

Understanding the patterns, characteristics and trends in the housing sector labour force in Australia

authored by

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ACRONYMS

| | |
|--------|---------------------------------------------------------------|
| ABS | Australian Bureau of Statistics |
| AIA | Australian Institute of Architects |
| AIG | Australian Industry Group |
| ANZSIC | Australian and New Zealand Standard Industrial Classification |
| ASIC | Australian Standard Industrial Classification |
| AWA | Australian Window Association |
| BAPS | Building Approvals |
| BAS | Building Activity Survey |
| BDAA | Building Designers Association of Australia |
| BSD | Brisbane Statistical District |
| COAG | Council of Australian Governments |
| CPSISC | Construction and Property Services Industry Skills Council |
| DIY | do it yourself |
| GDP | Gross domestic product |
| GFCF | Gross Fixed Capital Formation |
| GGAA | Glass and Glazing Association of Australia |
| HE | higher education |
| HIA | Housing Industry Association |
| HSLF | Housing sector labour force |
| LQ | Location Quotient |
| ISC | industry skills council |
| KBDI | Kitchen and Bathroom Design Institute |
| MBA | Master Builders Association |
| NHSC | National Housing Supply Council |
| NPCAA | National Precast Concrete Association of Australia |
| NZSIC | New Zealand Standard Industrial Classification |
| OHS | occupational health and safety |
| PCA | Property Council of Australia |
| PIA | Planning Institute of Australia |
| RTAA | Roofing Tile Association of Australia |
| SLA | Statistical Local Area |
| SMI | spatial mismatch index |
| TAFE | technical and further education |
| UDIA | Urban Development Institute of Australia |

EXECUTIVE SUMMARY

The background to this study is the mismatch between housing supply and demand in Australia. A failure of housing supply to keep pace with demand is associated with growing problems of housing affordability. The establishment of the National Housing Supply Council (NHSC) in 2008 has provided for policy focus on this problem. However, there is a lack of research and knowledge regarding both the demand and supply characteristics of housing in Australia. In particular, regarding housing supply, there is limited knowledge of the housing industry, including both new build and those parts of the industry which supply maintenance, retrofitting and renovation services to the existing stock. This dearth of understanding is particularly pertinent given current policy attention to both housing affordability and the need to improve the environmental and efficiency performance of housing, with its own implications for housing industry supply.

This research seeks to address the following question:

What are the key features and trends in the structure, conduct and performance of the core parts of the housing industry and what are the main dimensions of the labour force working in these parts in the context of considerable fluctuations in the level of activity in the housing industry?

This Positioning Paper responds to this question in the following way.

1. It examines key housing supply trends by considering approvals, commencement and completion times and the value of work done on new dwellings and home improvements.
2. It presents an institutional account of the housing industry by examining industry structure, conduct and performance.
3. It presents an initial analysis of housing sector labour force issues in the context of the broader construction industry labour force.
4. It begins the process of examining the housing sector labour force in the spatial context of large metropolitan capital cities.

Housing industry outputs in Australia

As a share of the national economy, the level of housing production in Australia and the size of the Australian house building industry is similar to other industrialised countries. It fluctuates, as does the industry in other countries, but over time the share of resources it claims is similar to that of its counterparts. Whether it should form a larger proportion of the economy in the context of a continuing undersupply of housing is an important housing and broader macro-economic policy issue.

Three features to describe the housing industry are drawn from the ABS Building Activity Survey (BAS) that collects data from builders and other individuals and organisations engaged in residential building activity:

1. Approvals of houses and other residential dwellings.
2. Commencement and completions.
3. Value of work done.

There is considerable fluctuation in approvals especially in NSW, Victoria, Queensland and WA. Moreover, the fluctuations across the states are only partly synchronised, suggesting that approvals relate to both national and to more locally based state supply and demand factors. Trends in the composition of dwelling

approvals also vary by location. Another variable is the time taken to complete a dwelling. There is no regular series presenting this data. However, Australian Bureau of Statistics (ABS) published a special article on average quarterly completion times for new houses, in which it found that average construction times fell from a peak of 2.1 quarters in 1990 and remained at between 1.6 and 1.8 quarters to the end of the 1990s, before rising again to around 2.4 quarters by 2008.

Another way of understanding the housing market is by considering the value of building work done in the *ABS 8731.0 – Building Approvals* collection. From 1984 to the mid-2000s NSW had the highest value of approvals. However, from the mid-2000s Victoria and Queensland caught up with and overtook NSW. Overlaying this is a significant issue associated with the balance between new house building and reinvestment activity. Measures of reinvestment in the existing housing stock vary and tend to under-report the scale of the housing maintenance, retrofitting and renovation industry, but generally indicate that the flow of housing industry resources into the existing stock is significant. It is clear from this that any study of the housing sector labour force (HSLF) cannot ignore the labour engaged in alterations and additions.

Institutional structure of the house building industry in Australia

Building on work by Ball (2006) we translate his institutional framework into a stylised account of the Australian housing 'structure of provision'. At its centre are the house builders, comprising building firms, unincorporated sub-contractors and employees. They are closely connected to building materials manufacturers and suppliers and to finance intermediaries. Another close connection is to the land development industry that supplies new urban residential land. There is then a wider set of connections to organisations associated with house and lot sales, etc., and associations representing the interests of the various actor groups including the Housing Industry Association (HIA), the Master Builders Association (MBA) and the Property Council of Australia (PCA).

The construction industry, as a whole, is dominated by small businesses, as are the businesses within the house building sector. Within house building, there is limited overlap between the new build and 'alterations and additions' sub-sectors. Indeed, generally, it appears that the industry is not homogenous, that is, there is no archetypal Australian residential building company. The conduct, or strategic development, of residential building businesses building new dwellings can be considered by examining the way, in which businesses organise themselves around particular residential building products in geographic areas and how they grow or decline over time. For example, it is clear that firms make decisions about whether to build houses and/or apartments; whether to remain a builder, become a builder and a developer or just a developer; whether to adopt a franchise model, and whether to adopt one entity or use multiple trading entities. One feature is that most residential building firms are private companies. Only two companies in the top 20, Mirvac and Multiplex, have become public companies listed on the stock exchange.

There is also diversity in both the geographic spread and range of activities of residential building companies. Most residential building companies base their operations in just one state. Although the 1990s and early 2000s saw some increase in the number of companies that extended their operations into other states, there is a reduction in the last five years in companies that operate across state borders. This trend suggests a shift towards core business, reversing the previous sectoral diversification trend observed by Dowling (2005).

In recent years, fewer of the top 100 housing companies also undertake land development or build multi-unit dwellings, while an increasing proportion are building detached dwellings. The limited overlap with alterations and additions work and with commercial building work or property management has tended to fluctuate or show no marked trend.

Housing industry performance indicates economies of scale at play. The Private Sector Construction Industry survey indicates that as business size increases, the average size of operating income and operating expenses per employee increases, and industry value added per employee increases with business size. For micro firms with an income of less than \$0.1 million, the level of operating expenses per employee is greater than income per employee, indicating, perhaps, a tendency in these small businesses to minimise taxable income.

Housing sector labour force (HSLF) issues and needs

The HSLF experiences considerable fluctuations in employment, closely aligned to changes in the level of activity within the housing sector and broader construction sector. The two issues which have been the main focus of concern in terms of HSLF and housing output costs are:

1. Overall labour shortages and competition with other sectors.
2. Skills shortages.

The former is mainly posited on the 'pull' of labour into resource industries, while the latter refers to the relatively low level of skills in housing construction and the need for a training/skills supply response.

The education and training of existing and potential construction workers has become a focus of attention in the context of debate about shortages and skill levels. The evidence suggests there are three substantive issues in the industry: investment in education and training; inefficiency in the training system associated with non-completion of apprenticeships; and the suitability of the current model of education and training. Of particular concern is that the construction industry has one of the lowest rates of per employee expenditure on training.

The literature review and preliminary interviews undertaken in the current study indicate that there are four other factors in considering the future demand for labour in the HSLF. The first of these confirms the widely reported problem of rising demand for labour associated with the expansion of the natural resources sector. The second stems from competition for labour between the new build sector and the maintenance and home improvement sector, particularly in the context of the need to improve this stock in the context of climate change and resource scarcity. The third is the significant gender imbalance in the HSLF, dominated as it is by male workers. The fourth is the potential exacerbation of labour shortages due to spatial mismatches between HSLF demand and supply.

The spatial mismatch concept relates to the non-labour market factors, which shape the settlement patterns of workers, that is, the factors that operate against the geographic alignment of labour supply and demand. The housing industry is labour intensive, with its main product, that is new dwellings and renovated dwellings, being site-specific. Therefore, workers must travel to undertake on-site work; and there are preferences for and limits to their mobility. Applying the 'spatial mismatch' concept to HSLF census data provides a conceptual framework for analysing supply and demand. A preliminary analysis of Victoria and Queensland HSLF markets is presented in this Positioning Paper. In summary, there are differences in the urban

morphology and settlement patterns of the two areas and we anticipate a greater flexibility in the movement of labour in Victoria when compared to Queensland because of a more compact settlement pattern.

Next steps

The application of the spatial mismatch approach will enable the socio-economic and spatial constraints underpinning the spatial distribution of the HSLF to be identified. The relationship between dwelling demand (measured using the surrogate of age-specific population growth) and the supply of HSLF will be modelled. Other constraining factors such as region type (urban versus rural; metropolitan city, town etc.), labour market conditions (e.g. unemployment rate), accessibility to the coast and the closest CBD, the degree of remoteness, and levels of socio-economic disadvantage will also be used as model variables. A spatial economic model will then be developed to estimate the effects of these variables on characteristics of the HSLF. Interviews with HSLF participants will be used to provide cross-comparison and validation of relationships between these variables as indicated in the model.

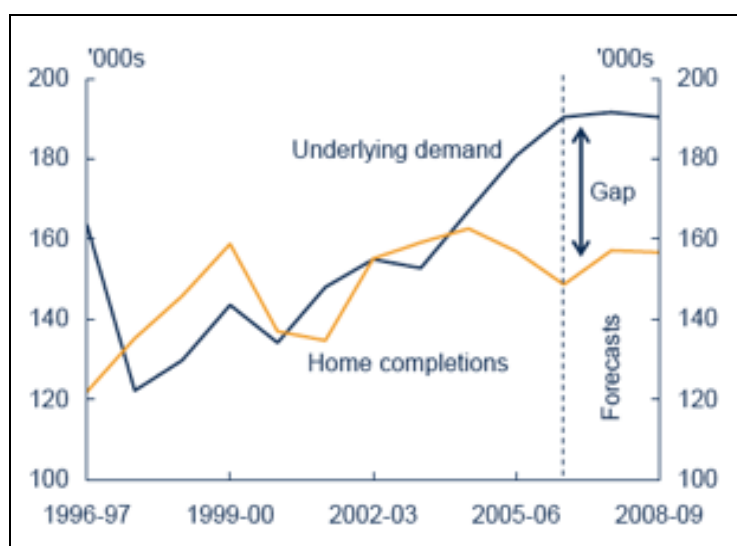
1 INTRODUCTION

1.1 Context

New housing supply has become an important public policy issue in Australia. The first official recognition of the issue was the announcement in early 2008 by the Treasurer and Minister for Housing that the government would establish the National Housing Supply Council (NHSC), to be charged with monitoring housing demand, supply and affordability in Australia and highlighting current and potential gaps between housing supply and demand from households.

An indication that the government regarded the supply problem as serious was evident in the Budget Overview (Australian Government 2008) statement that 'housing supply has not kept pace with demand' accompanied by Figure 1, which indicates past and forecasts increasing divergence between the underlying demand for new housing and completion of new dwellings.

Figure 1: Housing underlying demand and completions



Source: Australian Government (2008)

Subsequently, the National Housing Supply Council (2009, 2010) has estimated the extent of the supply problem. In the most recent report the National Housing Supply Council (2010) stated:

The gap between total underlying demand and total supply is estimated to have increased by approximately 78 800 dwellings in the year to June 2009 to a cumulative shortfall of 178 400 dwellings.

It also notes that other national bodies have concluded that there is a significant housing supply problem (Braddick, Wayne et al. 2007; Richards 2009; Housing Industry Association 2010).

More recently the supply problem has been further acknowledged by the Council of Australian Governments (COAG) (2009) with the statement:

The housing market faces significant pressures, with population growth and a healthy economy continuing to add to strong housing demand. Housing supply has not responded as strongly as it could have to this demand.

In the light of this finding, COAG has commenced a program of federal and state government research and policy work aimed at stimulating additional housing supply (Council of Australian Governments 2009b). Not surprisingly, identification of housing undersupply as a policy problem has been accompanied by discussion of the causes of undersupply. The NHSC has summarised the demand and supply factors that should be considered.

On the demand side, factors commonly identified are demographics, in particular the number and type of households; the economic circumstances of households and their capacity to express effective demand for housing; investor demand; consumer preferences in relation to size, quality and location; price and availability of rental accommodation and dwellings for purchase; taxes and transfers; and the cost and availability of finance (National Housing Supply Council 2010).

On the supply side, factors commonly identified are construction costs associated with labour inputs and materials; infrastructure costs; land availability shaped by geography, zoning, and environmental and heritage constraints; land release and development processes including fees and regulations; and taxes and transfers (National Housing Supply Council 2010).

In addition to these factors it is important to recognise the extent of reinvestment in housing through renovations or 'alterations and additions'. Housing renovation augments the existing housing stock by improving, and very often expanding the size of, dwellings. However, housing renovation has not been systematically considered in the recent housing supply discussion.

This lacuna in housing supply discussion is evident in both NHSC reports, as the renovation of urban housing is not considered in either of the NHSC reports. This is a problem because, as it will be shown in this paper, the level of labour and materials being used in housing renovation is significant. Further, it is reasonable to suggest that the demand for home renovation will be further stimulated with the advent of residential 'mandatory disclosure', the result of a COAG (2008) agreement that commits governments to begin phasing in residential building energy, greenhouse and water performance disclosure at the time of sale or lease in 2011.

1.2 Research questions

This research focuses on the supply of housing and in particular on the contribution that workers in the residential housing sector make to the supply of housing. It seeks to answer the following principal research question:

What are the key features and trends in the structure, conduct and performance of the core parts of the housing industry and what are the main dimensions of the labour force working in these parts, in the context of considerable fluctuations in the level of activity in the housing industry?

The research presented in this paper addresses this question by using two key frames of reference:

1. An institutional frame of reference is used to analyse the structure, conduct and performance of the Australian housing industry, including the new build and renovation sectors, and the pattern and trends in employment within this institutional arrangement.
2. A spatial frame of reference is used to analyse how the structure, conduct and performance of the Australian housing industry is shaped by the pattern of urban settlement and the structure of metropolitan cities.

These two frames of reference have guided the development of three secondary research questions used to structure the presentation in this report. The secondary research questions are:

1. What housing construction labour and resources are devoted to new build and what will they add to the supply of new housing, compared to the labour and resources devoted to renovation or extension of old stock? What options are there for shaping labour supply in relation to new build and renovation?
2. Does the residential location of the housing sector workforce impose particular constraints on the supply of labour for new housing production and renovation? How does this compare with housing demand? If so, where are the locations where under— or oversupply exist, and what might be done about it?
3. What is the nature of the relationship between the new build housing sector labour force and the home improvement sector labour force and, in particular, what observations can be made about the nature and the extent of movement of labour between these two areas of the housing industry?

1.3 Research approach

This research is being conducted in the following three stages.

This first stage describes the key features and trends in the structure, conduct and performance of the housing industry and labour force. It presents an account of industry organisation and operation; a ‘political economy’ account of the housing industry. This is the institutional context that shapes HSLF demand and supply, supports the description of trends and issues and is useful for informing policy development that seeks to influence HSLF arrangements. The methods used to undertake this initial research include reviewing existing academic and industry research, statistical data and preliminary interviews with industry participants.

The results of this first stage are presented in Chapters 2 to 6 of this report. Chapter 2 is concerned primarily with trends in housing industry outputs. Chapter 3 presents an institutional analysis of the housing industry, focussing on the size, type, value, diversity and trends in housing industry firms. Chapter 4 presents key dynamics, trends and issues in the HSLF. Chapter 5 develops the concept of spatial mismatch between supply and demand in the HSLF. Chapter 6 presents a summary of key findings to-date and outlines the remaining work planned for the project.

The second stage will present an estimate of the HSLF at local and regional levels using the concept of ‘spatial mismatch’. It will seek to identify areas, where there is either a labour shortage or the possibility of unemployment. It is being undertaken against the background of the observation by Shah and Burke (2005) that:

The performance of a labour market varies across regions. One aspect of this geographical disparity could be that while some regions have shortages of particular skills others have surpluses.

In this context, it is important to understand the spatial distribution of the HSLF, especially in large metropolitan regions, and how this distribution relates to work on production of new dwellings and the renovation of existing dwellings.

The third stage will present an analysis of HSLF issues based on interviews with industry participants. The methodological framework presented in Figure 2 will form the basis for the selection of case studies by focussing on the relationship between dwelling demand and labour supply.

Interviews will initially be with representatives of organisations representing builders, developers and trade groups. Policy analysts in government and the training sector will also be interviewed and user group advice for these interviews will also be sought. These interviews will be followed up by two focus groups (held in Brisbane and Melbourne) with eight to 10 industry experts. Guided by the outcome of these interviews and focus groups, a further set of face-to-face interviews with developers and builders will be conducted in two case study cities (Brisbane and Melbourne). This will support further sense making of data in Stage 2 and in particular an analysis of the relationship between the formal HSLF in relation to new housing supply, alterations and additions and home improvement across two large metropolitan cities.

2 HOUSING INDUSTRY OUTPUTS IN AUSTRALIA

This chapter presents an overview of the recent trends in housing production in Australia. It begins by briefly comparing the housing industry in Australia with the industry in other industrialised countries by considering its share of the economy as a whole and the size of its fluctuations.

The focus then shifts to three features typically used to describe the housing industry. These are drawn from ABS Building Activity Survey (BAS) data from builders and other individuals and organisations engaged in residential building activity valued at \$10 000 or more:

- Approvals of houses and other residential dwellings.
- Commencement and completions.
- Value of work done.

Finally, this chapter examines work on existing housing, the other major area of housing industry outputs. Broadly, this work on existing housing can be described as housing or home improvement. However, trend data on the full extent of home improvement is limited to a sub-set of improvements referred to as alterations and additions.

2.1 The Australian housing industry compared

The level of housing production in Australia is broadly in line with the level in other industrialised countries. Table 1, based on Ball (2006), presents data for a selection of industrialised countries ranked by the long-term significance of house building as a share of Gross domestic product (GDP) for the period 1956–2000. The country with the highest level of house building is Germany, followed by France and Japan. Australian data has been added to this table and is similar to the next two countries, the Netherlands and Canada in this rank ordering. The variation exhibited for all countries around the long-term share of national income, evident in the maximum and minimum shares, is caused by fluctuations in different factors.

Ball suggests that the source of variation in the ranking is found in the particular circumstances of countries and policy responses. He suggests, for instance, that the German figure is explained by the high level of housing investment during the 1990s following reunification; the UK figure is low because of restricted land supply and a propensity to repair and upgrade dwellings; and the US provides little subsidised low income housing. Overall he argues that:

A crude estimate of the typical long-term share of housing investment in the annual national income of an advanced economy with moderately expanding household numbers would seem to be around 4 to 5 per cent, with the extra percentage point depending on the social attitude to subsidising the housing conditions of lower-income groups. (Ball 2006)

In summary, the size of the Australian house building industry, as a share of the national economy, is similar to that of other industrialised countries. It fluctuates, as does the industry in other countries, but over time the share of resources it claims is similar to that of its counterparts. Whether it should form a larger proportion of the economy in the context of a continuing undersupply of housing is an important housing and broader macro-economic policy issue.

Table 1: Housing investment as a share of national income 1956–2000

| | <i>Mean</i> <i>(per cent)</i> | <i>Max</i> <i>(per cent)</i> | <i>Min</i> <i>(per cent)</i> | <i>Std Dev</i> | <i>Std Mean</i> |
|------------------------|----------------------------------|---------------------------------|---------------------------------|----------------|-----------------|
| Germany | 6.4 | 8.1 | 4.8 | 0.9 | 0.15 |
| France | 5.7 | 7.8 | 4.1 | 1.2 | 0.20 |
| Japan | 5.6 | 8.8 | 3.6 | 1.3 | 0.23 |
| Netherlands | 5.3 | 6.4 | 3.9 | 0.6 | 0.12 |
| Canada | 5.3 | 7.4 | 3.8 | 1.0 | 0.19 |
| Australia ¹ | 5.0 | 7.0 | 3.9 | 0.6 | 0.12 |
| USA | 4.4 | 5.7 | 3.2 | 0.6 | 0.14 |
| UK | 3.5 | 4.7 | 2.6 | 0.5 | 0.14 |

Source: Ball (2006, p.149) and Australian Bureau of Statistics (2010a)

2.2 Housing output data

The ABS provides two main data series on the outputs of the housing industry: building approvals and building value.

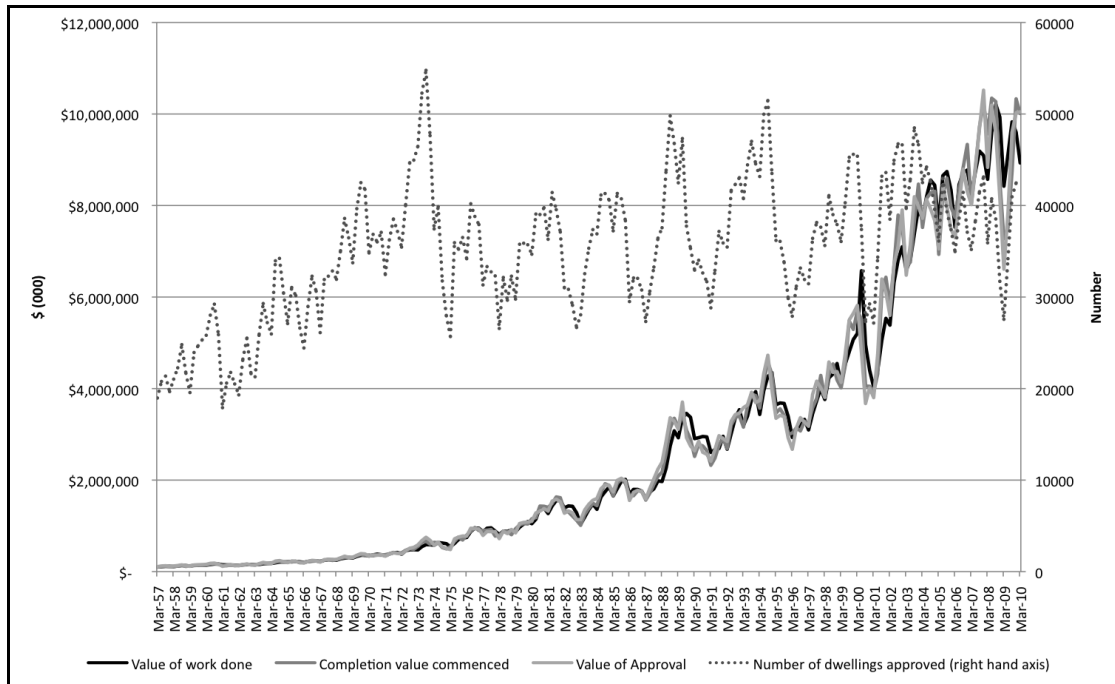
The monthly Building Approvals (BAPS) collects data relating to residential and non-residential building work above value limits that have been approved within the reference month. Data from this collection provide timely estimates of future building activity and act as an important leading economic indicator and sampling framework for the quarterly BAS (Australian Bureau of Statistics 2010b). Approvals data is published monthly in the ABS series BAPS, Australia—8731.0.

The BAS collects data relating to all stages (commenced, under construction, completed) of residential and non-residential building activity undertaken in the reference quarter. One BAS component is a sample survey involving residential building jobs valued at \$50 000 or more and non-residential building jobs valued at \$250 000 or more. Another is a complete enumeration of all building jobs involving residential building jobs valued greater than \$10 000 and less than \$50 000 and non-residential building jobs valued greater than \$50 000 and less than \$250 000; new houses over \$1 million; alterations and additions to residential over \$500 000; and all jobs over \$2 million. BAS data are published in three main ABS series: Dwelling Unit Commencements—8750.0, Construction Work Done—8755.0 and Building Activity—8752.0.

Figure 2 presents four housing output series. Information on the value of work done, completion value commenced and the value of approvals drawn from BAS is presented against the left-hand axis. The number of dwellings approved, drawn from the BAPS data, is presented against the right-hand axis. Two broad observations can be made from this presentation of data. First, there is considerable fluctuation in the number of dwellings produced and value. Second, the three series presenting data on value broadly move together, but with some differences. These differences are considered further below in Section 2.4.

¹ The Australian data has been added to Table 9.1 in Ball (2006, p.149). The time period in the Ball table is 1956–2000. However, the time period for Australia is 1963–2000 as the National Accounts data in this series is only available from 1963.

Figure 2: Housing industry outputs: quarterly values and number of dwellings (1957–2010)



Source: ABS Cat 8752.0 Building Activity

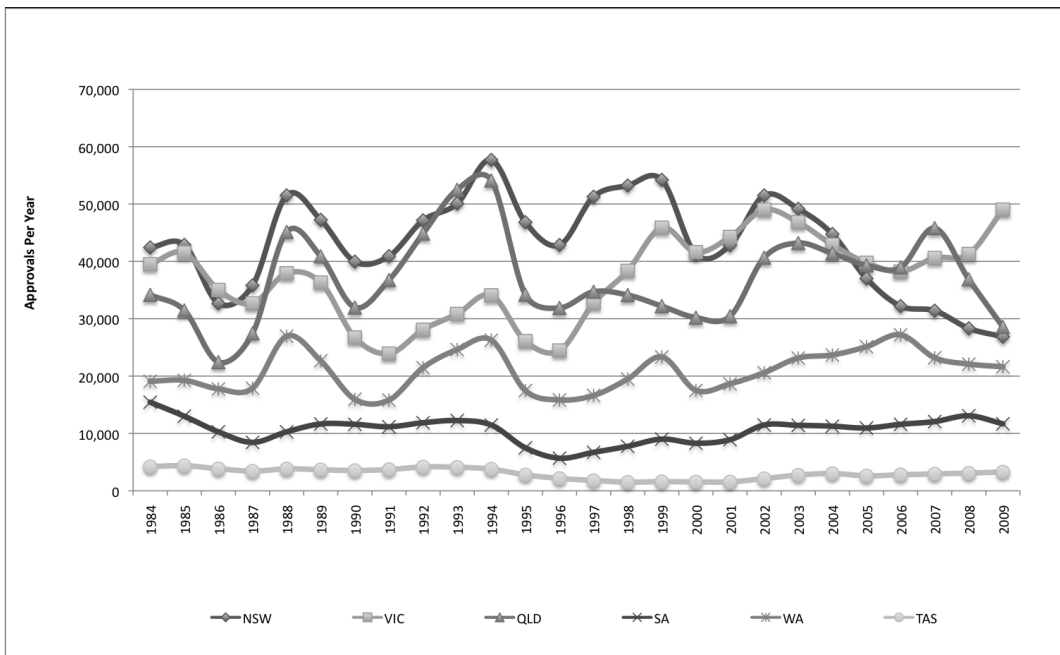
2.3 Approvals—houses and other residential dwellings

The presentation below focuses on dwelling approvals for:

- Australia as a whole, states and capital cities.
- Type of dwellings being approved—houses, townhouses and apartments.

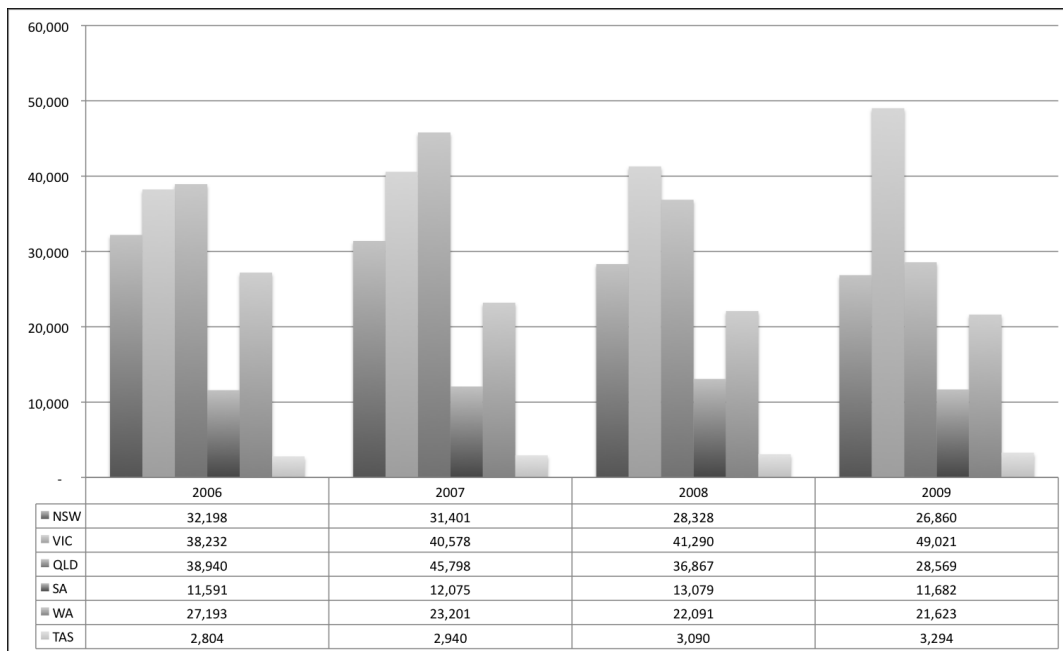
Figure 3 presents building approvals for dwellings in each of the states for the period 1984–2009. Several features in the pattern of approvals are evident. First, there is considerable fluctuation in approvals, especially in NSW, Victoria, Queensland and WA. Second, the fluctuations across the states are only partly synchronised, suggesting that approvals relate to both national and to more locally based state supply and demand factors. Third, NSW, which traditionally dominated dwelling approvals, declined as the lead state from the mid-2000s. Victoria overtook both NSW and Queensland in this period. This trend, for the most recent four years, is shown in more detail in Figure 3.

