Australian Children) mean that estimates of individual housing effects are often statistically significant, the available housing variables explain very little of the variation in child outcomes beyond what can already be accounted for by a relatively small set of variables capturing background family socio-demographic characteristics. (Dockery et al. 2013, p.51)

In a productivity data audit for policy purposes the strength of effects is a key consideration.

Dockery et al (2013) also give helpful guidance on what matters, when they note:

- 'Given the general level of housing enjoyed by Australian children, housing plays a small role in shaping physical health' (p.51).
- 'For children's social and emotional outcomes, the family aspects of a home are of greater relative importance than the physical properties of the buildings' (Dockery et al. 2013, p.51).
- Among housing variables 'it is the things likely to impact upon the quality of relationships—frequent moves, renting rather than owning and being in financial stress—that appear to impact upon children's social and emotional wellbeing' (Dockery et al. 2013, p.51).
- 'Crowding has the largest negative impact for learning outcomes' (Dockery et al. 2013, p.51).

Dockery et al. (2013, p.51) also note, importantly and echoing Johnstone's neighbourhood findings, that:

... the inferior housing conditions faced by Indigenous families in fact contribute more to their children's lower outcomes, compared to non-Indigenous children, than differences in key socio-demographic characteristics. For physical health, it is the inferior neighbourhood conditions and poorer conditions of their dwellings that are estimated to be the biggest contributors, among the housing variables, to the gap in child outcomes... the higher proportion living in public housing is estimated to be a major contributor to the inferior outcomes for Indigenous children, while greater crowding is also estimated to impact upon learning outcomes.

They also note that housing and neighbourhood policies need to pay more attention to these learning effects from housing and neighbourhood outcomes. Arguably, local economic development and productivity strategies also need to make the same connections. The evidence from North America suggests that the lack of affordable housing and poor housing and neighbourhood quality has lasting impacts. More work needs to be done on how the housing and neighbourhood conditions of children as infants and during their school years impacts later performance in the workforce, if we are to understand the enduring effects on human capital.

5.3 Housing, health and productivity

The health of children can also influence learning. It is useful, in developing a sense of how housing conditions impact labour productivity, to also have regard to a growing literature, for all stages of the life cycle, that illustrates how housing and neighbourhood effects can influence the mental and physical capabilities of households (and by implication their ability to act as consumers and producers).

These effects are well defined and estimated in Australia, but rarely appear as explicit arguments in housing resource allocations. This may reflect a long-held belief that, by OECD standards, Australians are physically well housed and less segregated into affluent and disadvantaged places with potentially adverse neighbourhood effects. Recent decades have eroded the latter belief and there are also growing concerns that there is a low income group of Australians now in poor and deteriorating housing (Baker et al. 2011). New attention to how housing outcomes impact health and productivity, both directly and through the higher fiscal costs of treating poor health, are required. The rising health costs of a now ageing population also draw attention to links with housing outcomes both in shaping health capabilities, as well as household resources for dealing with them. This section of the report highlights some of the main issues and their potential productivity issues.

5.3.1 *Looking abroad*

There has been significant research on the epidemiology of poor housing quality in affluent, northern hemisphere countries, often in cold climates (Maclennan 2008). Reviews of international experience can be found in Bonnefoy (2007) and Thomson et al. (2009). Research demonstrates how inadequate plumbing, poor heating, poor ventilation, and lack of heating lead to health problems caused by mould (see Dunn 2002). Epidemiological studies show that indoor contaminants such as mould, moisture, or cockroach antigens cause or exacerbate respiratory problems, particularly in children. Other research directly links structural deficiencies and overcrowding in housing with physical and mental health problems. Indoor environmental hazards, such as exposure to carbon monoxide, excessive heat or noise, pesticides, and cigarette smoke, are also linked to negative health outcomes (Jackson 2004). High shelter costs for poorer households often also crowd out other key expenditures, such as on food and clothing, and can therefore lead to poor nutrition and related health effects.

While poor housing conditions were historically associated with poor health (see Mueller & Tighe 2007), this is less significant today. In Canada, for example, poor housing conditions are not exclusively associated with low income. However, poor health is associated with socioeconomic status—various studies on sense of empowerment/self-esteem have found a correlation between socio-economic status and health in terms of longevity, employee absenteeism, and dependence on prescription drugs (CHRA 2003). Where incomes are largely left to shape housing market outcomes, the result is usually concentrations of poverty in lower cost/rent /quality areas, sometimes also associated with a spiral of declining physical condition, and resulting health effects (Vandivere et al. 2006). As poor health may be a driver of household incomes, then the possibility of difficult recursive links between income, housing and health come into play. The ability of housing programs to raise real incomes for the poor or to break the market relationships between lowest incomes and poorest housing, are likely to have significant health effects for poorer households.

5.3.2 *At home*

The 'traditional' Australian perspective on housing-health issues is well reviewed by Phibbs and Thomson (2011) and recently succinctly summarised by Baker et al. (2011). They note:

The majority of Australians live in relatively good quality housing ... the stock is modern by international standards, and the population tends to be largely concentrated in climatically milder regions around the coastal parts of the nation. This means that ...

many of the traditional markers of health risk (including damp, cold, indoor air quality, safety) established in the international literature ... are seen to have limited influence in Australia. At the population scale, there is little evidence of negative health effects of poor quality dwellings in Australia ... the overarching means by which housing affects health in Australia at the population level, appears to be affordability. (Baker et al. 2011, p.2)

There is, however, a new attention to these issues in Australia. The Australian Commonwealth Government (AIHW 2011, p.31) have recognised that:

In recent years, there has been a growing awareness that the design and structure of the built environment is an important determinant of lifestyle and health ... It is also recognised that aspects of the built environment (e.g. housing) can magnify health disparities and compound existing health conditions, especially among children, the elderly and other vulnerable groups. (Marmot et al. 2010)

As we noted above, housing is the largest single element of the built environment. The Australian Bureau of Statistics (2012) drew attention to the key issues in reporting that: 'A long range of studies, most originating within the health rather than the housing sector, have drawn attention to a number of broad impacts of housing outcomes for health'. These effects, and any linked productivity effects, arise in a number of ways (and those presented below are not exhaustive but selected illustrations drawn from AIHW 2011):

1. Poor-quality and substandard housing directly affect resident health as well as designs and materials used in the construction of homes—
 - Australian research shows a significant correlation between exposure to carbon dioxide and adverse health outcomes for children aged 7–14, (Garrett et al. 1998).
 - Volatile organic compounds have significant effects on respiratory disorders (Fuentes-Leonarte et al. 2009) as well as have adverse effects of fatigue and difficulty concentrating, neurotoxic effects and cancer (Bernstein et al. 2008); Rumchev et al. (2004, p.746) conducted a population based case-control study for children in Perth, Western Australia and concluded that many 'VOCs appeared to be significant risk factors for asthma'; studies of workers with high exposure have shown an association between exposure to formaldehyde and several cancers, including nasopharyngeal cancer and leukaemia (National Cancer Institute 2009).
2. Neighbourhood and locational choices may also impact health through a range of mechanisms. In recent years medical research has drawn attention to relationships between walkability and health. Walkability, and its association with individual physical activity, reflects land use patterns, residential densities and street layouts, as well as access to public transport; all of these are income elastic neighbourhood attributes captured through housing costs.
 - Saelens and Handy (2008) identified density, distance to non-residential destinations and land use mix as the most important correlates of walking for transport. In separate studies, people living in neighbourhoods with 'walkable' designs reported about 30 minutes more walking for transport each week (Saelens et al. 2003) and more total physical activity (Frank et al. 2005).
 - Inadequate physical activity is associated with an increased risk of ill-health and death, and has been linked to increased rates of overweight and obesity, cardiovascular disease, diabetes and some cancers (AIHW 2008).
3. Housing and neighbourhood outcomes have been identified as having mental as well as physical health effects.
 - The Mental Health Council of Australia (2009) noted that COAG had recognised the prevalence of mental illness among the homeless population and there is a well

understood, a priori, set of links between homelessness and inability to return to the labour market for individuals who would be otherwise capable of work. However, the empirical connections between mental illness, bad housing and low employability are largely unknown for the 100 000 plus Australians homeless on any given night.

- Baker et al. cite (2011) a number of research papers indicating mental health issues facing low-income, housed individuals and note a major review of evidence of the relationship between housing and mental health undertaken by Evans, Wells and Moch (2003); that study finds substantial evidence that the 'overall quality of the housing environment' may influence mental health through 'emotional distress', mental health, anxiety and depression.
- A major review of international studies of neighbourhoods and depression by Mair, Roux and Galea (2007) found that:
 - There is a plethora of cross-sectional and longitudinal studies reporting clear effects of at least one neighbourhood-level variable on either depression or depressive symptoms.
 - Seven of 10 longitudinal studies reported associations of at least one neighbourhood characteristic with incident depression.
- The associations of depressive symptoms/depression with structural features (socio-economic and racial composition, stability and built environment) were varied and inconsistent, but the built environment (included in few of the studies) was most consistently associated with depression, although causal processes were not identified.

Some of these housing-health effects (physical and mental), and their human capital consequences, may be demonstrable at the population level. But Baker et al. (2011), having noted the past absence of large scale health-population effects, then highlight the need for more fine grain research. They conclude that:

... recent work (e.g. Mallett et al. 2011, and smaller scale qualitative studies, suggest that there are in fact substantial cohorts of Australians, statistically hidden in population-level analysis, whose housing conditions are very poor. We suspect that these cohorts, termed the 'Hidden Fraction' ... occupy dwellings that are disadvantageous to their health.

We would argue that understanding these issues is not just a matter of addressing inequality issues but of raising the labour productivity of low-income populations.

5.3.3 Housing, health and ageing

It is clear that population ageing is a large scale socio-economic transformation that will impact labour and capital as well as the residual in production functions. Much attention has been paid to how new demands for health and care services will place pressures on the budgets of households and governments alike (and arguably divert more expenditure into potentially low labour productivity health-care service tasks). Thought needs to be given to the productivity effects of these fiscal and spending changes. We also note here the potential roles of housing assets in supporting the health and core choices of older households in Australia, but do not develop the argument here (Ong & Wood 2013).

Ageing is not exclusively about fiscal downside and rising dependency ratios. Overall population ageing reflects rising longevity of individuals with longer and changing lives. Housing and work careers are shifting. New patterns of saving, living and working are emerging as individuals anticipate, however unclearly, changing future possibilities. And these changes are not restricted to younger age cohorts. Sen's (2010) notion of capabilities is helpful in this regard. Rising longevity has been associated with higher levels of physical health at increasingly older ages; 'capabilities' for work have been rising, so that more older households

are remaining in the workforce, usually in part-time work, well after they previously identified statutory 'retirement ages'. Participation of such workers in the labour force raises growth potential and, at the same time, may raise tax revenues and reduce fiscal 'dependency'.

There are, in Australia, a growing number of more detailed studies of the housing and urban consequences of population ageing. There has been no published work assessing how housing choices affect workforce capabilities as Australians age. Clearly the housing and locational characteristics that are optimal for a younger demographic may not be effective for an older population. Equally a working cohort of 65–75-year olds (an emerging likelihood) may require a mix of house sizes, types, digital connections and locations different from that of a retired cohort in the same age bracket. In the field work we report in the penultimate chapter we did not once come across a local economic strategy that engaged with this potentially important issue. Some new thinking on the longevity-capability-working-housing nexus is required. Presently ageing strategies make much of 'ageing in place'. It is not obvious, a priori, whether this is an appropriate strategy for economic development where more of the over 65s are seeking work. Adapting to reducing capabilities with age begins for many older households well before the onset of care needs.

5.3.4 Health, housing and human capital

This very brief reporting of a growing literature indicates that there are substantial and complex, sometimes recursive, connections between individual health (and capability) and housing and neighbourhood outcomes. Housing quality, neighbourhood context and affordability all bear upon the wellbeing and capabilities of individuals. There is evidence, in a society with generally improving health outcomes, of a 'hidden fraction', perhaps one in ten Australians, mostly poor and many Indigenous, where housing outcomes drive particularly adverse health futures for adults and children alike. There is clear evidence that poor health related to substandard or unaffordable housing circumstances and poor neighbourhood conditions affects the labour market performance and productivity of individuals. Lowered learning capacities of young people, higher rates of absenteeism and lower levels of concentration whilst at work all contribute to attenuated productivity. The health-housing issues for the 'hidden fraction' dent productivity prospects for Australia. At the same time social progress is held back where homelessness exacerbates and causes physical and mental health issues with the attendant high costs of hospital admissions and emergency treatments.

Housing policy and planning in Australia recognises the significance of homelessness issues and has attempted to assess the extent and consequences of homelessness. However, while there is a broad recognition of the association of poor health and housing, there appears to be little identification of the extent of problems in particular localities, and how they need to be addressed by housing policy measures. A much more thorough audit of how changed housing outcomes could impact health and economic performance is needed to draw housing, health and local economic development practitioners and policy-makers into a more integrated discussion of these key issues.

5.3.5 Moving to experiences

This section of the report, illustrating the diverse ways in which housing (outcomes and processes) and neighbourhoods may impact human capital, does not provide a full audit of impacts. It has focused on some of the interactions that flow from housing and neighbourhoods to education and learning outcomes, and to health and capability for work. As noted above, there may be other labour market influences to be audited. And this section has not probed areas of housing outcomes that impact capital formation and innovation in the business sphere, especially in relation to new firm formation and growth. It can also be argued, bringing a wider model of sustainable development into play, it is important to include the 'natural' capital consequences of housing. Housing processes have environmental effects but the attributes of homes and neighbourhoods designed, maintained and chosen have key

environmental outcomes that impact not just narrowly defined productivity but more refined measures of social outcomes concerned with, for instance, wellbeing.

This is a scoping study, not a systematic review, of the ways in which housing impacts productivity. In the discussion above it is clear that there are significant gaps in research, and we highlight them in the concluding chapter. It is equally apparent that there is a great deal of existing material that arises in research on children, health, transportation, labour markets and environmental change that has embedded insights regarding housing and neighbourhood effects. If housing scholars and advocates are to make a more effective housing policy case, then there needs to be a more coherent auditing and synthesis of such work. Where nations or cities have a housing policy department they will often seek out such cross-portfolio effects. But where housing policy falls from political view or is confined to the questions of housing affordability for the poorest, then bureaucracies will not ask the right questions, and plans will not make the right connections, especially where the economic consequences of outcomes are not assessed.

Housing has some potentially large impacts on growth and productivity but the nature of the commodity means multiple, sometimes small, impacts on a range of key household behaviours. Some policy areas have rich veins of research, like mining gold in rich shafts. Housing research is often more like panning for smaller flecks of connection that are valuable to identify to find and use, but that require repeated local sifting processes. In this project we believed that it was vital to scope not just what is already known/not-known in academic research, but to understand how practitioners involved in making housing plans and delivering local economic strategies understand the linkages between housing, productivity and growth. The next chapter, based on new research, investigates how the housing-productivity connections are understood, or not, in practice.

PART 3

6 HOUSING AND ECONOMIC DEVELOPMENT STRATEGIES AT THE LOCAL AREA AND METROPOLITAN LEVELS

The introductory chapters noted that policy cases for infrastructure investment were increasingly made at metropolitan and more local scales. Major insights regarding the perceived benefits of infrastructure projects can be gleaned from local economic development and investment strategies and impact analyses. Economic policy is not simply a federal or state activity; metropolitan areas, partnerships between municipalities and some single municipalities usually implement a local economic development strategy. Wider land use plans as well as housing plans, and housing system monitoring, also usually exist at these scales and within the same governments and partnerships that govern local economic strategies. Within bureaucracies at metropolitan and municipal levels, officials in different departments and with different professional skills and scopes deal directly with the housing sector or its economic drivers and consequences. In the absence of widely researched local strategies, bureaucracies have accumulated knowledge through their practical involvement, and this practitioner knowledge can shed light on housing and productivity interactions. This knowledge had to be accessed with approaches different from the citing of published literature used in the earlier sections of the report.

This chapter addresses the question:

How does housing fit into existing local area and metropolitan economic development strategies?

We assess how housing is meshed with economic development in strategy formation and monitoring by a two-pronged approach that involves a review of local area and metropolitan economic development plans, and interviews with policy-makers to elucidate how productivity issues might shape thinking on housing policies at these levels.

This chapter is structured as follows. In Section 6.1, we set out the methodology employed for conducting the review of economic development and housing strategy plans, as well as the subsequent interview process. Sections 6.2 to 6.7 report our key findings from the review and interviews. Specifically, we document what are the key housing issues that are seen to affect economic development at the local and metropolitan levels, whether housing strategies consider economic drivers of change and indicate impacts on economic outcomes such as employment, stability or competitiveness, and whether economic development plans link to housing provision. Section 6.8 draws the previous sections together by providing a summary of the key findings.

6.1 Method

6.1.1 *Review of economic development and housing strategy plans*

This review was implemented in three stages to achieve a comprehensive coverage of economic development and housing strategy plans at both the local government and metropolitan level.

The first stage involved an initial screening of local government economic development and housing strategy plans—63 Victorian and 140 WA plans were accessed and screened for whether the local government authorities have considered at least some economic issues in their plans. The full list of plans assessed is noted in Appendices 2 and 3.

Following the initial screening, plans from 15 Victorian and 10 WA local governments that had considered economic issues were chosen for more in-depth review to ascertain how their housing strategies fit with their economic development plans. We also ensured that the 25

selected local governments were drawn from regions with diverse economic conditions to facilitate comparisons between five key area types:

1. Inner to middle metropolitan areas, where economic conditions are typically healthy and the workforce is generally dominated by white collar workers employed in service industries. These areas have enjoyed a relative socio-economic advantage compared to most other regions in Australia.
2. Outer metropolitan areas, where economic conditions are less robust and expansion in employment opportunities would be welcome.
3. Regional tourism towns, marked by distinct seasonal peaks and troughs in economic conditions that are triggered by fluctuating tourist numbers, and large seasonal workforces.
4. Regional resource rich towns, where the mining boom has contributed to labour shortages.
5. Regional slow growth areas, where labour markets are slack.

Each of these area types have different housing issues and varying connections to labour markets and industry structures that call for nuanced policy approaches. Consequently the links between housing, economic development and productivity are not uniform across the nation, and the review we set out below reflects this heterogeneity.

The third stage of the review canvassed the Melbourne and Perth metropolitan strategies with a view to teasing out the extent and ways in which thinking about housing, productivity and economic development has shaped these plans. Two metropolitan-wide planning strategies were also scrutinised for city-wide perspectives on housing, productivity and urban growth. These included Perth's *Directions 2013 and Beyond* metropolitan plan and *Plan Melbourne*, both of which feature state-wide metropolitan planning strategies from the two states' departments of planning.

Table 1 below lists the areas from which the final 27 economic development and housing strategy plans were drawn.