Figure 3: Building approvals, all dwellings, 1984–2009, states



Source: ABS Cat 8731.0 Building Approvals

Figure 4: Building approvals, dwellings, 2006–09, states



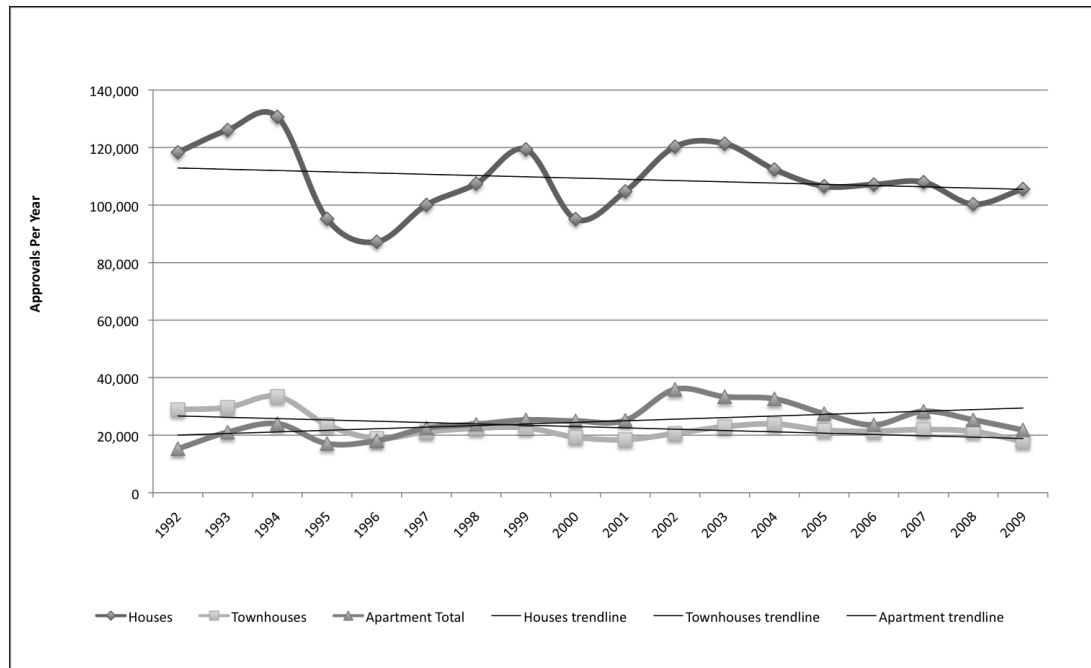
Source: ABS Cat 8731.0 Building Approvals

The approvals presented in Figure 5 show that detached houses is the dominant type, with between 100 000 and 120 000 per annum, from 1992 to the present. The trend lines suggest there has been some change in the composition of new dwellings being constructed. The long-term trend has been a decline in the proportion of houses and an increase in the proportion of apartments or flats. This has been accompanied by a slight decline in the proportion of townhouses. Figure 6 presents the composition for the four years period 2006–09. It shows that approval of houses has been between 100 000 and 108 000 per annum, with apartments between 22 000 and 28 000, and

townhouses between 17 000 and 22 000. It also shows continuing movement in the mix of houses, townhouses and apartments.

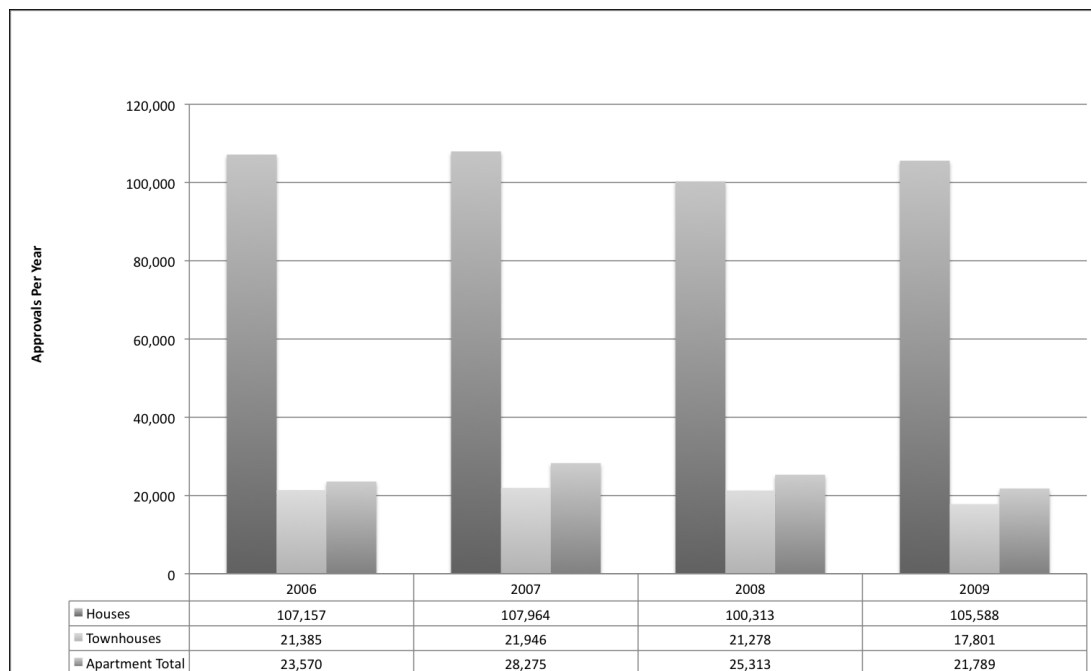
Figure 7 takes extends the analysis of apartment approvals and indicates an increase in one and two-storey apartments and reductions in three and four-storey apartment approvals. However, it should be noted that the data for the period 1981–2009 in Figure 5 indicates a longer-term trend towards apartments of four or more storeys.

Figure 5: Building approvals, type of dwelling, Australia 1992–2009



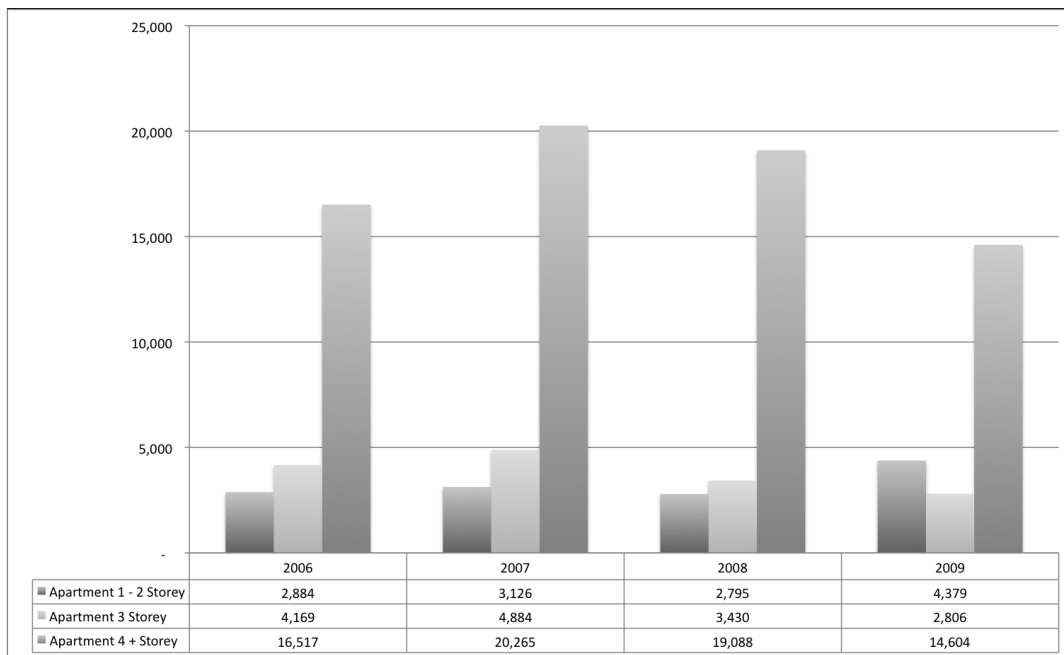
Source: ABS Cat 8731.0 Building Approvals

Figure 6: Building approvals, dwelling type, Australia 2006–09



Source: ABS Cat 8731.0 Building Approvals

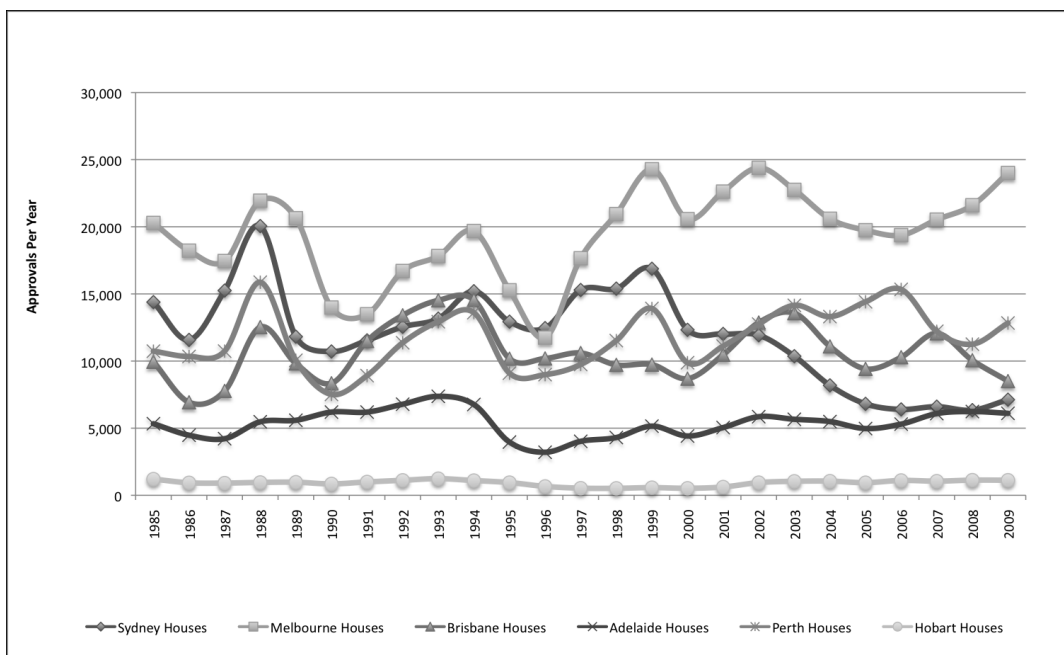
Figure 7: Building approvals, apartment type, Australia 2006–09



Source: ABS Cat 8731.0 Building Approvals

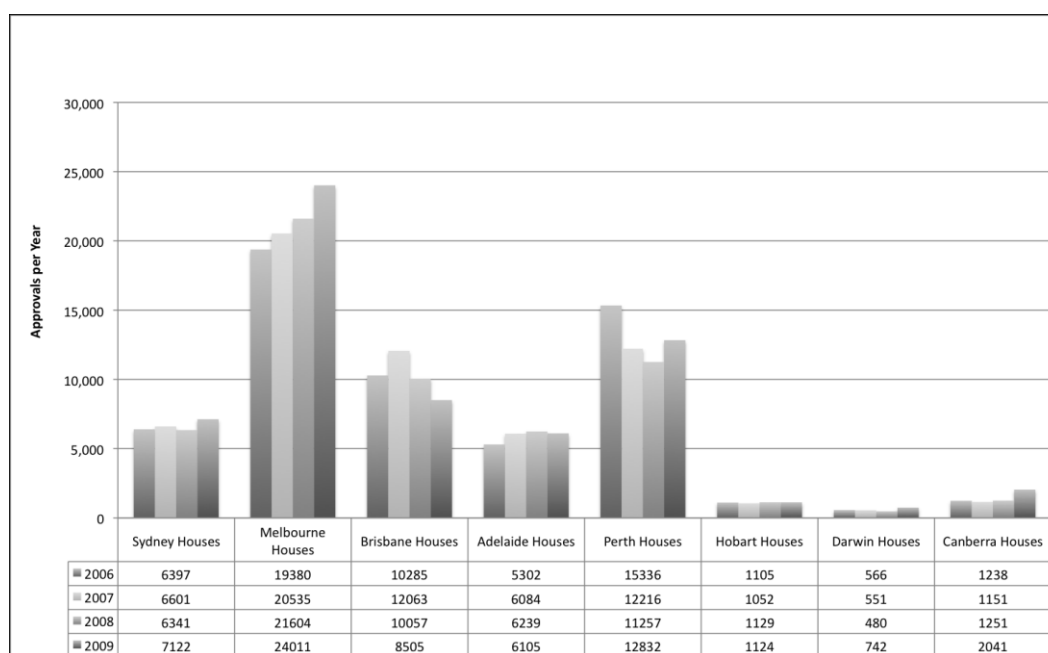
Trends in the composition of dwelling approvals vary by location. This is evident in Figures 8 and 9, presenting capital city house approvals for the period 1985–2009 and 2006–09. Figure 8 shows Melbourne with the highest number of approvals for separate houses, with the gap widening from the other capital cities from the mid-1990s. Over the same period Sydney’s separate house approvals declined. In the years 2006–09, Figure 9 shows that Melbourne had between 19 000 and 24 000 approvals for houses per annum, Perth between 11 000 and 15 000, Brisbane between 8500 and 12 000 and Sydney around 6000 per annum.

Figure 8: Building approvals, capital city houses, 1985–2009



Source: ABS Cat 8731.0 Building Approvals

Figure 9: Building approvals, capital city houses, 2006–09



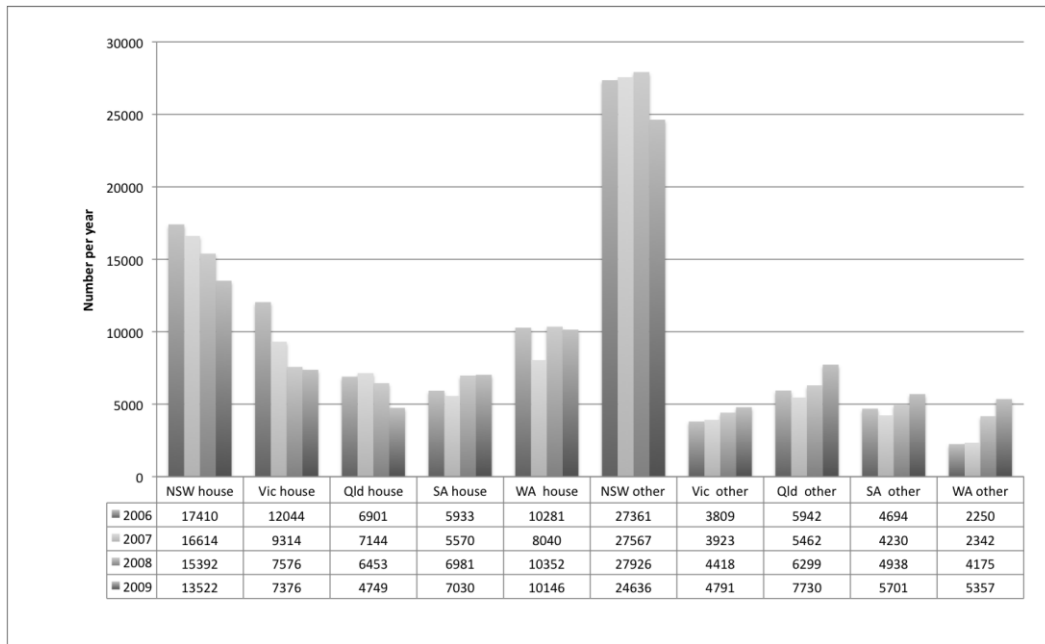
Source: ABS Cat 8731.0 Building Approvals

2.4 Commencement and completion times

Because not all approvals translate into completed dwellings, the ABS also collects data on building commencements. While this data provides a better indication of actual additions to the dwelling stock, it is less detailed in terms of dwelling location and type, when compared to building approvals data.

Figure 10 presents data on dwellings that have been approved but have not commenced (for houses and other dwellings types) for the period 2006–09. This shows a decline in houses approved but not commenced in NSW, Victoria and Queensland over the period, with a slight increase in South Australia. Western Australia is consistent at around 10 000 houses. For other residential types (townhouses and apartments), NSW has a comparatively high level of dwellings approved that have not commenced. This may indicate a large number of apartment developments that are 'on hold'. Alternatively, it could be an outcome of developers making ambit claims through the planning system and gaining approval for more apartments than it is prudent to build and offer in the market at that time.

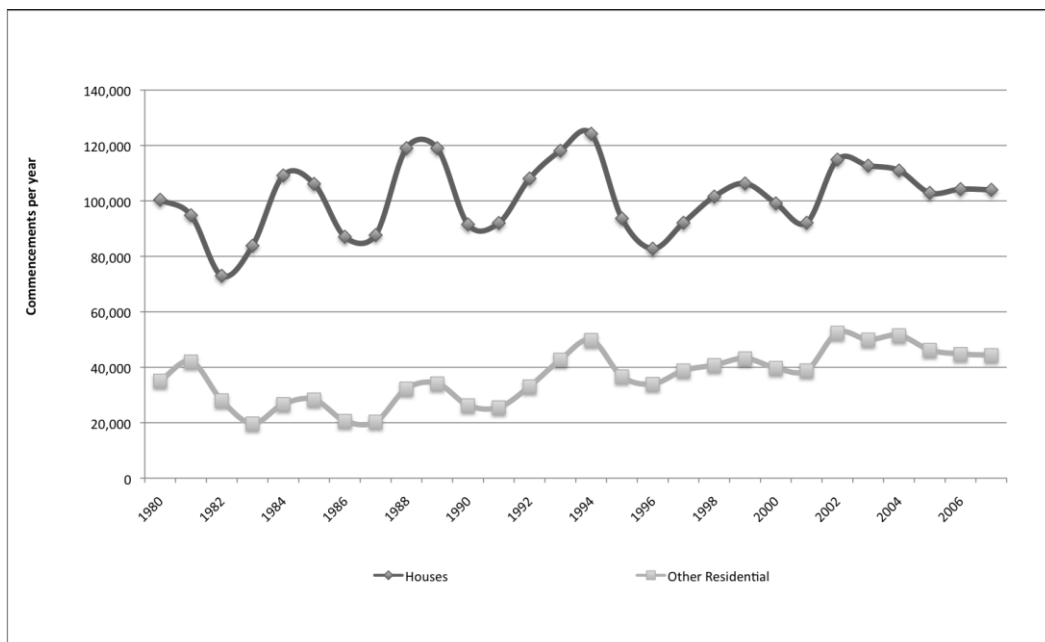
Figure 10: Dwellings approved but not commenced, houses and other dwellings types, 2006–09



Source: ABS Cat 8755.0 Construction Work Done

Figure 11 shows commencements for houses and other residential building for Australia from 1980. This is consistent with the building approvals shown in Figure 3, with between 100 000 and 120 000 houses and between 20 000 and 50 000 apartments approved and commenced. This indicates that most dwelling approvals eventually translate into dwelling commencements.

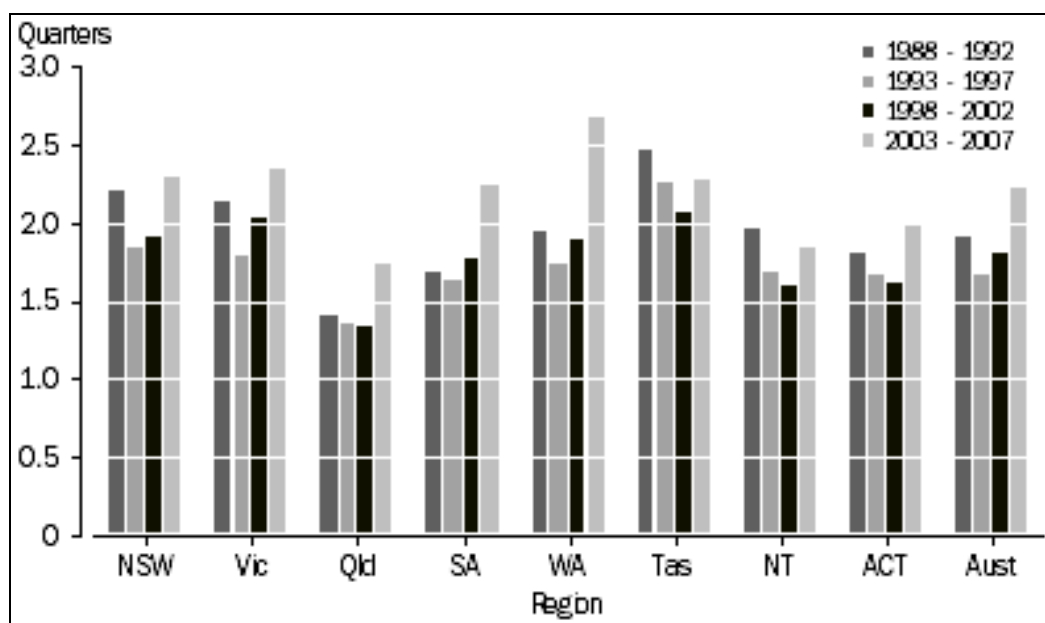
Figure 11: Dwelling commencements, houses and other residential building, Australia, 2006–09



Source: ABS Cat 8755.0 Construction Work Done

Another variable is the time taken to complete the dwelling. There is no regular series presenting this data, although the ABS published a special article on average quarterly completion times for new houses. It found that average construction times fell from a peak of 2.1 quarters in 1990 and remained at between 1.6 and 1.8 quarters to the end of the 1990s. From 2001, construction times rose to around 2.4 quarters by 2008 (Australian Bureau of Statistics 2008). Data on the history of completion times for each of the states and territories is shown in Figure 12. Queensland consistently had the lowest average completion times, while Tasmania's were the highest. Western Australia also experienced a large increase in average construction times in the five years period 2003–07.

Figure 12: Average number of quarters to complete new houses, states, territories and Australia



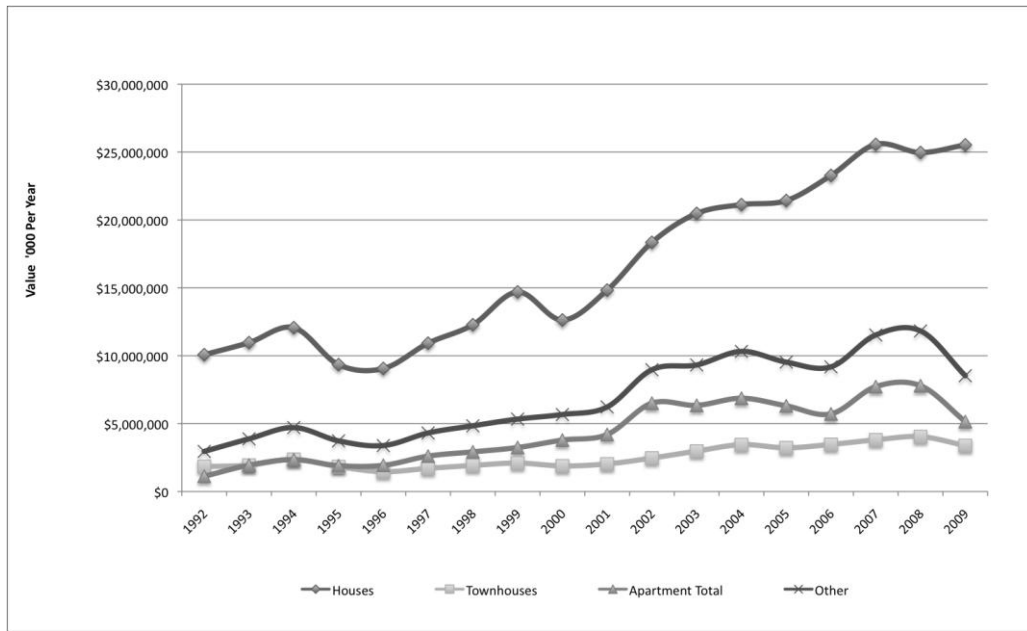
Source: ABS (2008)

2.5 Value of work done—new dwellings

Another way to understand the housing market is to consider the value of building work done in the ABS 8731.0—Building Approvals collection. Statistics on the value of building work approved are derived by aggregating the estimated 'value of building work when completed' as reported on building approval documents provided to local councils or other building approval authorities.

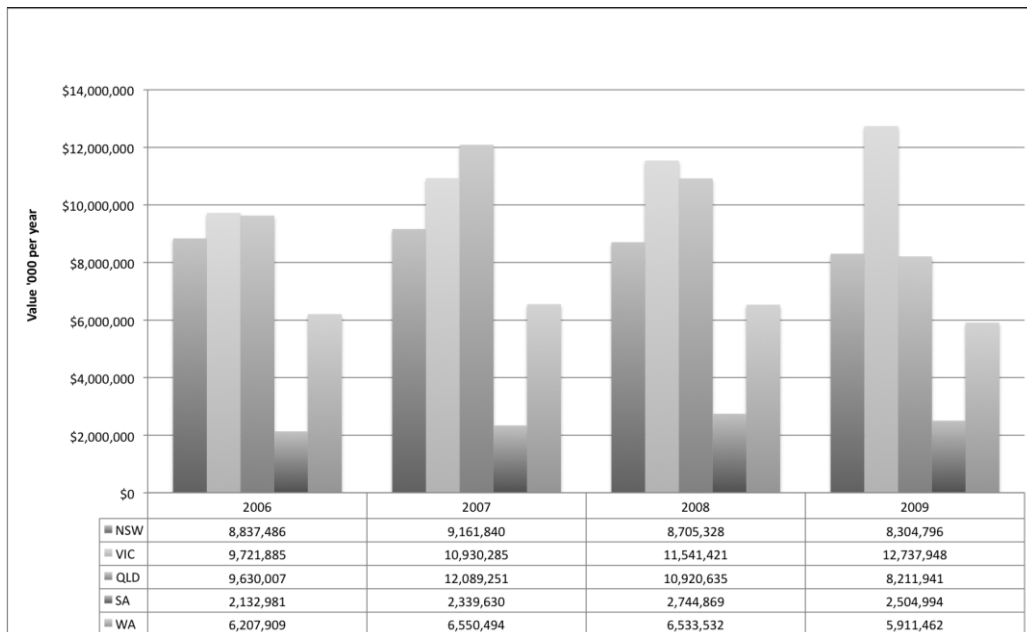
Figures 13 and 14 show the total value of residential building approvals for the period 1984–2009. From 1984 to the mid-2000s NSW had the highest value of approvals. However, from the mid-2000s Victoria and Queensland caught up and overtook NSW. In the most recent four years, NSW had approximately \$8 billion of dwelling approvals each year, while over the same period the value of Victoria's building approvals increased from \$10 billion to \$13 billion per annum. The value of Queensland's approvals declined from a peak of \$12 billion in 2007 to \$8 billion in 2009.

Figure 13: Residential building approvals, value, Australia 1984–2009



Source: ABS 8731.0 Building Approvals

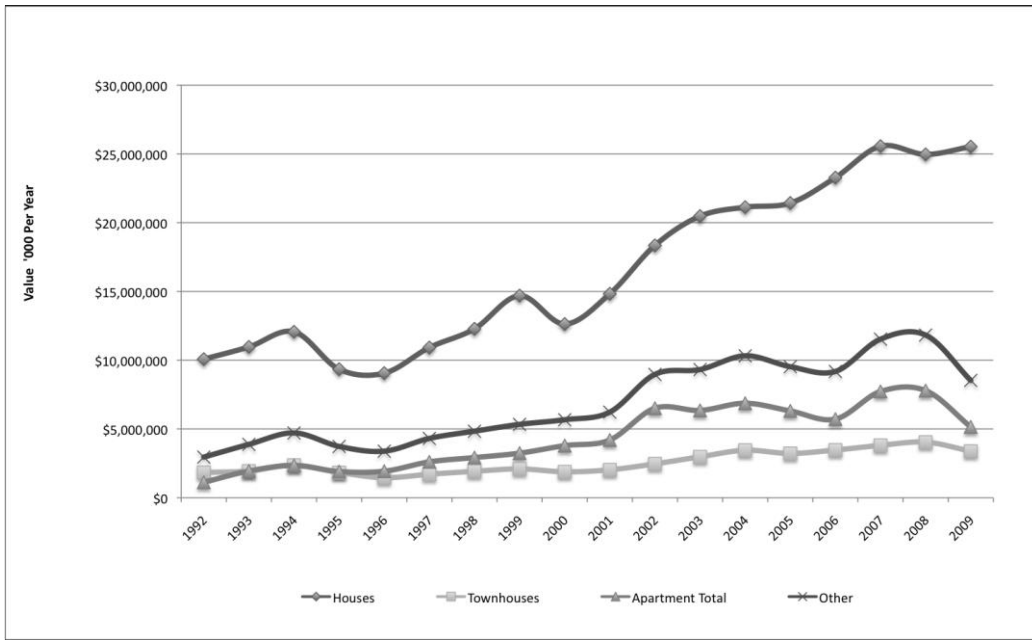
Figure 14: Residential building approvals, value, states, 2006–09



Source: ABS 8731.0 Building Approvals

Figures 15, 16 and 17 focus on the value of approved dwellings of different types. Figure 15 presents data on building approval value for four different dwelling types for the period 1992–2009. It shows that houses have been the dominant dwelling type by value and that the value of houses has been increasing. The combined value of townhouse and apartment approvals has also increased over this period while their share of the total value has decreased. In June 2010 the share of houses, as a proportion of the total value of approval of all residential building, was 68 per cent, while for townhouses and apartments it was 32 per cent.

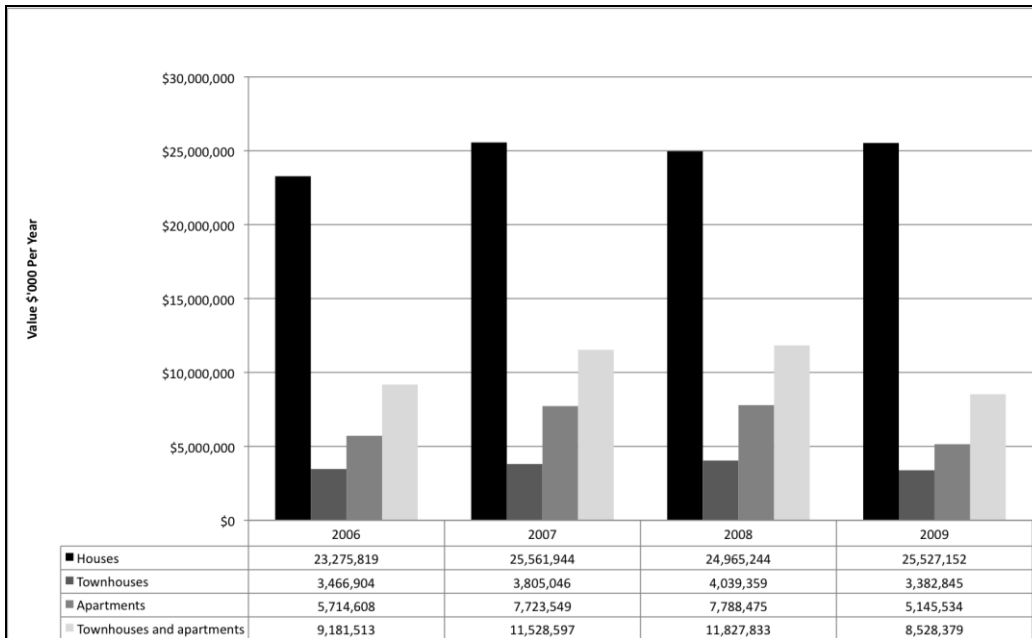
Figure 15: Value of residential approvals by dwelling type, 1992–2009



Source: ABS 8731.0 Building Approvals

Figure 16 indicates that in the four years period 2006–09, the value by type has been relatively stable, with the value of approvals for houses at \$25 billion per year, and townhouses and apartments combined at between \$9 billion and \$12 billion. The most significant change is the 2009 decline in the value of approved apartments.

Figure 16: Value of residential approvals by dwelling types, 2006–09

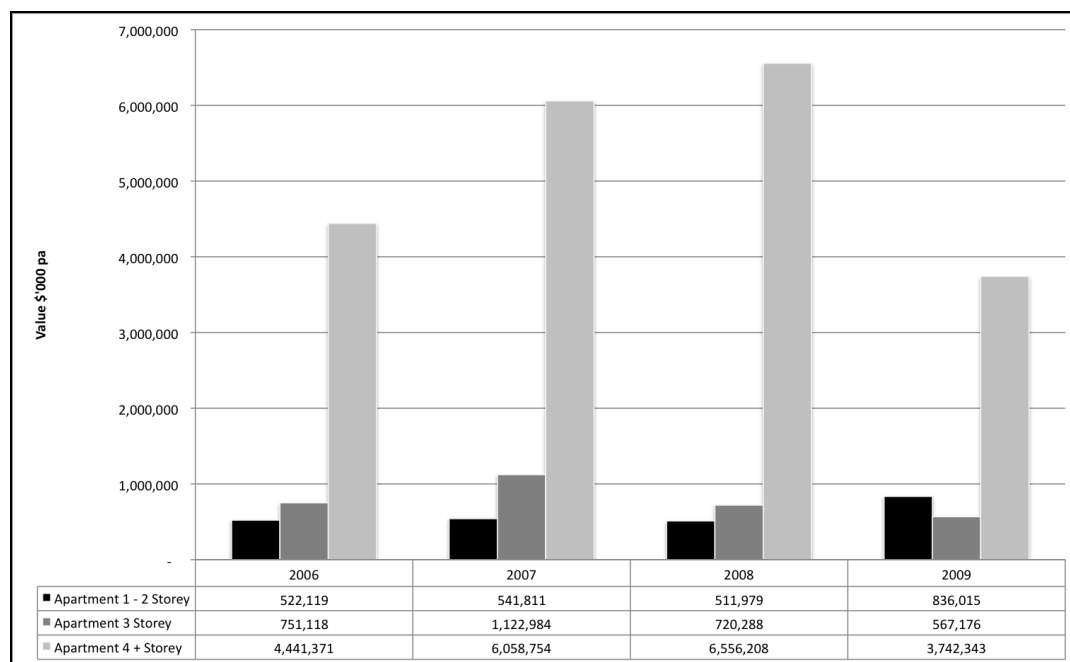


Source: ABS 8731.0 Building Approvals

Figure 17 provides further detail on the value of approved apartments. It shows that the largest category in the apartment market is four-plus-storey apartments. It also shows a change in the share of different types of apartments. In the period 2006–09,

there were declines in three and four-plus-storey apartment approvals and a small increase in one to two-storey apartments.

Figure 17: Value of residential approvals by apartment type, Australia, 2006–09



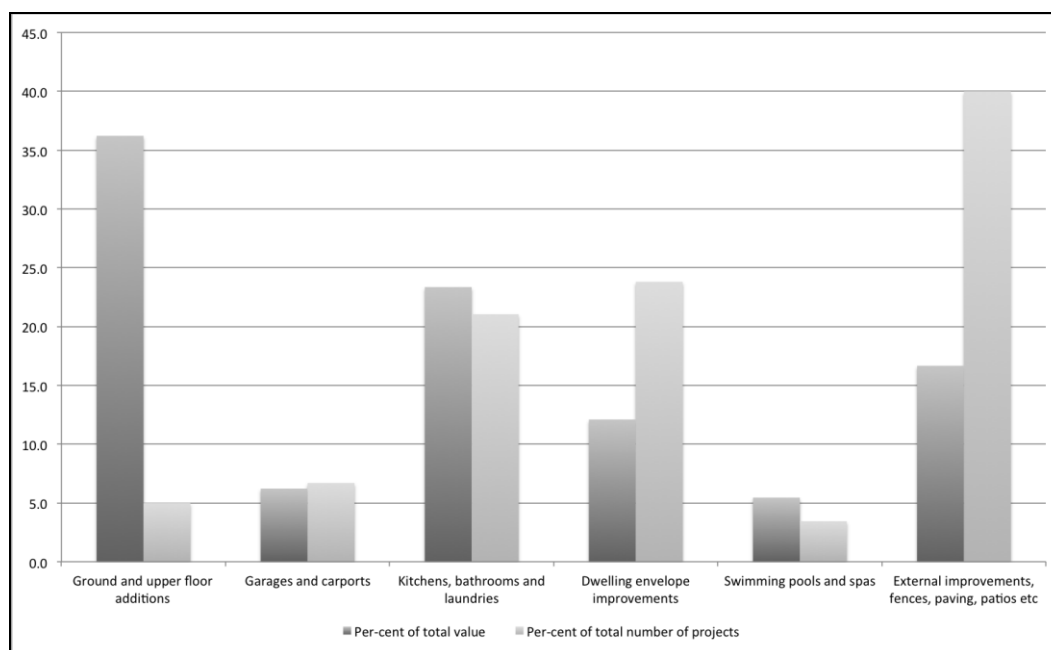
Source: ABS 8731.0 Building Approvals

2.6 Value of work done—home improvement

In addition to looking at the value of work done in producing new residential buildings, an adequate assessment of the housing sector labour force must also include consideration of the value of work done on existing dwellings. The nature and extent of this work can be appreciated by noting that BIS Shrapnel (1994) in its report *Study to investigate the alterations and additions sector of the housing industry* found in 1992 that a total of 1.7 million households, or 30 per cent of total households, undertook some form of home improvement, resulting in 2.84 million separate projects (ibid; xiii).

BIS Shrapnel uses six major categories for data on this very large home improvement sector. Figure 18 uses these categories to present data on the shares in investment in home improvements and the number of projects. It shows that the type of improvement attracting the largest share of investment is additions. This is followed by investment in the utility areas of dwellings, kitchens, bathrooms and laundries; external improvements including fences, paving, patios and pergolas; building envelope improvements, which includes roofs, walls, windows and claddings; garages and carports; and swimming pools and spas. The distribution of projects across these categories is quite different, which reflects significant variation in the average value of projects. External improvements projects form the largest share of all projects. The sequence of shares is then: dwelling envelope projects; kitchens, bathrooms and laundries; garages and carports; and then swimming pools and spas.

Figure 18: Per cent share of home improvements by value and number (1992)



Source BIS Shrapnel (1994)

Derived from the BIS Shrapnel (1994) report *Study to investigate the alterations and additions sector of the housing industry*, commissioned by the Indicative Planning Council for the Housing Industry through the Commonwealth Department of Housing and Regional Development, this data is only available for 1992. BIS Shrapnel draws data from its own regular surveys of building materials and fittings as well as other commissioned surveys. Survey results are only available through subscription. The 1994 BIS Shrapnel report is the most recent study of the home improvement sector.

The only reliable trend data available for home improvement is 'alterations and additions' presented by ABS. The ABS (Australian Bureau of Statistics 2011) definition of alterations and additions is:

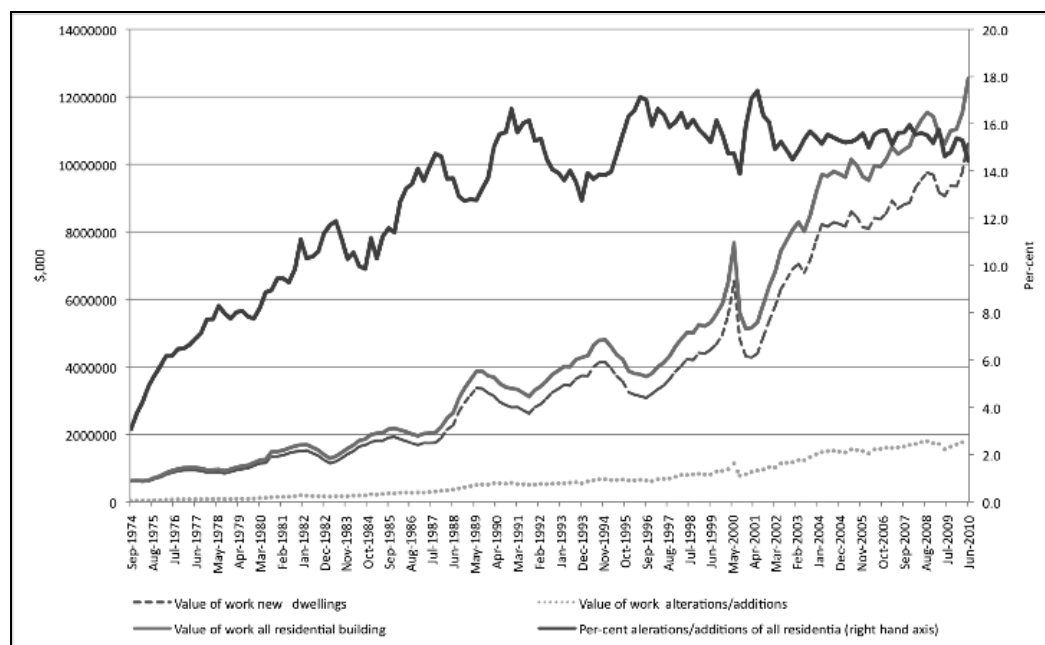
Building activity carried out on existing buildings. Includes adding to or diminishing floor area, altering the structural design of a building and affixing rigid components, which are integral to the functioning of the building.

Trends in the quantum of work within this category of alterations and additions can be described using two ABS data series: the value of work done (drawn from the BAS) and National Accounts data. These two series present significantly different pictures of the split between investment in new residential dwellings and investment in existing stock. Even then, both data series under report alterations and additions work carried out on existing dwellings.

As noted in Section 2.2 above, the ABS applies rules in the collection of building data in the BAS collection. First, the BAS sample survey is limited because it only samples residential building jobs valued at \$50 000 or more. Second, the BAS complete enumeration data collection only involves residential building jobs valued greater than \$10 000 and less than \$50 000. Further, this complete enumeration data collection is based on building permit data. It is generally recognised that a great deal of home improvement work, including 'alterations and additions', is undertaken without a building permit. In summary, the ABS collections result in under reporting alterations and additions work. If the broader concept of home improvement, used by BIS Shrapnel, is adopted then the under reporting is even greater.

Figure 19 presents the data of the 'value of residential work done' for both alterations and additions and new dwellings for the period 1974–2010. It shows that the proportion of resources devoted to alterations and additions increased steadily until the early 1990s. Since then it has largely remained in the range of 14 to 17 per cent of the total value of work done in the residential sector.

Figure 19: Value of work done for new dwellings and alterations and additions

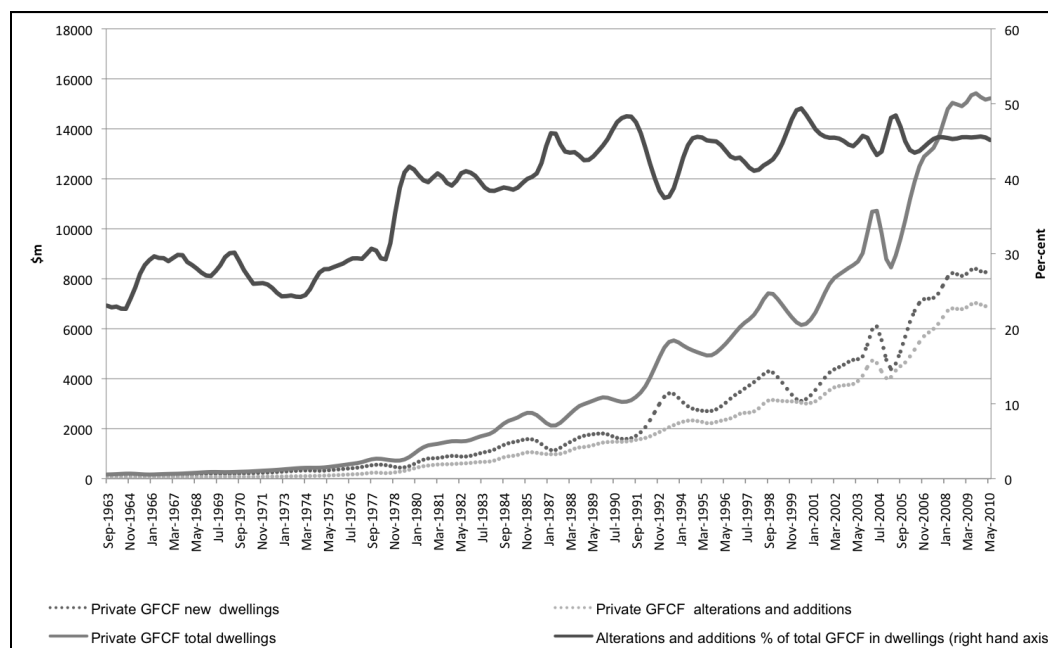


Source: ABS Cat 8752.0 Building Activity

The second data series that can be used to observe the trend in alterations and additions is taken from the National Accounts measurement of Gross Fixed Capital Formation (GFCF) in dwellings. In the residential sector, GFCF is a measure of the value of acquisitions of new and existing dwellings less the value of disposals of existing dwellings, the value of dwellings created by the conversion of existing non-dwelling buildings to dwellings, and the value of alterations and additions to existing dwellings. The method used to calculate residential alterations and additions starts with the BAS. Because a significant proportion of alterations and additions are not captured in the BAS, it is used as a benchmark, which is then extended by use of estimates of expenditure on alterations and additions drawn from the Household Expenditure Survey (Sacks & Harel 2006).

The trend data for GFCF in new dwellings and alterations and additions is presented in Figure 20. It is clear that the National Accounts methodology suggests that alterations and additions are more significant than what is reported through the BAS alone. Two differences between the BAS and National Accounts GFCF series are notable. First, the GFCF information suggests that growth in the share of alterations and additions investment was earlier than that indicated in the BAS. The GFCF indicates that alterations and additions reached approximately 40 per cent of total residential GFCF by the mid-1970s. Second, the GFCF data suggest that alterations and additions form a more significant proportion of total residential activity than suggested by the BAS value of work data. Figure 20 shows GFCF in alterations and additions, as a proportion of all residential GFCF, has ranged between 38 per cent and 49 per cent since the mid-1980s.

Figure 20: Private gross fixed capital formation in new dwellings and alterations and additions



Source: 5206.0 Australian National Accounts: National Income, Expenditure and Product

In summary, both data series indicate that the flow of resources into the existing stock is significant. If the GFCF National Account measure is the more accurate of the two measures, it is more correct to say that the flow of resources into alterations and additions is very significant. Therefore, it is clear that any study of the HSLF cannot ignore the labour engaged in alterations and additions.

2.7 Summary

This chapter presents an overview of the recent trends in housing production in Australia. The key findings of Chapter 2 are as follows:

- The level of housing production in Australia, measured as a share of national income, is broadly in line with the level in other industrialised countries. For a selection of western countries this level of investment varies between 3.5 and 6.4 per cent and for Australia it is 5 per cent for the period 1956–2000.
- Building approvals and building value data from the ABS show that there are considerable fluctuations in approvals across all states and territories. These fluctuations are only partly synchronised, suggesting there are local as well as national supply and demand factors.
- Data from the ABS on building commencements indicate a decline in the number of houses approved but not commenced in NSW, Victoria and Queensland during the period 2006–09. The ABS suggests that average construction times fell from a peak of 2.1 quarters in 1990 to 1.6–1.80 at the end of the 1990s before rising to around 2.4 quarters by 2008.
- There are two important data series describing the value of work done in residential housing. These series are the ABS BAS and the Australian national accounts. Both data series indicate that flow of resources into existing housing stock is significant and has been increasing as a proportion of total investment in residential housing. It is clear that any study of the housing sector labour force cannot ignore the workforce involved in home improvements.

3 INSTITUTIONAL DIMENSIONS OF THE HOUSING INDUSTRY

This section presents an initial analysis of the structure, conduct and performance of the Australian housing production industry. In this context the idea of 'structure, conduct and performance' refers to a heuristic device or paradigm used to analyse key features of an industry and changes in that industry. In short, the paradigm is an aid to institutional analysis that has developed out of the study of industrial organisations and firm interaction and competition from the 1930s (Schmalensee 1987). The terms in this heuristic have the following broad definitions:

- Structure directs attention to features such as the number and size distribution of firms, product differentiation, vertical integration, barriers to entry into the industry and the nature of competition.
- Conduct directs attention to the way in which firms go about doing what they do—their strategies. In other words, it directs attention to firm organisation around capacity development, price setting, contracting, mergers and market analysis.
- Performance directs attention to the achievements of firms within the industry, including income, expenses, profitability, efficiency, quality, innovation and margin.

More broadly, how the structure, conduct and performance of the industry develop over time is also influenced by the broader macro economy and government policy in the areas of regulation, taxation and public expenditure.

This section uses the ideas of structure, conduct and performance to present an analysis of the housing industry. It does this by presenting an account of:

- The structure of the house building industry by focussing on building businesses in the broader Australian housing system of housing provision; the system of representation by associations; and key features of residential building businesses, including size, employment and operations.
- The conduct of house building businesses by considering how firms organise themselves geographically; the level of diversification of building firm activities; and the trends in the outputs of businesses of different sizes.
- The performance of the house building industry by considering the available evidence on expenses, income and profitability of house building firms.

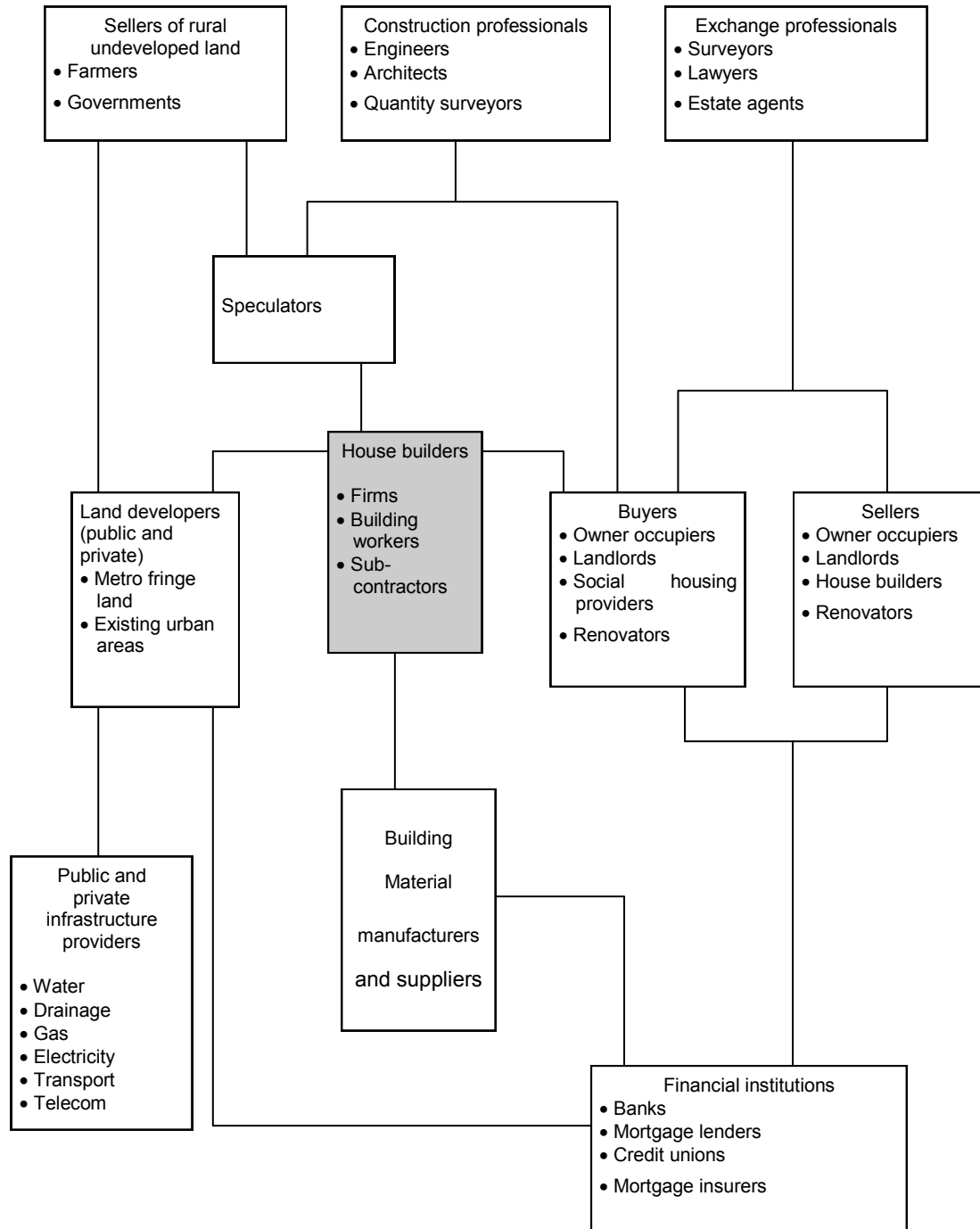
3.1 Residential building and the system of provision

The broader housing industry can be understood as a 'structure of provision', which produces new housing and supports the operation of the broader housing market. This structure of provision, to use Ball's (2006) description, is made up 'networks of organisations (firms, regulatory bodies etc.) and institutions associated with the production and transaction of particular types of built structure'. Focusing specifically on the new house building process, Ball (2006) then identifies three 'prime functional aspects' of housing development: residential land development; housing production; and house marketing and sales.

Rendered for the Australian context, Figure 21 presents a stylised account of the Australian housing 'structure of provision'. At its centre are the house builders (building firms, unincorporated sub-contractors and employees). They are closely connected to building materials manufacturers and suppliers and to finance intermediaries. Another close connection is to the land development industry that supplies new urban residential land. Beyond this there are connections to actors in

house sales and purchasing in the broader urban housing market. Figure 21 also shows that connections can be further extended to include the vendors of rural land being brought into the urban system, infrastructure providers and building and exchange professionals.

Figure 21: Australian housing 'structure of provision'



- Government policies:
- Federal: finance system; tax; building regulation; training; labour regulations; OHS legislation; R&D.
 - State: planning; infrastructure pricing; building regulation; training; R&D; landlord & tenant; insurance.
 - Local: planning; infrastructure pricing; approval processes.

3.2 Residential building governance

The structure of provision that produces new housing and supports the operation of the broader housing market can be further defined by recognising that there are many associations to represent the interests of the actor groups identified in Figure 21. They are bodies that identify and describe issues and participate in accompanying consultative policy processes that influence government policy. They act, as Coleman (1996) argues:

... as governance mechanisms by defining and procuring public goods through organising and enforcing cooperative behaviour among their members

In the Australian context, the way these associations are organised typically reflects the federal nature of government. At the state and territory level state branches work with the membership and engage with local, state and territory government agencies. These state branches are federated to form national associations.

For example, associations throughout many Australian industries consult with each other and with government agencies through industry skills councils (ISCs). ISCs are consultative bodies made up of peak employer and employee associations, which with relevant stakeholders, provide input on education and training provision policy for both the technical and further education (TAFE) and higher education (HE) systems. The ISC that includes residential building is the Construction and Property Services Industry Skills Council (CPSISC). Its membership, typically for these consultative bodies, includes unions, housing and broader construction industry associations and those representing property service providers².

Three principal associations represent and provide services to residential building businesses: the Housing Industry Association (HIA), the Master Builders Association (MBA) and the Property Council of Australia (PCA). The HIA, the largest residential building organisation, has a national membership of approximately 43 000 builders, contractors, manufacturers, suppliers, building professionals and business partners. The MBA has a membership of 31 000 companies: large national, international, residential and commercial builders and civil contractors, local subcontracting firms, suppliers and professional industry advisers. It is more broadly focussed on the building and construction industry and similarly provides services and represents the interests of members. Within this broader remit, it also focuses, to some extent, on residential building. The PCA has formed the Residential Development Council of Australia, which represents larger residential builders and land developers. Further, there is some overlap in the membership of the HIA, MBA and PCA.

In addition to these principal associations, others that represent specific interests become involved in residential building issues from time to time. They include:

-
- ² Membership of CPSISC: Construction, Forestry, Mining and Energy Union (CFMEU)
 - Surveying and Spatial Science Institute (SSSI)
 - Master Builders Australia (MBA)
 - Real Estate Institute of Australia Institute of Australia (REIA)
 - Australian Industry Group (AIG)
 - National Fire Industry Association (NFIA)
 - Housing Industry Association (HIA)
 - Liquor, Hospitality and Miscellaneous Union (LHMU)
 - Communications, Electrical, Electronic, Energy, Information, Postal, Plumbing and Allied Services Union of Australia (CEPU – Plumbing Division)
 - Australian Security Association Limited (ASIAL)
 - Building Services Contractors Association of Australia (BSCAA)
 - Australian Environmental Pest Managers Association (AEPMA)

- Other industry associations, such as the Australian Industry Group (AIG), Property Council of Australia (PCA), Urban Development Institute of Australia (UDIA) and the National Precast Concrete Association of Australia (NPCAA).
- Professional associations, such as the Planning Institute of Australia (PIA), the Australian Institute of Architects (AIA) and the Building Designers Association of Australia (BDAA).
- Building product and component associations, such as the Australian Window Association (AWA), the Roofing Tile Association of Australia (RTAA) and the Glass and Glazing Association of Australia (GGAA).

3.3 Residential building businesses size and patterns of employment

Small businesses dominate the broader construction industry, of which house building is a part. In 2008, the AIG reported that the construction industry, including residential construction, had approximately 320 000 enterprises, of which over 60 per cent were sole trader and around 30 per cent employed between one and four people (Australian Industry Group and Australian Constructors Association 2008). Data from the *8772.0 Private Sector Construction Industry* survey (Australian Bureau of Statistics 2004) provide a means, albeit with 2002 data, to describe further the predominantly small business residential building industry.

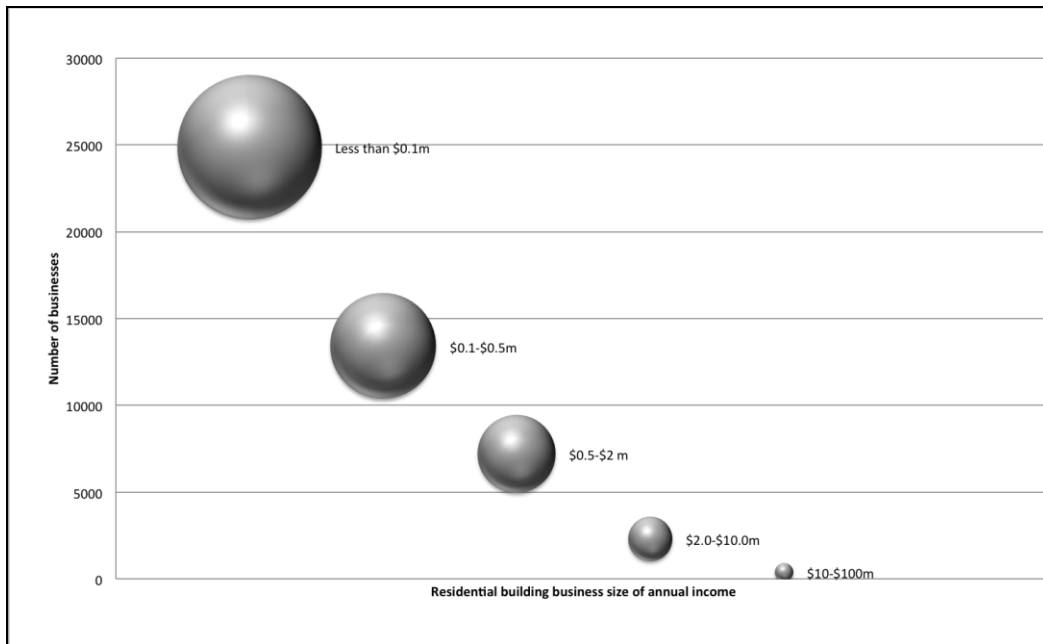
The composition of businesses by the size of their annual income is illustrated in Figure 22. It shows 52 per cent of businesses had an annual income of less than \$100 000, while another 28 per cent had an annual income of between \$100 000 and \$500 000. Together these two categories comprise 80 per cent of all businesses in residential building. This dominance of small business in residential building is further illustrated the employment in these businesses, illustrated by the period 2002–03. Overall, they employed 85 300 persons (11.9% of total construction employment), which is an average of 1.8 persons per business. The employment category, ‘working proprietors or partners of unincorporated businesses’, indicates a form of organisation suited to small business arrangements, and in this period, it had a total employment of 32 000 persons. The distribution of this type of employment is presented in Figure 23, for businesses in the annual income range of ‘less than \$100 000 and ‘less than \$10 million’. This figure shows that ‘working proprietors or partners of unincorporated businesses’ are overwhelmingly in small businesses with 89 per cent of this group employed in firms with an income less than \$500 000. The second category, ‘employees’, tends to be employed in larger businesses and totalled 53 300. Figure 24 shows a broadly equal distribution of employees across the three categories representing the larger firms³.