Table 1: Local area economic development and housing strategy plans reviewed

Area type	Victoria	WA
Inner to middle metropolitan areas	Bayside Maribyrnong Melbourne Port Phillip	Bayswater Fremantle
Outer metropolitan areas	Cardinia Frankston Knox City Wyndham	City of Swan Wanneroo
Regional tourism towns	Colac Otway Surf Coast Warrnambool Bass Coast	Margaret River
Resource rich towns		Broome Bunbury Port Hedland Roeburne
Regional slow growth areas	Moira Shire Ballarat Wimmera-Mallee	Carnamah
Metropolitan wide	Melbourne	Perth
<i>Total number of areas</i>	<i>16</i>	<i>11</i>

6.1.2 Interviews with policy-makers

We reviewed the 25 local government plans with particular attention given to connections between housing and local economic development. Those local government areas where links between housing and local economic development are a feature of plans and strategies were chosen as subjects for in-depth interviews. The ten interviewees were key local government officials responsible for crafting local economic development plans. The interviews achieved representation from each of the five local area types described above. In addition, three interviews were conducted with state government officials from Victoria and WA to elicit thinking about how housing affects economic development from their tier of government perspective. These interviews explored the same kind of themes as were raised in local government interviews. In total, 18 policy-makers from 12 areas were interviewed. The number of government officials interviewed by area type is reported in Table 2.

Table 2: Number of agencies and interviewees by local area type

Area type	N agencies	N interviewees
Inner to middle metropolitan areas	3	3
Outer metropolitan areas	2	2
Regional tourism towns	1	1
Resource rich towns	2	2
Regional slow growth areas	1	1
Metropolitan wide	3	9
<i>Total</i>	<i>12</i>	<i>18</i>

The interviews were conducted during 2014 and 2015, and this data collection process was approved by the human research ethics committees at both RMIT and Curtin universities. The recruitment process entailed several steps. Initially, contact was made with the local government council of interest. Often this involved approaching a council communications officer who then directed us to the appropriate council officer. In other cases, local government associations or networks were able to provide us with the names of potentially suitable interviewees.¹ Once we ascertained the names of possible interviewees, they were approached with a formal request for interview, and an accompanying description of the project's key aims. On securing an in-principle agreement for an interview, the interview subject was sent an information sheet approved by the two universities' ethics committees. Each interviewee also signed a form consenting to be interviewed.

6.1.3 Key themes canvassed

Overall, our review and interviews were conducted with the aim of shedding light on the following themes/issues:

- Do housing strategies consider economic drivers of change and indicate impacts on economic outcomes such as employment, stability or competitiveness? In addition, do economic development plans link to housing provision?
- What are the key housing issues that are seen to affect economic development at the local area and metropolitan levels?
- How, if at all, is housing leveraged to promote local and metropolitan economic development?

The key findings are reported by local area type (Sections 6.2 to 6.6). This is then followed by a discussion of key ideas and connections as discerned from metropolitan strategies and interviews with key state government officials (Section 6.7).

6.2 Inner to middle metropolitan areas

We discuss the key issues in this spatial grouping under five thematic headings. These themes often crop up again in relation to our other spatial groupings, but in different contexts.

- The shift to mixed land use activity centres and housing diversity.
- Home-based economic activities.
- Rising land values and displacement of economic activity.
- Housing affordability, demographics and labour markets.
- House prices, debt and economic resilience.

6.2.1 The shift to mixed land use activity centres and housing diversity

The encouragement of mixed land use is a trend in planning documents of particular note in inner and middle ring areas of our metropolitan cities. They typically combine medium or even high density housing, with commercial and even industrial (light manufacturing, for instance) land uses in a precinct. They feature diverse housing styles with the uniformity of detached housing and villas broken up by town houses and apartments. The mix of housing and work places eases work commutes as well as traffic congestion, with consequent time savings and productivity gains. Steering new housing investment to create high density mixed use activity centres is highlighted in the City of Port Phillip (n.d.), and the City of Greater Bendigo (2014), as well as metropolitan plans for Perth and Melbourne. In the City of Melbourne (2013),

¹ We are grateful to Andrew Hollows of the Victorian Local Governance Association, and Olwyn Redshaw of the Municipal Association of Victoria, for their assistance.

housing diversity is seen as a means of attracting knowledge workers who it believes prefer dense urban neighbourhoods:

High-density neighbourhoods which locate homes close to shops, transport and employment are favoured and it is proposed that these can be achieved through good architectural design. Hence, a key aim is to establish and support compact, mixed use neighbourhoods that promote opportunities to live and work in the same local area. (City of Melbourne 2013, p.18)

These changes in housing and land use strategy reflect influential thinking on clusters and economic development. There is a growing belief that 'knowledge workers' are more productive in high density environments given the importance of face-to-face contact to the formation of new business relationships and their continuance. An interesting development is thinking around the appeal of good quality diverse housing in high amenity neighbourhoods to managerial and professional workers, particularly those belonging to younger age cohorts. The City of Melbourne (2013) sees these housing and neighbourhood factors as particularly important in fostering the emergence of enterprises in the creative industries. A mix of creative place-making, shopping strips, restaurants and housing is seen as attractive to new businesses by this economic development officer at an inner metropolitan local government:

A lot of work is around that little town centre ... town centre is a burgeoning little centre, and we're got some new development happening in there. Now there's a lot more café and shopping strip stuff happening. And there's a lot of place-making work happening, like public art, getting the community involved in what they want to see in their town centre, events, and activating town centres and then attracting businesses into those localities. And then getting housing in ...

6.2.2 *Home-based economic activities*

Various structural changes are believed to be encouraging an upsurge in home-based economic activities. Flexible work arrangements facilitated by high speed internet connections, and video telecommunication, allow telecommuting among workers in certain types of job. These jobs are typically located in service industries, so the shift in metropolitan economies to service employment, especially in inner city areas, is of particular importance to these parts of our major cities. But there is a second, perhaps even more important development, and it is the rise of home-based micro-businesses. This is again likely to be related to growth of the service economy, where small enterprises are more common. But it might also reflect sub-contracting patterns in the construction industry and the importance of self-employed independent contractors in this sector. In Melbourne, Bayside's Economic Development Strategy gives us some insight into the importance of micro-businesses (Bayside 2014, Table 2.3.1). In 2011, there were 12 554 business establishments within Bayside's local government boundaries, and 8066 (64%) had no employees. Some, if not many, of these micro-businesses might be inactive, but nevertheless this nearly two-thirds figure is striking and deserves more scrutiny across local and regional economies in Australia. As there are no employees, there is less need for business premises, and so many if not most are operating from residential addresses.

In inner Perth Western Australia, Bayswater's housing strategy acknowledges the potential importance and benefits of home-based businesses. They see these as including the 'provision of local employment opportunities, supporting the local economy, promoting safety by increasing more day time activity in these areas and reducing commuter traffic' (City of Bayswater 2012, p.166). One Perth Local Economic Development Officer observed that co-working spaces could provide important benefits for home-based business start-ups, and suggested that many of these home-based economic activities require little in the way of start-up costs:

... and tele-working spaces are working in the city, but you work out of your office one day a week so you don't have to drive to the city every day. But co-working spaces are

really informal, you know, [it] has worked in the tech industry, for those sort of guys that don't need their own office. They can pull up a beanbag or a desk and they ... kind of, work away. But they enjoy the discussion and the talking about ideas and sharing ideas and all that sort of thing. So I think, with those businesses, they're springing up everywhere, 'cause, you know, these days, what do you need to start a business, you need a laptop and free Wi-Fi. You don't even do a business plan, you can just give it a go, if it fails, it fails, you know. If it falls over

While there is growing recognition of home-based economic activities, and a sense that they are becoming more important, the implications for housing policy and planning have not been informed by any extensive policy analysis or research. There are building and land use regulations that limit the uses of residential property for business purposes; these regulations were typically drafted in an era when noisy, polluting industries were a more common feature of the Australian urban environment. In service-oriented metropolitan economies these regulations might be fruitfully revisited. The design and amenity of residential housing is a likely influence on the capacity of housing to act as an incubator spawning micro-businesses. In the creative industries and high-technology sectors, high speed internet connections will be important, and the ability to convert areas of the home into workshop space is especially important to the former.

6.2.3 Rising land values and displacement of economic activity

The inner and middle ring areas of Australian metropolitan cities are believed to have been especially prone to rising land and property prices during the upswing of recent property price cycles. These cycles seem to hatchet real house prices and rents up to levels that exceed the peak of the previous cycle. The spiralling prices and rents spillover into commercial and industrial land markets, because increases in the amount of land used for residential purposes will come at the expense of alternative uses. The strong demand for residential property has therefore also driven up the rents (prices) business must pay for its premises.

In local government economic development reports and strategies we came across repeated reference to competitive pressures that are forcing industrial and commercial businesses to relocate, especially those that are land intensive such as assembly type manufacturing industries, warehousing and logistics. Consider, for example, the following statement from Victoria's Bayside Local Government in its 2014 economic development strategy:

Manufacturing is a declining industry in Bayside, which was a trend identified as early as the preparatory analysis for the 2004 Bayside Industrial Area Strategy. The Strategy found that the rising land values in the former Bayside Industrial Area compared to outer metropolitan locations were driving the relocation of manufacturing and other secondary industry firms such as warehousing, logistics and transport. (Bayside City Council 2014, p.22)

The strategies that planning authorities implement with respect to the spatial configuration of industrial, commercial and residential land uses appears to pay little heed to the relationship with and consequences for land values and competitiveness. For example, low density detached housing is land intensive and its preservation through land regulation/zoning will inflate land values (all other relevant drivers held constant); but the consequences for the competitiveness of commercial or industrial users of land are not a consideration in housing strategies.

The displacement of industrial and commercial activity will mean a loss of jobs in the local government area affected, but it does not necessarily raise alarm bells, particularly if 'noisy and dirty' industries move away. If most residents work outside the boundaries of their local government, they are not directly affected by the job losses, and their property values will be boosted by reductions in noise and air pollution and any other negative externalities. Furthermore, the inner and middle areas of our large cities appear to have been successful in

fostering growth in 'cleaner' service industries, or small niche manufacturing activities that are less intensive users of land, and generate jobs for knowledge workers that might prefer the amenities associated with working and living in the inner and middle ring suburbs.

But there is a potential downside. The displacement can shift business activity overseas with (possibly) permanent loss of expertise and skills to the detriment of the metropolitan (and national) economy's competitiveness. Also, there are parts of our metropolitan cities where there have traditionally been pockets of disadvantage, and concentrations of low-income workers who rely on continued access to blue collar unskilled or semi-skilled jobs. In these regions of our cities there is a greater concern about restructuring that is in part triggered by rising land values. The City of Maribyrnong is typical of this type of region; consider the following statements that come from the City's Economic Development Strategy:

The City of Maribyrnong is undergoing a period of significant change. Residential properties are increasingly sought after, contributing to gentrification and increasing housing prices in suburbs such as Yarraville, Seddon, Footscray and Maidstone. At the same time, a number of large redevelopment opportunities have emerged from changes in land use as a result of the restructuring of manufacturing industries and the almost wholesale relocation of the Commonwealth defence industries that once provided many thousands of jobs in the area. (AEC Group 2011, p.3)

For Maribyrnong, these on-going structural economic changes are likely to produce a continued overall decline in manufacturing employment but also a chance to maintain some manufacturing processes, namely in the food and beverage, publishing and other niche manufacturing sectors that require proximity to the Port of Melbourne. However, further consultation with local industry has revealed that while manufacturing companies enjoy the benefits and advantages that Maribyrnong can offer, many of these same companies indicated that if the need to expand arose, they would more than likely consider leaving the municipality due to larger, more unencumbered land, less residential interface issues, lower land costs, less traffic congestion and greater amenity. This highlights an immediate need for Maribyrnong to revitalise its existing industrial lands to be able to cater for the changing needs of manufacturers in the region. (AEC Group 2011, p.12)

In the inner and middle ring areas of Australia's major cities, the shortage and high cost of land is a constraint for both residential and commercial/industrial activity. But the above citations also alert us to another dimension of the connection between land values and economic development; soaring land values and land supply shortages due to the spread of land-intensive residential areas increase the cost and limit the scope for expansion of the transport and other land-using infrastructure critical to economic development and productivity. These connections are not explicitly drawn in planning documents, and they do not dominate debates about competitiveness and urban and regional economic development.

Relaxing land constraints by reform to planning mechanisms (e.g. mixed use) and transition to less land intensive commercial and industrial uses is critical for areas like Maribyrnong. Transport congestion and the externalities associated with noise and air pollution is also problematic. Residential development is negatively impacted, but a balance has to be struck between mitigating these negative externalities and job creation. In the outer suburbs the 'paddocks cannot and do not shout back', so these constraints are less forbidding. For example:

... interest in Maribyrnong from industrial tenants has waned with consumption and enquiry levels decreasing. Many industrial companies are attracted to industrial lands further west that are more affordable, accessible and provide a more appropriate setting for industrial activities (without residential encroachment). (AEC Group 2011, p.17)

Maribyrnong must maximise efficient brownfield redevelopment for employment purposes if it is to maintain its status as an employment hub. In some cases, it may also require reclassification of existing industrial areas to mixed-use, including the opportunity for retail or commercial employment. These rezoning can also assist in accommodating future residential demand but should retain a focus on job generation. (AEC Group 2011, p.16)

In one Perth local government area there is also a perceived need to redevelop and attract new businesses, particularly service sector industries; clustering such businesses and fast broadband connections are viewed as critical by this economic development officer:

I think that's the next step of attracting some of those businesses in. But for them to come, you need to cluster them together, or you need, you know, to develop some of those networks, or you need to get them some really good broadband and that sort of thing. So you need some things in place before they come, otherwise they're going to go somewhere else. So at the moment, you know, it's about bringing those land parcels together.

6.2.4 Housing affordability, demographics and labour markets

This is a connection that has attracted widespread attention, including the recently released Productivity Commission report on Geographic Labour Mobility (Productivity Commission 2015). A commonly expressed fear is mismatch between the location of job vacancies and access to affordable housing. When affordable housing is inaccessible from workplaces that are seeking to fill job vacancies, employers will find it difficult to fill those vacancies, or if they can fill the vacancies the commuting times are long and expensive. Either way business costs are elevated in one way or another.²

Housing strategies in the inner and middle regions of our larger cities do not seem to be overly concerned about this as an issue. They are acutely aware of housing affordability problems, but the issue is viewed as one of equity rather than economic efficiency. So ensuring a supply of housing affordable to low-income groups, and especially older persons in this income group, are exercising the minds of housing strategists in these areas. Gentrification is therefore viewed as a potential threat to supplies of low-income housing. For example:

Selected areas within the City of Maribyrnong, such as Yarraville and Seddon, have undergone gentrification and re-urbanisation over the past five years. While there are many benefits from this occurrence (both social and economic) there are many issues attached to ongoing gentrification of the City including affordability of housing and dislocation of the more disadvantaged households that currently reside within the catchment. (AEC Group 2011, p.10)

But in many inner urban areas, high house prices and rents are associated with high amenity neighbourhoods that are attractive to workers in the professional and managerial occupations. A skilled workforce is attractive to local governments because it promotes a resilient high productivity local economy. It is thought that such a population profile in a local economy promotes an agile and entrepreneurial culture.

A highly-skilled and educated workforce can help regions take advantage of new opportunities and overcome challenges. Regions with a highly-skilled workforce are more resilient to change as skilled workers have greater capacity to adapt and move between different occupations and industries. (Bayside City Council 2014, p.18)

² Long commutes must typically be compensated by higher wages. Traffic congestion problems will also be exacerbated.

Spiralling house prices and rents in more prestigious inner and middle ring suburbs are increasingly unaffordable for young couples and singles. This has an interesting demographically-driven impact on planning for economic development and labour market policy programs. These suburbs have population profiles that are ageing more rapidly than elsewhere in the metropolitan area. Promotion of economic wellbeing among residents will increasingly focus on planning for and addressing the needs of post-employment residents, rather than meeting the educational, training and employment aspirations of a younger demographic.

6.2.5 House prices, rents, debt and economic resilience

We are beginning to understand how the geography of housing markets, and in particular mortgage debt and house prices, can shape the resilience of local and regional economies (Mian & Sufi 2014). We have a good understanding of the wealth effects that fluctuating house prices can have on consumption spending; but now we are gaining knowledge of the importance of both prices and debt. Areas with large numbers of heavily indebted home owners are more vulnerable in the face of an economic shock that precipitates downturn in house prices. For example, a 10 per cent decline in house prices in a suburb where the average loan-to-value ratio (LVR) of home buyers is 80 per cent, will wipe out 50 per cent of the average buyer's housing equity. But in a suburb where the average LVR is 20 per cent the same 10 per cent house price decline will wipe out only 12.5 per cent of the average owner's housing equity. The cut back in household spending is likely to be quicker and more acute in the first of these two hypothetical suburbs. Local businesses will be hit harder in these areas, and will shed more jobs.

The resilience of regions is then going to be influenced by the debt profile of its home owners. The housing plans and economic development strategies of local governments cannot hope to advance programs that will reverse the consequences of a house price shock. The conditions precipitating such shocks are likely to be national and would overwhelm the resources of any one local government, or even state government. Nevertheless these types of regional multiplier effects have been recognised in some of our interviews with local government officers, and in economic development strategies, though they are more often cited in the context of rising rents that squeeze the budgets of tenants, who then cut back on other spending including that on locally provided goods and services. An example is the Western Australian local government Bayswater, in Western Australia:

Increasing housing costs also negatively impacts the local economy as a result of higher proportions of income having to be spent meeting housing costs, as opposed to being injected back into other areas of the local economy. (City of Bayswater 2012, p.133)

6.3 Outer metropolitan areas

Under the outer metropolitan spatial grouping, three key themes crop up:

- The shift to mixed land use activity centres and housing diversity.
- Home-based economic activities.
- Housing affordability, demographics and labour markets.

6.3.1 The shift to mixed land use activity centres and housing diversity

The encouragement of mixed land use activity centres features prominently in the housing and economic development plans of outer metropolitan areas. As with inner to middle metropolitan areas, the local councils in outer metropolitan areas typically look to integrate medium to high density housing and commercial land activities within a cluster (see Frankston City 2011; Knox City Council 2013, Wyndham City n.d.). These ideals align with Victoria's *Melbourne @ 5 Million's* aim to establish six new Central Activities Areas (CAAs) in suburban regions that offer

'CBD-like functions' (Department of Planning and Community 2008, p.3). Frankston, one of Melbourne's designated CAAs, has an ongoing vision to establish a high density and mixed use centre in its economic development strategy (Frankston City 2011, p.23):

... the Frankston CAA has the capacity to accommodate the redevelopment of existing residential properties on the northern and southern fringes, as well as the opportunity to encourage the development of structures within the CAA that incorporate a residential component.

Other outer metropolitan areas have similar visions. In Wyndham City, it is proposed that the Werribee Employment Precinct and Werribee City Centre be integrated to 'facilitate the development of one regional economic centre of excellence' (Wyndham City n.d., p.15). A key aim of Cardinia's housing strategy is to 'facilitate the development of Cardinia Shire as a regional employment centre providing a diverse range of job opportunities for local residents' (Cardinia Shire Council 2013, p.22).