In summary, it can be concluded from this data that:

- Small businesses formed a very high proportion of all business in the residential building industry.
- The majority of those working in the industry in the ‘working proprietor or partners of unincorporated businesses’ worked in smaller businesses.
- Direct employees are distributed more broadly across businesses of all sizes other than the smallest category of businesses (\$100 000–\$0.5 million).

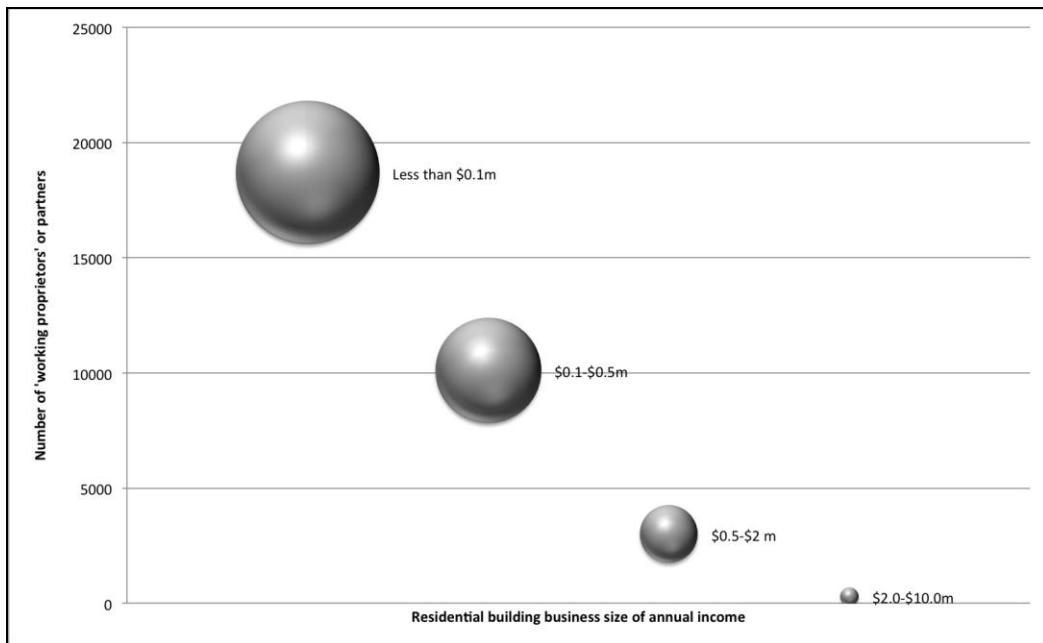
³ The data presentation in Australian Bureau of Statistics (2004). *8772.0 Private Sector Construction Industry*, Australia, 2002–03, Australian Bureau of Statistics. does not provide working proprietor or employee data for businesses in the two categories ‘\$10 million to less than \$100 million’ and ‘\$100 million or more’.

Figure 22: Residential building businesses by size of income, Australia, 2002–03



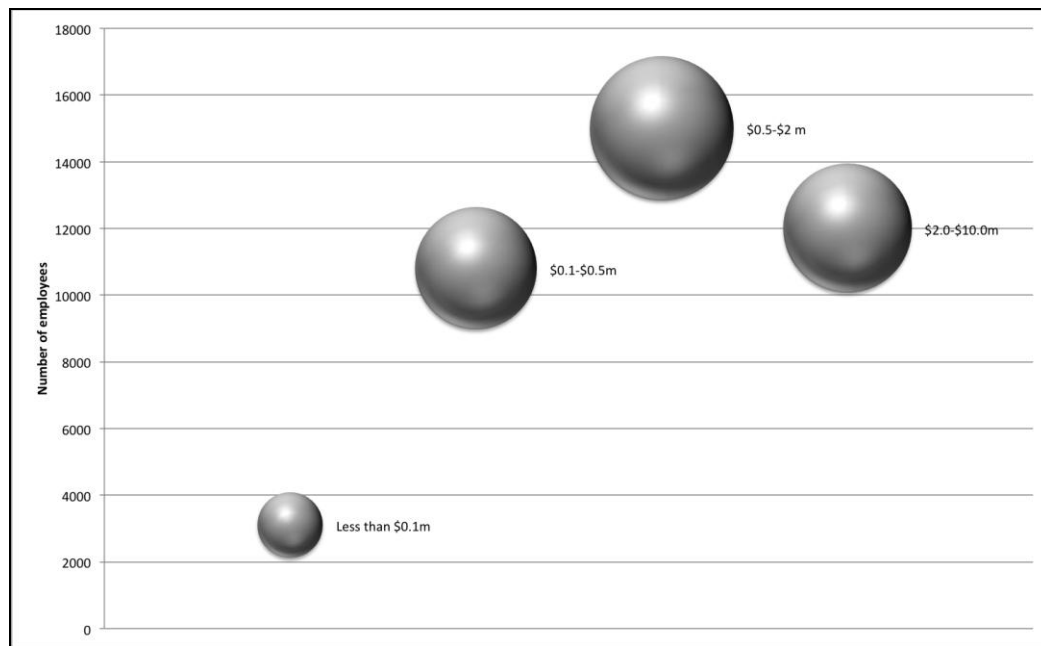
Source: Australian Bureau of Statistics (2004)

Figure 23: Residential building businesses employment of 'working proprietors or partners of unincorporated businesses'



Source: Australian Bureau of Statistics (2004)

Figure 24: Residential building businesses number of employees

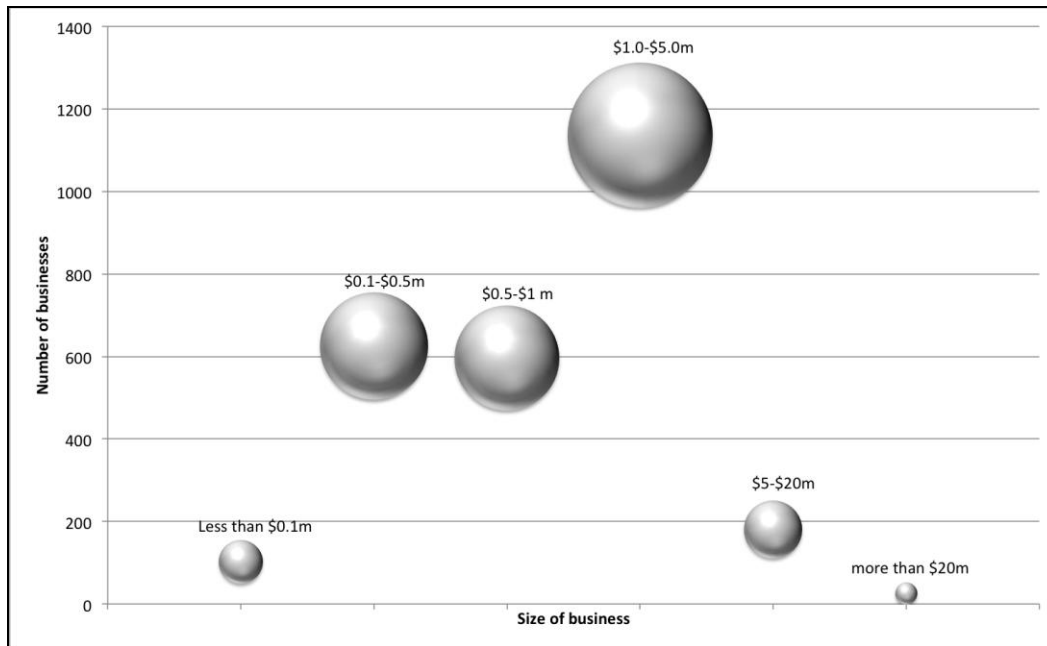


Source: Australian Bureau of Statistics (2004)

The dataset on size of businesses and employment in ABS 8772.0 Private Sector Construction Industry, Australia, 2002–03 does not distinguish between businesses engaged in alterations and additions and new build housing. In order to make this distinction, it is necessary to refer to an earlier construction industry survey collection (Australian Bureau of Statistics 1991) ABS 8771.0 Construction Industry Australia, Summary of Private Sector Operations—1988/89. This series presented data on businesses that specialise in alterations and additions and businesses that undertake both alterations and additions and new build. Although more than two decades old, this survey is nonetheless presented on the grounds that current anecdotal evidence suggests there has been little change in the structure of the alterations and additions sector of the housing industry.

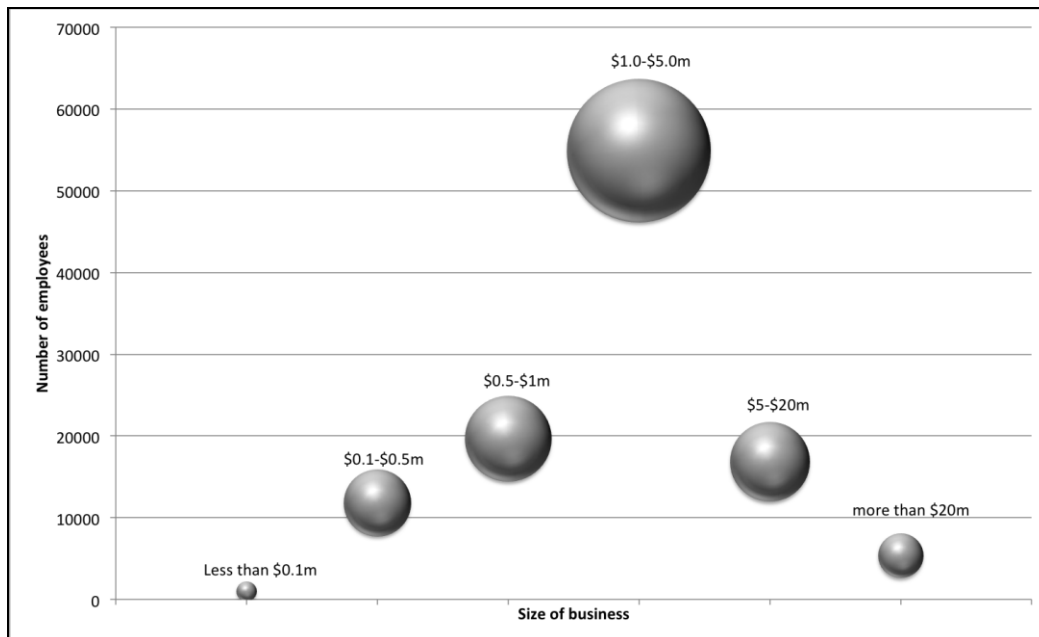
Both Figures 25 and 26 present datasets for businesses engaged only in alterations and additions. As for the 2002–03 dataset for all housing businesses, these figures confirm that small businesses dominate in the alterations and additions sector. Figure 25 shows firms with annual incomes in the ranges \$0.1–\$0.5 million, \$0.5–\$1 million and \$1.0–\$5.0 million make up the overwhelming number of alterations and additions only firms. The employment pattern for firms is presented in Figure 26. It indicates that firms with incomes in the ranges \$0.1–\$0.5 million, \$0.5–\$1 million and \$5–\$20 million have moderate significance for total employment. The average numbers of employees in these three categories are 9, 18 and 60. Businesses in the range of \$1.0–\$5.0 million annual income group are more significant for total employment, with an average of 28 employees.

Figure 25: Alterations and additions: number and size of businesses



Source: Australian Bureau of Statistics (1991)

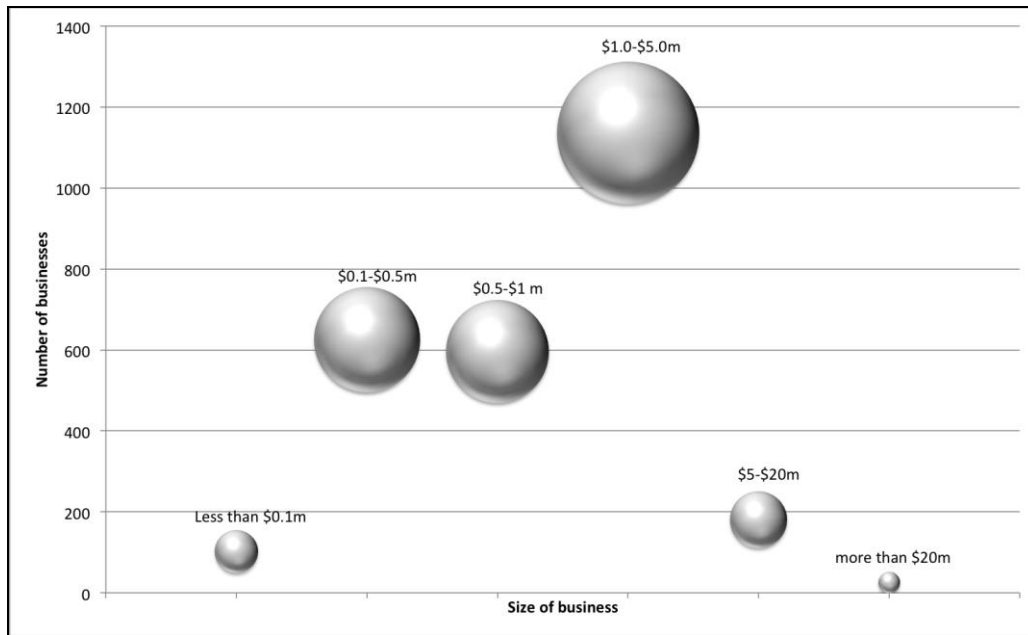
Figure 26: Alterations and additions: employment and size of businesses



Source: Australian Bureau of Statistics (1991)

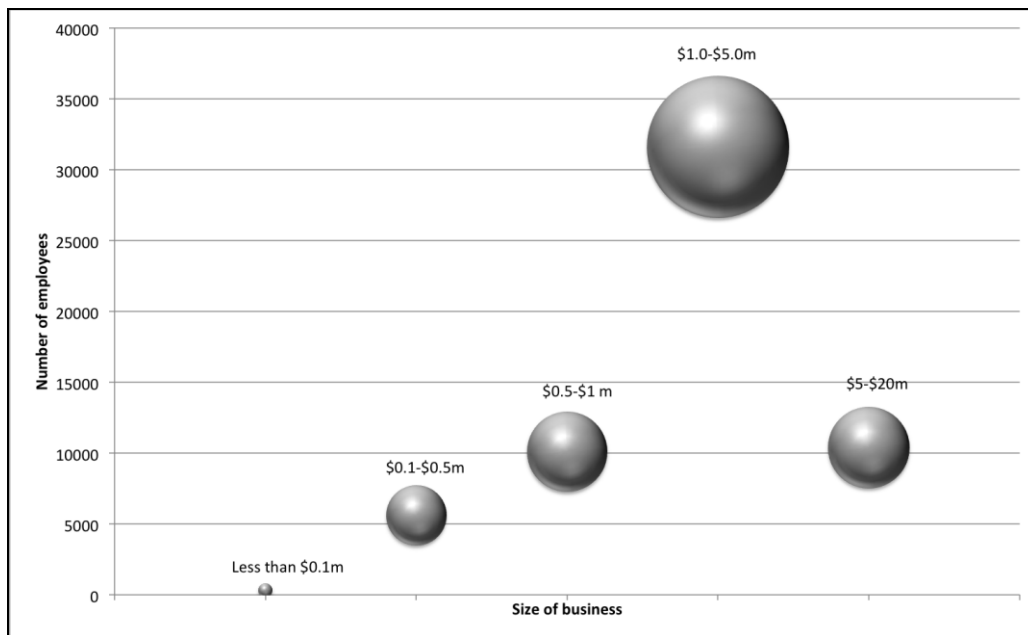
Figure 28 presents data for businesses that engage in both alterations and additions work and build new houses. The first point to note is that the number of businesses that undertake both alterations and new build is about half the number of businesses that only undertake alterations and additions. This indicates that there is limited overlap between these two sectors. Anecdotal evidence suggests that this limited overlap between the sectors has continued over the two decades following this survey. One can also note that the pattern in the size of business and employment is similar to that described above for alterations and additions businesses only.

Figure 27: Alterations and additions and new build: number and size of businesses



Source: Australian Bureau of Statistics (1991)

Figure 28: Alterations and additions and new build: employment and size of business



Source: Australian Bureau of Statistics (1991)

3.4 Conduct of residential building businesses

There is demand in Australian cities for new residential housing and for home improvements, alterations and additions. How businesses are established and organise to meet this demand varies greatly. This is evident in the ways company owners and managers develop their market analyses, make decisions about how to structure their business and operate within this market. Sections 3.4.1 and 3.4.2 present an account of key features of the conduct of businesses in the new build and home improvement sectors.

However, before discussing the conduct of businesses in these two sectors, two prefacing comments need to be made. First, the term business is used deliberately instead of firm. The reason for this is that within both the new build and improvement sectors the organisational form taken by builders varies considerably and includes sole traders, partnerships, private companies and publicly listed companies. Second, a lot more is known about the new build sector than the home improvement and alterations and additions sector. The ABS, other government agencies and industry associations regularly produce data series and other research on new build. However, their production of data and other research on renovation is scant and occasional.

3.4.1 Building new dwellings

The conduct, or strategic development, of residential building businesses that build new dwellings can be considered by examining the way, in which businesses:

- Organise themselves around particular residential building products and the resulting pattern of differentiation.
- Organise themselves geographically.
- Grow or decline and the resulting patterns of concentration.

A starting point for the discussion of these three aspects is to note that the evidence demonstrates there is no archetypal Australian residential building company. This is indicated in Table 2 and the following discussion presenting an analysis of the characteristics of the 20 largest residential builders of 2008–09.

Table 2: Characteristics of top 20 residential builders in 2008–09

| <i>Company</i> | <i>Starts</i> | | | | | | | <i>Private /public</i> | <i>No of trading entities</i> | <i>Base state</i> | <i>Other states</i> | <i>Other activities</i> |
|-------------------------|---------------|---------------|-------------------|------------------------|---------------------------------|--------------------------|------------------------|------------------------|-------------------------------|-------------------|----------------------------|---------------------------------------------------------------------------------------------|
| | <i>Total</i> | <i>Houses</i> | <i>Apartments</i> | <i>As builder only</i> | <i>As builder and developer</i> | <i>As developer only</i> | <i>Under franchise</i> | | | | | |
| BGC (Australia) | 3,844 | 3,844 | | | | | | Private | 3 | WA | | Building materials manufacture, property investment, commercial investment and construction |
| Alcock/Brown-Neaves Grp | 2,872 | 2,759 | 113 | | | | 25 | Private | 10 | WA | Vic | Commercial construction |
| Metricon Homes | 2,237 | 2,214 | - | 2,214 | 23 | 61 | | Private | 1 | Vic | Qld, NSW, SA | |
| Meriton Apartments | 1,791 | | 1791 | 1791 | | | | Private | 2 | NSW | Qld | Construction and property investment in commercial and residential |
| Simonds Group | 1,635 | 1,533 | 102 | 1,635 | | | | Private | 4 | Vic | | |
| Henley Properties | 1,596 | 1,596 | | 1,596 | | | | Private | 3 | Vic | Qld, NSW, SA | |
| JWH Group | 1,390 | 1,390 | | 1,390 | | | | Private | 6 | WA | | |
| Porter Davis Homes | 1,342 | 1,342 | | 1,342 | | | | Private | 5 | Vic | | |
| Mirvac Group | 1,283 | 432 | 851 | | 1,283 | 161 | | Public | 5 | NSW | Qld, SA, Vic, Tas, WA, ACT | Property investment in office, retail, hotels and industrial |
| Hickinbotham Group | 1,265 | 1,265 | | 1,265 | | | | Private | 6 | SA | | |

| | | | | | | | | | | | | |
|---------------------------|-------|-------|-------|-------|-----|--|-------|---------|----|-----|---------------------------|-------------------------------------------------------------------------------------------------|
| Hickory Developments | 1,114 | | 1,114 | 1,114 | | | | Private | 1 | Vic | SA | |
| GJ Gardner Homes** | 1,012 | 1,012 | | | | | 1,012 | Private | 13 | Qld | NT, NSW, ACT, Vic, SA, WA | |
| Devine Group | 923 | 923 | | | 923 | | | Public | 2 | Qld | Vic, SA | Commercial construction |
| Dennis Family Homes | 917 | 917 | | 917 | | | | Private | 1 | Vic | | Retail development, retirement villages |
| JG King | 883 | 753 | 130 | 883 | | | | Private | 2 | Vic | | |
| Multiplex Limited | 873 | 166 | 707 | 707 | 166 | | | Public | | NSW | Qld, Vic, SA, WA | Corporate real estate, project & facilities management, property services, residential services |
| Burbank Homes | 869 | 731 | 138 | 869 | | | | Private | | Vic | | Resort investments, property services |
| Hotondo Homes** | 864 | 864 | | | | | 864 | Private | | Vic | ACT, NSW, Qld | |
| Clarendon Residential Grp | 858 | 858 | | 858 | | | | Private | 12 | NSW | Vic, Qld | |
| Coral Homes* | 840 | 840 | | 812 | | | 28 | Private | | Qld | NSW | |

Source: Housing Industry Association (2009)

In Table 2, evidence of the choices made by business owners and managers of the top 20 companies in 2008–09 is apparent in the following operational features.

- Companies decide whether to build houses and/or apartments. Twelve of the twenty firms exclusively built houses and that two companies only built apartments.
- Companies decide whether to be a builder, a builder and developer, or just a developer. Four companies have adopted the role of builder and developer. All four of builder/developer companies build both houses and apartments. Another two building companies have acted as developer for some of their projects.
- Four businesses have developed a franchise model, by bringing in smaller building companies under an overarching company structure. Two of these, GJ Gardner Homes and Hotondo, only operate as franchise companies, whereas the other two ran their own residential building businesses and only built a small number of dwellings under franchise.
- Residential building companies remain overwhelmingly private companies. Only two in the top 20, Mirvac and Multiplex, have become public companies listed on the stock exchange.
- Companies make decisions about how they present themselves in the new housing market. Some, such as Dennis Family Homes, have a single company and develop a marketing strategy around just one entity. Others use multiple trading entities. Alcock/Brown-Neaves Group in WA, for instance, opts for this strategy and uses 10 trading entities.

Table 2 also shows there is considerable diversity in both the geographic reach and range of activities of residential building companies. Both of these points are discussed in more detail and evidence presented on the way, in which reach and diversity have been changing.

A picture of the geographic reach of the 100 largest Australian residential building firms, over a 16-year period, is presented in Table 3. Two features are apparent:

- Overwhelmingly, during this period large residential building companies consistently based their operations in just one state.
- While there was some growth during the 1990s and early 2000s in the number of companies that extended their operations into other states, in the last five years, there was a reduction in companies that operate across state borders.

Table 3: Geographical reach of top 100 residential building firms in Australia 1993–2009

| <i>Number of firms operating</i> | <i>1993–94</i> | <i>1997–98</i> | <i>2002–03</i> | <i>2004–05</i> | <i>2008–09</i> |
|----------------------------------|----------------|----------------|----------------|----------------|----------------|
| Internationally | | | | | 2 |
| Nationally | | 1 | 2 | | |
| In five states | 1 | | 2 | | |
| In four states | 3 | 6 | 5 | | 1 |
| In three states | 4 | 6 | 7 | 3 | 3 |
| In two states | 16 | 14 | 13 | 7 | 7 |
| In one atate | 68 | 65 | 69 | 67 | 67 |

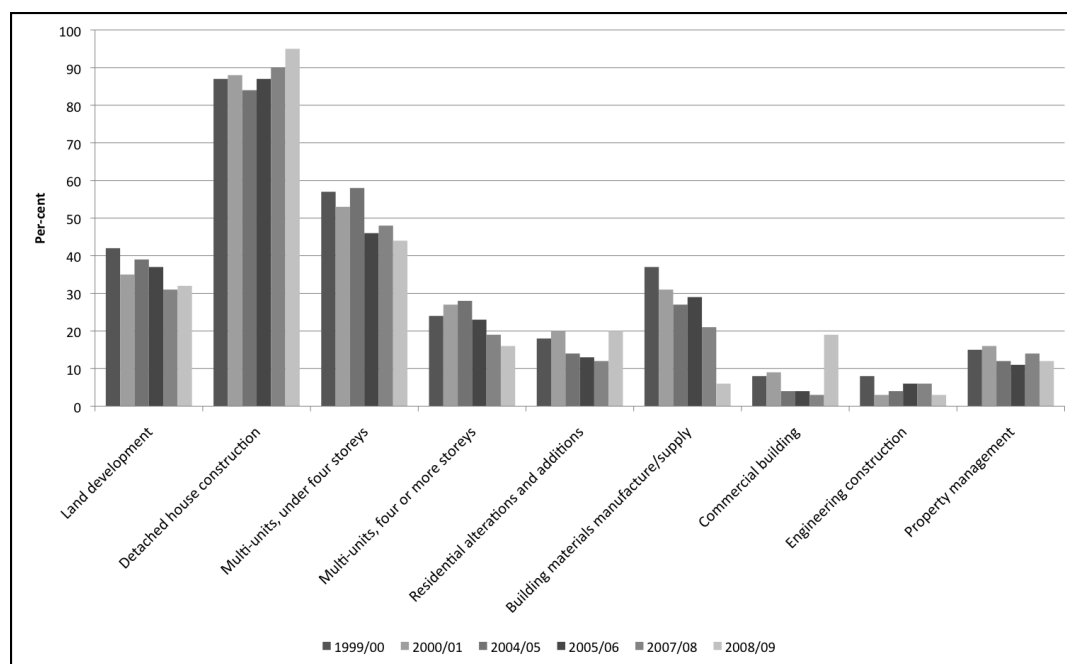
Source: Dowling (2005) and Housing Industry Association (2005, 2009)

In shaping the future of residential building companies owners and managers develop strategies around whether to restrict or broaden the scope of business activities. The evidence presented in Figure 29 indicates that, over the past decade, the owners and

managers of the largest 100 residential building companies have been making decisions resulting in their companies becoming less diversified. The ideal of core business and greater focus seems to have become more popular. This runs against the trend that Dowling (2005) found during the 1990s and summarised as 'sectoral diversification has increased'. Figure 29 shows:

- A declining proportion of building companies also engage in land development—32 per cent, down from 42 per cent.
- An increasing proportion are building detached dwellings—87 per cent, up to 95 per cent.
- A decreasing proportion are engaged in building multi-unit dwellings under four storeys—44 per cent, down from 57 per cent.
- A decreasing proportion are engaged in building multi-unit dwellings of four or more storeys—16 per cent, down from 24 per cent.
- The proportion engaged in residential alterations and additions has remained approximately constant—between 18 and 20 per cent.
- A decreasing proportion are engaged in building materials manufacture/supply—dropping from 37 to 6 per cent.
- The proportion engaged in commercial building has varied over the period—8 per cent in 1990, declining to 3 per cent in 2008 and then increasing sharply to 19 per cent in 2009.
- The proportion engaged in commercial building has been consistently low and has declined overall, dropping from 8 to 3 per cent.
- The proportion engaged in property management has declined slightly—from 15 per cent to 12 per cent.

Figure 29: Major activities of top 100 residential builders 1999–2009



Source: Housing Industry Association (various years) Housing 100.

An examination of firm size and concentration is a third way to extend our understanding of the conduct of residential building firms. This dimension of the

industry can also be seen, at least in part, as the outcome of decisions by firm owners and managers in the broader housing market.

This exploration of firm size and concentration is undertaken by examining the per cent shares of categories of residential building companies, using a rank ordering of the 100 largest, based on the number of dwellings produced. The series used is the Housing 100 series produced by the HIA between 1999 and 2009. It is a data series that supports a national and state level analysis of shares of production of all dwellings (houses and multi-unit dwellings). The analysis is presented for:

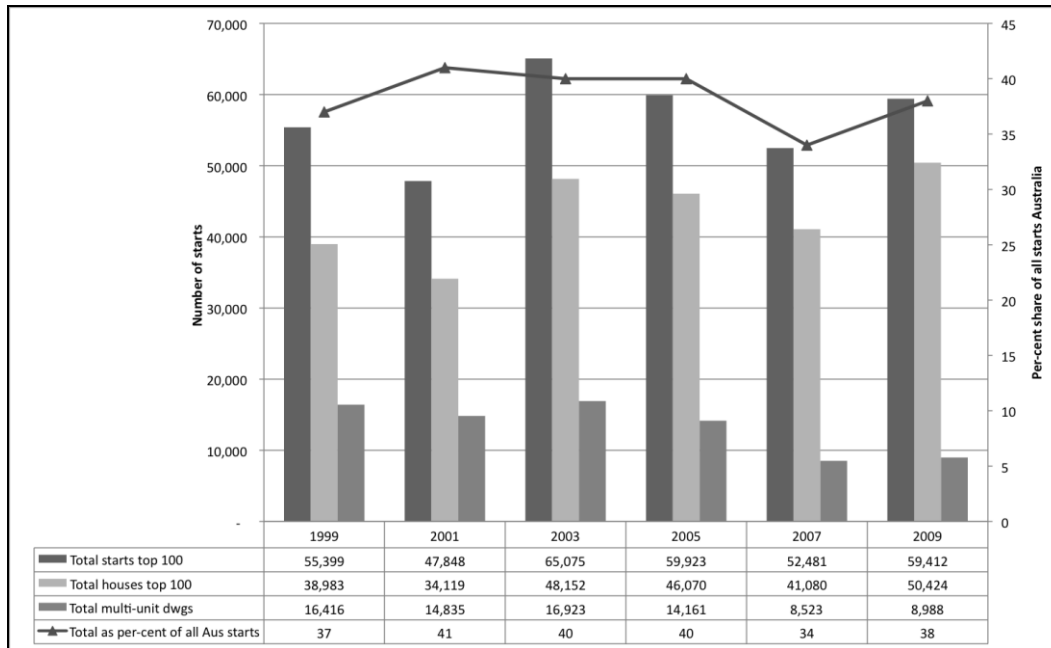
- The share of residential production of the largest 100 companies of all residential builders.
- The share of the top 20 companies as a share of production of the top 100.
- The share of dwelling production by quartile of companies in the top 20 group.

Broadly, this analysis shows that an earlier process of concentration in the residential building industry has stalled.

Dowling (2005) reported that during the 1990s and early 2000s a concentration process in residential building was underway: 'the importance of large builders has amplified'. The larger companies had increased their share of residential starts. However, the key finding evident in Figure 30 is that the concentration process seems to have stalled. The data for total starts for the top 100 companies as a share of all Australian starts show that there has been no increase in this share during the 2000s. The proportion of residential starts initiated by the largest companies has fluctuated, but there has been no overall increase. In 2009 the share was 38 per cent and in 1999 it was 37 per cent.

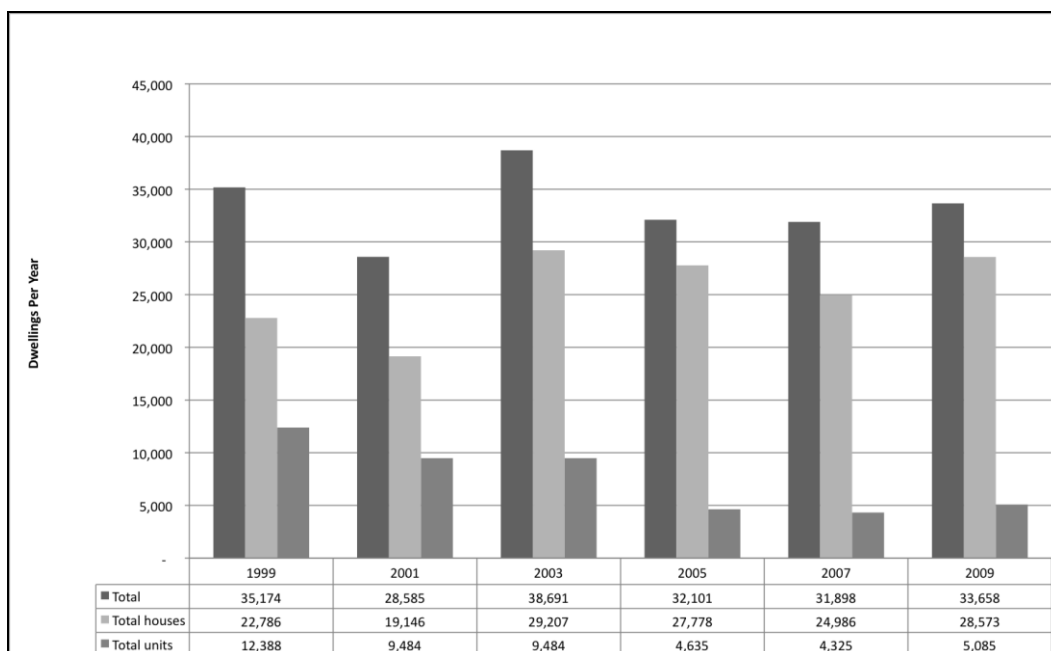
A second important observation is that among the top 100 companies there has been a noticeable shift in the mix of houses and multi-unit apartments built. The data indicates an increase in the proportion of houses and a decrease in the proportion of multi-unit dwellings. In 1999, 30 per cent of starts were multi-unit dwellings, but by 2009 this had declined to 15 per cent. This runs against the trend that Dowling (2005) found that multi-unit dwellings were increasing in importance for the top 100 firms during the 1990s and early 2000s. Figure 31 shows that this same trend, an increase in the proportion of houses and a decrease in the proportion of multi-unit dwellings, is evident for the largest 20 residential building companies in the top 100 list.

Figure 30: Dwelling production for largest 100 companies and as a percentage share of national commencements



Source: Housing Industry Association (various years) Housing 100 and ABS 8755.0 Construction Work Done

Figure 31: Dwelling production by top 20 of top 100 largest residential builders (number)

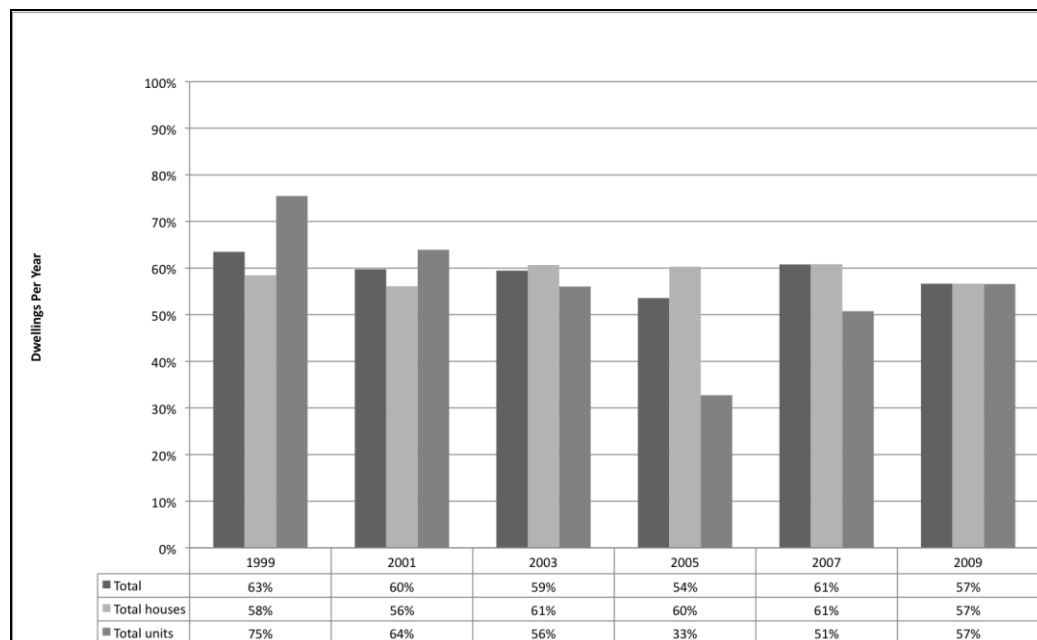


Source: Housing Industry Association (various years) Housing 100

The level of concentration can be considered further by examining the share of dwelling production by the top 20 residential builders. Figure 32 presents the data on the dwelling production of the top 20 companies as a percentage of the top 100 in Australia, bi-annually from 1999 to 2009. It shows that the level of concentration, against the background of considerable fluctuation in the percentage share, has declined slightly. For houses, the level of concentration in the top 20 firms varied from

56 per cent in 2001 to 61 per cent in both 2003 and 2007, but overall has remained steady. For multi-unit apartments, the level of concentration ranged from a high of 75 per cent in 1999 to a low of 33 per cent in 2005. Overall, the share of unit production by the top 20 companies declined.

Figure 32: Dwelling production of top 20 residential builders as per cent of top 100



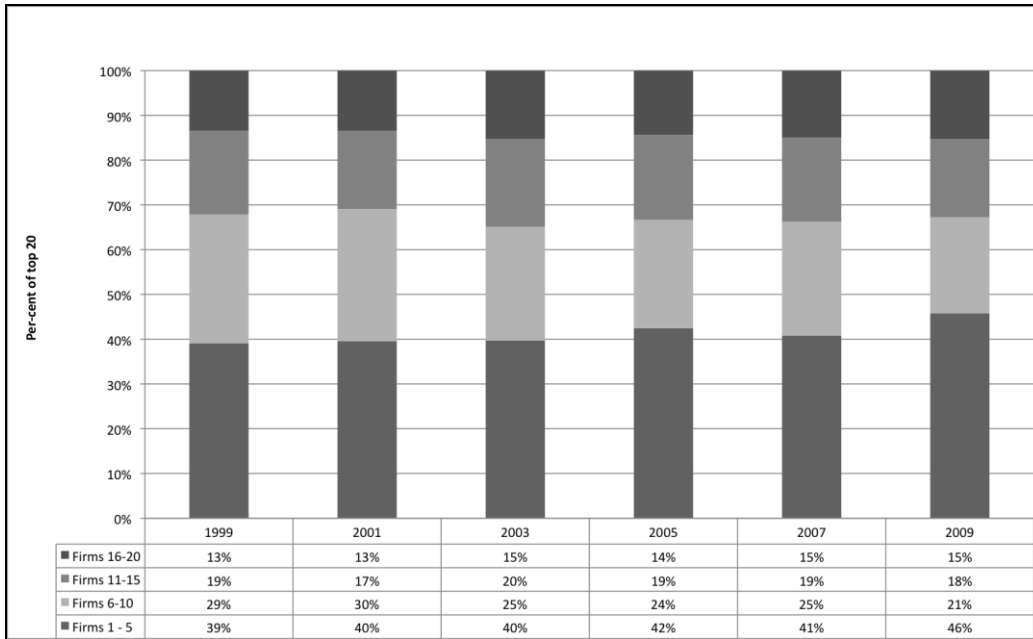
Source: Housing Industry Association (various years) Housing 100

Residential building company concentration can be further examined by disaggregating the production of the top 20 companies into quartiles for the period 1999–2009. Figures 33, 34 and 35 present these data for all dwellings, houses and multi-unit dwellings. In summary, they show:

- For all dwelling production, Figure 33 indicates an increasing concentration in the very large firms (firms 1–5), with their share increasing from 39 per cent in 1999 to 46 per cent in 2009. Over the same period, firms in the 6 to 10 category experienced a decrease in their share, from 29–19 per cent in 1999 to 21–19 per cent in 2009. This suggests a shift in market share from these firms to firms 1–5. Firms 11–15 and 16–20 retained a comparatively stable market share over this period, with around 19 per cent for firms 11–15, and around 14 per cent for firms 16–20. Source: Housing Industry Association (various years) Housing 100.
- Figure 34 indicates stable levels of concentration in very large firms (firms 1–5), with their share varying from 40 per cent in 2003 to 48 per cent in 1999. Over the same period, the share of firms in the 6–10 category also remained steady, at between 23 and 25 per cent. Firms 11–15 fluctuated, with between 16 per cent and 21 per cent market share. There is evidence of an increased share of production by firms 16–20, which rose from 11 per cent in 1999 to 15 per cent in 2009. Source: Housing Industry Association (various years) Housing 100.
- Figure 35 indicates fluctuating levels of concentration in very large firms (firms 1–5), with their share varying from 42 to 64 per cent in the period 1999–2005. Over that same period, the share of firms in the 6–10 category varied between 19 and 25 per cent. Firms 11–15 also fluctuated, between 16 per cent and 21 per cent market share, and firms 16–20 varied from 6 to 16 per cent. Overall, there was more fluctuation in the market share of firms building multi-unit dwellings

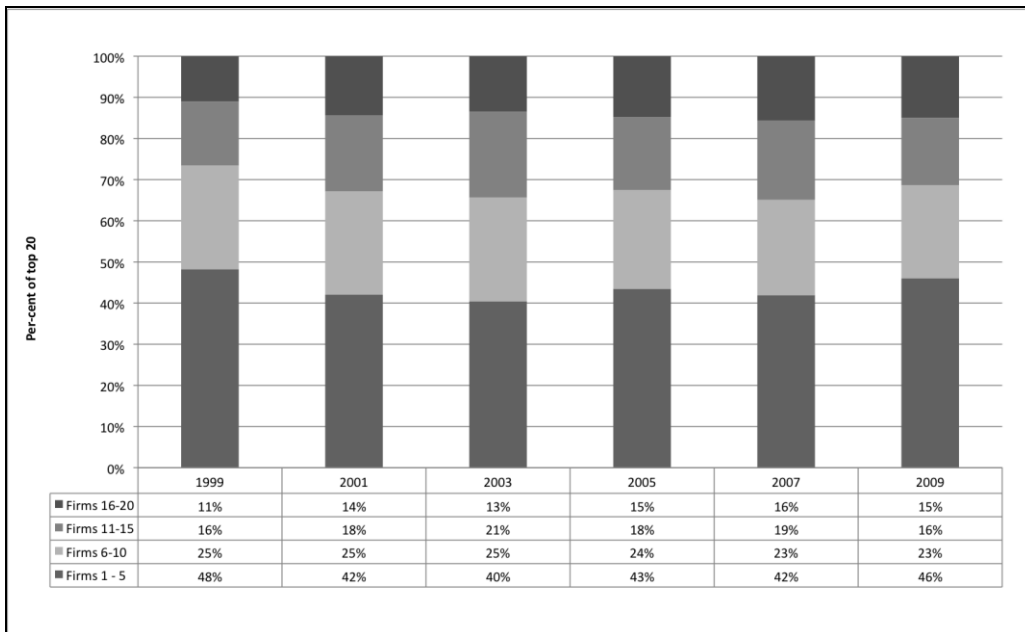
compared to those building houses. This occurred, in a market as shown in Figure 32, where overall unit production by the top 20 firms declined.

Figure 33: All dwelling production top 20 firms quartile per cent share



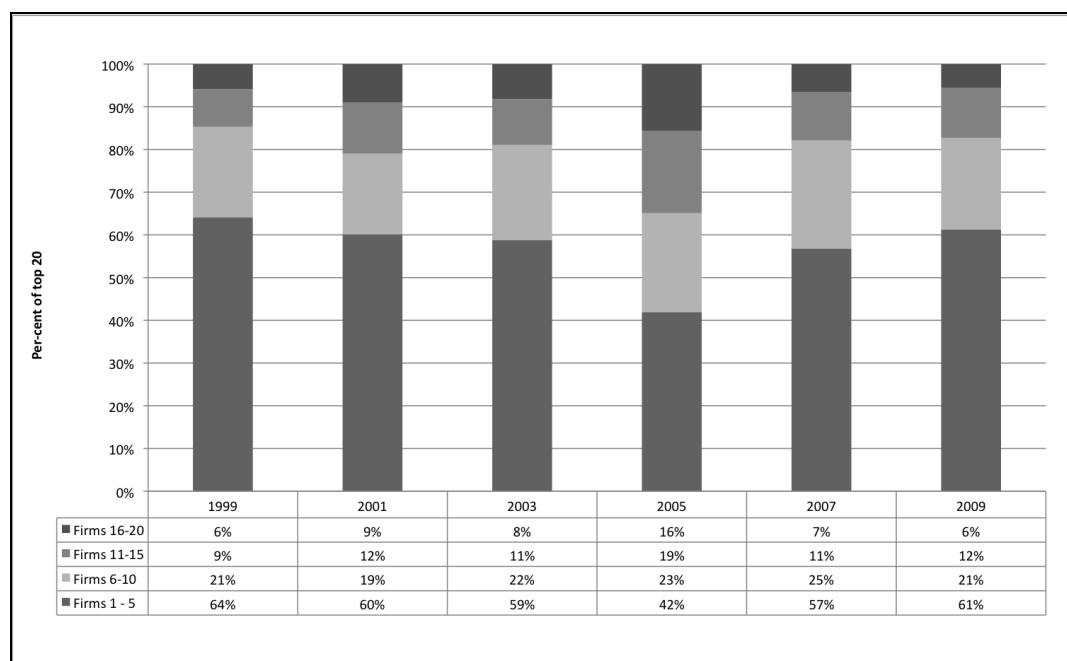
Source: Housing Industry Association (various years) Housing 100

Figure 34: House production top 20 firms quartile per cent share



Source: Housing Industry Association (various years) Housing 100

Figure 35: Multi-unit production top 20 companies quartile per cent share



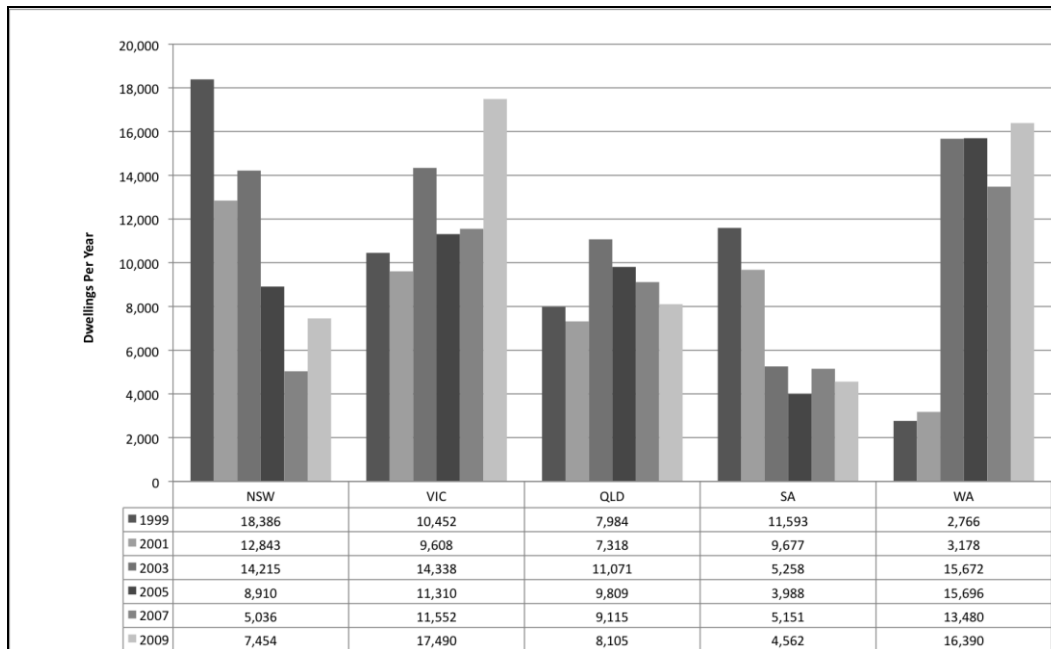
Source: Housing Industry Association (various years) Housing 100

The level of concentration can also be considered at the state level by considering the number of dwellings produced by the largest 20 companies (Figure 36) and the share of dwellings produced by the largest 100 companies (Figure 37).

Figure 36 indicates that there has been considerable fluctuation in the number of dwellings produced by the largest 20 companies. For both New South Wales and South Australia, there has been a significant decline in the number of dwellings produced by the largest 20 companies. In Victoria, by contrast, the top 20 firms significantly increased production in the period 1999–2009 from 10 000 to 17 000 dwellings. The largest 20 firms in Western Australia also increased production in the same period from 3000 dwellings to more than 16 000 dwellings. Queensland stands out as the state, where the level of production by the largest 20 companies fluctuated most. Here the largest companies finished the decade producing almost the same number of dwellings as they did at the beginning.

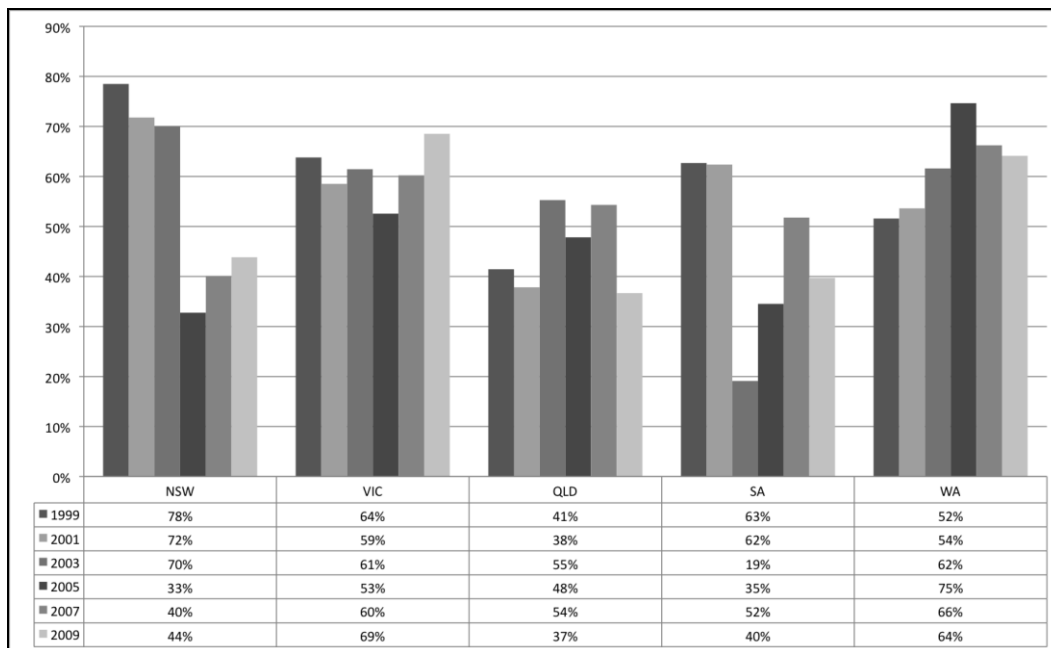
Figure 37 presents the production of the largest 20 companies in each of the states as a per cent of the production of the largest 100 companies. This dataset suggests that in some states there has been concentration of dwelling production, while in others there has been a deconcentration. In both New South Wales and South Australia there appears to have been a process of deconcentration over the decade. In New South Wales the extent appears to have been very significant. At the beginning of the decade, the largest 20 companies were producing nearly 8 per cent of dwellings, whereas by the end of the decade they were producing little more than half. In Victoria and Western Australia there appears to have been some concentration. In Queensland it appears that the level of concentration at the beginning and the end of the decade is about the same.

Figure 36: Dwelling production top 20 companies by state



Source: Housing Industry Association (various years) Housing 100

Figure 37: Dwelling production largest 20 companies as per cent of largest 100 companies



Source: Housing Industry Association (various years) Housing 100

3.4.2 Improving, altering and adding

In Section 2.6, evidence was presented showing that there has been steady growth in the level of reinvestment in the existing residential housing stock. National Account data show that GFCF in alterations and additions, as a proportion of all residential GFCF, has ranged between 38 and 49 per cent since the mid-1980s. Further, this definition is too narrow to include the full range of improvement work. A better

definition is found in the six categories used by BIS Shrapnel in their regular survey of building materials and fittings, viz., ground and upper floor additions; garages and carports; kitchens, bathrooms and laundries; dwelling envelope improvements; swimming pools and spas; external improvements including fences, paving, patios and decks.

How do home improvement sector businesses organise themselves around this range of work? In the absence of recent research and current data, the following broad points can be made about the conduct of home improvement businesses that undertake this large volume of residential building work. Also household members will undertake this work as do it yourself (DIY) projects. The mix of work undertaken by businesses and through DIY is an area, where there is no research to draw on for this discussion.

- Ground and upper floor extensions is the category of home improvements forming the largest share of reinvestment in existing housing, as illustrated in Figure 18. They are also the improvements that most likely to be subject to planning and building regulation. Consequently, this work is overwhelmingly undertaken by registered builders. Within this category of the home improvement industry, specialist businesses have developed. While some of these businesses also build new dwellings, it is clear that a niche of ground and upper floor extension specialists has developed in the Australian housing industry.
- Garages and carports is a category of home improvement with two forms of provision. First, building businesses build bespoke garages and carports. Second, many households will purchase garages and carports built off-site, and have them transported and erected. An overlay influencing how this is done is the observance and enforcement of building regulations in local areas.
- The provision of new kitchens, bathrooms and laundries in existing dwellings has become a major specialist business area. Design professionals specialising in kitchen and bathroom design have emerged as a specialist group represented by the Kitchen and Bathroom Design Institute (KBDI). The installation work is undertaken by specialist supply and install businesses. Further, industry groups carefully monitor demand and supply of kitchens and bathrooms. For example, the Housing Industry Association (2010b) publishes an annual report on trends and forecasts future demand. It reports that in 2009–10 some 1.22 million kitchens and bathrooms were installed in Australian dwellings, with a value of \$11 billion.
- Dwelling envelope improvement refers to work such as recladding, window replacement, re-guttering, re-roofing, relining of internal walls and ceilings, ceiling insulation and re-cladding of eaves and gables. This is the work that can be carried out either by a building business, which organises the relevant trades, or by individual tradespeople, engaged directly by households. Further, this is also an area where some households will undertake these works, partly or fully, through DIY. In part, the distribution of this work across formal building businesses and household DIY depends on the extent to which households seek to have the work subject to building permit provisions.
- The provision of swimming pools and spas is another category where specialist businesses have developed. Again the specialty nature of this work is signalled by the development of an association of providers, the Swimming Pool and Spa Association. It represents members and the broader swimming pool and spa industry to the general public, government and relevant statutory bodies. The speciality nature of businesses in this area is reinforced by a framework of government health and safety regulation.

- External improvements refers to screens, fences, paving, concreting, decks, patios, sheds, pergolas and gazebos. Again this is an area where households will either engage individual tradespeople or they will undertake their own projects through DIY.

In summary, housing improvement is organised around specialist providers across the six improvement categories. Ground floor and upper floor extension is the area that most likely to involve the use of a contract builder responsible for the whole project. Projects in the other categories are more likely to be organised through a household to contractor arrangement. Some areas of work, especially external improvements and perhaps building envelope improvements, may be undertaken through DIY by householders.

3.5 Housing industry performance

Industry performance is typically measured in terms of expenses, income and profitability. In the residential building industry datasets that suitable for providing this type of analysis are limited. However, two sources, the ABS *8772.0 Private Sector Construction Industry* survey (Australian Bureau of Statistics 2004) and the recent URBIS (2009) National Dwelling Costs Study, support an initial account of industry performance. The Private Sector Construction Industry survey supports an analysis of performance by size of firm whereas the National Dwelling Costs Study provides an insight into the performance of businesses building houses and those building apartments or multi-unit dwellings.

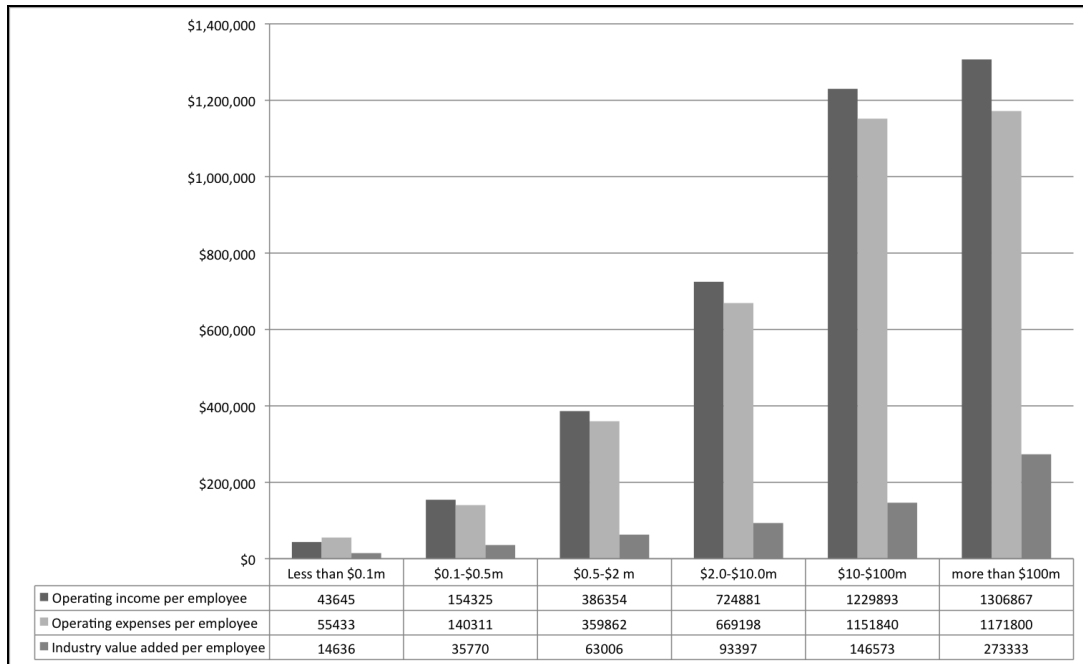
3.5.1 Performance of residential building businesses

As already noted in the Section 3.3, the residential building industry is dominated by small business. In other words, it is characterised by many businesses employing small numbers of people. However, because there are also some larger companies operating in the sector, there is a spectrum of small to large. The Private Sector Construction Industry survey supports a description of the performance of residential building across this spectrum, both in relation to employees and businesses.

The performance outcome per employee for residential building businesses of different sizes is presented in Figure 38. This figure shows that:

- As business size increases, the average size of operating income and operating expenses per employee increases.
- Industry value added per employee, which is the difference between the market value less the cost of production of outputs, increases with the business size, indicating major economies of scale.
- For the labour-intensive firms with incomes of less than \$0.1 million, the level of operating expenses per employee is greater than income per employee. Perhaps this indicates a tendency in these small businesses to minimise taxable income (Buchanan & Allan 1998).