The rationale behind encouraging mixed use activity centres in outer metropolitan areas is to promote economic growth by boosting consumption of locally produced goods and services. It is anticipated that mixed use activity centres will also encourage people to live and work in the same outer metropolitan area despite the distance from the inner city (Frankston City 2011). An official from one outer metropolitan council notes that:

They can jump on the train, within walking distance if they want to go somewhere, but I think our dream for this city is that people don't need to leave because it's got all the entertainment they need, it's got the job, it's got the home, it's, you know, it would tick every policy box in the book for the state government in terms of green, in terms of you know, the poly-centric city.

However, outer metropolitan councils believe it important that the development of activity centres be unique to the character of outer metropolitan regions rather than a straightforward replication of inner metropolitan designs. The Frankston City Council (2011) sees the need to '*consolidate a shared regional economic understanding with surrounding municipalities, in particular Mornington Peninsula Shire*' (p.35). A local government official describes his local area as being:

... the city without the gridlock almost because you've got the city environment with the city amenity, but you don't have the traffic, you don't have the snarls, you don't have the issues that you've got in Melbourne ...

The shift to mixed land use is also commonly linked to housing diversity, and the inclusion of high density housing in activity centres that are well served by public transport (see e.g. Cardinia Shire Council 2013; Knox City Council 2013). Another linked feature is planning strategies that ensure activity centres are well-served by a public transport that ensure easy access to these areas (see Knox City Council 2013; City of Swan n.d.). These are all elements of strategies that aim to stem the apparent flow of professional workers into inner metropolitan areas where there are higher levels of amenities, more diverse housing and the 'buzz' that is associated with clusters of new economy information-intensive enterprises. There is a concern that outer metropolitan areas could miss out on new business formation if they fail to retain and attract skilled, educated younger workers, because it is this demographic that supplies the majority of entrepreneurs. Consider, for example, a key objective of Frankston City's economic development strategy (2011, p.7) which is 'to boost the number of business owners and managers living in the City (by providing diverse housing opportunities that take advantage of the unique natural environment)'.

6.3.2 Home-based economic activities

Support for home-based businesses is highlighted in the local area plans of various outer metropolitan areas. For instance, in Frankston City's economic development strategy, the

encouragement of home-based businesses is described as part of an objective to support the growth of micro, small and medium-sized businesses (Frankston City 2011). Business support in Wanneroo's (in WA) and Wyndham's (in Victoria) economic development strategies also highlight the importance of promoting growth in home-based businesses (City of Wanneroo n.d., Wyndham City n.d.).

In outer metropolitan areas, the drive to promote growth in home-based businesses is viewed as part of a push to establish self-sustaining decentralised activity nodes at some distance from the inner city. In outer metropolitan areas this push is expected to have significant economic spinoffs because it curbs outflows of labour to inner metropolitan regions, a fear that is increasingly influential in local economic development circles. There is also a belief that this kind of initiative can be the source of local multiplier effects because home-based micro-businesses source their inputs locally, and because profits earned locally are more likely to be reinvested into the local area, boosting local consumption and economic growth (City of Wanneroo n.d.). We are unaware of any evidence that might validate these ideas.

Local Government economic development strategies put forward a variety of proposals designed to support the growth of the home-based business sector. Ensuring there is appropriate social and economic infrastructure such as broadband access to support home-based activities is seen as critically important. Other additional tools include monitoring and reviewing regulations regarding home-based businesses, facilitating mentoring, information, training and networking opportunities, and providing links to support networks such as the Small Business Development Corporation (City of Wanneroo n.d.). Planning regulations also play an important role in facilitating or impeding the growth of home-based businesses, as noted in our discussion of this issue in an inner metropolitan context. A local government official highlights the tensions between existing regulations and economic goals in the following remarks:

... whilst they're at home, as soon as they employ one person, they're technically in breach of the planning scheme which really, as an economic development practitioner, really sucks for us because there's, as far as I'm concerned, I really don't care if they employ people. I think it's fantastic.

The NBN's importance to the future of home-based work was expressed in a number of interviews, as indicated in the following quotes:

I think it's potentially a market for us with the NBN to, rather than home-based business, or just home-based business, home-based work as well. So people could be able to work a couple of days from home.

Yeah, tele-commuting I think is going to become more, I mean we've been speaking about tele-commuting for years, haven't we, but the band width will allow that to happen properly.

In an interesting development some outer metropolitan councils (as well as councils in the regions) are actively supporting the development of home-based businesses, by encouraging a transition into non-residential premises. The design and provisions of co-working hubs where individuals can lease office space, infrastructure (e.g. internet connection) and reception services is a typical initiative along these lines. Micro-businesses generally lack the resources to hire these services on their own; these co-working hubs allow the cost of provision to be shared by a cluster of micro-businesses, thereby making these services accessible to a part of the business community that would otherwise lack what could be vital support. They might also be input-output agglomeration economies as micro-businesses discover linkages with fellow users of the co-working hub.

A co-working hub example is described by a local government official in the following favourable terms:

The place I was telling you about ... that is a shipping container that's set up with a meeting room and an outside area and a coffee shop and free Wi-Fi access, and they've put an ablution block there, there's a toilet, there's a playground, so that the local playground that a lot of the developers put in first, you know, put in there to attract the families, they've done that and then they've put this little mini co-working or community hub meeting space, and it's just brilliant. And they had to, we had to work really hard to, because it's only a temporary, it's only got a three-year approval, so we had to work really hard to get that through our approval system, and had a lot of planners scratching their heads and thinking, 'Oh, well we can't do that'. 'Well, yes you can. We've just got to find a way to do it.' So that's been very, very successful. It's only early days yet. So I think we need more of that early activation of, 'Yes, you can work from home, or you can work close to home.'

6.3.3 *Housing affordability, demographics and labour markets*

Affordable housing's role in facilitating access to employment opportunities, services and amenities is another key theme in outer metropolitan areas. Affordable housing with close proximity to employment, education and life opportunities is viewed as an essential prerequisite for economic development (Knox City Council 2013). Areas like Frankston, which has relatively more socio-economic disadvantage than Metropolitan Melbourne, are conscious of the importance of stable and affordable housing in encouraging youths aged 15–24 years back into local education and employment markets (Planisphere 2013).

Some outer metropolitan areas tend to have a higher incidence of public housing stock than the state average. Examples include Frankston in Victoria and Wanneroo in WA. While public housing is a critically important source of affordable housing to those 'locked out' of private housing markets, concentrations of public housing can become an impediment to local economic development. For instance, Frankston City's housing strategy notes that the attainment of higher educational qualifications is lower in localities where public housing is concentrated, and strongly correlated with pockets of poverty in which households with low socio-economic status are concentrated (Planisphere 2013). In Wanneroo (see MacroPlan Australia 2005), concentrations of public housing and economic development are not as explicitly linked, but concerns are evident, as reflected in recommendations to reduce concentrations of public housing and 'sprinkle' new public housing via 'salt and peppering' construction plans (p.43).

Affordable housing strategies tend to be formulated in 'physical' planning and design terms, rather than as interventions addressing market and government failures that have an economic cost. For instance, in Knox City, a key action plan is to develop social housing, which includes state or community organisation affordable housing, located close to employment services (Knox City Council 2010). Cardinia Shire Council's (2013) housing affordability policy statements also reflect planning and design concerns, including facilitating the development of housing in areas with good access to public transport and other services, as well as promoting housing and urban design that reduce residents' running costs.

Lower house prices and rents in outer metropolitan suburbs appeal to lower and middle income households juggling pressing spending needs. But some of our interview participants are aware that transport costs can offset much if not all the housing cost advantages. Consider, for example, the following interview quotes:

... because your previous question about affordable housing, when you said that I thought, you know, we've got to think of affordable living as well, so it's not just a, you know, it's great if I can get my house and land cheap, but if I've got to travel 50ks in my car ...

... quite a lot of people are drawing attention to that, that you know, prices and rents might be a lot lower on the outer suburbs, but often transport costs and commuting costs are, you know, an offsetting factor that people kind of forget.

These observations motivate some outer metropolitan councils to promote local economic development that will lift the proportion of people living and working in the local area, and these aims have also found expression in state metropolitan plans.

6.4 Regional tourism towns

6.4.1 Economic and housing profile

Regional areas with a strong tourism industry typically display four key characteristics. First, these areas enjoy relatively low unemployment rates compared to the national average during periods of economic boom. For instance, WA's South West region, which features tourist attractions such as Margaret River, enjoyed a low unemployment rate of 3 per cent during 2006–07 when the overall Australian economy was at its peak (South West Development Corporation 2014). During the same financial year, the national unemployment rate sat at 4.5 per cent (ABS 2015).

Second, key contributors to these areas' economies are unsurprisingly tourism and complementary industries such as retail. According to Tourism Western Australia (2012), the tourism industry in the South West attracted an average of 1.5 million overnight visitors annually over the period 2010 to 2012, amounting to an annual turnover of \$800 million. During 2011–12, the South West retail industry was valued at \$1.8 billion, growing at an annual average rate of 6.3 per cent.

Third, the workforce in these areas generally has a large seasonal worker component. These types of workers come from a wide range of occupations; they can include student teachers and health workers, visiting trades and professional staff, semi-skilled seasonal workers, specialist seasonal workers such as chefs, road and building crews (Colac Otway Shire 2007). There are two important features that characterise seasonal work. First, due to its very nature the work provides employment for only part of the year. By becoming itinerant it is possible to work throughout the year in the same occupation,³ but this is unsettling as it involves repeated disruption to living arrangements that is far from ideal if raising children. But whatever the working schedule over the year, housing might only be required for part of the year. A second key feature is that low wage jobs are common in many of these seasonal occupations, as are insecure working conditions. It means that household incomes are frequently low and volatile, and so these groups are vulnerable to housing affordability stress and uncertain housing circumstances.

Finally, housing systems in regional tourist towns have distinctive features; because they are typically located in areas of scenic beauty with attractive climates, holiday homes can be a large share of the local housing stock. This is more likely in towns accessible from our major cities, where they can be used as 'weekenders'. Holiday homes are typically vacant for much of the year, and while owners might offer their properties as holiday lets, it is uncommon for them to become available for lease as conventional private rental housing, though this is conjecture as it is a subject we know little about. Seasonal workers' access to affordable housing is then thought to be impaired by the second home phenomenon. The *Pracsys* housing needs report on the south west region in Western Australia offers the following analysis of this issue:

Another common occurrence in regional towns is the prevalence of unoccupied dwellings. These may represent under-utilised dwelling stock. There are instances

³ For example, a tourist worker might work in a southern Australian state during the summer months, and then spend the winter months in a northern Australian tourist resort.

where the stock is unavailable because the dwelling is reserved for holiday houses or seasonal workers. In many cases, investors can receive higher rents from tourists than they do from long-term tenants. Alternatively, investors who live outside the region may opt to keep the property as a holiday house for themselves. Unless rents significantly increase it is unlikely that owners of holiday houses will move towards renting in the long-term private market. (Pracsys 2014, p.28)

An understanding of unoccupied dwellings is vital in determining the true capacity of the dwelling stock. (Pracsys 2014, p.30)

In the south west region *Pracsys* (2014) claim that the towns of Augusta, Gracetown, Walpole and Dunsborough all had 40 per cent or more of their housing stock unoccupied in 2011 according to Census figures. These are remarkably high figures, and represent a substantial loss of housing stock to accommodate the permanent or seasonal workforce.

There is a second distinctive feature of regional housing systems that exacerbate the housing affordability and seasonal worker issue, and it is the high cost of housing construction in regional areas, particularly those that are distant, and especially if remote, from centres of population. Building materials must be transported over long distances, sub-contractors and building workers commonly have to commute over long distances, critical labour shortages cause delay and there is a lack of competition. The consequence is higher house prices and rents that may make it even more difficult to attract and retain low wage seasonal (and permanent) workers.

We now review how these issues are dealt with and responded to in local government economic development plans and housing strategies, and draw on the insights offered by interview participants.

6.4.2 Key housing issues that affect economic development

Many of the housing and economic development plans reviewed from these regions reveal a general awareness on the part of local governments that the housing environment does indeed impact on their regional economies. For instance, in Victoria the Colac Otway affordable housing strategy briefly notes that there is a link between labour market changes and housing consumption (Colac Otway Shire 2007). Furthermore, the shire's economic development agenda acknowledges the need for an up-to-date affordable housing strategy that can assist the shire's workforce to access housing that is accessible to jobs (Colac Otway Shire 2009).

The South West Development Commission's mission, by 2025, is 'to develop the region's economy and enhance those qualities which make the South West the best place in which to live, work and invest' (SWDC 2010, p.9). The subsequent housing needs draft report for the region explicitly recognises that the success of this mission relies greatly on establishing a significant permanent population of residents who live and work locally, and that the provision of housing will be a critical factor for sustaining growing populations (Brennan 2014, p.9). A resident population who live and work locally is a commonly expressed goal that is viewed as virtuous because it helps community cohesion and economic development.

The key housing issue hindering the economic development of regional tourism towns is undoubtedly the lack of affordable housing in these areas (Colac Otway Shire 2007; Warrnambool City Council 2013; Brennan 2014). Specifically, the lack of appropriate and affordable housing is seen as an impediment to the attraction and retention of workers in key sectors that support the local area's economy, such as hospitality and other tourism-related services (Colac Otway Shire 2007; Warrnambool City Council 2013; Brennan 2014).

This lack of housing affordability has negative impacts on the economy. Workforces that actually live in the towns they work in aid economic growth and diversity for these regional towns because of regional multiplier effects. However, unaffordable housing impedes the potential of tourism towns to act as a residential hub from which workers can commute to work

in nearby towns (Dench et al. 2011). Conversely, those who work in tourism towns may not be able to afford the housing there. A local government official notes that:

... it's kind of like a double whammy where if [young people are] employed in the tourism or the retail areas, not only are they earning less money than they could be, but also they're faced with proportionately higher housing costs.

The lack of affordable housing discourages long-term commitment to reside in these tourism towns. Businesses will therefore find it difficult to maintain profitability when demand for local goods and services dip during tourist off-peak seasons (Dench et al, 2011).

A number of contributing factors to unaffordable housing in tourism towns were identified in local government plans. The first is the relatively high construction costs in these regions. For instance, construction costs in areas like Margaret River and Augusta are believed to be 25 per cent higher than in Perth due to its small market scale and distance from other towns. Second, the rising numbers of holiday home properties that are unoccupied for periods of the year prop up house prices and crowd out housing for workers. Third, small towns that are highly reliant on one industry are deemed to be riskier by financial institutions. Hence, developers and home owners face greater difficulty in obtaining housing finance in these towns (Brennan 2014).

6.4.3 Housing strategies to promote economic development

It is unsurprising, given the issues laid out in the previous subsection, to find that the promotion of housing affordability is seen as a key housing strategy for supporting economic development in regional tourism towns. Various strategies are mentioned in local government plans.

Seasonal workers' housing is a particular source of concern. Hence, it has been proposed that caravan parks should be encouraged to set aside accommodation for seasonal and key itinerant workers (Colac Otway Shire 2007) because, as a local government official pointed out, seasonal workers tend to:

... live in grouped housing ... where if they're going to be around for six to 12 months or whatever they might live together with six or eight or however many other people in a house ... they might live in a caravan park or they might just find some other camping opportunities.

As a longer term solution, it has been proposed that employee housing be included in future commercial developments (Colac Otway Shire 2007).

Other affordability strategies that have been proposed include implementing shared equity schemes to facilitate key worker access to home ownership (Colac Otway Shire 2007) and identifying potential sites adjacent to activity centres and public transport that can be used to develop dwellings (infill) (Warrnambool City Council 2013). A local government official interviewed in one tourist-oriented region highlighted the role of developers in influencing affordability:

There is so much land identified for future development here. The nature of the way it works is that developers go through the planning process, what they end up with is subdivision approvals to create lots, that might consist of hundreds of lots, but of course they don't go and construct and get titles to hundreds of lots as in one go so to speak. What they do is that they only create the lots that they can foreseeably sell immediately so there's always tension between supply and demand even though there's actually no block on supply. So the developer is the one that's drip feeding the lots out, not—there's no other blockages apart from the normal planning processes that need to be worked through.

Tourism towns also seem keen to support a local construction sector because input-output linkages will lead to the purchase of goods and services from the local area, and hence promote employment opportunities in the area:

... so many of the residents here are involved in industries which directly relate to housing. So by that I mean everything from the developer, the real estate agent, the home builder, the tradies, okay now the house is constructed we need landscaping, we need people to mow the lawns, irrigation suppliers, whitegoods, you know all of that kind of domestic service industry type areas. The more people we have, the more fridges you need, so the more retail jobs, it's more fridges you need, it's simply just —I really see the place as just kind of feeding on itself like that.

Identified strategies for achieving growth in the construction sector include improving the local supply of goods and services for builders and identifying ways of easily accessing residential development opportunities in these towns (the Planning Group et al. 2010).

An interesting development in regional tourism towns (and indeed other regional areas) is the importance of home-based business. For example, in the Surf Coast it is explicitly proposed that future residential land supply include allotment sizes that support home-based businesses (Dench et al. 2011).

It is also noted that housing diversity needs to increase to accommodate ageing in place and attract new residents as the population ages. For instance, the Warrnambool and Moyne economic development strategy suggests that there are growing opportunities for businesses in health services, local government services, construction and leisure and entertainment services if the region is marketed to retirees (The Planning Group et al. 2010).

6.5 Resource rich boom towns

6.5.1 Economic and housing profile

In the last decade, various regions in WA disproportionately drove the Australian economy on the back of a sustained resource boom and major resource investment in the state. A key defining economic feature of resource rich areas is its transient workforce, comprising fly-in-fly-out (FIFO) and drive-in-drive-out (DIDO) workers, as well as workers on short employment contracts. For instance, Port Hedland's draft transient worker accommodation (TWA) strategy estimates that there are at least 3000 FIFO workers in the town and this is expected to increase by 500 per cent to 15 050 in 2016 (Town of Port Hedland n.d.b). A local government official provides a snapshot of the labour market profile in resource rich towns as follows:

We've a very high churn factor here. I talk about the 2s, the 5s, the 10s, the 20s. So we have a very high number of people that come here for limited term contract, either whether that's with the resource sector or with government; they stay here for up to two years and then they move on. But some of those people actually quite like it here then and they look for other opportunities or they try to get a renewal of their contract. Those people become the five years'. Some of those people then might meet a partner, settle down, start a family, they become the 10 years'. And some of those buy a business and get established really, roots here and become your 20 years'. So that's just a quick snapshot of how it works here, but unfortunately at the moment we've got a very high turnover.