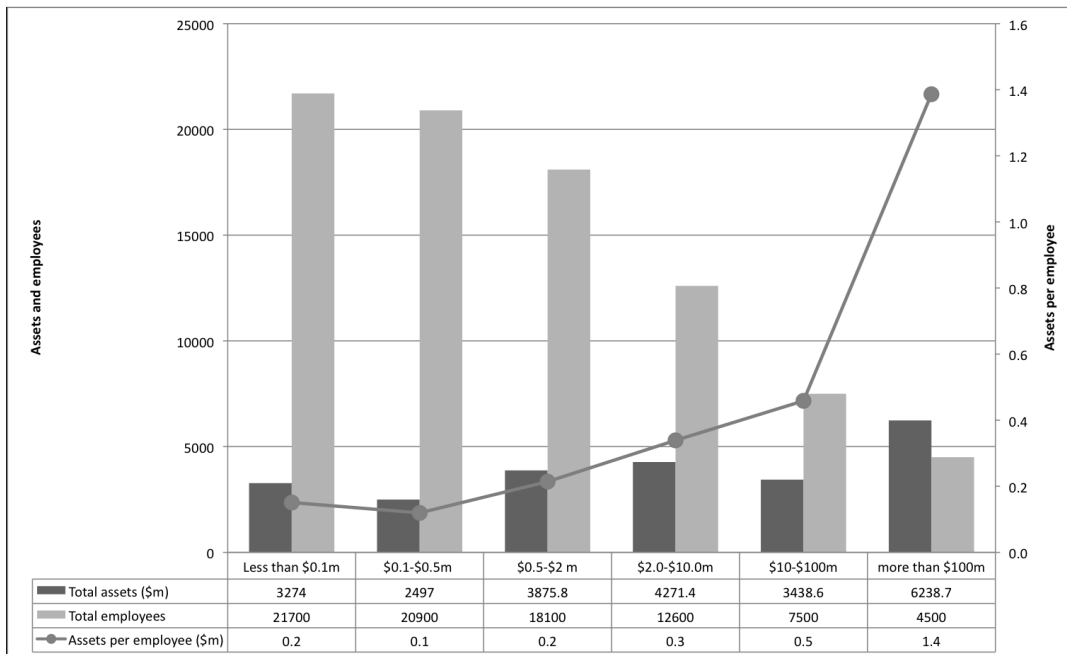
Figure 38: Outcomes per employee for residential building businesses by size of business



Source: Australian Bureau of Statistics (2004)

Figure 39 presents data on the ratio of assets to employees. It indicates a very significant increase in this ratio, total factor productivity, as the size of the firm increases.

Figure 39: Capital to employee ratio for residential building businesses



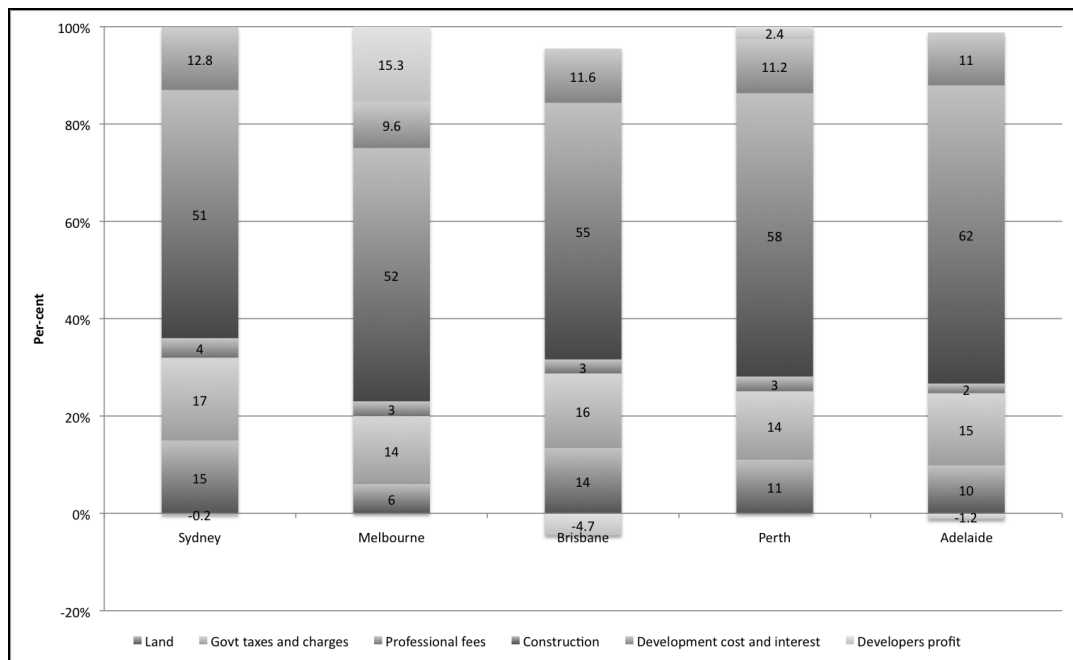
Source: Australian Bureau of Statistics (2004)

3.5.2 Costs of building houses and apartments

The recent URBIS (2009) National Dwelling Costs Study presents research on the cost structure of house and apartment building. It was undertaken in an effort to understand what the barriers might be to infill and medium density residential construction and what might lie behind the decline in multi-dwelling development (already described in Chapter 2). The approach taken was to compare point-in-time cost of building a three bedroom, two-storey house on the fringe, 30–50 kilometres from the CBD and a two bedroom single level apartment in the inner city, two to 10 kilometres from the CBD in the five largest capital cities.

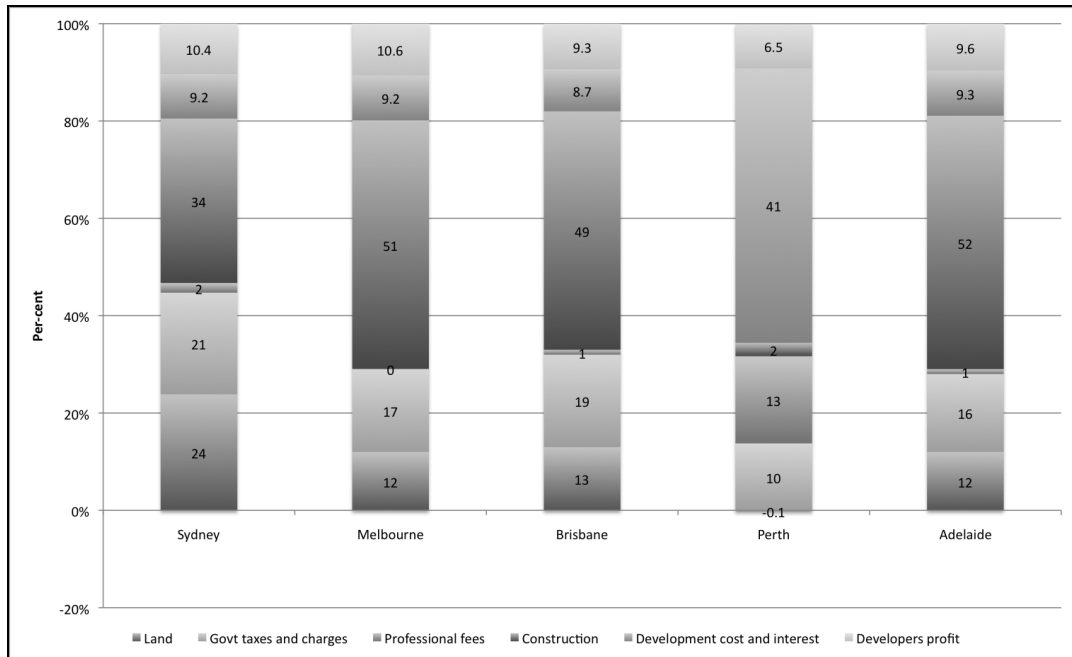
In summary, the URBIS (2009) research found that infill apartments cost significantly more than greenfield houses, 13 to 39 per cent, with the exception of Sydney, where greenfield costs were higher. Figures 40 and 41 present the data for the costs of both dwelling types in the capital cities. Figure 40 indicates that apartment builders, apart from those building in Melbourne, are struggling to make a profit. In Melbourne, the sustained profits result from continuing demand for inner city apartments, within the context of a continuing strong housing market. Figure 41 indicates that residential building businesses, apart from those building in Perth, are making a profit from building houses on greenfield sites on the fringe. The conditions identified in the research mitigating against predictable profit making through inner city apartment building are construction costs, government taxes and charges, land supply and development time frames.

Figure 40: Cost components of 'infill' multi-unit development in capital cities



Source: URBIS (2009)

Figure 41: Cost components of 'greenfield' residential three-bedroom house in capital cities



Source: URBIS (2009)

This section presents an initial analysis of the structure, conduct and performance of the Australian housing production industry. The idea of 'structure, conduct and performance' is a heuristic device used to analyse key features and changes of an industry and changes in the industry. The key findings of this chapter are:

- The structure of the Australian house building industry is characterised by small businesses that contribute to the building of residential housing through extensive contracting arrangements.
- The conduct of the house building industry has changed, as an increasing proportion of volume builders are building detached dwellings and have reduced their role in building multi-unit dwellings and/or land development projects.
- In the area of home improvement, ground floor and upper floor extensions is the area most likely to involve the use of a contract builder who is responsible for the whole project.
- Available data on industry performance indicates that economies of scale are achievable as firm size increases. It also appears that there are cost implications associated with the construction of infill apartments.

More broadly, the way the structure, conduct and performance of the housing industry develops over time is also influenced by the broader macro economy and government policy in areas of regulation, taxation and public expenditure.

4 HOUSING SECTOR LABOUR FORCE ISSUES

4.1 Introduction

This chapter reviews the available evidence on current characteristics and trends within the HSLF in relation to new housing production and renovation. It does this by reviewing recent discussion of the Australian labour force and drawing material relevant to the housing sector from this broader debate. The review material is supplemented with case study analysis of interviews with three house building firms in Victoria. These were undertaken to initially explore labour force issues across the industry. The three case study firms differ markedly in their size, product and structure. Profile details are included in the Appendix.

There are two important broader labour market features to this review. First, as noted earlier, the housing sector labour force is contiguous with the broader construction industry workforce. Much of the research and policy discussion concerns the construction industry and in some particular attention is paid to the residential housing sector. Second, there are broader policy debates about the economy and population. In relation to the economy, there is discussion about the structure of the Australian economy in the context of an ongoing high level of export of resources. In relation to population, there is discussion about the size and growth of the Australian population, its age profile and immigration. These have profound implications for housing provision and the housing sector labour force.

While analysis and commentary from secondary sources is referred to through this review, there are three sources of data upon which this Chapter draws; ABS Census data (2006); ABS Labour Force Survey (conducted monthly, with periodic reports on sectors and trends), and; skills shortage research involving over 9000 employers conducted for the Department of Education, Employment and Workplace Relations (June 2010).

The discussion in this chapter of the past and current trends within the HSLF proceeds by considering:

- housing industry worker supply
- housing industry education and training
- skills in the housing industry labour force.

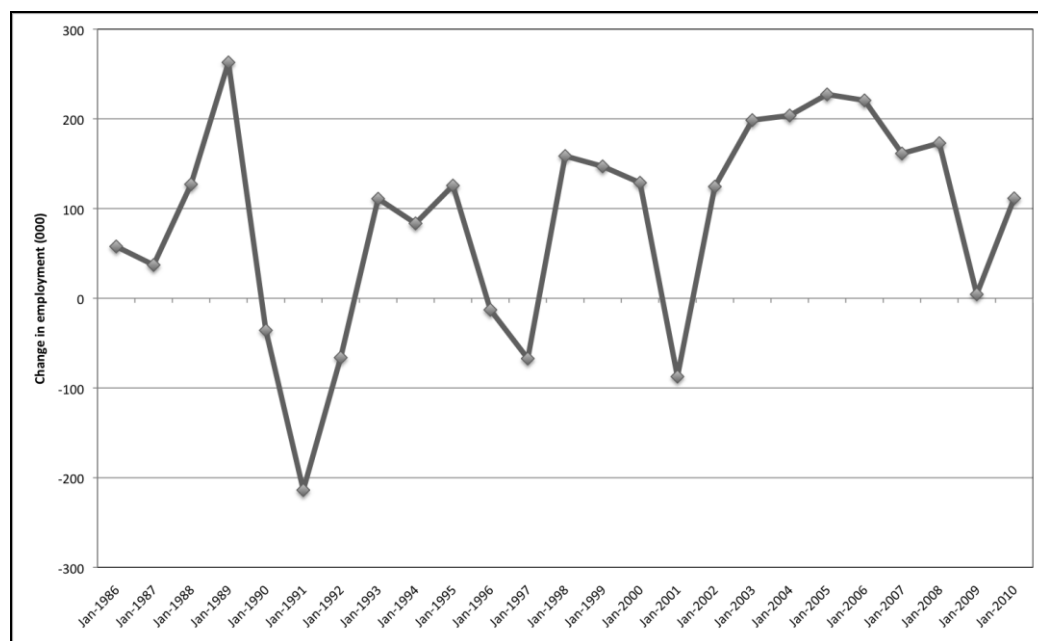
4.2 Housing industry worker supply

In the labour force data, housing industry workers are included within the larger construction workforce category. While this workforce continues to grow, it is also a workforce that experiences considerable fluctuation in the numbers employed. Between 2001 and 2006, employment in construction increased by 35 per cent (Richardson & Tan 2006) and further growth, of 22.5 per cent, over the period 2006–16 was anticipated (Shah & Burke 2006).

In the period 1986–2010, sector employment rose from 494 000 to 1 024 500, a 107 per cent increase. Figure 42 presents the annual change in the numbers for the construction workforce as a whole in the period 1986–2010. It reveals that it is a workforce where the number of employees, those in paid employment and self-employed, fluctuates significantly. These fluctuations are closely aligned to increases and declines in activity within the broader construction industry, including the housing sector.

The impact of the global financial crisis and subsequent slowing of construction activity in late 2008 and 2009 is clearly visible in this figure. Since the beginning of 2010 the indications are that demand for most occupations in the construction industry has increased and some shortages have become apparent (Department of Education Employment and Workplace Relations 2010).

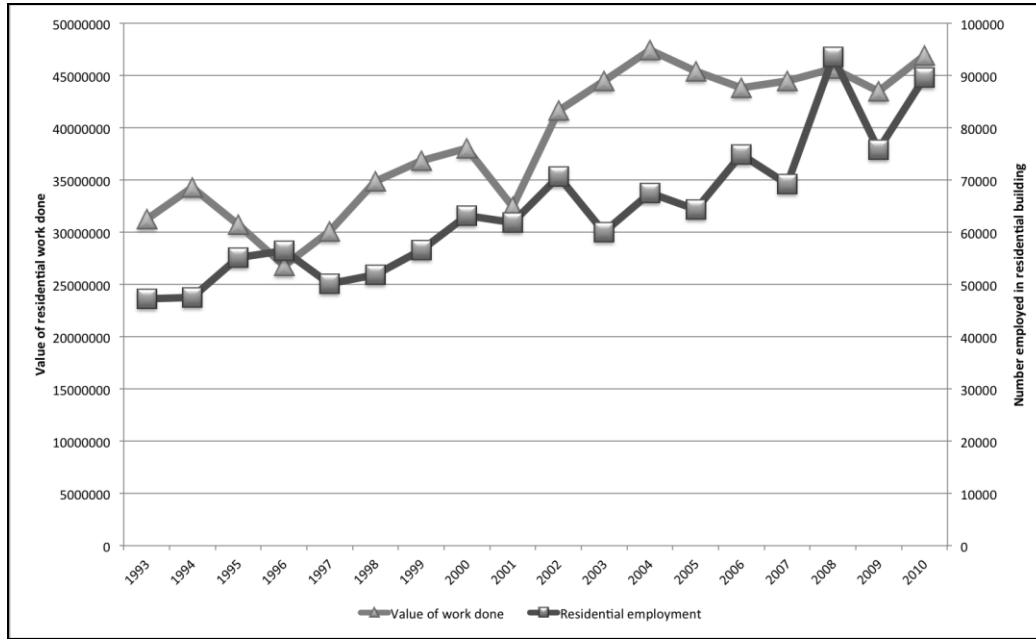
Figure 42: Annual change in construction employment ('000)



Source: ABS 6291.0.55.003 Labour Force, Australia, Quarterly

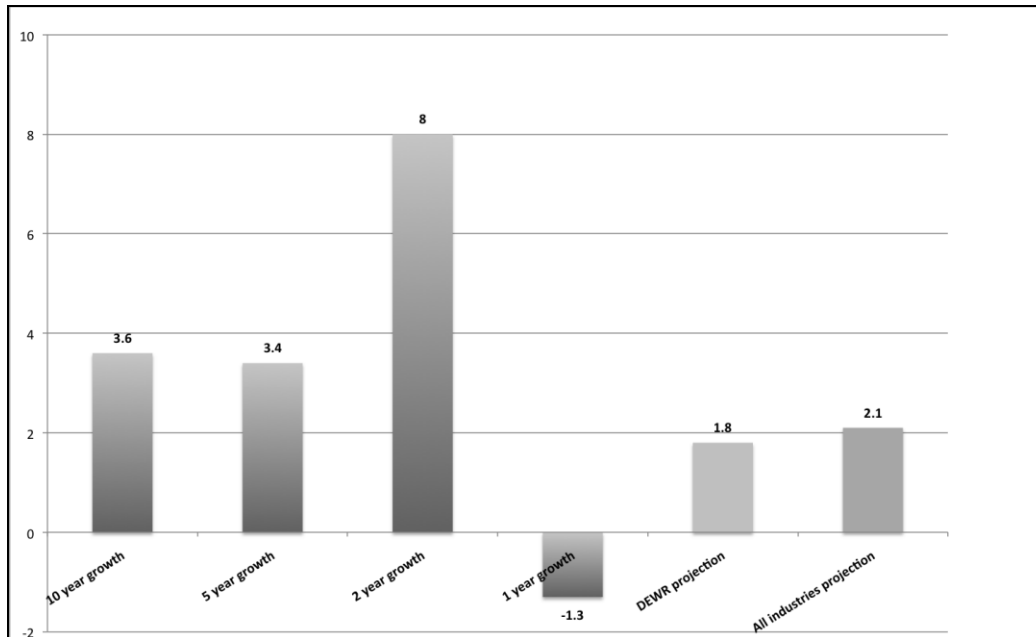
A closer examination of residential sector employment within the broader construction industry workforce is supported by data from the ABS Labour Force Survey presented by the Department of Education and Workplace Relations (2011b) and is found in Figures 43 and 44. The trend for employment in the residential sector for the period 1993–2010 is presented in Figure 43, along with the trend for the value of work done (chain volume measure). In summary, this figure shows that workforce growth has accompanied growth in the value of work done. However, Figure 43, similarly to Figure 42, also shows that the level of employment fluctuates considerably. This is particularly noticeable for the period 2000–10. Further evidence of fluctuations in the residential housing workforce is also seen in Figure 44. In addition, this figure indicates that the Department of Education Employment and Workplace Relations are forecasting further fluctuations.

Figure 43: Residential housing employment and value of work done



Source: Australian Bureau of Statistics (2010e) and Department of Education and Work Place Relations (2011b)

Figure 44: Residential recent projected and employment growth (per cent)



Source: Department of Education Employment and Workplace Relations (2011b)

Ongoing fluctuation in the workforce is therefore an ongoing significant feature of the housing industry workforce, where many workers move in and out as labour demand fluctuates. Grieg (1992) describes this movement in and out of the industry.

During peaks in the economic cycle, severe pressures are placed on the supply of skilled labour. This influences the cost of housing construction through higher rates of remuneration to tradespeople and through quality control problems associated with the employment of less skilled labour. On the

other hand, slumps can lead to temporary and sometimes permanent withdrawal of skilled labour from the housing industry. Not surprisingly, the construction industry suffers from high separation and wastage rates. This places additional demands on labour supply once the economic cycle reverses.

There is undoubtedly movement out of the industry but there is an argument that this should not be unduly problematised. Instead, this movement can be seen as an integral part of the broader labour market. As the Huntly Consulting Group (2008) argue, in their report *Exits from the Trades*, these people go into other jobs so this movement meets other labour market requirements.

A range of skilled and semi-skilled occupations rely on this outflow of tradespeople to meet demand for individuals who know how to work on site, understand the processes surrounding trade work and have the ability to apply trade skills from time to time.

This is the context for various groups in the industry when seeking to identify the extent of the shortages. The Australian Industry Group and Australian Constructors Association (2008), for instance, recently assessed the situation in the following terms:

The sustained high level of growth has contributed to difficulties in finding people with the right skills for the sector. Whilst employment growth in the sector has slowed this year, and construction employment could decline over the next 12 months, shortages in skills required by the industry are likely to remain.

The evidence for this claim came from a survey of firms across five industry sectors. It found that, 'the construction and services sectors reported the highest proportion of respondents citing impacts from skill shortages, 83.3 per cent and 78.0 per cent respectively' (2008). The estimate of the number of employees required to meet the gap was approximately 17 000.

The HIA (2010c) makes a similar point:

... unless reforms are enacted to make training more attractive and accessible, the industry will face a growing shortage of skilled workers. Skills formation and related issues are a major priority in the HIA policy and advocacy agenda.

The MBA (2010) presents a similar analysis and adds a point about the age profile of the workforce and the likely loss of skilled workers through retirement:

A simple age cohort analysis would indicate close to 10 per cent or over 80 000 of a total 900 000 workers will exit the industry over the next five years, even allowing for one in five continuing working after the age of 60.

Box 1: Case study interviews: labour shortages

The ageing workforce is one issue. Builder 1 finds that younger workers are different to their older counterparts in that they take a less long-term view of their career, and will be more likely to switch jobs for more money. Plumbers and drainers have a good apprenticeship scheme.

Builder 2 also noted the age of workforce was an issue, as tradespeople are generally 40 years and over. Carpentry is the exception, as it is more attractive to younger workers.

It could well be that there are issues about the age of particular groups of workers in residential construction. However, the data shows that the average age of workers in the residential construction industry is not a concern. In 2010, the median age of

residential building construction workers was 37 years. This was the same median age as for the construction industry as a whole, and two years less than for 'all industries' (Department of Education Employment and Workplace Relations 2011b).

4.2.1 Future labour supply issues

There are three other factors that should be taken into account when considering the future demand for labour in the construction industry, and particularly in the housing sector. These factors are: the demand for labour associated with the growth in the exploitation of natural resources; the relative shares of labour across new build and renovation and home improvement; and the gender composition of the workforce.

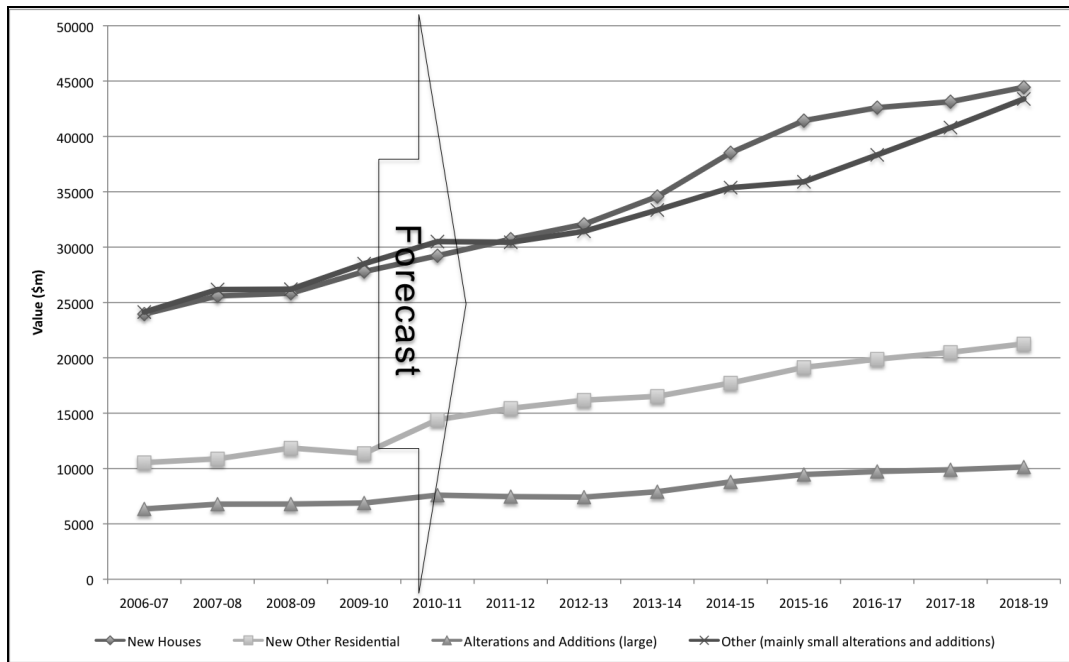
The National Resources Sector Employment Taskforce (2009) noted that, 'a rapid escalation in resources and construction projects can also affect other sectors of the economy'. For instance, it notes that a rapid escalation in wages can flow through to other sectors, luring students away from courses of study in other sectors. The high level of demand for trades workers in the resources sector, particularly during the start-up period, makes the housing sector particularly vulnerable to the movement of skilled workers to the resources sector.

The second factor, future demand for labour, stems from the potential competition required to build new dwellings and for renovation and home improvement of the existing stock. In the earlier discussion of investment in alterations and additions, it was noted that the level of investment, in terms of GFCF, has ranged between 38 and 49 per cent since the mid-1980s. The forecast of investment in residential development, presented in Figure 45, suggests that renovations, that is both large and small alterations and additions, will continue to form a very significant share of residential investment. Further, it is important to note Australian Government-sponsored policy work for significant improvement of energy efficiency in the national economy. Approximately one fifth of Australia's energy is consumed within buildings. In this context, increasing their energy efficiency has become a focus for policy and program development (Prime Minister's Task Group on Energy Efficiency 2010).

A comprehensive pathway [towards zero-emissions buildings] would therefore cover both new and existing buildings, in both the residential and commercial sectors. It could also seek to better link actions across policy domains and across levels of government, such as improving synergies between energy efficiency in buildings and broader urban or infrastructure planning.

The implications of this energy efficiency focus for work by the housing sector workforce on new and existing housing has yet to be established. However, it is recognised that a 'skilled workforce is essential for achieving the energy efficiency' (ibid, p.195) and this will add another dimension to the demand for a skilled housing sector labour force.

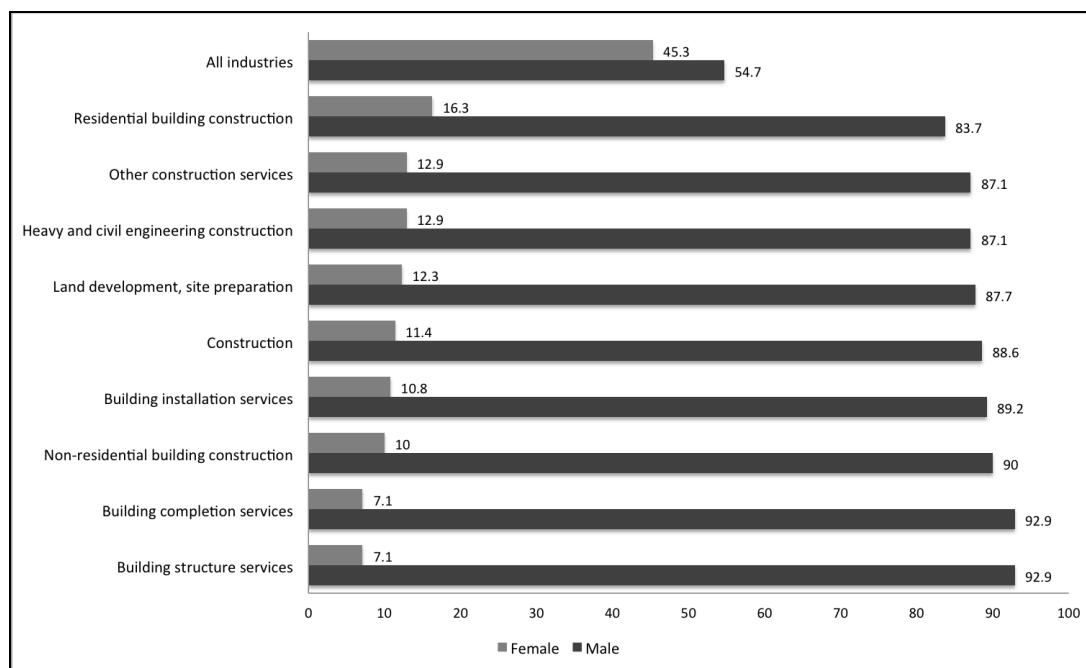
Figure 45: Residential investment forecast 2006–18



Source: Construction Forecasting Council (2010)

The third factor in regard to future labour force demand is the persistent gender imbalance of the construction workforce. This industry has the lowest representation of women of any industry. Women form approximately 10 per cent of the workforce which is significantly lower than the all industry average of 44 per cent (Department of Education Science and Training 2006). There is some variation in the gender composition of the construction industry workforce. Figure 46 presents data on the gender composition of different parts of the construction industry. It indicates that residential building construction has the highest proportion of female employment, when compared to other parts of the construction industry. However, at 16.3 per cent there remains significant opportunity to respond to labour supply issues by making residential construction more attractive to women.

Figure 46: Construction and all industries employment by gender, per cent share (2010–11)



Source: Department of Education Employment and Workplace Relations (2011b)

4.3 Skills in the housing industry labour force

An extension of the research into labour shortages has been enquiry into demand, utilisation and development of skills by industry and occupation. This research into skills has led to an argument that simply asking employers about shortages rests on an overly simplistic idea of demand, undersupply and the need for a supply response. This approach tends to take the recruitment difficulties of businesses and translate them into a broader labour market problem of skill shortages. It then leads to an overly simplistic call for schools, vocational education and training providers, and universities, to supply more trained workers. It can also lead to calls, by employers and employer organisations, on government to lift the level of permanent or temporary skilled immigration.

An alternative approach is to place greater attention on the way, in which employers engage labour and 'how they utilise skills in the workplace and whether they provide training relating to other aspects of their workplace operations' (Department of Education Science and Training 2006). This approach recognises different perspectives on the nature and extent of skill shortages, asks different questions about shortages and elicits more nuanced responses. The result is that the estimates of shortages decline significantly, as this approach reveals that, when the focus is on industry-wide recruitment problems, the figure declines significantly.