A price inelastic supply of housing is a key housing system feature in resource-rich towns. Housing supply is price inelastic when new housing construction that would add to a region's housing supply is insensitive to house price increases. We might expect escalating house prices to encourage existing housing construction companies to expand their operations, and new ones to enter the local construction sector. But resource regions tend to be isolated locations, with heavily resource dependent local economies ('the one-horse region or town'). Investors in rental housing and builders are exposed to considerable risk in these types of local economies; because they are 'one-horse towns/regions' the local economies are particularly vulnerable to fluctuations in resource prices that are well known for their volatility. These features of resource dependent local economies deter risk-averse builders, investors and

financiers; a resource boom and influx of workers is typically accompanied by soaring house prices and rents, but housing supply does not expand as it might otherwise do in a diversified local or metropolitan economy.⁴

While the most obvious issue is one of housing affordability, there are economic consequences of note. A surge in house prices and rents to high levels is especially troublesome for permanent residents working in other sectors of the local economy. They do not directly benefit from the typically high wages paid to resource industry workers; local business will invariably offer higher wages to retain employees, and their profit margins can be squeezed, with threats to survival.

The resource companies themselves adjust to high housing costs. The FIFO (and DIDO) worker is the most well-known labour market adjustment (Productivity Commission 2014b). Temporary, mobile homes are installed adjacent to mine sites to house workers that are transported (at company cost) from their permanent residences to spend their 'x' week shift at the mine, before returning for a 'y' week spell at home at their permanent residence. These adjustments are a direct consequence of housing system effects, and add to business costs. They can also be responsible for negative externalities. There is anecdotal concern that tired DIDO workers are more vulnerable to vehicle accidents. FIFO workers are said to be prone to mental illnesses because of the episodic disruption to home lives that is an unsettling experience for some. Local communities in the vicinity of mines complain that social cohesion is adversely impacted, as FIFO workers do not integrate into their communities. Finally, Trade Unions argue that FIFO is used by employers as a substitute for training of local workers (Productivity Commission, 2014b). But there is a contrasting view, as one state government official put it in one of our interviews:

... the fly in/fly out model, which you know in my view has actually made our labour market work much better than it otherwise would have, if we'd try to put people in there, you know situate them somewhere in the Pilbara.

How are these market pressures viewed by local governments in resource-rich regions and towns? We now describe their concerns and typical strategies to ease or adjust to these pressures

6.5.2 Key housing issues that affect economic development

The housing markets in resource-rich towns are experiencing chronic demand pressures that can threaten the long-term economic growth of these regions if they are not addressed in a timely and adequate manner. For instance, to date, the economic growth experienced in Port Hedland has resulted in a town that is industrial, expensive to live in, and impacted by FIFO and shift work (Town of Port Hedland n.d.a). House prices can reach extraordinarily high levels; for example, despite its relatively small population, the median house price in Broome was \$755 000 in 2013, compared to a median of \$510 000 in Perth in the same year (Shire of Broome n.d.). A local government official interviewed summed up the housing situation in resource-rich towns as follows:

... over the last five years, we've had enormous growth in terms of housing, and so we did have a super storm where that caused major issues with housing and land prices ... so typically you could be paying anywhere \$2000 to \$2500 a week for a top quality four-bedroom executive home with a swimming pool ... that's moderated to some degree now, and typically you're only paying rent about \$1400 or \$1500 a week for that type of property. But it's still well over double what you might get in the Perth CBD.

The rise of the transient worker population is seen as both a driver of and response to housing market pressures in resource-rich regions. The influx of FIFO and other transient workers into

⁴ Because resource-rich towns and regions are often located in remote areas, housing construction also tends to have higher costs for the same reasons as outlined in relation to tourist towns.

resource-rich towns exert demand pressures on housing in these areas which in turn result in inflated housing costs. Conversely, the lack of affordable and appropriate housing makes it difficult for workers to reside in the towns in which they work (Brennan 2014; Shire of Broome n.d.). The absence of a permanent residential population that both lives and works in the same town prompts fears for an area's future economic growth. These fears arise because a local workforce is viewed as the source of regional multiplier effects, as their demand for locally produced goods and services boosts local businesses (Brennan 2014). A local government official notes this as a particular worrying issue for the local economy:

... I guess the biggest issue for us is that a fly in/fly out worker is estimated to only contribute about, less than 20 per cent to the local economy as a normal resident. So when they have all of their food, accommodation, laundry, basically everything is catered for, they then contribute very little to the local economy. And plus they work extremely long hours and maybe only get a Sunday afternoon off every fortnight. So their ability to interact with the community and contribute economically is very minimal
...

However, local government housing strategies acknowledge the unique challenges associated with supplying housing in resource-rich regions. First, the number of FIFO workers in a region can be expected to fluctuate dramatically, resulting in population shocks that are difficult to manage (Brennan 2014). Furthermore, long-term prospects for mining are uncertain. Should commodity prices fall, the size of transient workforces will drop as mines' profitability falls. Because resource-rich towns are highly vulnerable to international resource price movements that they cannot control, investing in the support of a FIFO workforce is typically deemed a risky long-term development strategy (Brennan 2014). These risks are described by one local government official in the following terms:

... with the current philosophy and business directions of major corporates like BHP Billiton and Rio Tinto, Woodside Petroleum, with a decline in pricing on some of these commodities like iron ore that encourage big business to look very closely at their cost of doing business, and that unfortunately then impacts on their staffing costs and we find they're moving more and more to fly in/fly out workforces.

Third, as in the case of towns that are largely reliant on tourism, resource-rich towns are typically deemed to be riskier by financial institutions, which in turn impedes investors' ability to access finance to fund projects in the region:

We've multiple different resources: iron ore, salt, petroleum, gas, ammonium. So it's trying to get the right message out there that we're more than just a mono economy. Yes, it's all resources based, but we have a broad range of different resources. So it's getting that message out to banking institutions so that they're aware of that because typically banks are quite concerned about investment in one-horse towns, and that can impact on people's ability to invest because there's some reluctance by the financiers.

6.5.3 Housing strategies to promote economic development

Resource-rich towns typically have three key housing-related strategies for promoting local economic development. First, there is clearly a need to address housing affordability issues by implementing plans to meet excess demand for housing in these regions. Proposals that have been put forward include:

- Planning-related strategies such as increasing the number of housing approvals and reducing approval process time (Town of Port Hedland, n.d.a) and developing and implementing staging plans for land releases over the next 20 years (Town of Port Hedland 2010).
- A focus on workers' housing needs, for example developing housing for health professionals such as allied health practitioners, dentists, chiropractors and key workers

(Town of Port Hedland 2010; Shire of Roeburne n.d.) and provision of additional government employees' housing to promote the establishment of new agencies (Town of Port Hedland 2010).

- Supporting Indigenous involvement in housing market projects, for example through initiatives that support Indigenous persons to become developers and promote home ownership among Indigenous people who are able to afford home purchase (Town of Port Hedland 2010).

A second key strategy focuses on the provision of TWA facilities to encourage shifts from transient to longer-term workforces in resource-rich regions. For instance, various towns in the Pilbara region have proposed that TWA and facilities for FIFO workers be located in areas that are closer to commercial centres and key services, to encourage greater integration between transient and permanent residents in the region, and promote shared use of facilities and services (Town of Port Hedland n.d.b; Shire of Roeburne n.d.). In Port Hedland, time limits on the operation of TWA facilities are also stipulated to encourage shifts away from transient work to longer-term work. For instance, Port Hedland's draft TWA strategy has proposed that TWAs be split into 'Fly Camp' versus 'City Building Camp'. A Fly Camp will accommodate a building project and be limited to 100 beds over 18 months. A City Building Camp will provide for any number of beds and be limited to five years (Town of Port Hedland n.d.b). However, such strategies are at times fraught with complications:

For example, with the Chevron Wheatstone projects which you may have heard of, a \$30 billion new gas plant at Onslow on the Western Australia coast, Chevron originally made a commitment to build their long-term operational accommodation within the town boundaries so that those people could interact with the community and add to the economic growth of the local community. Recently they've approached the Premier to say that they want to rethink that strategy, they want to have their accommodation where the gas plant is to avoid a 30-minute drive before and after a 12-hour shift, which starts to be an occupational health issue. And the Premier has agreed to that. So that's a huge disappointment for that particular community, and that will impact on their economic growth.

A third strategy is to pursue a diversified economy that promotes local employment and investment opportunities (Town of Port Hedland n.d.a), but housing factors can be a constraint. One local government official we interviewed sums up the intricate links between housing market conditions and the success of diversification efforts in a resource-rich economy in the following ways:

Tourism, there's a huge potential here. That's been very much on the back burner over the last few years because there was no accommodation available; basically anyone that had any skills at all were sucked into the mining sector, whether you could drive a boat or drive a bus or drive a machine, then all those sorts of people were in high demand and so there was issues with accommodation, lack of accommodation, expense of accommodation ...

Diversification might be best pursued through the encouragement of entrepreneurship, an idea developed and enthusiastically promoted by Glaeser (2011) in a city context. Various programs based around the provision of resources and services to support the growth of home-based businesses have been proposed (Town of Port Hedland n.d.a). As previously noted in the context of metropolitan areas, how the home might act as a catalyst for the birth of micro-businesses is as yet poorly informed; but the attention it is beginning to attract in local government policy circles is clearly increasing.

6.6 Regional slow growth areas

6.6.1 *Economic and housing profile*

In this grouping we have regions that typically have a high exposure to the agriculture, forestry and fishing industries. There are niche segments in this sector where healthy employment and business growth is apparent (e.g. certain parts of the food processing industries). However, across much of the sector there is stagnation and even decline (e.g. forestry and timber processing); regions unlucky enough to have developed on the back of such industries confront serious economic challenges aggravated by drought, sustainability issues and their specialised economic structures. While their economies often share the 'one-horse town' feature with resource-rich regions, the key distinguishing characteristic is a high dependence on stagnant or declining industries.

Their economic stagnation is mirrored by ageing populations as the young often migrate in search of training and employment opportunities. This erodes the region's skill base, and depresses regional income as they leave behind a work force increasingly concentrated in low wage jobs, or jobless. The population's low per capita incomes are commonly associated with poor quality housing and inferior community amenities; households lack the spending power needed to maintain and upgrade their housing, while local governments have a weak tax base that is a constraint on their capacity to finance investments in local amenities. Those same low incomes can translate into a relatively high dependence on rental housing, with precarious housing circumstances a feature in the private rental housing segment of this tenure. The insecurity of leases can complicate arrangements around child care, schooling and commuting and pose impediments to economic participation, with adverse consequences for regional productivity.

In these regions there are two key links between housing and productivity. Attracting and retaining younger skilled, managerial and professional individuals is problematic when the region is blighted by poor housing and amenities, as well as poor prospects for house prices, that is a further disadvantage given their importance to wealth accumulation. Sub-standard and precarious housing is the source of a second connection given its importance to physical and mental health. Indeed regions in this category tend to have elevated rates of homelessness, a housing outcome correlated with health issues and low rates of employment participation.

We pick up these topics in our review of housing and economic strategies under three thematic headings:

- housing insecurity, labour markets and economic expansion
- depressed house prices
- housing quality and diversity.

6.6.2 *Housing insecurity, labour markets and economic expansion*

There is a widespread agreement in local government strategies of the importance of affordable secure housing to the welfare of residents, as indicated by the quote below:

People living in precarious housing—housing that is unaffordable, in poor condition or insecure in tenure are likely to suffer from worse health than those in appropriate housing. Precarious housing has been linked to heightened emotional and physical stress, mental health issues, domestic violence and drug and alcohol use. In the long term, precarious housing can lead to intergenerational disadvantage, entrenched social disadvantage and social exclusion. (City of Ballarat 2013, p.7)

The ramifications for productivity and economic development are less well appreciated in local area documents, though there are signs of an increased awareness of these issues. The City of Ballarat's 2012 affordable housing review highlighted that the economic performance of a

region can be tied to the availability of secure, affordable housing. A lack of affordable housing is not a common feature in these regions; however, reluctance from private investors to acquire rental properties can result in shortages in this tenure. Where this emerges, parts of these slow growth regions can nevertheless have housing costs that are high relative to the low incomes typical in these regions given the predominance of low wage jobs. This can be the source of labour market impediments by hindering the mobility of workers to regions that offer low wage job opportunities, but are afflicted by relatively high housing costs (SGS Economics and Planning 2012). Furthermore, there can be regional multiplier effects as households experiencing housing stress will have reduced income to spend on other goods and services in the local economy. This is particularly problematic in slow growth regions where per capita incomes are typically low.

6.6.3 Depressed house prices

In reality, however, house prices (and rents) in regional slow growth areas are generally markedly lower than in metropolitan areas. Hence affordable housing is frequently seen as a way of promoting expansion in key sectors of regional slow growth areas. Various planning-related strategies are proposed to improve housing supply. This is viewed as a way of attracting new residents who could find lower house prices attractive, because they offer in-migrants an opportunity to withdraw housing equity, without having to trade down in terms of size and quality of housing. For the younger family, they offer an easier pathway into first home ownership.

In the City of Ballarat (2012), greenfield residential development in growth areas is encouraged. Moira Shire's economic development strategy recommends developing affordable housing that is in close proximity to its town centre and nearby regions (e.g. Shepparton) to link up to neighbouring areas. Moira Shire's economic development strategy also proposes targeting specific occupational and age groups to boost local industry. For instance, it is proposed that Melbourne-based tradespeople be encouraged to relocate to take advantage of the more affordable housing in Moira, while also boosting the construction industry's skilled workforce. Retirees are also being targeted as a demographic for whom affordable housing is likely to appeal. Moira sees the in-migration of retirees as a potential regional economic benefit because of the resultant stimulus to its health and community services industry (The Regional Development Company and Shaw & Associates Consulting 2008).

On the other hand, a local government official we interviewed offered contrasting views. The interviewee felt that relatively flat house prices in regional slow growth areas have in fact discouraged moves by managers and professionals away from capital cities and to rural areas. These high skilled employees fear that they would have to forego capital gains in rural regions, and this could hamper future moves back to the city, where house prices are much more robust.

6.6.4 Housing quality and diversity

Another related housing concern is the fear that the lack of good quality housing, and its limited range of housing styles, hinder the attraction and retention of skilled workers:

Over the past decade, businesses in the Wimmera Southern Mallee (WSM) Region have become increasingly concerned that a lack of appropriate housing is acting as a barrier to attracting and retaining skilled employees in the region. (Ernst & Young 2013)

An inability to secure appropriate housing in turn can impact on local economic conditions. Less direct effects may also be felt more widely, for example the inability of communities to attract labour in locations where there are job opportunities yet higher housing costs. (City of Ballarat 2013, p.12)

The WSM region in particular feels that the lack of established rental housing markets as well as limited housing diversity, means that its townships cannot meet the needs of workers

relocating to the region (Ernst & Young 2013). Comments from a local government official we interviewed confirmed that the lack of rental housing and housing diversity are indeed impediments to the attraction of skilled workers. The interviewee noted that professional and public service workers (e.g. policemen and nurses) often have difficulties finding suitable quality homes readily available in dispersed rural areas. They therefore locate into areas that are at some distance from where they work, which in turn result in considerable commuting costs and times, as well as preventing these workers from engaging with communities in which they work.

6.7 State metropolitan region

This section highlights the key themes linking housing to productivity and economic development as gleaned from state metropolitan-wide planning documents. The connections are much the same as those highlighted in our discussion of inner and outer metropolitan local government strategy plans. However, there is a key spatial distinction because the planning documents drawn on in this section are developing strategies that are to be implemented on a metropolitan-wide basis, rather than specific to a sub-region of the city. They must therefore take into account linkages between sub-regions. We begin with some observations on the evolving economic and housing profiles in major Australian cities.

6.7.1 Economic and housing profile

Australian city economies to some degree mirror structural change in the national economy, and so manufacturing sectors have typically shrunk, while service industries have become more prominent. This is an especially marked feature of the changing urban landscape in Adelaide and Melbourne, where manufacturing industries were relatively important contributors to their metropolitan economies as recently as the 1970s. Globalisation is also prompting structural change. It is thought to be weakening economic ties with city region hinterlands, while connections with the wider world strengthen as tariff barriers have been relaxed, and international trade in goods and services mushroomed. Immigration has complemented these economic changes, with growing numbers from Asian countries helping to create an increasingly multicultural urban population. Migrants typically settle in our larger cities, and this has helped maintain strong population growth in most major Australian cities, a trend that has also been helped along by interregional migration.

In recent times the Australian economy has become more resource-based as real commodity prices soared and investment in energy and mining sectors surged. This shift has left an especially conspicuous imprint on the Perth and Brisbane metropolitan economies. They have benefited from strong growth in service industries (e.g. insurance and banking), that are complementary to the resource sector. Populations have increased at rates well in excess of the national average, placing pressures on housing markets and urban infrastructure.

The cultural and entertainment industries are a growing influence, notably in the inner city and surrounding suburbs. The demand for the services of cultural and entertainment industries is believed to be income elastic; as higher paying jobs tend to be concentrated in the central business districts of Australian cities, and the inner suburbs have come to be populated by higher income residents, these industries have prospered in inner areas of our cities. The rise of such service industries could be leaving its mark on the housing market, as the incomes of workers in these industries can be both low and volatile, yet inner cities typically host the most expensive segments of our housing markets. There is therefore a growing demand for affordable housing, and particularly for the smaller apartment style accommodation that Australia has not supplied in the past, though this is now changing.

Spiralling real land and housing prices have (since the mid-1990s) increased the housing costs of home buyers and tenants (of private landlords) in our major metropolitan cities. The Global Financial Crisis interrupted the upward momentum in prices and rents, but this seems to have been a temporary hiatus, especially in Sydney and Melbourne. The cost of living pressures for

renters and the difficulties experienced by first home buyers have grabbed the headlines, but there are potentially important connections with productivity and economic development, as already explored in our survey of local government strategies in inner and outer metropolitan regions. There are 'key worker issues', with fears that professionals in certain occupations concentrated in the public services (e.g. fire-fighters, child care workers, teachers and so on) are unable to access affordable housing within commutable distance of those jobs located in expensive inner areas of Australian cities. Furthermore, a pattern of low density development is recognised as the source of potential labour market inefficiency that might affect younger individuals with training needs. One state government official expressed concerns along these lines in one interview:

... with that pattern of development it means that you put people who have low labour market attachment and probably need opportunities for education and training, you put them out in the fringe and they, they don't really able to accommodate high transport costs. So, you know, as part of that pattern of development is probably not particularly conducive to enhanced productivity and labour force participation.

The displacement of traditional industries, especially those that are land intensive, is igniting concerns around jobs and the loss of skills and expertise. Spiralling land and property rents and prices add to business costs, and since land is an important factor of production complementing labour and capital, one would think that rising rents and prices adversely impact the competitiveness of Australian city locations. This line of reasoning does not seem to have directly influenced the metropolitan planning documents that we have accessed, and that we now turn to.