In summary, it is possible to make the following observations about the demand, utilisation and development of skills in the construction industry, based on the analysis of multiple surveys in the mid-2000s by Watson (2008):

- Twenty-one per cent of employers reported a lot of difficulty in recruiting, which was similar to most other industries.
- Nineteen per cent of employers reported industry skill shortages similar to most other industries.

- Ten per cent of employers reported employees had skills below those required by the organisation, which was higher than for many other industries.
- Thirty-one per cent of employers reported employees had skill levels above those required by the organisation.
- Between 8 and 5 per cent of employees reported that they are not fully using their skills and abilities, which was lower than for many other industries.
- Seventy-nine per cent of employees did not experience any change in the usage of their skills, while 10 per cent of employees experienced a decrease and 11 per cent of employees experienced an increase, in the period 2003–05
- Thirty-three per cent of employees undertook training. This was lower than that in most other industries.
- Forty-three per cent of employers determine training needs using formal performance management methods and 45 per cent of employers determine training needs using informal methods. For both methods, this was close to the all industry average.

This approach to the demand, usage and development of skills also directs attention to the changing nature of work. In recent decades, an increasingly prominent feature of the Australian labour market has been the growth in 'contingent work'. This contingency is evident in higher levels of casualisation, part-time work and underemployment. These changes shape the way skills are defined and sought in the broader labour market.

Watson's (2008) finding is that there is an observable relationship between contingent work (considered across the spectrum of permanent full-time, permanent part-time, casual full-time and casual part-time), and skills utilisation and skill development through training. It is not apparent in higher-level professional jobs, but becomes apparent in midlevel jobs and becomes severe in lower-level jobs. In the construction industry, this relationship is moderate for tradespersons and severe for labourers and related workers.

Box 2: Case study interviews: skills and quality

Builder 2 noted that in Victoria some trades are not registered or licensed, unlike other states where they are registered. This makes it difficult to know whether a person is good at their job until you try them out. Sub-contractors can be very reluctant to become compliant with occupational health and safety (OHS) requirements and insurance. Builder 2 has run training systems, and has full-time OHS representatives to ensure the provisions are observed, 'which they should not have to do'.

Innovations in products and materials are not challenging for the workforce, they adapt easily.

Builder 3 also thought the existence of unregistered tradespeople was an issue. Plumbers and electricians are registered, with a licence, which gives the licence holder a degree of professionalism, and accountability for their standard of work. Other trades have no professional standards or licensing. Victoria is not a leader in this area, with other states having higher degrees of licensing. He gave the example of a concreter who, with no licence, can walk away from a job that has gone badly. There is no ownership of the work.

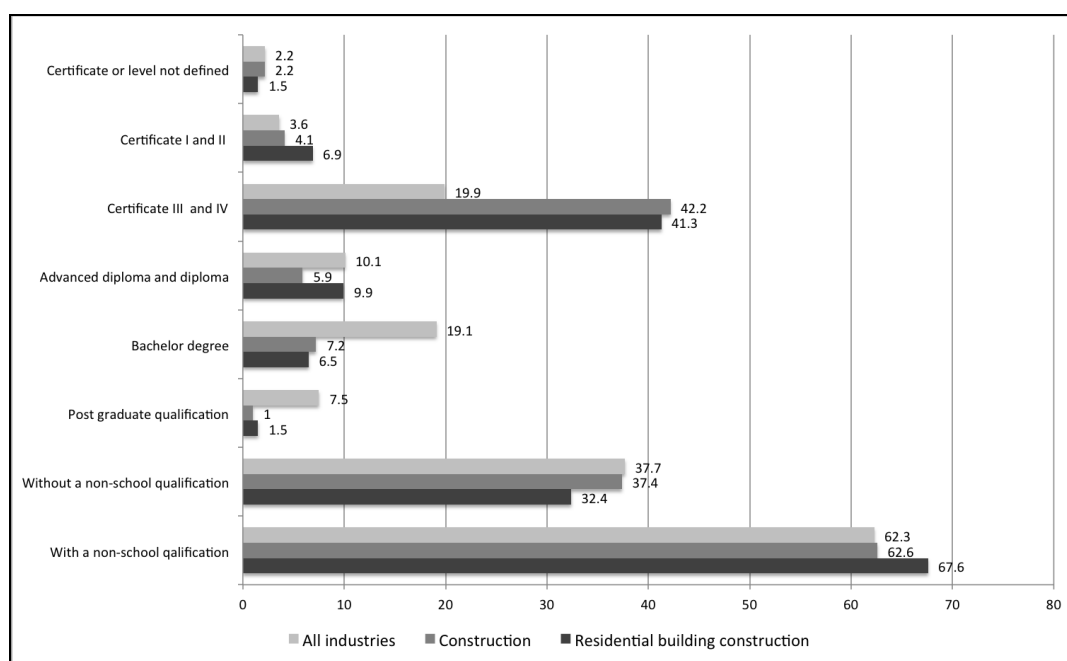
In Melbourne, there is a 'lack of quality due to a lack of education, training, and standards'. Volume builders operate on price, so will opt for the lowest priced labour. This allows people to carry out work at a low price, with low standards. If standards, including licensing and registration, were in place, tradespeople would not be able to undercut on price, with poor quality outcomes. Firms such as Builder 3 look for niche, quality professional tradespeople.

4.4 Education and training of housing industry workers

In the context of the debate about shortages and skill levels, the education and training of existing and potential construction workers has become a focus of attention. First data is presented on the extent of post-school formal qualifications of the residential construction workforce, compared to construction more broadly and to all industries. This is followed by a discussion of investment in education and training and inefficiency in the training system, associated with non-completion of apprenticeships.

Based on the data presented in Figure 47, two important points can be noted in regard to the level of educational attainment within the residential construction workforce. First, the residential construction sector has a larger percentage of workers with a post-school qualification than both the construction industry, as a whole, and all industries. Second, when qualification levels are aggregated into TAFE and university degrees, the workforces of the residential building sector and the construction industry have similar levels of attainment. In the residential building sector, 58.1 per cent have a TAFE qualification and 8 per cent have a bachelor or postgraduate degree. In the broader construction sector, 52.2 per cent have a TAFE qualification and 8.2 per cent have a bachelor or postgraduate degree. When compared to all industries, there is a distinct difference, where in the broader workforce, 33.6 per cent have a TAFE qualification and 26.6 per cent have a bachelor or postgraduate degree.

Figure 47: Educational attainment per cent (2010)



Source: Department of Education Employment and Workplace Relations (2011b)

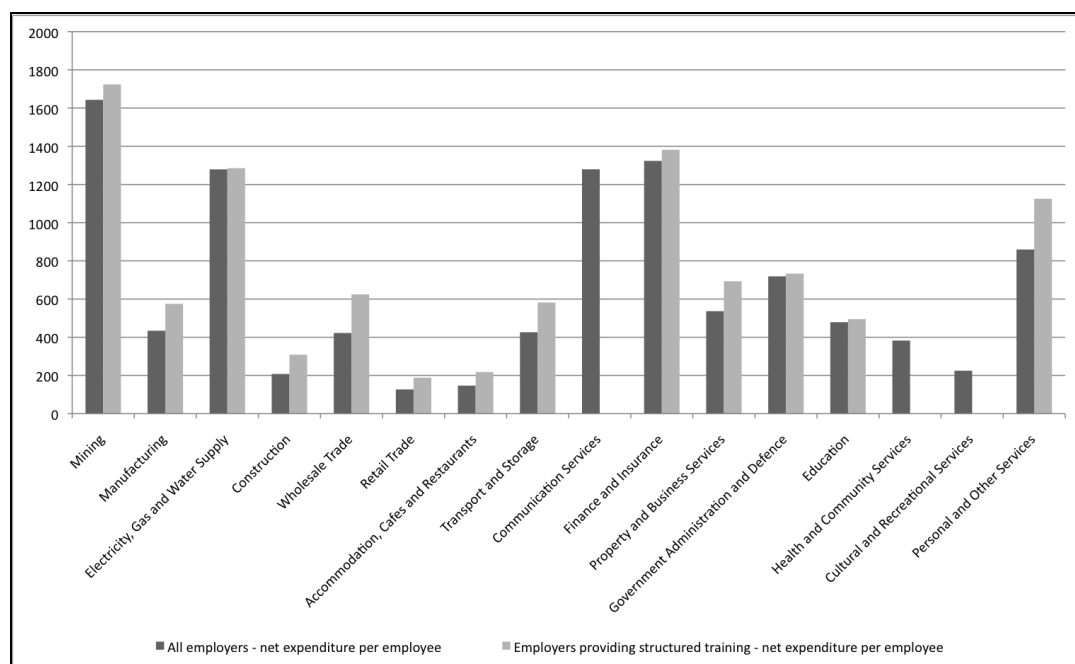
4.4.1 Investment in education and training

In the construction industry, as a whole, there has been an increase in employer provided training. In 1997, 47 per cent of employers provided training. This had increased to 75.7 per cent by 2001–02 and, concomitantly, the proportion of employers not providing training declined from 53 to 24.3 per cent. However, because the construction industry is very reliant on contracting as a way of organising work, it is important to consider the level of training undertaken by what ABS designates as

'other workers'⁴. In 2001–02, only 41.3 per cent of other workers received training and 58.7 received none. This indicates a poorer performance when compared to the all industries category, where 48.7 per cent workers did receive training and 51.3 per cent received none.

Training, as reviewed by the ABS, can take two forms: structured training, with a specified content or plan, and unstructured training, where the content and plan remains unspecified. Figure 48 presents data on net direct training expenditure for these two forms of training for employees in all industries. In summary, it shows that, despite the increase in the proportion of construction industry employees in receipt of training, this industry has one of the lowest rates of per employee expenditure on training. For the year 2002–03, an average amount of \$208 was spent on training per employee and the average amount for employers providing structured training was \$309. These figures do not include training expenditure on 'other workers'. The ABS does not provide the data necessary to be able to include what is spent on structured and unstructured training for 'other workers'. However, given the proportion of 'other workers' in this industry who did not receive training (58.7%), higher than the all industry average, this figure is likely to be one of the lowest across all the industry sectors.

Figure 48: Direct training expenditure \$ per employee all industries 2001–02



Source: Australian Bureau of Statistics (2003), Table 7 Direct Training Expenditure

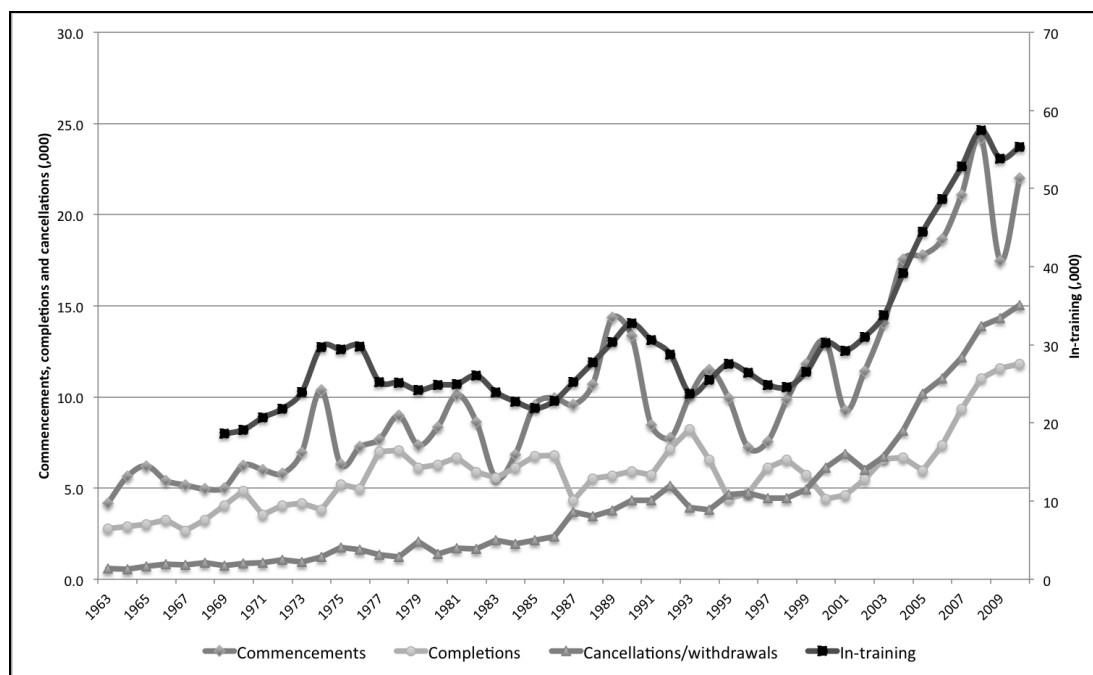
4.4.2 Apprenticeships

A major long-term issue has been the very large number of apprentices that do not complete their apprenticeship. It is an issue for apprenticeships across all industries, including the construction industry. Figure 49 presents data for construction trades apprenticeships over the period 1963–2010. It shows that cancellations and

⁴ Other workers contribute to the productive work of the organisation, but are not employed by that organisation Australian Bureau of Statistics (2003). 6362.0 Employer training practices and expenditure. Canberra, Australian Bureau of Statistics. Types of 'other workers' relevant to the construction industry, including residential housing construction, are proprietors or partners of unincorporated businesses, contractors, consultants, and employed workers, apprentices and trainees provided by Group Training Companies and unpaid workers in family businesses.

withdrawals have outnumbered completions since 2000. In 2010, there were 22 000 commencements, 11 800 completions and 15 000 cancellations or withdrawals from apprenticeships in the construction trades.

Figure 49: Construction trades apprenticeships in Australia, 1963–2010 (,000)



Source: NCVET (2011)

In a sense there is recognition that the current system is grossly inefficient and needs significant change. Accompanying the tracking of trends in apprenticeship commencements, completions and withdrawals, there have been attempts to identify the reasons for the low completion rate. In the construction area a project initiated by Skills Victoria, through the Building Industry Consultative Council Industry Advisory Body, (Building Industry Consultative Council Industry Advisory Body 2008) sought to identify the key issues for construction industry apprenticeships and summarised them thus:

- Lack of appropriate supervision in the workplace.
- Problems with poor and inappropriate training.
- Bullying and abuse in the workplace.
- Low wages.

The non-completion of apprenticeships is now a state of affairs that has become a significant policy issue (Australian Apprentices Taskforce 2009; Apprenticeships for the 21st century expert panel 2011). The policy problems have most recently been identified as: skill shortages, especially in the traditional trades; a recent downturn in apprenticeship commencements; completion rates of about 48 per cent; under investment by employers; poor governance arrangements for the national system; and a lack of complementarity between the apprenticeship system and the workplace relations system. This has led to a set of initiatives in the 2011–12 budget that seek to address these problems (Department of Education Employment and Workplace Relations 2011a) and signal the possibility of significant reform of the apprenticeship system.

Box 3: Case study interviews: education

Builder 3 argued apprentices need a greater education in running a small business, as well as trades skills. Trades people are also business people, and there should be a higher degree of professionalism.

Apprentices need a level of computer literacy, and school based trades training needs to lift its standards, for example by giving students the ability to read a plan, not just lay a brick, and by engendering a sense of professionalism.

This chapter notes that the housing sector labour force is contiguous with the broader construction industry labour force. This presents challenges in understanding housing sector labour force issues, as much of the labour force research and policy discussion is about this broader industry, rather than the particular challenges of the residential housing sector.

Drawing upon the three principal sources of national data (ABS Census and ABS Labour Force Survey and DEWR Skill Shortage Research), the following observations are made about past and present trends within the housing sector labour force.

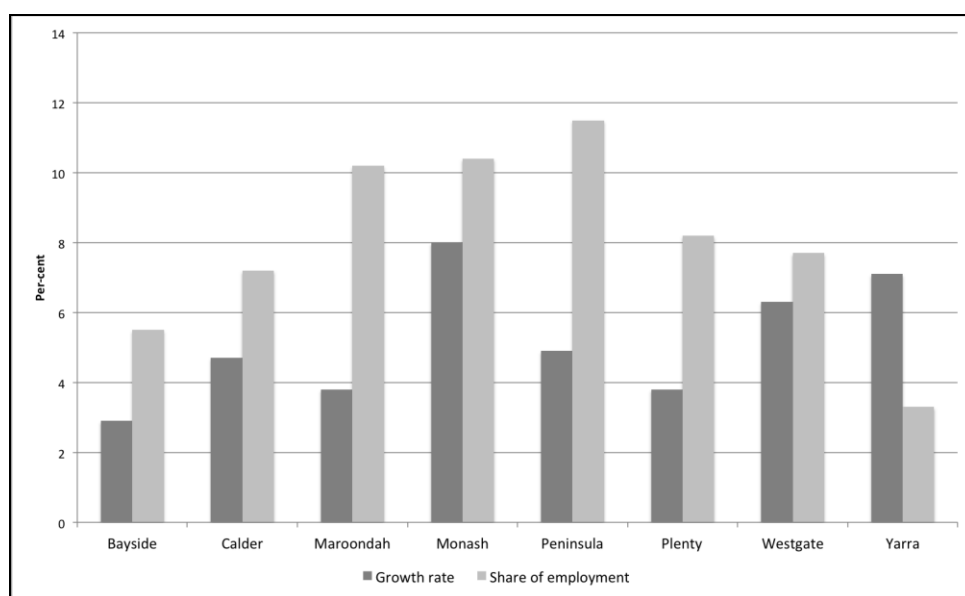
- Worker supply shortages in the housing sector labour force are associated with the national resources sector employment and the broader construction industry and are compounded by a persistent gender imbalance that effectively excludes a large potential workforce.
- Skill levels and their utilisation vary across the housing sector labour force, as within the broader construction industry, and this has implications for quality and productivity of housing production. The availability of skilled workers is associated with the structure of work and the way labour is utilised within the industry.
- A major long-term education and training issue has been the high proportion of apprentices that do not complete their apprenticeship. This is associated with a lack of appropriate supervision in the workplace, poor training, bullying and abuse and low wages. There is also evidence of low levels of investment in continuing workplace training.

5 SPATIAL ASPECTS OF THE HOUSING SECTOR LABOUR FORCE

The evidence presented in the previous chapters demonstrated that residential labour force issues are associated with competition for the limited pool of skilled labour from the resources sector; competition with commercial construction and major infrastructure projects; skill development and utilisation within the existing workforce; and considerable wastage within the apprenticeship system. Further, in the context of continuing growth in the resources sector and major infrastructure investment, an adequate supply of skilled workers in the residential construction industry will potentially become an even more important issue. However, it is not sufficient to simply examine the demand and supply of labour in any labour market in the aggregate. All labour market demand and supply dynamics operate within a space. This proposition also applies to residential construction. In the case of residential construction labour markets, this spatial context is largely suburban capital cities and provincial centres. Residential construction workers are engaged in building new detached houses on new urban land on the fringe of cities; building new multi-unit dwellings in existing urban areas (often following the demolition of buildings); and renovating and extending existing dwellings, largely in inner and middle ring suburbs. These residential construction workers also live in these suburban capital cities and provincial centres.

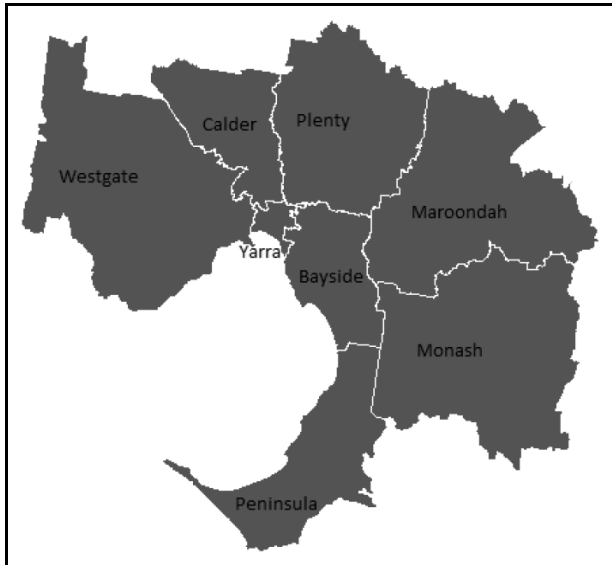
Initial evidence of the spatial dimensions of the broader construction industry labour force is presented in Figure 50 from ABS household labour force survey data. This dataset, displayed for eight labour market regions within Melbourne, demonstrates how the annual growth in employment of the construction workforce (2001–06), and the shares of construction employment (for 2011), can vary across a large metropolitan city. It shows that the regions with the greatest share of the construction workforce are on the eastern of Melbourne. Running from north to south, they are Plenty, Maroondah, Monash and Peninsula. The Yarra region stands out as one with a low share, but a high growth rate, in the construction workforce.

Figure 50: Annual growth rate and shares of construction employment for Melbourne's labour market regions



Source: Department of Education Employment and Workplace Relations (2011b)

Figure 51: Melbourne labour market regions



While this spatial data is available, labour market analysis, including in the construction industry, generally fails to take account of the way in which space, particularly urban space, shapes the market interactions of actors. *Prima facie* this is as much an issue for the construction industry labour market as it is for other markets. However, it is reasonable to further suggest that it may be even more of an issue for the construction industry. This is because the construction industry, and particularly the housing industry sector, has a high labour to capital ratio, as discussed in Chapter 2. This is in contrast to other industries, such as Information and communication technologies (ICT) and manufacturing, which are capital intensive and have high capital to labour ratios. In these industries, management chooses enterprise locations in ways that maximise their access to suitable labour. In the construction industry (and, within this, the residential housing industry), building sites are selected by building owners and then labour is recruited to work on these sites.

Regional spatial mismatches between new housing construction locations and the residences of those who form the labour supply are therefore a potential issue. This potential 'spatial mismatch' between the supply of labour and the demand for housing is important for three underlying reasons:

- The housing industry is a labour intensive industry with a relatively high labour to capital ratio, compared to many other industries.
- The product of the housing industry, that is new dwellings and renovated dwellings, is site specific and workers must travel to undertake on-site work.
- There are preferences for, and limits to, the mobility of HSLF workers within large low-density cities and across regions because of journey to work time and costs.

This chapter establishes a framework for understanding the spatial characteristics of the HSLF in the following way:

- An argument is made for considering the spatial dimensions of labour markets, including the HSLF market, by applying the 'spatial mismatch' concept.
- A conceptual framework and methodology for analysing HSLF supply and demand in Australian metropolitan cities is presented.

- A preliminary analysis of the Victorian and Queensland HSLF markets, with a particular focus on Melbourne and Brisbane HSLF markets, using census data, is provided.

5.1 Applying the 'spatial mismatch' approach

The 'spatial mismatch hypothesis', first proposed in 1965 by Kain (1992) argued that the employment of lower-skilled inner city Afro-Americans in US cities was restricted, because the labour demand was largely in the suburbs. Kain observed that the dispersion of jobs from central cities to suburbs, associated with housing market discrimination, made it harder for lower-skilled Afro-Americans to know about and retain jobs. This initial work on the home/work spatial relationship and the way it affects labour markets has led to continuing examination of this relationship in the context of changing urban economies. A number of themes are evident in the literature.

The continuing and increasing separation of work, in central areas, and home, in the suburbs, made possible by metropolitan transport systems, tramways, trains, and cars is one of these themes (Gobillon, Selod et al. 2007). In part, this has been driven by continuing suburbanisation of manufacturing, severe competition for inner city land, relatively cheap outer-suburban land and environmental controls (Coulson, Laing et al. 2001). A consequence for workers has been higher commuting costs, when their work place is further away from where they live, or when they are poorly served by public transport (Ihanfeldt & Young 1996). Wasmer and Zenou (2002) used the term 'spatial friction' to describe reduced job search efficiency when the distance between a searcher's home and potential work place became too great. In his review of the research, Arnott (1998) identified two restrictions stemming from job decentralisation. The first was commuting costs (e.g. Jencks & Mayer 1989; Ihanfeldt & Sjoquist 1990, 1991) and the second factor was reduced job searching (e.g. Holzer 1987, 1988; O'Regan & Quigley 1993; Holzer, Ihanfeldt et al. 1994).

In recent research, another theme has been the effect of the spatial distribution of employment opportunities on the duration of unemployment (see Ihanfeldt 2006 for recent surveys; Gobillon, Magnac et al. 2010). Broadly, the research findings are that the distance to jobs is a prime contributing factor for producing adverse labour market outcomes (Zenou 2010). The literature on job search indicates the inhibiting role of distance and travel time prevent the unemployed finding jobs (see e.g. Rouwandal 1998; Wasmer & Zenou 2002). Détang-Dessendre and Gaigné (2009) had similar results in their analysis of broader urban regions. They found that duration of unemployment is affected by geographic accessibility to employment hubs. This varied across rural and urban settings, as well as across small, medium and large cities, largely because of the cost of commuting.

Despite the demonstrated significant effect of space, most labour market studies do not include a spatial perspective on job search (Rogers 1997; Van Den Berg & Gorter 1997; Rouwandal 1999; Patacchini & Zenou 2006). With the exception of Gurmu et al. (2008), Johnson (2006) and Mattsson and Weibull (1981), there are few empirical studies that consider the geographical dimension of labour supply.

The issue of spatial mismatch in labour market analysis in Australia is becoming increasingly important. However, the factors that lead to spatial mismatch in Australian cities are different to cities in the United States. Two main differences stand out. First, job decentralisation has not been supported through any government policy intervention in most Australian cities. Instead, there has been greater emphasis placed on agglomeration into hubs or activity centres through urban renewal and rejuvenation programs. Second, Australian cities are less socially and racially

polarised and spatially fragmented than American cities. This establishes a different spatial context for the emergence of spatial mismatch. On the other hand, Australian cities, like many American cities, are suburban and the distances across metropolitan cities are large. This means journey to work travel by HSLF workers, for new build, is mostly to the fringe of Australian cities, and to the renovation of existing dwellings throughout metropolitan areas, is potentially great.

It is the demand and supply relationship that creates a situation, where employers have difficulty attracting qualified workers for jobs in a particular area. This could be because residential segregation separates potential workers from available jobs and that these workers prefer to find work closer to where they live or are constrained in how far they can travel. As Shah and Burke (2003) note in relation to Australian urban labour markets:

Skill shortages in one region can coexist with skill surpluses in another, but such geographic imbalances are more persistent in labour markets, which are relatively inflexible or where geographic mobility is restricted.

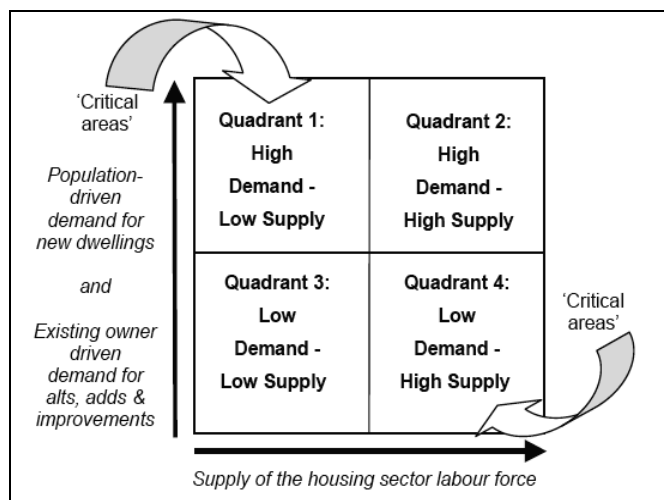
Arguably, a better understanding of the spatial distribution of the HSLF will assist in understanding how labour demand and supply relates to the shortage in the supply of new housing in Australian cities. As Martin and Morrison (2002) argue, multiple geographies 'arise from the simultaneous presence of different categories of labour and of various scales at which the employment relationship can be understood'.

In summary, the key features of the spatial context for new housing provision and home improvement by the HSLF are: continuing growth of detached dwellings on the fringe; extensive renovation of dwellings within the older inner and middle ring suburbs; and the construction of new medium density multi-unit dwellings in the inner and middle ring suburbs.

In this context, two HSLF issues stand out as requiring spatial analysis. First, there are HSLF labour shortages, within large low-density cities and across regions. We hypothesise that these shortages have a spatial dimension. Second, it is important to develop a better understanding of the relationship between labour supply and demand for residential building work associated with new build and renovations. Again we hypothesise that the availability of the HSLF across these two sub-sectors has a spatial dimension.

A framework that will be used to guide the investigation of these issues, in a way that recognises their spatial dimension, is presented in Figure 52. The vertical axis represents the demand for residential building work that flows from demand for new dwellings, associated with population growth and household formation, and the demand from the owners of existing dwellings for alterations and additions. By its very nature this demand is distributed across cities and regions. The horizontal axis represents HSLF supply, which comprises workers who live in existing urban areas of metropolitan and provincial cities and towns and travel each day in order to build new dwellings or improve existing dwellings.

Figure 52: Framework for estimating dwelling demand and housing sector labour force supply



The four quadrants in Figure 52 provide a stylised identification of the intersection of demand for housing building services and supply of housing construction labour in urban space. ‘Critical areas’ of spatial mismatch are identified in quadrants 1 and 4 and guide analytical, and potentially policy, attention.

Quadrant 1 represents areas where there is high demand for residential building labour but limited supply. For example this could be an outer metropolitan area where estate builders experience difficulty in recruiting subcontractors. This might be due to a combination of undersupply of sub-contractors living within reasonable commute distance of the available work. It might be exacerbated by a significant proportion of those who do live within a reasonable commute distance being engaged in alterations and additions work within existing areas. Underlying factors that might assist in explaining the underlying shortage might be the age profile of subcontractors and retirement exit from the industry; movement to other occupations during a previous cyclical downturn; or rising house prices and declining affordability that discourage younger subcontractor households settling in the area. Other areas to experience HSLF supply problems might be urbanising coastal areas, where there is strong demand from sea change populations; and provincial cities and towns located near mines and other natural resource projects experiencing growth.