6.7.2 *The shift to mixed land use and housing diversity*

A common feature of planning documents from urban areas is the focus on the creation of activity centres distinguished by clusters of businesses and medium density housing in mixed developments, that are well-connected by public transport (State Government Victoria 2010; State of Western Australia 2010; WA Planning Commission 2010, p.4). There is then a move away from the separation of business locations from housing that has been encouraged by land zoning. It reflects the emergence of the service sector, and especially information intensive industries. Businesses in service industries are not generators of the negative externalities (air and noise pollution) linked to 'old' industries. There is a second important difference. The physical proximity of service businesses and residential housing can improve productivity by facilitating the face-to-face contact crucial to trust, the cement that helps bind new business ventures that require sub-contracting arrangements between various independent enterprises. Face-to-face proximity can be especially significant when specialist skills and expertise are being combined, as such business arrangements are characterised by asymmetric information, and hence prone to opportunism and hold-up.

Various quotes from metropolitan planning documents illustrate the overall vision embedded in activity centre approaches to mixed land use strategies. *Plan Melbourne* (State Government Victoria 2010, p.4) describes '20-minute neighbourhoods' as 'places where you have access to local shops, schools, parks, jobs and a range of community services within a 20-minute trip from your front door'. Perth's *Directions 2031* document (WA Planning Commission 2010b, p.14) describes a 'connected city pattern of urban growth' characterised by 'developing and revitalising activity centres as attractive places in which to invest, live and work'.

But the key driver shaping metropolitan housing strategies is the need to respond to population growth, and the changing demography of urban populations. Victorian and Western Australian governments expect strong capital city population growth that will require a large increase in each city's housing stock. The other key demographic trends are population ageing and smaller household sizes that are a 'clarion call' for a more diverse dwelling stock. These considerations should be important facets of any housing strategy. But there is a demographic

determinism at the heart of forecasts of housing demand that parallels the states' approach to the spatial dynamics of the metropolitan economy. Both are based on a geo-spatial modelling approach that barely acknowledges the presence of market processes in land and property. For example, one state government interviewee admitted:

... the issues that probably ... take up most of our time at ..., we're really associated with providing, I guess, the infrastructure particularly to support population growth in areas where economic development is occurring.

The result is neglect of the consequences of spatial plans for land and property prices and rents. These are yawning gaps in metropolitan planning practices, given the importance of prices and rents as signals (flawed or otherwise) that help shape spatial resource allocation and use. Since the allocation and use of land are a key influence on the pace of urban economic development and productivity growth, the neglect of how plans interrelate with land and property markets is a significant weakness.

Despite the absence of economic analysis, metropolitan plans appear to be shaped by assumptions about links between mixed land use and economic development that reflect a growing belief that cutting travel to work time improves productivity, and also an expectation that accommodating residential and employment growth in designated locations will yield agglomeration dividends. For instance, in Perth's *Directions 2013* metropolitan planning document (WA Planning Commission 2010b), the following claims are made:

... increased residential populations and business activities will promote employment self-containment, which will reduce journey-to-work trip generation. (p.46)

... [t]he focus on promoting mixed use activity centres throughout the region that provide both housing and employment opportunities will reduce the reliance on the capital city centre and potentially reduce the number of commuter trips. (p.57)

Direction 1.1 in *Plan Melbourne* (State Government Victoria 2014) states that:

The [Metropolitan Melbourne] structure plan will help optimise planning for major infrastructure provision, while creating opportunities for people to live closer to jobs and allow businesses to be located closer together. (p.33)

Under the Metropolitan Melbourne Structure Plan, we will provide opportunities for businesses to be placed where they can be most productive or meet a market gap. (p.33)

Related to the development of mixed use activity centres is a perceived need to increase housing diversity. In Perth, it is proposed that higher-density housing be concentrated within and immediately adjacent to activity centres in a compact urban form, and this is expected to increase activity outside the usual business hours (State of Western Australia 2010). The Perth *Directions* plan envisages the development of medium-rise higher density housing along urban corridors that connect activity centres. This strategy aims to maximise use of public transport and also contribute to the viability of activity centres (WA Planning Commission 2010a, 2010b). These views reflect a belief that unbridled expansion on the urban fringe is no longer sustainable in part because public transport is not financially viable at the low densities generally accompanying expansion at the fringe. As one state government interview participant put it:

... and that pattern of development makes public transport more expensive because you don't have the aggregation of people that really makes railway viable.

In *Plan Melbourne* it is proposed that medium and high density housing be supplied in clearly defined urban renewal sites and precincts, an aim that is true to the spirit of Glaeser's (2011) view that high density housing must be concentrated in those areas where it is possible to

increase supply, without impacting on the wellbeing of existing communities of low density housing.

6.7.3 *Housing affordability, demographics and labour markets*

Unsurprisingly, housing affordability emerges as a key issue at a wider metropolitan level. It is recognised that the provision of affordable housing is essential for supporting economic development and employment. For instance, an aspiration of *Plan Melbourne* is to provide a larger range and supply of affordable housing that is close to the city centre and other major employment centres (State Government Victoria 2014). Perth's *Directions 2031* notes that providing affordable housing close to activity centres will increase the catchment populations near these centres, which will in turn increase the consumption base needed for businesses to flourish. It is also suggested that increasing affordable housing in activity centres will increase the employment containment within the centres (WA Planning Commission 2010b).

Improvements in housing affordability are largely envisaged through planning mechanisms. It seems that ensuring ample supplies of residential land through zoning, the delineation of activity centres, national employment clusters and so on, are the principal mechanisms to achieve affordability goals as well as employment containment. However, there is a neglect of the kind of fiscal measures that might help achieve these same goals.

Plan Melbourne argues that:

... locating medium- and higher-density development near services, jobs and public transport supports the objectives of housing choice and affordability. (State Government Victoria 2014, p.71)

... providing housing close to jobs promotes affordable living. There are already areas in metropolitan Melbourne with medium-to-high job numbers that have the potential to provide more housing. In order to plan for this growth, national employment clusters, metropolitan activity centres and activity centres will require structure plans to enable housing and job growth. (State Government Victoria 2014, p.74)

Similar strategies are found in Perth's *Directions 2031*, including:

... increased dwelling densities in activity centres, particularly around public transport nodes, will relieve the pressure on urban fringe locations. (WA Planning Commission 2014, p.46)

... higher densities and innovative dwelling designs will improve access to a variety of housing types, and potentially improve housing affordability. (WA Planning Commission 2014, p.46)

6.7.4 *Home-based economic activities*

State planning documents recognise the importance of home-based economic activities that should and can be encouraged via planning provisions. In WA, it is proposed that:

Activity centre structure plans should cater for small-scale and home-based businesses and live-work housing whenever possible. (State of Western Australia 2010, p.35)

In Victoria, similar aspirations are evident, with *Plan Melbourne* stating that metropolitan planning authorities should:

... [i]nvestigate opportunities to support [working from home (or closer to home) by updating home-based business regulations (including a review of clause 52.11 of the Victoria Planning Provisions) and supporting the implementation of the Residential Growth Zone or Mixed Use Zone. (State Government Victoria 2014, p.36)

Support for home-based economic activities is thus emerging as a theme, not just in regional Australia, but also metropolitan cities.

6.8 Concluding remarks

We conclude this chapter with some overarching observations that have emerged from a close reading of the selected housing strategies and economic development plans, as well as interviews with policy-makers.

Housing policy has taken a market-oriented direction in recent decades. As a consequence, supply side interventions in the form of direct provision to increase housing and residential land supply have diminished in importance, to be replaced by a greater reliance on private markets. Direct subsidies are increasingly aimed at assisting the capacity of low-income households to pay for housing in private rental and owner-occupied markets. Despite the growing prominence of market mechanisms in the Australian housing system, housing planning strategies remain firmly wedded to a population-driven approach to housing strategies that are designed as if markets do not exist. So physical targets (number of housing units) are set for areas and regions to meet future household projections, but long or even short-term consequences for rents and prices of alternative spatial configurations for housing supply (and demand) are ignored.

While this omission is most obviously relevant to the issue of housing affordability, it has an important implication for our understanding of the implications for productivity and economic development. One of the more important transmission mechanisms through which housing impacts local (regional) economies is through land and property prices. Soaring residential land and property values will spill over into commercial and industrial land and property markets with adverse consequences for competitiveness (since land is a key business input alongside labour and capital). These spillover effects directly impact private business costs because of higher rents and prices for premises, but they also indirectly affect a region's competitiveness by lifting the economic cost of land using infrastructure that is important to the servicing of business premises (e.g. power and water), the transport of goods (e.g. road and rail) and the electronic transmission of information (e.g. broadband cable). These competitiveness impacts are raised in some plans and interviews, but there is a lack of economic and modelling expertise that is a constraint on the capacity of local and state government planning authorities to address these connections.

A second key omission in planning documents and interview responses is their almost complete neglect of taxes and charges on land and property, including those where local governments (e.g. rates) and state governments (e.g. land taxes and stamp duties) are responsible for both collection and design. It is well known that these taxes and charges impact on land use and both residential and non-residential property markets. Their incidence can have efficiency and hence productivity consequences. For example, stamp duties are a tax on mobility and will therefore impede changes of land use, as well as relocation of people and businesses. Adjustments in land and property markets are therefore slower and arguably less resilient in the face of economic shocks. The narrow perspectives of planning documents that focus on the physical built environment, and neglect fiscal instruments that are levied on property, means that local and regional housing and economic development strategies miss one of the more important connections between property markets on the one hand, and productivity and economic development on the other hand.

PART 4

7 RESEARCH PRIORITIES

Our review of the academic literature and local area housing strategies and economic development plans, as well as interviews with local government officials, have unearthed a number of potentially important connections between housing and productivity. Most of these links remain to be empirically explored in Australia, the one exception being housing and employment participation, where there is now a robust body of evidence that can be drawn on. In this section, we offer readers a toolkit comprising databases and statistical techniques that could be used to build an Australian evidence base that informs policy-makers on the various ways housing is related to productivity and economic development. We hope that future researchers will dip into this toolkit and generate findings that could help guide the design of housing policy in ways that are sensitive to the connections between housing, productivity and economic development in Australia.

With these aims in mind, we have conducted a search for suitable data sources and also make tentative suggestions as to how these data sources might be used. The results of our searches are grouped under three headings that describe broad areas of study in this emerging research field:

- housing effects on regional and local area economic performance
- housing effects through human capital channels
- housing effects through business capital and innovation channels.

7.1 Housing and land use effects on national and regional economic performance

There are various approaches to the study of links between housing and national or regional economic performance, each of which calls for different types of data.

7.1.1 *The links between housing and employment or income growth over the long-run*

In order to generate a bird's eye view of how housing and economic growth are linked, it is insightful to take the 'long view', over say the last 20–30 years, and trace the trajectory of housing outcomes, employment and income growth in the state capital cities and rest of state regions of Australia. Various ABS data sources contain a rich array of housing, employment and income variables over the long run.

One such data source is the ABS Survey of Income and Housing (SIH), which is replicated in various years over the period 1981–82 to 2011–12.⁵ As its name implies, the data contains variables on housing that allows researchers to generate the distribution of households by housing tenures, average housing cost burdens, as well as their demographic and other personal characteristics. Importantly from the perspective of economic participation, the survey also contains rich detail on labour force status, income, and education. SIH is representative of the entire population, and population weights can be applied to generate capital city-wide estimates. Wood et al. (2009) illustrates how variables from SIH can be combined to analyse possible relationships between an individual's housing circumstances (in this case, tenure) and employment outcomes.

However, aside from the capitals, the SIH does not allow identification of other major cities in Australia. Here the Census can be used as a reliable source. It provides a range of housing, labour force status and income variables for Australia's population on a five-yearly basis, and allows a more detailed breakdown of cities and regions. At present, the Census also spans the period 1981 to 2011, allowing a 30-year analysis that the SIH also offers. It has the advantages

⁵ Specifically, the survey data is available for the following years—1981–82, 1986, 1990, 1994–95, 1995–96, 1996–97, 1997–98, 2000–01, 2002–03, 2003–04, 2005–06, 2007–08, 2009–10, 2011–12.

of a population rather than sample-based source, but it lacks the detail that SIH offers on the socio-economic characteristics of individuals and households.

7.1.2 Effects of residential investment on regional and local economic performance

The international literature now features a number of studies that assess the links between infrastructure investment, productivity and national (or regional) economic growth. This is a crucial issue as our review of the literature, both academic and 'grey', reveals. These studies typically relate infrastructure investment to output and income through production function-growth model approaches. The effects of residential investment at a regional or metropolitan level could be estimated using such modelling approaches. Various national data sources are available for such an exercise. For instance, Wood (1988) estimated that the impact of the housing sector on long-run growth trends in the Australian economy over the period 1968–1982 assuming a dual sector economy (housing and non-housing sectors). Aggregate output is represented by GDP and economic growth by the rate of increase in GDP. Other important variables include gross fixed capital expenditure as a proxy for investment, and the total number of wage and salary earners as a proxy for labour input. The value of new residential commencements is used to measure housing investment. These variables were obtained from a historical series made available by the Reserve Bank of Australia.

The regional multiplier effects of housing investment are thought to be an important source of stimulus that can accelerate recovery from recessions that typically have an uneven geographical impact. Regional variants of these production function-growth model approaches might shed insights into the size of housing investment multipliers. In Australia, building approvals data is available from the ABS at the LGA level. These data are compiled from permits issued by local governments and other related certifying authorities, contracts let or day labour work that have been approved by local governments, semi-government, the state and Commonwealth, as well as major building work approved in areas that fall outside the usual administrative approval processes, such as building activity on remote mines. It is classified by type (i.e. residential versus various non-residential components) (ABS 2015). Such data could be combined with employment data from, say, the Census to estimate the multiplier effects of residential investment on employment growth at the LGA level.

7.1.3 Mixed land use and local productivity

Our review of local area housing plans and economic development strategies as well as interviews with local government officials, reveal the importance of mixed land use zoning as a strategy for promoting economic development in inner, middle and outer metropolitan areas. Mixed land use activity centres typically combine medium or even high density housing, with commercial and industrial (light manufacturing, for instance) land uses in a precinct.

The hypothesis is that the mix of housing and work places eases work commutes as well as traffic congestion, with consequent time savings and productivity gains (see Chapter 4). But reduced travel to work times are but one potential productivity gain from clusters of residential, commercial and industrial land uses. Claims that 'knowledge' workers in the new information intensive industries as well as creative industries benefit from positive externalities in such clusters deserve scrutiny. Comprehensive property transaction and land valuation datasets compiled by each state's Valuer-General are a rich source of information that might shed light on whether (and how) mixed land use activity centres impact local economies, and in particular their capacity to yield productivity gains.

Valuer-General transactions data is extremely helpful because it gives us an historical record of land and property prices as struck across markets where land use zoning varies. When matched with land valuation data sets, the researcher has access to a broad range of land and property attributes (size, zoning, overlays, distance from amenities and so on) that can be used as controls in multivariate regression models. Land supply is fixed, and densities change slowly, so externalities and productivity gains are capitalised into land values. Transactions in

land (controlling for size, zoning, overlays, distance from amenities and so on) can then be used to estimate possible land premiums associated with the higher productivity of land in mixed use precincts. A propensity score approach might usefully be employed to design a treatment versus control group quasi-experimental study design, in which mixed land use activity centres are assigned to the treatment group, while comparable control groups are created from a cluster of residential land plots that do not fall within a mixed use area, but whose characteristics mimic that of the treatment in all other ways. An example of this kind of methodology can be found in Wood and Cigdem (2012) where it is used to estimate the net benefits from neighbourhood renewal programs.

7.1.4 House prices and local economic performance

In Chapter 6 we explained that the resilience of areas is influenced by the debt profile of its home owners. Those areas with large numbers of heavily indebted home owners are more vulnerable in the face of an economic shock that precipitates downturn in house prices. During a housing market downturn, the local economies of areas with highly leveraged home owners are likely to be harder hit than regions where home owners are less indebted. There are thus regional multiplier effects that were recognised in interviews with local government officers from inner to middle metropolitan areas. Furthermore, job losses will be greater in sectors offering non-tradable goods that cater to the local economy rather than sectors offering tradable goods that cater to the national economy, and are more reliant on national (rather than local) spending. Regional economies with large numbers of heavily indebted home owners, and large non-tradable good sectors are then especially prone to downturns in the national housing market that are accompanied by falls in house prices.

A likely empirical approach to testing the extent to which house prices impact on local economic performance can be rolled out if two critical datasets can be accessed. The first is data on employment at a local area level (e.g. LGAs or SA3s) by fine industry classifications that allow us to identify goods and services that are non-tradable (e.g. hairdressing), versus those that are tradable. The Census contains data on industry classifications down to the four-digit level, allowing one to observe the fine-grained industry breakdowns at the local area level. These data can be drawn from the Census database using ABS tools such as the Census Table Builder. The second critical piece of data is information on the LVRs of homebuyers at a local area level. This data is less easily accessed and could need an approach to a major bank with a view to requesting access to their mortgage applications data, on a confidentialised basis. Data access via these means is a complex task, but not an impossible one. For instance, Dungey et al.'s (2012) Australian study of the impacts of borrower characteristics on mortgage product choice made use of a database of 600 000 mortgage applications to a major Australian bank over the period 2003–09. It contains a rich array of variables provided by de-identified applicants to the bank at mortgage origination.

7.1.5 Built environments and economic activities

The fusing of property and land databases (e.g. from the Valuer-General's office) with the confidentialised unit record files from cross-section and longitudinal surveys (e.g. SIH, HILDA), offers a potentially robust approach to the analysis of relationships between built environments and the economic activities that take place in and around the built environment. Property and land databases provide a detailed picture of the urban (or regional) built form and the distance separating individual properties and their occupants from key services, amenities and employment centres (e.g. see Goodman et al. 2010). But in the absence of information on the people living and working within the buildings, they generate limited insights into how access to amenities, services and employment influence the efficiency of the economic activities of people who work and reside in these buildings. This important hurdle can be overcome on merging microdata from surveys such as HILDA with property and land databases.

7.2 Housing effects through human capital channels

7.2.1 *Housing and child development*

Much has been made in the academic literature of the important contribution that good quality housing can make to a child's development, and hence their lifetime prospects and productivity in adulthood (see Dockery et al.'s 2010 scoping study). This is not explicitly recognised in contemporary housing strategies and plans, though it was an important influence in earlier times when poor sanitation and damp housing conditions combined to cause serious childhood health problems. Dockery et al. (2013) undertook an empirical exercise to measure associations between key housing variables and early childhood health and development outcomes based on data from the Longitudinal Study of Australian Children (LSAC) and Longitudinal Study of Indigenous Children (LSIC). The study uncovered a modest housing effect on children's development and wellbeing. However, it was limited by the relatively short data panels available to the researchers at the time—three waves of LSAC and two waves of LSIC—a timeframe that might be too short for the detection of relationships that might be slow to form due to lagged effects of housing on developmental outcomes. Also additional waves of data will allow more variation in developmental outcomes to be observed. As of 2015, five waves are available from both datasets,⁶ offering researchers an opportunity to replicate the previous analysis over a longer timeframe. As noted by Dockery et al. (2013), parameter estimates are more precise with a longer panel.

7.2.2 *Housing and the educational and career choices of youths*

There are concerns in outer metropolitan areas and regional Australia that youths are at a locational disadvantage in regard to education and training opportunities. The 'unconfidentialised' version of the Household, Income and Labour Dynamics in Australia (HILDA) Survey offers an opportunity to disentangle these 'place effects' on youths' educational and careers choices from those attributable to personal characteristics. As of 2015, 13 waves of the HILDA survey data have been released spanning the period 2001–13.⁷ While the HILDA Survey is not a youth-specific dataset like the Longitudinal Survey of Australian Youth (LSAY), the former contains a rich array of housing variables, such as housing tenure history, dwelling type, dwelling size (as proxied by number of bedrooms) etc. The HILDA Survey also features a wide range of education and labour market variables that allows one to empirically test for the links between Australian youths' housing and location histories, and their education and career choices.

7.2.3 *Housing and labour force participation*

The empirical evidence base on the links between housing and economic participation in Australia has largely focused on the associations between housing assistance receipt and labour force participation. Under AHURI's first national research venture, a series of empirical investigations was carried out to measure the impact of Commonwealth Rent Assistance (CRA) and/or public housing on employment decisions (see e.g. Dockery et al. 2008; Whelan & Ong 2008; Wood et al. 2009). Key datasets that were employed included the ABS SIH available over the period 1982 to 2002, up to four waves of the HILDA Survey, and Western Australian public housing administrative records, which provided a panel on the characteristics and income changes of WA public housing tenants over the period 1999–2005. Later this year (2015) the Productivity Commission will be releasing the results from research that addresses similar research questions using a nationwide administrative data base.

⁶ See <http://www.growingupinaustralia.gov.au> and <https://www.dss.gov.au/about-the-department/publications-articles/research-publications/longitudinal-data-initiatives/footprints-in-time-the-longitudinal-study-of-indigenous-children-lsic>, (viewed 30 March 2015).

⁷ See <https://www.melbourneinstitute.com/hilda/data/>, (viewed 30 March 2015).

There is now a wider recognition of the myriad ways in which housing policies can impact labour force participation. AHURI will in 2015 commission an evidence-based policy inquiry into housing policies, labour force participation and economic growth that will widen the evidence base. An empirical investigation will be conducted using the 2001–13 HILDA dataset to investigate how differences in labour mobility across housing tenures may influence job search, wages and job quality following re-employment. The in-confidence version of the HILDA data will be used, in order to facilitate analysis of mobility at detailed geographical levels. This analysis will help inform the design of policy initiatives aimed at mitigating the impacts of housing market failure on labour market adjustments.

Extremely low price elasticities of demand have motivated labour market adjustments in the form of FIFO and DIDO. These workers are thought to be exposed to increased risks of mental health problems, including depression and suicide. These disturbing trends have received widespread media coverage in recent times (see Turner 2011; Colvin 2014). If housing market failure is giving rise to a form of labour market adjustment that erodes mental wellbeing, then productivity gains from resource-rich regions will be dampened as a result of the adverse mental health outcomes of workers, and the worker absenteeism and labour turnover it causes. However, to our knowledge, there are currently no data sources that will allow nationally (or regionally) representative empirical analysis of the transient workforce. The ABS does not collect data directly on such workers. The Census collects data on individuals' location of residence and location of work. A distance-to-work measure can thus be used to make inferences about the transient workforce, though the ABS concedes that it is neither a direct nor complete measure (see ABS 2014). Furthermore, a further review of the Census data items list⁸ reveals that while it collects data on location of both residence and work, the location of work variable is not available in the Census 1 per cent or 5 per cent sample microdata, hence limiting the prospects of detailed analysis on the transient workforce through methods such as regression modelling. Access to confidentialised company employment records is a possible option.

7.3 Housing effects through business capital and innovation channels

7.3.1 Housing arrangements and home-based economic activities

The research reported in Chapter 6 uncovered the importance of home-based economic activities in both metropolitan and regional areas. In metropolitan areas, promoting home-based businesses is expected to lead to the emergence of micro, small and medium-sized businesses that help boost the local economy. In regional towns that are highly reliant on the resource sector, it is hoped that the growth of home-based businesses will help diversify the economic base of these regions.

Once again the HILDA Survey would be a relevant data source as it offers a range of variables that could aid identification of the drivers of home-based businesses, as well as measurement of their impacts on local economies. Importantly, the dataset contains information on whether a respondent works from home, and whether s/he owns a small business. As the survey is also a rich source of information on personal characteristics, it can be employed to examine whether particular sub-groups of the population are associated with the formation of home-based businesses, and/or the propensity to work at home. Furthermore, one could empirically test for the links between ownership of home-based businesses and economic prospects such as job security and income stability, for example are home-based business owners and employees who work from home more vulnerable to labour market precariousness than those in more traditional forms of employment?

⁸ See <http://www.abs.gov.au/ausstats/abs@.nsf/Lookup/2037.0.30.001main+features502011> for the data item list of the most recent Census.

Chapter 6 also highlighted the importance of telecommunications infrastructure to the success of home-based businesses. ABS data sources such as the General Social Survey and Business Longitudinal Database offer information on internet access and usage for business purposes. These sources could be useful as the basis for descriptive work that explores the importance of residential housing as the 'premises' for home-based businesses, and the role of internet connections to different types of business (e.g. building construction contractors versus consultancy businesses).

PART 5

8 CONCLUSIONS AND POLICY CHALLENGES

8.1 Key conclusions

1. The study agreed with the wider conclusion of leading economic commentators that productivity in Australia will have to rise in the future if incomes are to grow at the rates of the last two decades. Australian productivity is high compared to other OECD countries, but will have to rise further. The productivity challenge faces not just individual workers and firms but all sectors of Australian life that are significant users of resources and shapers of how they are used. That includes the housing system and how and where, and at what cost Australians live and work.
2. The study concluded that there are few well researched arguments on how housing impacts long-term growth and productivity. The possible impacts of housing outcomes on local economies are not widely understood in local economic development practice nor in local and metropolitan planning systems. Growth cases for housing are rarely made in the policy context and this is in marked contrast to arguments widely held to support other forms of infrastructure investment.
3. These gaps in research, policy and practice are at first glance surprising as housing constitutes such a large sector of consumption, investment and employment in national and local economies. A range of housing processes, including construction and design, have a potential to impact national productivity and, importantly, the housing prices, rents and characteristics that prevail in an economy have a significant potential to impact growth. The report concludes that the failure to make growth cases for housing reflect the different past momentum of key areas of research, the conventional wisdoms and assumptions of government economic policy-makers about the housing system, the emphasis on social policy outcomes in the housing policy process, the neglect of economic processes when assessing housing-productivity links in local economic strategy development, and the unwillingness of strategic planning at local and metropolitan scales to grapple with economic housing market drivers and outcomes in strategic planning processes.
4. Policy and research approaches to infrastructure investment are very different. High level economic policy debate in Australia, and elsewhere, is replete with advocates convincingly arguing for infrastructure spending-led productivity effects. The RBA and the MCU have argued strong cases for transport infrastructure because they benefit the economy in the longer term. There is an irresistible, but reasonable, temptation to ask: What about the houses? Is there nothing to support the idea that a well-functioning housing system, efficient in its processes and effective in its outcomes, would not also constitute smart infrastructure investments with the economic benefits of 'long-term competitiveness, productivity, innovation, lower prices, and higher incomes'? The housing sector, whether in research or policy-making, has much to learn about the ways in which the infrastructure sector in general has evidenced and sustained a more favourable position within the thinking of economic policy-making. The demographically deterministic nature of housing plans is indicative of the unsophisticated way in which planners think about housing investment requirements.
5. The overview of published research on housing and productivity undertaken in this project concludes that there is evidence of a sparse and scattered nature that housing processes, as well as price outcomes and characteristics, have potential productivity effects. A framework was suggested and outlined that connects housing processes, characteristics (including neighbourhood attributes as housing and neighbourhood choices are inseparable) and market (price/rent/turnover) outcomes to key growth factors. These growth impacts can then be, at least logically, connected to effects on human capital, business investment and innovation. This may be done directly or through the filter of other local economic policy areas or tools, such as improving skills, growing home-based businesses, or diversifying local economies.

6. We did not identify a single example in published research or in Australian practice of a government (state/provincial or local) undertaking such an audit or strategic review of the economic consequences of housing. These logic chains for housing system/ policy effects need still to be developed in most places. We also note that they can connect to wider sets of desired policy outcomes, including wellbeing, rather than solely GDP-related measures of progress.
7. Application of this broad framework for auditing productivity consequences of housing can be applied at different spatial scales. Traditionally national economic policy arguments pertaining to infrastructure and productivity, and indeed regional approaches too, have been highly reductionist (abstract) in their economic underpinnings (assuming simple production functions). They have come to focus on labour (human capital) and capital (business investment) as key growth sources with other growth factors, sometimes including innovation, treated as a statistical (and perhaps conceptual) 'residual'. Land-related activities are now largely included within the 'residual' so that what homes, place and space contribute to economic growth formally falls outside the scope of conventional macroeconomic policy thinking.
8. The review in this report notes that factors such as spatially fixed assets (housing and infrastructure), agglomeration economies, spillovers and externalities, inelastic supplies, in other words, the essential characteristics of housing systems in modern cities, are assumed away in macro-thinking about growth. We concluded that the modern economy is regarded as if it develops on the head of a pin with no production and consumption space requirements. In consequence, too little regard is paid to place and space within economic development processes and outcomes. Housing lobbies, we argue below, fail to make the productivity case for housing. Treasury economists, arguably, fail to look for it and rule out potentially important effects by sticking to an unduly reductionist framework on what drives economic progress.
9. Macroeconomic or regional level estimates of housing investment impacts on growth are largely missing, especially compared to work in other infrastructure sectors. But a case can be made that the absence of such estimates should not hamper the improvement of housing-productivity impacts. The joint task of housing and economic policies is not to be bedazzled, or bedevilled, by the search for the holy grail of a singular productivity measure. Rather, it has to recognise the existence of different, wider models of growth and scrutinise the activities and outcomes of the housing sector and, where possible, evidence these effects and identify ways of improving the effectiveness of the system in relation to metropolitan goals. In many respects, this is an extraordinarily obvious statement. However, it is clear from this study that state and local governments do not actually undertake such assessments, and that housing policies are rarely modified to better achieve economic productivity objectives.
10. There are strong arguments to suggest that the housing performance auditing framework we have suggested and other future research on productivity and housing, and indeed infrastructure more generally, should be focused on metropolitan and local levels. Outside of the housing field of interest, there is a host of applied economics studies at all geographic scales that draw attention to how technological change, knowledge creation, the nature of human capital, education and health expenditures, institutional conditions, agglomeration economies and infrastructure development impact productivity. These are well-established fields of applied economics research. The research reviewed in Part 2 of this report suggests that the effective route to understanding how housing impacts productivity is not to estimate them within the constraints of reductionist growth models, but to develop, use and evidence synthesis of how housing outcomes shape economic growth. Clear logic chains in the relationships identified and estimated will have more substantive meanings for policy than estimates of the macroeconomic output elasticities for residential investment.

11. Currently metropolitan and local competitiveness studies seldom include housing variables and influences. There is an emerging literature assessing how housing outcomes impacts productivity within cities and regions. These effects can be identified in relation to overall regional market price and cost outcomes, to the structures of land uses and socio-economic separation that occur in local housing markets and to the spillover effects that arise from the characteristics or attributes of particular homes and neighbourhoods.
12. Rising real house prices, rather than driving economic growth and reinforcing booms, may erode productivity growth and impair overall metropolitan and national economic growth. Where real housing prices rise as a result not of a shortage induced by household numbers growth but by, say, self-reinforcing expectations of the attractiveness of housing investment, then rising investment in housing is more related to hope and fear than to increased shelter, comfort or access. It will not enhance human capital inputs and it will displace flows of savings and investment from productive sectors of the economy as well as put upward pressures on wage costs. There is a growing international view that rising house prices, through affordability and labour market channels, have the potential to distort locational patterns within a state or nation in ways that drive firms and households to less than optimal productivity locations. Poor housing system outcomes can frustrate the potential for agglomeration economies to foster growth.
13. In relation to 'emergent structures within the city' arising from housing market processes, commuting to work and labour market mismatch are concerns within city economic development, but they are too often seen as transport problems rather than as joint transport-housing outcomes. Similarly, the sorting processes of housing markets that concentrate poorer households into poorer places is fashioning, in many localities, increasing income-based segregation between areas. Neighbourhood spillover effects, as well as individual housing conditions, have discernible effects in some settings. This may apply not just to the links with human capital that arise from how homes and neighbourhoods impact on the ways children learn and transition to the world of work, but also to how households can use their home as a place of work and an asset to underpin investment in their own businesses, and raise levels of business formation and investment.
14. The research review pointed up many potential housing-productivity connections but also highlighted the absence of systematic knowledge on most of the key issues. The project then sought evidence from practice. The research examined a large number of metropolitan and local area plans and strategies for housing, strategic planning and economic development to assess whether, despite the absence of research, practice had developed some workable ways of connecting housing and economic development that chimed with prima facie, conceptual cases for likely impact. To this end, more than a hundred planning documents were assessed, some 25 localities (10 in Western Australia and 15 in Victoria) were assessed in depth and interviews carried out in 13 illustrative cases.
15. The research at local scales indicated that in many cases there was little attention to interactions between housing outcomes and the local economy, but in some places, and some kinds of plans, there was recognition that such issues could be important. It was quickly identified that different kinds of areas experienced different sets of housing-economy growth problems. The study, established to scope possible research and policy actions, identified, for illustrative purposes, five key area types (inner to middle metropolitan, outer metropolitan, regional tourism towns, regional resource-rich towns and regional slow growth areas). Within these areas there was not the breadth and depth of research that would allow researchers, or policy officials, to complete anything like a data-led matrix of housing-to-growth factor connections. As an alternative, and drawn from the plan assessments and interviews, a number of key themes were identified. In some areas, all themes were relevant and in others, one or two themes arose. When these key themes were discussed with local officials, it was clear that particular housing outcomes could play significant roles in relation to specific economic development problems or policies.

16. We set out to address three key questions in our local studies. They were:

- Do housing strategies consider economic drivers of change and assess economic impacts? Do economic development plans link to housing provision?
- What are the key housing issues that are seen to affect economic development at the local area and metropolitan levels?
- How is housing leveraged to promote local economic development?

The detailed results are presented in Chapter 6. In general terms, we have to conclude that the coverage of housing issues within economic development policies was, however, extremely patchy. It is not apparent that planning and practice for housing in economic development is oriented to maximising local productivity and competitiveness.

17. There is, however, a growing recognition by business and governments that housing outcomes may already be constraining national growth, or imposing undue expenditure costs on other public budgets (e.g. homelessness effects on health), and that a much more informed and coherent approach is required to house future population growth, at the same time as there is a renewed imperative to raise total factor productivity. How can different policy and practice approaches and different research change the outcomes identified?

8.2 Challenges for policies and governments

1. The Commonwealth Government has had a fluctuating interest in housing policies over the last decade and there has been a long-term shift to less federal involvement. States have not, in response to federal withdrawal, expanded their housing policy scope and expertise. The withdrawal of governments at national/federal and state levels has resulted in a dangerous narrowing of housing policy focus, in particular coping with homelessness and running ever smaller stocks of public housing. There has been a loss of bureaucratic, and perhaps political, capacity to understand and act upon wider housing system market, and regulatory, failures that shape less than effective outcomes for future economic growth. Housing policy is often, at the state level, fragmented across different Ministerial portfolios and it is increasingly difficult to have a sense that the housing system as a whole, and especially the market sector, is well understood. No level of government appears to ask the question as to which outcomes in the housing system will best fashion productivity. We believe this has to change at all levels of government if the housing system is to become more pro-growth and productivity-focused.
2. The key operational issues revolve around a more housing-informed economic development profession, and a planning profession and system that is comfortable with and competent at understanding economic drivers, outcomes and analyses of housing markets. This is an Australia-wide problem and we believe that the Commonwealth Government could act with COAG to shape a more productivity-oriented local development and planning effort. A first measure, drawing on some of the ideas developed in Chapter 6 of this report, would be to provide an advice note on the range of questions and conversations that local planners, housers and economic development professionals might share in shaping local change. It would be a good practice guide to housing in local economic development that would, while respecting local variety, be nationally relevant.
3. It would also be appropriate, through the same medium of COAG, to rethink appropriate approaches to education and certification in these areas of professional competence. There needs to be an on-the-ground competence to put productivity and an understanding of market processes and their analysis as a priority in housing and place development. Universities and others involved in teaching planning, economic development and real estate need to rethink the content of the courses they now provide, to shape planning and housing professions suitably skilled to understand and evaluate the kind of interventions in markets that promote the public good. There is also a critical need for the technical skills that would enable planners to measure the effects of interventions on market prices,

supplies and demand. The naïve demographically-driven housing strategies that are typical in Australian planning circles are not 'fit for purpose' in a 21st century housing system where resources are generally allocated (for better or worse) by markets.

4. We also believe that the skills and credibility of the Productivity Commission should be used to fashion a step change in policy in this area. There is a case for the Commonwealth referring the question of housing outcomes and their consequences for metropolitan and national productivity to the Commission. Our work has scratched the surface of a range of issues that need to be urgently addressed, and national leadership is required to move forward. Housing systems may be local, but their outcomes (whether social, environmental or economic) include significant spillovers from local to national outcomes. Federal governments who will not address this issue don't just fail to care about housing, they fail to promote productivity too.
5. Within Federal government, and indeed within state bureaucracies, there needs to be a solid professional expertise that understands the functioning of housing markets from an applied economics perspective. Expertise in labour economics and health economics, for instance, is valued within governments. Housing and urban economics expertise has to be seen in the same light and deployed in both Finance Ministries and relevant spending departments. It is important that policy thinking, advice and prioritisation moves past previous approaches that see housing policy as simply social in its objectives, and any public finance devoted to the sector as being 'displacement'.
6. At national and state scales, other participants in the policy process, especially leading housing advocates also have to embrace the productivity proposition to promote the case for change. Housing, at national and state scales, has fallen between macroeconomic views that largely neglect housing outcomes, and policy advocates who have made little of the economic arguments and instead pursued social and environmental cases.
7. In making these new policy cases and changing perspectives there would be merit in a new emphasis in policy of housing as essential economic infrastructure. The ways in which infrastructure, broadly defined, is argued to impact growth and productivity have been quite different from the housing sector. Although macroeconomic modelling has supported past infrastructure programs, research suggests that macro estimates have little general validity. As cases for infrastructure impact on the economy become more local, it is argued here that the housing sector should be a new, significant part of such modelling, audits and evaluations.
8. These changes at Commonwealth and state levels also need to be reinforced by, and at the same time reinforce, changes in the governance of housing, planning and economic development at more local scales. The local area interviews revealed an understanding on the part of economic development practitioners that housing might be an important consideration in some contexts, but there was little monitoring/information available to them from local housing planners. They struggled to understand the overall significance of housing issues for the economy, because 'housing' was seen as being outside the locus of their portfolio. Understandings were often intuitive rather than evidenced. Local housing planners and providers, who were focused in dealing with acute shortages of housing for poorer households or particular needs groups, had little time and few resources to devote to identifying housing constraints on the economy.
9. At more local and metropolitan scales, spatial planning has a more obvious role in policy processes than in national discussions. Planning, as a discipline, has a capacity to provide a spatial perspective that is essential to locationally fixed investment such as housing and infrastructure. The discipline also purports to have the ability to take a holistic or integrated view of different sectoral activities. The evidence in this study is that the practice of planning is inadequate in relation to the contemporary tasks of understanding, guiding and regulating spatial systems that are primarily market driven. There is a tendency towards

reliance upon strategic spatial plans with firm, forward estimates of housing investment requirements.

10. The review suggested that these estimates were driven by essentially demographic models that had little or no economic content, and were invariably unclear on the likely geographies of linkages between housing and labour markets that plans would shape. There is a very inadequate economic basis to plans and little attempt to monitor and adapt to their economic consequences. The adverse productivity outcomes that follow are often only slowly or partially recognised in local economic strategies. Moreover, there is little appreciation of how fiscal instruments such as user charges and taxes might be reformed to achieve planning goals. This is not an argument to abandon planning to the market. But it is an argument that productivity, like sustainability and equity, has to be recognised in public planning and investment strategies.
11. The study concluded that there is, based on research evidence and local practice experience, a sufficient prima facie case to provide a better framework of governance structures and competences at and across all levels of government in Australia with regard to the housing dimensions of productivity. The focus of housing policy has to be not simply on the poorest households or expanding home ownership, but also in shaping the housing system that will contribute to place competitiveness and national productivity gains for Australia.
12. However, a number of potentially important connections between housing and productivity remain to be empirically explored in Australia, the one exception being housing and employment participation. Hence, this study offers readers a toolkit in Chapter 7 comprising databases and statistical techniques that could be used to build an Australian evidence-base that informs policy-makers on the various ways housing is related to productivity and economic development. Our searches are grouped under three headings that describe broad areas of study in this emerging research field, i.e. housing effects on regional and local area economic performance; housing effects through human capital channels; and finally, housing effects through business capital and innovation channels.

8.3 Last words

The research reviewed in this report confirms an Australian imperative to improve productivity. It also makes clear that, although housing processes and outcomes are a determinant of innovation and the productivity of capital and human capital, there is scant evidence on how housing affects growth paths. There is no real understanding of how the housing sector impacts national growth and local competitiveness despite the significant scale of the sector in the economy. Local, metropolitan and regional practice does not lead to effective audits of and strategies for housing impacts productivity, and indeed other economic outcomes. This scoping study makes clear the pervasiveness of the knowledge gap required to make the Australian housing system pro-productivity, and highlights possible policy and research steps forward. There is a long, potentially productive journey ahead.

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APPENDICES

Appendix 1: Supporting materials for interviews and case studies

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- 2010b, *Directions 2031 and beyond: metropolitan planning beyond the horizon*, August, WA Planning Commission, Perth.
- Warrnambool City Council 2013, *Warrnambool city-wide housing strategy 2013*.
- Wyndham City (n.d.), *Economic development strategy 2012–2016*.

Appendix 2: Victoria documents review

Total: 77 local governments and three associated agencies (Wimmera Development Association, Rural Councils Victoria, Regional Cities Victoria).

	Local Government Area	Website	Relevant documents	Economic issues considered in housing plans?
1	Alpine Shire	www.alpineshire.vic.gov.au	Alpine Shire Council. (2010). <i>Alpine Shire 2030 Community Vision—2010 Review</i> .	
2	Ararat	www.ararat.vic.gov.au	GHD, & Ararat Rural City Council. (2005). <i>Ararat Residential Land Use Strategy</i> . Ararat Rural City Council.	
3	Ballarat	www.ballarat.vic.gov.au	SGS Economics & Planning. (2012). <i>Affordable Housing Review (Final Report)</i> .	
4	Banyule	www.banyule.vic.gov.au	Banyule City Council. (2009). <i>Housing Strategy</i> .	
5	Bass Coast	www.basscoast.vic.gov.au	Beverley Klinger & Associates. (2009). <i>Affordable Housing Picture and Affordable Housing Plan 2009–2013</i> . (Includes multi-stage study of impact of desalination workforce on local housing market).	
6	Baw Baw Shire	www.bawbawshire.vic.gov.au	Baw Baw Shire Council. (2013). <i>Council Plan 2013–2017</i> . (Refers to affordable housing strategy framework, however doc not available).	
7	Bayside	www.bayside.vic.gov.au	Bayside City Council. (2012). <i>Bayside Housing Strategy September 2012</i> . Bayside City Council. (2014). <i>Economic Development Strategy: Updated April 2014</i> .	
8	Benalla	www.benalla.vic.gov.au		
9	(Greater) Bendigo City Council	www.bendigo.vic.gov.au	SGS Economics & Planning. (2008). <i>Growing our Potential: Greater Bendigo Economic Development Strategy</i> . (No mention of housing). REMPPLAN. (2014). <i>Residential Building Construction Economic Analysis: City of Greater Bendigo</i> . City of Greater Bendigo. (2014). <i>Housing Needs Analysis 2014 (Research Paper)</i> .	✓
10	Boroondara	www.boroondara.vic.gov.au	Essential Economics Pty Ltd. (2009a). <i>City of Boroondara Economic Development Strategy 2009–2016</i> . (Housing and homelessness mentioned in relation to wellbeing).	

	Local Government Area	Website	Relevant documents	Economic issues considered in housing plans?
11	Brimbank	www.brimbank.vic.gov.au	Brimbank City Council. (2014). <i>Home and Housed: The Brimbank Housing Strategy</i> .	
12	Buloke	www.buloke.vic.gov.au		
13	Campaspe	www.campaspe.vic.gov.au		
14	Cardinia	www.cardinia.vic.gov.au	Bill Fox & Associates Pty Ltd. (2013). <i>Cardinia Shire Tourism Strategy</i> . Cardinia Shire Council. Cardinia Shire Council. (2013). <i>Housing Strategy 2013–2018 Strategic Action Plan</i> .	
15	Central Goldfields Shire Council	www.centralgoldfields.com.au	Central Goldfields Shire Council. (2013). <i>Central Goldfields Workforce Development Strategy 2013–2021</i> . (Mentions poverty and itinerant workforce, but not housing).	
16	Colac Otway Shire Council	www.colacotway.vic.gov.au	Colac Otway Shire Council. (2007). <i>Colac Otway Affordable Housing Strategy</i> . Colac Otway Shire Council. (2009). <i>Colac Otway Shire Economic Development Action Agenda 2009–2013</i> .	✓
17	Corangamite Shire Council	www.corangamite.vic.gov.au		
18	(Greater) Dandenong City Council	www.greaterdandenong.com	City of Greater Dandenong. (n.d.). <i>Achieving Greater Dandenong's Potential: A Local Economic and Employment Development Strategy for our City</i> . City of Greater Dandenong. (2012). <i>Housing in Greater Dandenong: Filling the gap between need and availability (Briefing paper)</i> . City of Greater Dandenong. (2014). <i>Greater Dandenong Housing Strategy 2014–2024</i> .	✓
19	Darebin City Council	www.darebin.vic.gov.au	City of Darebin. (2013). <i>Darebin Housing Strategy 2013–2033</i> .	
20	East Gippsland Shire Council	www.egjpps.vic.gov.au		
21	Frankston City Council	www.frankston.vic.gov.au	Frankston City Council. (2011). <i>Economic Development Strategy 2011</i> (p.832). Planisphere. (2013a). <i>Frankston Housing Strategy (Final Report)</i> .	✓

Local Government Area	Website	Relevant documents	Economic issues considered in housing plans?
		(Both docs mention need for residents to support business growth).	
22	Gannawarra Shire Council www.gannawarra.vic.gov.au	Urban Enterprise. (2011). <i>Economic Development Strategy 2011–2015</i> . (Does not mention housing).	
23	(Greater) Geelong City Council www.geelongaustralia.com.au	City of Greater Geelong. (2010). <i>Geelong Economic Development Strategy 2005–2010</i> . (Does not cover housing).	
24	Glen Eira City Council www.gleneira.vic.gov.au	Glen Eira City Council. (2002). <i>Glen Eira Housing and Residential Strategy</i> . doi:10.1016/j.icrp.2009.12.007	
25	Glenelg Shire Council www.glenelg.vic.gov.au	Buchan Consulting. (2010). <i>Glenelg Shire Business Retention and Expansion Program Regional Economy and Strategy Report</i> . (Notes importance of residential development and transport).	
26	Golden Plains Shire Council www.goldenplains.vic.gov.au	Geografia. (2013). <i>Economic Development Strategy 2013–2017</i> . (Mention of ‘economic leakage’ when services/products not available locally, but no mention of housing).	
27	Hepburn Shire Council www.hepburn.vic.gov.au	Hepburn Shire Council. (2012). <i>Economic Development Strategy: Business Plan</i> . (Some mention of affordable housing).	
28	Hindmarsh Shire Council www.hindmarsh.vic.gov.au		
29	Horsham Rural City Council www.hrcc.vic.gov.au		
30	Hume City Council www.hume.vic.gov.au	Hume City Council. (2013). New report sheds light on homelessness in Hume—Media Release. retrieved from http://www.hume.vic.gov.au/About_Us/Your_Council/Media_Publications_Forms/Media_Releases/Media_Releases_2013/New_report_sheds_light_on_homelessness_in_Hume	
31	Indigo Shire Council www.indigoshire.vic.gov.au	Indigo Shire Council. (n.d.). <i>Economic Development Strategy</i> (p. 14). (No reference to housing or residential development).	
32	Kingston City Council www.kingston.vic.gov.au		
33	Knox City Council www.knox.vic.gov.au	Knox City Council. (2010). <i>Knox Affordable Housing Action Plan 2007–2012</i> . (No economic development strategy available).	
34	Latrobe City Council www.latrobe.vic.gov.au	MWH Australia. (2011). <i>Economic Sustainability Strategy (Final Report)</i> . (Mentions land affordability but not housing).	

	Local Government Area	Website	Relevant documents	Economic issues considered in housing plans?
35	Loddon Shire Council	www.loddon.vic.gov.au	Loddon Shire Council. (2008). <i>Economic Development Strategy</i> (pp.50–47). doi:10.3200/WEWI.61.3.50-57. (Includes population questions and led to development of housing strategy, below). Loddon Shire Council. (2009). <i>Loddon Housing Strategy</i> (pp. 1–46).	✓
36	Macedon Ranges Shire Council	www.mrsc.vic.gov.au		
37	Manningham City Council	www.manningham.vic.gov.au	Manningham City Council. (2012). <i>Manningham Residential Strategy</i> . (No link with economic development).	
38	Mansfield Shire Council	www.mansfield.vic.gov.au	Mansfield Shire Council. (2013). <i>Economic Development Strategy Review Action Plan 2013–2017</i> . (Mentions understanding gaps in housing stock which are impeding economic growth).	
39	Maribyrnong	www.maribyrnong.vic.gov.au	Planisphere. (2011). <i>Maribyrnong Housing Strategy</i> . AEC Group. (2011). <i>Maribyrnong Economic and Industrial Development Strategy Part 1—Economic Development Strategy</i> .	✓
40	Maroondah City Council	www.maroondah.vic.gov.au	Maroondah City Council. (2013). <i>Maroondah 2040 Future Forum Outcomes Report</i> . (Includes housing models).	
41	Melbourne	www.melbourne.vic.gov.au	City of Melbourne. (2013a). <i>Future Living—Issues and Options for Housing our Community (Discussion Paper)</i> . City of Melbourne. (2013b). <i>Future Living: Community Engagement Findings</i> . Inner Regional Housing Working Group. (2005). <i>Inner Regional Housing Statement</i> . City of Melbourne. (2014). <i>Homes for People Housing Strategy 2014–18</i> .	✓
42	Melton City Council	www.melton.vic.gov.au	City of Melton. (2013). <i>Economic Development & Tourism Plan (Background Report)</i> . (Mentions desirability of housing diversity). Essential Economics Pty Ltd, & Hansen Partnership Pty Ltd. (2014). <i>House Smart: City of Melton Housing Diversity Strategy</i> .	
43	Mildura Rural City Council	www.mildura.vic.gov.au	Hansen Partnership Pty Ltd. (2013). <i>Mildura Housing and Settlement Strategy</i> .	

Local Government Area	Website	Relevant documents	Economic issues considered in housing plans?
		Pinge, I. (n.d.). <i>Regional Economic Analysis: Mildura, Victoria</i> . (No mention of housing).	
44	www.mitchellshire.vic.gov.au	Essential Economics Pty Ltd. (2010). <i>Mitchell Shire Economic Development and Tourism Strategy</i> . (Mentions relationship between increased housing and rates, and highlights importance of affordable housing for business).	
45	www.moira.vic.gov.au	The Regional Development Company, & Shaw & Associates Consulting. (2008). <i>Moira Shire Economic Development Strategy 2008–2013</i> . (Includes housing as an economic element. No separate housing strategy available).	✓
46	www.monash.vic.gov.au	Planisphere. (2014). <i>Monash Housing Strategy 2014 (Final Report)</i> . (Mentions economic significance several times). City of Monash. (2013). <i>2013–2017 Economic Development Strategy & Action Plan</i> . (Does not cover housing).	
47	www.mvcc.vic.gov.au	Moonee Valley City Council. (2010). <i>Housing Strategy 2010</i> .	
48	www.moorabool.vic.gov.au		
49	www.moreland.vic.gov.au	Moreland City Council. (2014). <i>Moreland City Council Affordable Housing Strategy 2014–2018</i> . Moreland City Council. (2010). <i>Brunswick Structure Plan</i> . Moreland City Council. (2008). <i>Glenroy Structure Plan</i> . Moreland City Council. (2006). <i>Central Coburg 2020 Structure Plan</i> .	
50	www.mornpen.vic.gov.au	Mornington Peninsula Shire. (2005). <i>Social and Affordable Housing Policy</i> (pp. 22–23). (Covers extensive range of housing issues but no evident economic development strategy).	
51	www.mountalexander.vic.gov.au		
52	www.moyne.vic.gov.au		
53	www.murrindindi.vic.gov.au	Murrindindi Shire Council. (2011). <i>Economic Development Strategy 2011–2016</i> (pp. 1–20). (Does not mention housing).	
54	www.nillumbik.vic.gov.au	Nillumbik EDS Community Reference Group, & Tim Nott economic	✓

Local Government Area	Website	Relevant documents	Economic issues considered in housing plans?
		analysis & strategy. (2007). <i>Nillumbik Economic Development Strategy 2011–2016</i> (pp. 1–44). (Mentions housing including accommodation challenges for young people).	
55	Northern Grampians Shire Council www.ngshire.vic.gov.au		
56	Port Phillip City Council www.portphillip.vic.gov.au	City of Port Phillip. (2012). <i>Port Phillip Economic Development Strategy 2012–2016</i> . (No focus on housing). City of Port Phillip. (2008). <i>City of Port Phillip Housing Strategy 2007–2017</i> . (Concentrates on social and affordable housing).	
57	Pyrenees Shire Council www.pyrenees.vic.gov.au		
58	(Borough of) Queenscliffe www.queenscliffe.vic.gov.au		
59	Regional Cities Victoria www.regionalcitiesvictoria.com.au	Essential Economics Pty Ltd. (2009b). <i>Implications of Population Growth on Infrastructure and Resources in Regional Cities: Final Report</i> . (Projections for additional number of dwellings and residential land use pp.35–6).	✓
60	Rural Councils Victoria www.ruralcouncilsvictoria.org.au		
61	(Greater) Shepparton City Council www.shepparton.vic.gov.au	Urban Enterprise. (2007). <i>Greater Shepparton Economic Development Strategy</i> .	
62	South Gippsland Shire Council www.southgippsland.vic.gov.au	South Gippsland Shire Council. (2012). <i>Economic Development and Tourism Strategy 2012–2017</i> . (No mention of housing). Urban Enterprise. (2004). <i>The Economic Impact of Tourism in Prom Country</i> . (Mentions holiday housing stock). Planisphere. (2013b). <i>South Gippsland Housing & Settlement Strategy</i> . (Focuses on zoning).	
63	Southern Grampians Shire Council www.sthgrampians.vic.gov.au		
64	Stonnington City Council www.stonnington.vic.gov.au		

	Local Government Area	Website	Relevant documents	Economic issues considered in housing plans?
65	Strathbogie Shire Council	www.strathbogie.vic.gov.au		
66	Surf Coast Shire Council	www.surfcoast.vic.gov.au	<p>Regional Innovation Pty Ltd, Urbanomics Pty Ltd, & ASCET (Warrnambool). (2005). <i>Surf Coast Shire Economic Development Strategy</i> (p. 80). (Includes some housing issues).</p> <p>Dench McClean Carlson Corporate Advisory, & Compelling Economics. (2011). <i>SCSC Economic Development & Tourism Strategy 2011–14</i> (Final Draft). (Two mentions of housing).</p> <p>Planisphere. (2006). <i>Surf Coast Housing Policy Project: Housing Strategy</i> (vol. 1). (Discusses housing needs and feeds into planning scheme).</p>	
67	Swan Hill Rural City Council	www.swanhill.vic.gov.au	Swan Hill Rural City Council. (2011). Swan Hill Rural City Council Economic Development Strategy 2011–2016.	
68	Towong Shire Council	www.towong.vic.gov.au		
69	Wangaratta Rural City Council	www.wangaratta.vic.gov.au		
70	Warrnambool City Council	www.warrnambool.vic.gov.au	<p>Research Planning Design Group, Parsons Brinckerhoff, & SGS Economics & Planning. (2004). <i>Warrnambool Land Use Strategy</i>.</p> <p>Warrnambool City Council, & Moyne Shire Council. (2010). <i>Warrnambool & Moyne Economic Development & Investment Strategy</i>. (Refers to residential zoning imperative).</p> <p>Hansen & Hyder. (2004). <i>Warrnambool Eastern Activity Precinct: Structure Plan</i>.</p> <p>Warrnambool City Council. (2013). <i>Warrnambool City-Wide Housing Strategy 2013</i>.</p>	
71	Wellington Shire Council	www.wellington.vic.gov.au		
72	West Wimmera Shire Council	www.westwimmera.vic.gov.au		

	Local Government Area	Website	Relevant documents	Economic issues considered in housing plans?
73	Whitehorse City Council	www.whitehorse.vic.gov.au	City of Whitehorse. (2014). <i>Gateway to the East: Whitehorse Economic Development Strategy 2014–2019</i> . (Does not mention housing).	
74	Whittlesea City Council	www.whittlesea.vic.gov.au	Beverley Klinger & Associates. (2012). <i>City of Whittlesea Social and Affordable Housing Policy & Strategy 2012–2016</i> .	
75	Wimmera Development Association	www.wda.org.au	Wimmera Development Association Inc. (2013). <i>Housing Investment Opportunities in the Wimmera Southern Mallee Region</i> .	
76	Wodonga City Council	www.wodonga.vic.gov.au	City of Wodonga. (2011). <i>Economic Development Strategy 2011 to 2013</i> . (One mention of housing affordability).	
77	Wyndham City Council	www.wyndham.vic.gov.au	Wyndham City Council. (2012). <i>Economic Development Strategy 2012–2016</i> . (Does not mention housing). Parliamentary submission on housing affordability: City of Wyndham. (2014). <i>Wyndham City Makes its Voice Heard on Housing Affordability</i> . viewed May 12, 2015, http://www.wyndham.vic.gov.au/aboutwyndham/pubmedia/media/2014/may_2014_media_releases/wyndham_city_makes_its_voice_heard_on_housing_affo	
78	Yarra	www.yarracity.vic.gov.au	City of Yarra. (2009). <i>Economic Development Strategy 2009–14</i> . (Does not mention housing). City of Yarra. (2011). <i>Social and Affordable Housing Strategy Background Paper—draft for consultation</i> .	
79	Yarra Ranges Shire Council	www.yarraranges.vic.gov.au	Shire of Yarra Ranges. (2009). <i>Shire of Yarra Ranges Housing Strategy</i> . (Focuses on planning issues). Shire of Yarra Ranges (2012). <i>Economic Development Strategy 2012–2022</i> . (No mention of housing).	
80	Yarriambiack Shire Council	www.yarriambiack.vic.gov.au	Yarriambiack Shire Council. (2009). <i>Yarriambiack Shire Economic Development Strategic Plan 2009–2012</i> . (Recognises housing as an issue).	

Appendix 3: Western Australia document review

Total: 140 local councils and 12 regional councils.

Table A1: Local Councils

	LGA	Website	Relevant documents	Economic issues in housing plans?
1	Albany City	www.albany.wa.gov.au		
2	Armadale City	www.armadale.wa.gov.au		
3	Ashburton Shire	www.ashburton.wa.gov.au		
4	Augusta-Margaret River Shire	www.amrsc.wa.gov.au		
5	Bassendean Town	www.bassendean.wa.gov.au		
6	Bayswater City	www.bayswater.wa.gov.au	City of Bayswater. (2012). <i>City of Bayswater Local Housing Strategy May 2012</i> . (Some efforts to link housing and economic development).	
7	Belmont City	www.belmont.wa.gov.au		
8	Beverley Shire	www.beverley.wa.gov.au		
9	Boddington Shire	www.boddington.wa.gov.au		
10	Boyup Brook Shire	www.boyupbrook.wa.gov.au		
11	Bridgetown-Greenbushes Shire	www.bridgetown.wa.gov.au	Council is currently preparing a new Local Planning Scheme (LPS No. 5) and associated Local Planning Strategy for the whole of the Shire.	
12	Brookton Shire	www.brookton.wa.gov.au	Shire of Brookton. (2009). <i>Housing Development Plan 2009–2014</i> . (Focuses on accommodation for government staff and local housing stock). Edge Planning & Property. (2014). <i>Background and Context Report to support the Shires of Brookton and Beverley Local Planning Strategy</i> . (Broad statements on affordability, housing needs).	
13	Broome Shire	www.broome.wa.gov.au	Shire of Broome. (2009). <i>Local Housing Strategy February 2009</i> .	

LGA	Website	Relevant documents	Economic issues in housing plans?
		(Some mention of economic aspects). Shire of Broome. (2013). <i>Strategic Community Plan 2013–2023</i> . (Mentions housing cost and supply, housing options for itinerant and homeless persons).	
14	Broomehill-Tambellup Shire www.shirebt.wa.gov.au		
15	Bruce Rock Shire www.brucerock.wa.gov.au		
16	Bunbury City www.bunbury.wa.gov.au	JM Community Development Projects. (2011). <i>Study into the Future Office Accommodation Requirements of Not for Profit Community Services in the Greater Bunbury Region</i> . City of Bunbury. (n.d.). <i>City of Bunbury 2030 Strategic Community Plan</i> .	
17	Busselton City www.busselton.wa.gov.au	Campbell, M., Schonfeldt, A., & Martin, P. (2009). Capes Regional Economic Development Strategy Shire of Augusta—Margaret River Shire of Busselton, (6). (Does not make significant mention of housing).	
18	Cambridge Town www.cambridge.wa.gov.au		
19	Canning City www.canning.wa.gov.au		
20	Capel Shire www.capel.wa.gov.au		
21	Carnamah Shire www.carnamah.wa.gov.au	Shire of Carnamah. (2012). <i>Shire of Carnamah Community Strategic Plan for the 10- year period from July 2012</i> . (Covers staff and teacher housing, affordable housing).	
22	Carnarvon Shire www.carnarvon.wa.gov.au		
23	Chapman Valley Shire www.chapmanvalley.wa.gov.au		
24	Chittering Shire www.chittering.wa.gov.au		
25	Christmas Island Shire www.shire.gov.cx	Shire of Christmas Island. (2013). <i>Our Future: Christmas Island Community Strategic Plan 2011–2021</i> . (Refers to housing strategy, which is unavailable).	

LGA	Website	Relevant documents	Economic issues in housing plans?
26	www.claremont.wa.gov.au	Planning Context. (2013). <i>Adopted Housing Capacity Study, Town of Claremont.</i>	
27	www.cockburn.wa.gov.au		
28	www.shire.cc	Shire of Cocos (Keeling) Islands. (2013). <i>Shire of Cocos (Keeling) Islands Strategic Community Plan 2013–2023.</i> (Mentions housing infrastructure and affordability issues, and need for affordable and aged housing).	
29	www.collie.wa.gov.au	Shire of Collie. (2013). Strategic Community Plan 2013–2022. (No recognition of or policies for long-term housing needs).	
30	www.coolgardie.wa.gov.au		
31	www.coorow.wa.gov.au		
32	www.corrigin.wa.gov.au		
33	www.cottesloe.wa.gov.au		
34	www.cranbrook.wa.gov.au		
35	www.cuballing.wa.gov.au		
36	www.cue.wa.gov.au		
37	www.cunderdin.wa.gov.au		
38	www.dalwallinu.wa.gov.au	Shire of Dalwallinu. (2013). <i>Regional Repopulation Plan for the regional WA towns of Buntine, Dalwallinu, Kalannie, Pithara and Wubin and surrounding areas.</i> (Includes migrant workforce issues but no reference to housing).	
39	www.dandaragan.wa.gov.au		
40	www.dardanup.wa.gov.au		
41	www.denmark.wa.gov.au		
42	www.sdwk.wa.gov.au		

	LGA	Website	Relevant documents	Economic issues in housing plans?
43	Donnybrook-Balingup Shire	www.donnybrook-balingup.wa.gov.au		
44	Dowerin Shire	www.dowerin.wa.gov.au		
45	Dumbleyung Shire	www.dumbleyung.wa.gov.au		
46	Dundas Shire	www.dundas.wa.gov.au		
47	East Fremantle Town	www.eastfremantle.wa.gov.au		
48	East Pilbara Shire	www.eastpilbara.wa.gov.au		
49	Esperance Shire	www.esperance.wa.gov.au		
50	Exmouth Shire	www.exmouth.wa.gov.au		
51	Fremantle City	www.fremantle.wa.gov.au	City of Fremantle. (2011). <i>Fremantle Economic Development Strategy 2011–2015</i> . (Some mentions of housing).	
52	Gingin Shire	www.gingin.wa.gov.au		
53	Gnowangerup Shire	www.gnowangerup.wa.gov.au		
54	Goomalling Shire	www.goomalling.wa.gov.au		
55	Gosnells City	www.gosnells.wa.gov.au		
56	Greater Geraldton City	www.cgg.wa.gov.au		
57	Halls Creek Shire	www.halls-creek.wa.gov.au		
58	Harvey Shire	www.harvey.wa.gov.au		
59	Irwin Shire	www.irwin.wa.gov.au		
60	Jerramungup Shire	www.jerramungup.wa.gov.au		
61	Joondalup City	www.joondalup.wa.gov.au	City of Joondalup. (n.d.). <i>City of Joondalup Local Housing Strategy</i> . (Some implicit economic underpinning).	
62	Kalamunda Shire	www.kalamunda.wa.gov.au	Shire of Kalamunda. (2014). <i>Local Housing Strategy</i> (pp. 1–87). (Includes some economic aspects).	

LGA	Website	Relevant documents	Economic issues in housing plans?
63	Kalgoorlie-Boulder City www.kalbould.wa.gov.au	City of Kalgoorlie-Boulder. (2011). <i>City of Kalgoorlie-Boulder Social Plan 2011–2015</i> .	
64	Katanning Shire www.katanning.wa.gov.au <i>SuperTown!</i>	Town Planning Management Engineering, Ecoscape, Business Dynamics, Taktics4, Estill & Associates, Hocking Heritage Studio, & Riley Consulting. (2012). <i>Katanning SuperTown Growth and Implementation Plan</i> . (Lacks housing emphasis).	
65	Kellerberrin Shire www.kellerberrin.wa.gov.au		
66	Kent Shire www.kent.wa.gov.au		
67	Kojonup Shire www.kojonup.wa.gov.au		
68	Kondinin Shire www.kondinin.wa.gov.au		
69	Koorda Shire www.koorda.wa.gov.au		
70	Kulin Shire www.kulin.wa.gov.au		
71	Kwinana Town www.kwinana.wa.gov.au		
72	Lake Grace Shire www.lakegrace.wa.gov.au		
73	Laverton Shire www.laverton.wa.gov.au		
74	Leonora Shire www.leonora.wa.gov.au		
75	Mandurah City www.mandurah.wa.gov.au	City of Mandurah. (2013). <i>Strategic Community Plan 2013–2033</i> .	
76	Manjimup Shire www.manjimup.wa.gov.au	Shire of Manjimup. (2008). <i>Contributions to Community Based or Not-for-Profit Aged Housing</i> . Shire of Manjimup. (2012). Calling all residential housing developers (media release), viewed 12 May 2014, < http://www.manjimup.wa.gov.au/events-calendar/news/4/calling-all-residential-housing-developers- >	
77	Meekatharra Shire www.meekashire.wa.gov.au		
78	Melville City www.melvillecity.com.au		
79	Menzies Shire www.menzies.wa.gov.au		

	LGA	Website	Relevant documents	Economic issues in housing plans?
80	Merredin Shire	www.merredin.wa.gov.au		
81	Mingenew Shire	www.mingenew.wa.gov.au	Shire of Mingeneu. (2012). <i>Shire of Mingeneu 10+ Year Strategic Community Plan</i> . (Consists of broad statements only).	
82	Moora Shire	www.moora.wa.gov.au	Shire of Moora. (2012). <i>Age-Friendly Communities Study (Final Report)</i> .	
83	Morawa Shire	www.morawa.wa.gov.au		
84	Mosman Park Town	www.mosmanpark.wa.gov.au		
85	Mount Magnet Shire	www.mtmagnet.wa.gov.au		
86	Mount Marshall Shire	www.mtmarshall.wa.gov.au		
87	Mukinbudin Shire	www.mukinbudin.wa.gov.au		
88	Mundaring Shire	www.mundaring.wa.gov.au		
89	Murchison Shire	www.murchison.wa.gov.au		
90	Murray Shire	www.murray.wa.gov.au	This shire is waiting on the South West Regional Planning and Infrastructure Framework.	
91	Nannup Shire	www.nannup.wa.gov.au	This shire is waiting on the South West Regional Planning and Infrastructure Framework.	
92	Narembeen Shire	www.narembeen.wa.gov.au		
93	Narrogin Shire	www.narroginshire.wa.gov.au		
94	Narrogin Town	www.narrogin.wa.gov.au		
95	Nedlands City	www.nedlands.wa.gov.au	City of Nedlands. (2013a). <i>Nedlands 2023 Making it Happen: Corporate Business Plan 2013–2017</i> . City of Nedlands. (2013b). <i>Nedlands 2023: Strategic Community Plan 2013–2023</i> .	
96	Ngaanyatjarraku Shire	www.ngaanyatjarraku.wa.gov.au		
97	Northam Shire	www.northam.wa.gov.au		

LGA	Website	Relevant documents	Economic issues in housing plans?
98	www.northampton.wa.gov.au	Shire of Northampton. (2013). <i>Strategic Community Plan 2013–2023</i> . (No reference to housing).	
99	www.nungarin.com.au		
100	www.peppermintgrove.wa.gov.au		
101	www.perenjori.wa.gov.au		
102	www.perth.wa.gov.au	City of Perth. (2013). <i>Strategic Community Plan: Vision 2029+</i> . City of Perth. (2010). <i>City of Perth Economic Development Strategy 2010</i> . (Neither doc covers housing).	
103	www.pingelly.wa.gov.au		
104	www.plantagenet.wa.gov.au	Shire of Plantagenet. (2014). <i>Town Planning Scheme Policy No. 18.1: Planning Vision</i> .	
105	www.porthedland.wa.gov.au	Town of Port Hedland. (n.d.). <i>Town of Port Hedland Draft FIFO and TWA Strategy</i> . Town of Port Hedland. (2010). <i>Hedland's Future Today 2010</i> . Town of Port Hedland. (2012). <i>Strategic Community Plan 2012–2022</i> .	✓
106	www.quairading.wa.gov.au		
107	www.ravensthorpe.wa.gov.au		
108	www.rockingham.wa.gov.au	City of Rockingham. (2011). <i>Community Infrastructure Plan 2011/12–2020/21</i> .	
109	www.roebourne.wa.gov.au	Shire of Roebourne. (2012a). <i>Our Vision for the Future: Shire of Roebourne Strategic Community Plan 2012–2022</i> . Shire of Roebourne. (2012b). <i>Shire of Roebourne Corporate Business Plan 2012–2016</i> . (Above plans are well integrated).	
110	www.sandstone.wa.gov.au		

	LGA	Website	Relevant documents	Economic issues in housing plans?
111	Serpentine-Jarrahdale Shire	www.sjshire.wa.gov.au		
112	Shark Bay Shire	www.sharkbay.wa.gov.au		
113	South Perth City	www.southperth.wa.gov.au	<p>City of South Perth. (2011). <i>City of South Perth Draft Local Housing Strategy</i>. (Some coverage of housing affordability and possible policies to address it).</p> <p>City of South Perth. (2013). <i>City of South Perth Economic Development Strategy 2013–2016</i>. (Not linked to housing strategy).</p>	
114	Stirling City	www.stirling.wa.gov.au	City of Stirling. (n.d.). <i>Local Housing Strategy</i> . (Includes economic aspects).	
115	Subiaco City	www.subiaco.wa.gov.au	City of Subiaco. (2013). <i>Economic Development Strategy 2013–2017</i> . (Does not cover housing).	
116	Swan City	www.swan.wa.gov.au	<p>City of Swan. (n.d.-a). <i>Urban Housing Strategy</i> (pp. 1–53).</p> <p>City of Swan. (n.d.-b). <i>Urban Housing Strategy Appendix 1: Policy Context</i>.</p>	
117	Tammin Shire	www.tammin.wa.gov.au		
118	Three Springs Shire	www.threesprings.wa.gov.au	Greg Rowe & Associates. (2012). <i>Shire of Three Springs Local Planning Strategy: Strategies Document</i> . (Does not mention housing).	
119	Toodyay Shire	www.toodyay.wa.gov.au		
120	Trayning Shire	www.trayning.wa.gov.au		
121	Upper Gascoyne Shire	www.uppergascoyne.wa.gov.au		
122	Victoria Park Town	www.victoriapark.wa.gov.au		
123	Victoria Plains Shire	www.victoriaplains.wa.gov.au		
124	Vincent City	www.vincent.wa.gov.au	Housing and Urban Research Institute Western Australia. (2008). <i>Town of Vincent Affordable Housing Strategy Analysis and Prospects Discussion Report</i> .	

	LGA	Website	Relevant documents	Economic issues in housing plans?
125	Wagin Shire	www.wagin.wa.gov.au		
126	Wandering Shire	www.wandering.wa.gov.au		
127	Wanneroo City	www.wanneroo.wa.gov.au		
128	Waroona Shire	www.waroona.wa.gov.au		
129	West Arthur Shire	www.westarthur.wa.gov.au		
130	Westonia Shire	www.westonia.wa.gov.au		
131	Wickepin Shire	www.wickepin.wa.gov.au		
132	Williams Shire	www.williams.wa.gov.au		
133	Wiluna Shire	www.wiluna.wa.gov.au		
134	Wongan-Ballidu Shire	www.wongan.wa.gov.au		
135	Woodanilling Shire	www.woodanilling.wa.gov.au		
136	Wyalkatchem Shire	www.wyalkatchem.wa.gov.au		
137	Wyndham-East Kimberley Shire	www.swek.wa.gov.au		
138	Yalgoo Shire	www.yalgoo.wa.gov.au		
139	Yilgarn Shire	www.yilgarn.wa.gov.au		
140	York Shire	www.york.wa.gov.au		

Table A2: Regional Councils

	Regional council	Website	Relevant documents	Economic issues in housing plans?
1	Avon sub-region	http://aeon.sro.wa.gov.au	RPS. (2012). <i>Avon Sub-Regional Economic Strategy</i> . (Some analysis of housing prices and key economic opportunities, incomes).	
2	Bunbury-Harvey Regional Council	www.bhrc.wa.gov.au		
3	Eastern Metropolitan Regional Council	www.emrc.org.au	EMRC. (2010). <i>Regional Economic Development Strategy 2010–2015</i> . EMRC. (2012). <i>EMRC 2022: 10-Year Strategic Plan—A shared vision for the future</i> .	
4	Mid West Regional Council	www.mwrc.wa.gov.au		
5	Mindarie Regional Council	www.mrc.wa.gov.au		
6	Pilbara Regional Council	www.prc.wa.gov.au	Pilbara Regional Council. (2013). <i>Strategic Community Plan 2013–2023</i> . (Concentrates on mining, tourism).	
7	Rivers Regional Council	www.rrc.wa.gov.au		
8	South West Group	www.southwestgroup.com.au		
9	Southern Metropolitan Regional Council	www.smrc.com.au	Southern Metropolitan Regional Council. (2013). <i>Strategic Community Plan 2013–2023</i> .	
10	South West Development Council	www.swdc.wa.gov.au	South West Development Commission; Regional Development Australia—South West. (2013). <i>South West Regional Blueprint—DRAFT August 2013</i> . (Good analysis of population, economics. Refers to dramatic projected increase in aged population but no statement of relevant housing policy).	
11	Tamala Park Regional Council	www.tamalapark.wa.gov.au		
12	Western Metropolitan Regional Council	www.wmrc.wa.gov.au		

AHURI Research Centres

AHURI Research Centre—Curtin University

AHURI Research Centre—RMIT University

AHURI Research Centre—Swinburne University of Technology

AHURI Research Centre—The University of Adelaide

AHURI Research Centre—The University of New South Wales

AHURI Research Centre—The University of Sydney

AHURI Research Centre—The University of Western Australia

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