Quadrant 2 represents areas where there is low demand for residential building and a HSLF oversupply. For example this could be a provincial city where a changing regional economy has led to little or no population growth and reduced demand for new housing. Accompanying this there may be a growing differential between house prices in the city and prices in metropolitan areas with strong labour demand making relocation more difficult. Because of this differential, there is also likely to be an accompanying decline in household demand for renovations. Another possible area experiencing HSLF oversupply might be one where outward metropolitan growth has ceased because of land use policy or natural features that make the land unsuitable for new development.

The application of spatial mismatch framework presented here will assist in developing a better understanding of how the labour force supply in the housing sector has responded (i.e. positively or negatively) to the population change in Australia over the last decade. The framework will also support the development and deployment of a spatially-targeted policy response to the issue of spatial mismatch between the demand for dwellings and supply of labour.

5.2 Method for spatial analysis of the housing sector labour force

This section presents the case studies, discusses the datasets and outlines the research design that will be used to estimate the housing sector labour force.

5.2.1 Case Study

Victoria and Queensland have been selected as the study areas for this analysis for two main reasons. First, there are important differences in socio-demographic profile and contrasting mixes of sub-market conditions. Queensland is a rapidly growing state, particularly through in-migration from NSW and Victoria. It is also experiencing a rapid economic transformation, particularly through mining in regional and remote Queensland. Therefore, we anticipate spatial variability in housing demand within the state.

On the other hand, Victoria is also growing rapidly, through both overseas migration and natural growth, which is placing new demands on the housing market.

Second, there are differences in the urban morphology and settlement patterns of the two areas. Queensland has a more dispersed and multi-centric urban structure and Brisbane, the state capital of Queensland, has a lower primacy. In Victoria, Melbourne exhibits a greater degree of primacy and mono-centric urban structure, through which settlement patterns vis-à-vis growth are controlled and regulated.

We are specifically interested in evaluating how these differences in urban morphology influence the demand and supply of the housing sector labour force. For example, it is possible that the mobility of labour (movement from Brisbane to Cairns or Townsville, or from Melbourne to Bendigo or Ballarat) could be restricted because of the spatial organisation of the settlement systems? We anticipate a greater flexibility in the movement of labour in Victoria as it has a more compact settlement pattern.

5.2.2 Datasets used

This research uses a number of datasets, including the ABS Australian and New Zealand Standard Industrial Classification (ANZSIC) data, building approvals data and Geographic Information System (GIS) databases. The ABS collects data 'usual residence' and 'method of travel to work' based on census night. These questions include: 'What is the person's usual address?' and 'How did the person get to work on Tuesday, 6th August 2006?' Employer address recorded in the data refers to the main job held last week, that is the week before census night: 'For the main job held last week, what was the employer's workplace address?'

The ANZSIC replaces the Australian Standard Industrial Classification (ASIC) and the New Zealand Standard Industrial Classification (NZSIC). Identification of class is subjected to a range of criteria. These include:

1. The homogeneity in terms of similarity of economic activities within each class.
2. Economic significant and recognisable segments of Australian and New Zealand industry to meet user requirements.
3. The alignment with the international standard.

Specialisation and coverage ratios are used to measure the degree of homogeneity (1292.0—ANZSIC, 2006; Revision 1.0). Exclusivity and stability of industrial class are other driving principles for the classification. The economic significance limit was set

at a minimum of \$200 million turnover for Australia or \$40 million for New Zealand, or employment of 3500 people for Australia and 700 people for New Zealand.

The ANZSIC data (cat no. 1292.0) contain records of employment by industry sector and therefore allows the identification of industries that are related to the housing sector. The ANZSIC scheme is hierarchical and structured at four levels, namely Divisions, Subdivision, Group and Class⁵. Alphabetical characters are used to denote the 17 divisions within the ANZSIC. The subdivision, group and class levels provide increasingly detailed dissections of the broad categories. In this research, a four-digit code at a Statistical Local Area (SLA) is used to ensure the highest level of detail is captured. An example of the hierarchical structure is illustrated below:

- Division C - Manufacturing.
- Subdivision 11 - Food product manufacturing.
- Group 111 - Meat and meat product manufacturing.
- Class 1111 - Meat processing.

The construction sector (Division E) is the closest to the housing sector, which 'includes units mainly related to the construction of buildings and other structures (e.g. roads and bridges), additions, alterations, reconstruction, installation, and maintenance and repairs of buildings and other structures'. It also includes units engaged in demolition or wrecking of buildings, blasting, test drilling, landfill, levelling, earthmoving, excavating, land drainage and other land preparation. At a four-digit level, there are only a few units that can be purely identified as part of the housing sector such as 'House Construction' (Class 3011) and other 'Residential Building Construction' (Class 3019). Since the housing sector on its own is not recognised as a formal sector, it requires the identification of Classes across other Divisions to extract the industries that collectively represent the housing sector.

To overcome the problem of separating labour force between residential and commercial sub-sectors, we use Building Approval data to differentiate housing sector labour force. For a spatial perspective, Building Approval data (Australian Bureau of Statistics 2010b) will also be used to spatially capture the amount of housing supply of both 'new build' and 'alterations and additions' at a Statistical Local Area level. As described earlier, ABS compiled the statistics on building approvals from permits issued by local government and other principal certifying authorities. It includes construction of new buildings, alterations and additions to existing buildings, and all approved new residential, alterations and additions to residential building valued at \$10 000 or more. It excludes construction activities not defined as building, such as roads, bridges, railways, and earthworks (Australian Bureau of Statistics 2010b).

5.2.3 Research design

Figure 53 illustrates the research design, through which the housing sector labour force can be estimated. The research design comprises three stages. In the first stage, the number of people employed in the housing sector will be estimated and mapped. The second stage establishes the relationship between the amount of housing sector labour supply and the demand for housing, using the theoretical framework presented above. The final stage of the spatial analysis will build a statistical model that estimates the effects of spatial and contextual variables on the supply of the housing sector labour force.

⁵ See ABS website for more detail on the methodology

<http://www.abs.gov.au/websitedbs/D3310114.nsf/home/home?opendocument>

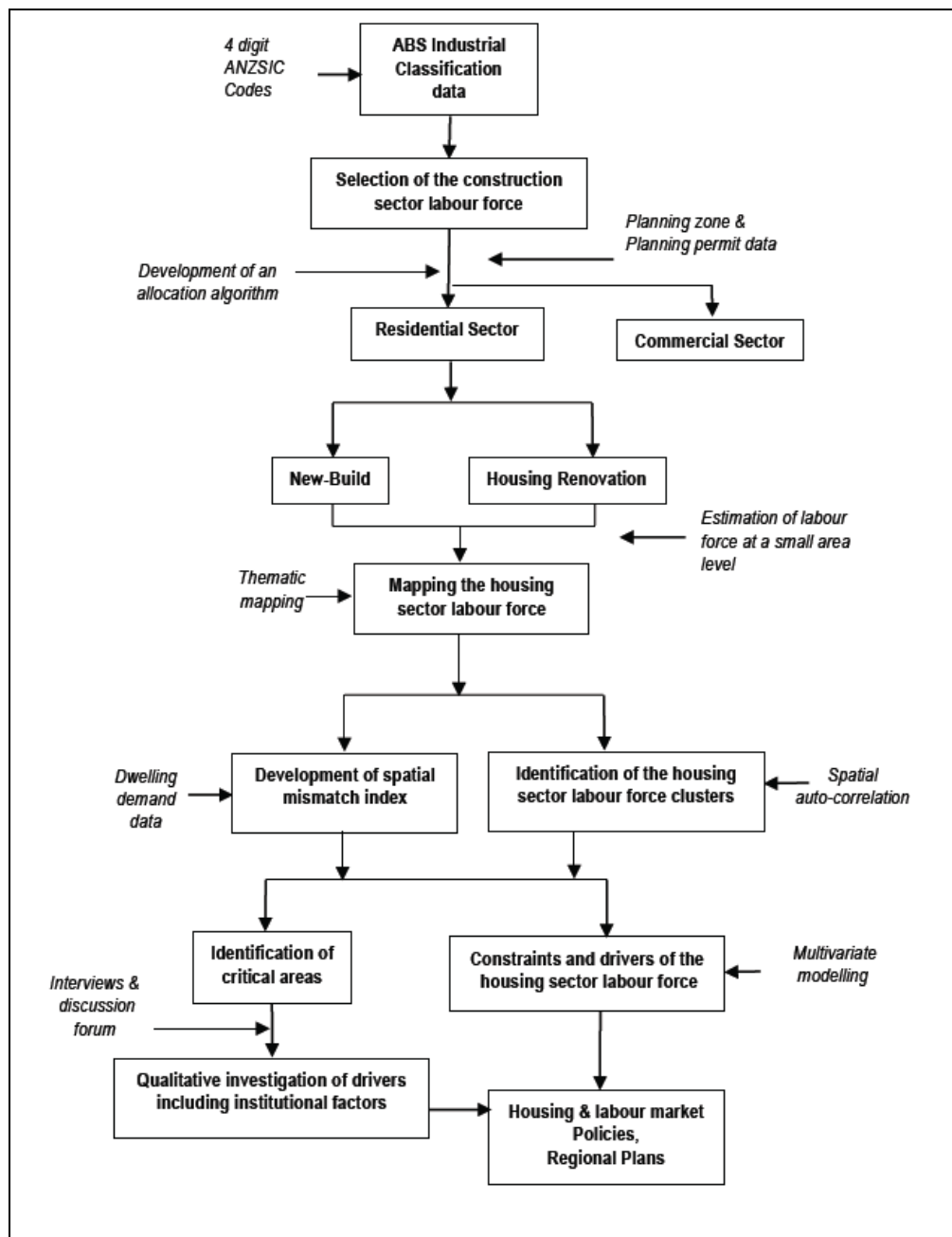
Stage 1: Identification and aggregation of the housing sector labour force

Stage 1 identifies the number of people working in the housing sector. Since the housing industry is not reported as a distinct sector in the national accounting, all construction related industries that includes both residential and commercial building construction are first identified and then extracted from the ABS ANZSIC database. There are two parts of the disaggregation process. First is to split the labour force in the construction sector between residential and non-residential. This will necessitate the development of a proportionate technique using a ratio between residential and non-residential sub-sectors. This can be ascertained through two different approaches. The first is to conduct a survey to estimate the proportion of people employed in residential and non-residential sub-sectors. The second approach is to utilise existing datasets, such as planning zones and building approvals data, which the state government collect or update on a regular basis. We propose to employ the second approach in order to avoid the over reliance on relatively costly sample survey data. Using planning zone data, where there is no or little area designated for residential zones SLAs will be scrutinised. Following this, an area-specific disaggregation technique will be developed by computing a ratio of residential and non-residential building approvals. This will be undertaken either using the total number of dwellings approved across two sub-sectors or the value of approval in dollar terms. Using this ratio, the number of labour force working in the construction industries will then be split between residential and non-residential sub-sectors. For instance, a ratio of 1 will split the total employment in the residential sector into an equal proportion (i.e. 50/50); a ratio of 0.25 will be applied to allocate 25 per cent of the total employment to the residential sector. This approach assumes that the numbers of people working in residential or commercial construction will be in the same ratio as the number of residential/non-residential approvals.

The second part of disaggregation relates to the splitting of residential housing labour numbers into new building and housing renovation. As outlined above, building approvals data contain the value of approval of new houses and alterations and additions to residential buildings. A further disaggregation of the labour force in the residential housing sector will therefore be possible to differentiate the number of people who are employed in new building construction against those who work in alterations and additions of existing housing stock. The estimation is based on the assumption that there is very little labour movement across those two sub-sectors of the housing labour market.

This method of enumerating the housing sector labour force represents a considerable advancement on the methods currently employed, because it will compute the size of the housing sector labour supply at the level of a statistical local area. Existing techniques estimate the degree of over or under supply of the housing sector labour force on the basis of economic indicators (e.g. hiring rates, wage movements, vacancy rates and employment changes) or through employer surveys of job advertisements and positions filled. Such estimates also misrepresent the size of the housing sector labour force as they may include employment in commercial building or infrastructure construction. Therefore, the technique proposed here is relatively robust, repeatable, scalable and less expensive.

Figure 53: Steps in small area analysis of housing sector labour force data



Stage 2: Mapping the spatial mismatch between labour supply and demand for housing

This stage will also map the spatial patterns and clustering of housing sector labour. Using GIS, the identified functional dimensions defining the housing sector labour force will be mapped over time. Mapping of data, such as the proportion of the housing sector labour force to total employment, will enable the identification of spatial concentrations in Victoria and Queensland. However, to what extent this spatial distribution creates spatial clusters of housing sector employment is yet to be investigated. We propose to employ spatial statistics, to examine the spatial clustering, through the use of spatial autocorrelation measures. One commonly used technique to calculate the degree of spatial clustering in observations is Moran's I (1950) statistic. The Moran's I index ranges from +1 to -1 with values close to +1 indicating spatial clustering and values near -1 indicating spatial dispersion.

The Moran's I index is a global measure (i.e. measures which assess the whole dataset) and therefore it does not indicate the degree of local variability. To explore this, Local Indicators of Spatial Association (LISA) will be applied to decompose the global measure into contributions for each suburb. The Local Moran I statistic enables the spatial clustering of similar or dissimilar values to be mapped for every location across our case studies. The outputs generated through the use of these measures will enable us to identify significant spatial clusters in terms of high or low concentrations of labour force in housing and its sub-sectors.

Using the spatial mismatch framework, this stage will measure and map the degree of spatial mismatch and establish the relationship between the demand and supply of the housing sector labour force. The condition of spatial mismatch is described as a situation, where employers have difficulty attracting qualified workers for jobs in areas of high demand, or a situation, in which people have difficulty getting employment in areas of low demand. The spatial mismatch index (SMI) is a relative measure of the spatial mismatch of demand and supply of labour under the constraint of perfect market. It is assumed that there will be a state of supply and demand equilibrium at the national and regional level, wherein the demand for labour is met with adequate supply.

A mismatch between the supply and demand will indicate a condition of market failure. The demand for labour force in the housing sector will be estimated through a surrogate measure of age-specific population growth. It is assumed that demand for housing, and thus for its labour force, is largely being driven by population growth. Supply will be quantified as the number of workers who reported to work in the housing sector.

The SMI index will be computed as the ratio between the absolute change in population above the age of 18 years and the size of housing sector labour force for each statistical local area against the metropolitan/regional area. It first calculates the ratio of the number of workers in the housing sector against the absolute change in population. If multiplied by 1000, it gives us an average number of workers per 1000 population. The value is then divided by the ratio at the metropolitan or regional level. An index value of 2.0, for example, indicates twice the size of workers employed in the industry than the percentage employed regionally for that industry—a case of oversupply. If the index value is equal to 1, it shows parity; values below 1 show a condition of undersupply.

$$\text{SMI} = \frac{\frac{\text{Absolute change in population in a SLA}}{\text{Supply of labour in the housing sector in a SLA}}}{\frac{\text{Absolute change in population in the metropolitan area}}{\text{Supply of labour in the housing sector in metropolitan area}}}$$

The calculation of SMI will enable the identification of areas of over or under supply of labour force in the housing sector. A set of case studies will then be developed for the qualitative component of this project, where those critical areas of excessive labour supply or shortage will be thoroughly investigated to answer questions such as, 'why does the workforce live where it does?' and 'how easy is it to travel to *get to work?*' However, questions such as, 'where does the housing sector labour force work?' and 'why they do they work there?' will be addressed in Stage 3.

Stage 3: Determining the spatial and socio-economic constraints of the housing sector labour force

In the final stage of the spatial analysis, the socio-economic and spatial constraints underpinning the spatial distribution of the housing sector labour force will be identified. Multivariate analyses will be used to investigate the static and dynamic nature of interactions between and within various dimensions of the housing sector labour force (from the 2001 and 2006 censuses). The relationship between dwelling demand (measured using the surrogate of age-specific population growth) and the supply of housing sector labour will be correlated. Spatial and socio-economic constraints such as region type (urban versus rural; metropolitan city versus town), location (i.e. inner, middle, outer and peri-urban); labour market conditions (e.g. unemployment rate), accessibility to the coast and the closest metropolitan city CBD, the degree of remoteness and levels of socio-economic disadvantage (e.g. The ABS product Socio-Economic Indexes for Areas (SEIFA), developed for the assessment of the welfare of Australian communities through four indexes to enable ranking of regions/areas, to determine the level of social and economic well-being in each), will be included in the model specifications.

Statistical modelling will help us understand whether patterns of housing labour supply are more pronounced in some areas than others, once we have controlled for other factors. A spatial economic model will then be developed to estimate the effects of these variables on the scale of the housing sector labour force. This stage is critical, given the fact that opportunities for employment in the sector are conditioned by the socio-economic and spatial differences of our settlement systems. This study will enable answers to more complex questions such as, 'do areas of remoteness, in rural parts of the state, with a poor labour market condition attract *fewer* workers than their counterparts?' We envisage that the modelling component will provide a comprehensive understanding of local and regionally embedded labour market dynamics to match locally-defined demand for housing and labour.

Limitations:

The use of ANZSIC data for the estimation of the labour force in the housing sector is subject to a number of limitations:

- As housing workers are, relatively, much more mobile and are likely to undertake projects across multiple locations, their reporting of main job held the week before census night and its location does not adequately capture the journey to work characteristics of housing sector workers.
- This dataset does not permit the identification of multi-skilled workers who regularly move between industries.
- The data offers a rigid industrial structure, with very little opportunity to ascertain the size of the housing sector labour force. In addition, the use of this data does not permit splitting employment into residential and non-residential sub-sectors.
- The re-structuring of industrial classifications over the last two censuses further restricts the use of this data for comparison over time.

Given these caveats, the ANZSIC data requires pre-processing, through which specific industries related to the housing sector at a four-digit level will be selected, aggregated and then disaggregated into sub-sectors of the housing labour market.

The methodology proposed in this project also has a number of caveats. Among them, the assumption that the numbers of people working in residential or commercial construction will be in the same ratio as the number of residential/ non-residential approvals is debatable. It is also contentious to assume that there is little labour

movement across residential and commercial sub-sectors of the housing labour market. In addition, the claim that demand for labour supply is largely driven by population growth may also be questionable.

Within these constraints, the research methodology proposed here offers a novel approach to the estimation of housing sector labour force at the four-digit industrial classification level for each SLA.

5.3 Preliminary analysis

This section presents the broader statistics on the housing sector labour force from a spatial perspective.

The data analysis begins with the extraction of industries that are related to the housing sector. The Journey to Work (JTW) data at a four-digit level comprise a total of 717 industries, which include all construction industries, both residential and non-residential. Using the three digit ANZSIC codes, five classes were identified to be directly related to the housing sector; others were partially related. The core housing industries include Housing Construction, Residential Building Construction, Other Residential Building Construction, Land Development and Site Preparation and Bricklaying Services. In this research, the industries that are listed in the table are aggregated to form the housing sector labour force.

The total counts of employment across these industries within the housing sector are presented in Table 4. The total number of employees in the housing sector was 639 858 in Australia in 2006, which accounts for the 7 per cent of total employment. The core housing industries comprised 181 747 people; the labour force in the supportive housing services industries is 117 368. These figures include the labour force working in the residential and non-residential sectors, and exclude infrastructure related construction.

Among major housing industries, the Housing Construction category alone consists of 156 831 workers (24.5%), followed by Electrical Services (66 688; 10.4%), Plumbing Services (45 984; 7%), Concreting Services (23 984; 3.7%) and Plastering and Ceiling Services (20 865; 3.2%). The total number of people in the supporting housing services sub-sector was 181 747, among which Real Estate Services accounts for 44 per cent (80 828).

Table 4: Industry-wide distribution of the housing construction sector labour force

| <i>Industry class</i> | <i>Number of labour force</i> |
|-----------------------------------------------------------------|--------------------------------------|
| 1491 Prefabricated Wooden Building Manufacturing | 219 |
| 1492 Wooden Structural Fittings and Components Manufacturing | 23,262 |
| 1493 Veneer and Plywood Manufacturing | 997 |
| 2033 Ready-Mixed Concrete Manufacturing | 5,857 |
| 2034 Concrete Product Manufacturing | 4,517 |
| E000 Construction Division, nfd | 19,567 |
| 3000 Building Construction, nfd | 26,781 |
| 3010 Residential Building Construction, nfd | 115 |
| 3011 House Construction* | 156,831 |
| 3019 Other Residential Building Construction* | 6,356 |
| 3200 Construction Services, nfd | 5,062 |
| 3210 Land Development and Site Preparation Services, nfd | 79 |

| | |
|-----------------------------------------------------------|------------------|
| 3211 Land Development and Subdivision | 4,019 |
| 3212 Site Preparation Services | 30,277 |
| 3220 Building Structure Services, nfd | 74 |
| 3221 Concreting Services | 23,984 |
| 3222 Bricklaying Services* | 18,366 |
| 3223 Roofing Services | 10,139 |
| 3224 Structural Steel Erection Services | 5,871 |
| 3230 Building Installation Services, nfd | 365 |
| 3231 Plumbing Services | 45,984 |
| 3232 Electrical Services | 66,688 |
| 3233 Air Conditioning and Heating Services | 13,304 |
| 3234 Fire and Security Alarm Installation Services | 7,871 |
| 3239 Other Building Installation Services | 4,752 |
| 3240 Building Completion Services, nfd | 271 |
| 3241 Plastering and Ceiling Services | 20,865 |
| 3242 Carpentry Services | 38,830 |
| 3243 Tiling and Carpeting Services | 20,651 |
| 3244 Painting and Decorating Services | 36,770 |
| 3245 Glazing Services | 6,822 |
| 3290 Other Construction Services, nfd | 115 |
| 3291 Landscape Construction Services | 27,914 |
| 3292 Hire of Construction Machinery with Operator | 1,404 |
| 3299 Other Construction Services, nec | 18,621 |
| L000 Rental, Hiring and Real Estate Services, nfd | 393 |
| 6600 Rental and Hiring Services (except Real Estate), nfd | 1,180 |
| 6700 Property Operators and Real Estate Services, nfd | 4,880 |
| 6711 Residential Property Operators | 11,716 |
| 6720 Real Estate Services | 80,828 |
| 6921 Architectural Services | 30,087 |
| Total Labour Force | 9,104,187 |
| <i>Core Housing Industries</i> | <i>181,747</i> |
| <i>Supportive Housing Services Industries</i> | <i>117,368</i> |
| <i>Total Housing Construction Labour Force</i> | <i>639,858</i> |

Note: *Core industries

nfd: not further defined

nec: not elsewhere classified

A statistical region-wide summary of the housing construction sector labour force is presented in Table 5. In Victoria, the total number of people employed in the construction industries (105 463), is 5.15 per cent of the total state labour force. Within Victoria, this distribution varies across statistical regions, ranging between 2.7 per cent in Inner Melbourne and 8.99 per cent in Mornington Peninsula. South Eastern Melbourne, Outer Western Melbourne, and North Eastern Melbourne are among those regions, where the proportion of labour force to total state employment is greater than 8 per cent. The distribution also shows a lower proportion of the

housing construction sector labour force in regional areas, such as Central Highland-Wimmera, Goulburn-Ovens-Murray and Gippsland.

In Queensland, the percentage of labour force to total employment in the housing construction sector is 6.2 (101 128), which is relatively higher than Victoria. Regionally in Queensland, the percentage of the housing sector labour force to total employment ranges between 3.78 per cent in the Far North and 10.19 per cent in South and East Brisbane Statistical District (BSD) Balance. Among those with a higher percentage of labour force in the housing construction sector are the Sunshine and Gold Coasts and North BSD Balance.

A similar geographic divide between the city and regions to that of Victoria can be discerned in Queensland, with a lower proportion of people employed in the housing construction sector in regional areas, such as Far North, Darling Downs-South West and Mackay-Fitzroy-Central West. However, the measure of standard deviation shows that regions with a high proportion of the housing construction labour force are also those which tend to have substantially high intra-regional variability.

Table 5: Statistical region-wide distribution of the housing construction sector labour force in Victoria

| <i>Statistical Region</i> | <i>Core Housing Industries</i> | <i>Housing construction sector</i> | <i>Total labour force</i> | <i>Percentage of total employment</i> | <i>Statistical District (SD)</i> | <i>Concentration index</i> |
|---------------------------|--------------------------------|------------------------------------|---------------------------|---------------------------------------|----------------------------------|----------------------------|
| All Gippsland | 1,523 | 5,501 | 87,398 | 6.19 | 4.39 | 0.88 |
| Barwon-Western District | 2,416 | 8,761 | 134,715 | 6.45 | 3.3 | 0.92 |
| Central Highlands-Wimmera | 1,002 | 3,812 | 73,202 | 4.95 | 2.41 | 0.71 |
| Goulburn-Ovens-Murray | 1,612 | 6,457 | 113,590 | 4.89 | 2.51 | 0.7 |
| Inner Eastern Melbourne | 3,522 | 10,576 | 230,059 | 5.44 | 3.46 | 0.78 |
| Inner Melbourne | 3,050 | 9,502 | 443,854 | 2.71 | 1.09 | 0.38 |
| Loddon-Mallee | 1,456 | 5,426 | 93,714 | 6.32 | 3.6 | 0.9 |
| Mornington Peninsula | 1,749 | 5,716 | 71,969 | 8.99 | 2.63 | 1.28 |
| North Eastern Melbourne | 1,884 | 7,917 | 119,111 | 8.86 | 4.02 | 1.26 |
| North Western Melbourne | 1,090 | 4,956 | 94,712 | 6.03 | 1.69 | 0.86 |
| Outer Eastern Melbourne | 1,875 | 9,144 | 129,021 | 7.24 | 1.6 | 1.03 |
| Outer Western Melbourne | 2,868 | 10,810 | 183,101 | 8.14 | 4.27 | 1.16 |
| South Eastern Melbourne | 2,104 | 9,143 | 130,576 | 8.73 | 3.31 | 1.24 |
| Southern Melbourne | 2,479 | 7,742 | 142,640 | 6.05 | 1.6 | 0.86 |

Using the Location Quotient (LQ), further analysis has been undertaken on the data to measure the degree of concentration of the construction sector labour force for each

statistical region. The state has been used as a benchmark. The higher LQ values show a high degree of concentration. A value of 1 indicates the same level of concentration as that of the state, and a value of 2 for a SLA shows twice the size of labour force, compared to the state of Victoria.

Results presented support the claim that there is a tendency of agglomeration and clustering of employment in the housing construction sector. In Victoria, there is a relatively higher concentration of employment in the housing construction sector in metropolitan areas (e.g. Mornington Peninsula; North Eastern Melbourne, South Eastern Melbourne), compared to regional areas. A similar tendency can be observed in Queensland, where a greater concentration of the housing construction sector labour force is registered in the Gold Coast, the Sunshine Coast and South and East BSD Balance.

This dataset also shows that there is a greater degree of flexibility of labour force in the housing construction in terms of spatial mobility. In other words, the number of people who reported their usual place of work as 'no fixed address' (e.g. driving around city, door to door) is, relatively, quite high. In Victoria, 121 000 people reported their workplace as 'no fixed address'; among them 42 per cent (39 329) work in the housing construction sector. Similarly in Table 6 we see that in Queensland the housing construction sector labour force with multiple places of work is disproportionately large (42.28%).

Table 6: Statistical region wide distribution of the construction sector labour force in Queensland

| <i>Statistical Region</i> | <i>Core Housing Industries</i> | <i>Housing construction sector</i> | <i>Total labour force</i> | <i>Percentage of total employment</i> | <i>Statistical District (SD)</i> | <i>Concentration index</i> |
|-----------------------------|--------------------------------|------------------------------------|---------------------------|---------------------------------------|----------------------------------|----------------------------|
| Brisbane City Inner Ring | 3,509 | 11,543 | 338,214 | 6.05 | 3.32 | 0.86 |
| Brisbane City Outer Ring | 2,959 | 13,880 | 238,279 | 7.28 | 4.09 | 1.04 |
| Darling Downs-South West | 1,381 | 5,366 | 102,184 | 5.42 | 3.92 | 0.77 |
| Far North | 1,957 | 6,323 | 96,028 | 3.78 | 3.34 | 0.54 |
| Gold Coast | 4,848 | 15,803 | 184,611 | 9.55 | 4.36 | 1.36 |
| Ipswich City | 510 | 2,464 | 45,449 | 7.8 | 3.49 | 1.11 |
| Mackay-Fitzroy-Central West | 2,202 | 10,198 | 154,142 | 5.71 | 2.83 | 0.81 |
| North BSD Balance | 1,588 | 6,406 | 78,117 | 8.85 | 4.03 | 1.26 |
| Northern-North West | 1,443 | 5,884 | 97,471 | 6.06 | 4.85 | 0.86 |
| South and East BSD Balance | 2,083 | 8,091 | 89,405 | 10.19 | 3.98 | 1.45 |
| Sunshine Coast | 2,696 | 8,842 | 98,053 | 9.58 | 3.23 | 1.36 |
| West Moreton | 255 | 1,031 | 20,288 | 5.1 | 1.4 | 0.72 |
| Wide Bay-Burnett | 1,550 | 5,297 | 83,891 | 5.42 | 3.07 | 0.77 |

In order to capture the intra-variability within a Statistical Region, spatial analysis has been conducted at a SLA level. Three sets of maps are produced to illustrate the spatial distribution of the housing construction sector labour force: the total labour force in the housing construction sector; percentage of labour force in the housing

sector to total employment; and the concentration of labour force through a measure of location quotient.

Figure 54 shows that the housing sector labour force is largely concentrated in parts of Melbourne, however some regional towns/cities such as Geelong, Mildura Wodonga, Greater Shepparton; Warrnambool; Ballarat – Central; and Corio – Inner; and South Barwon – Inner also have large concentrations. The labour force within Melbourne is largely located in and around growth areas (e.g. Casey – Hallam, Cardinia – Pakenham, Wyndham; Melton; Whittlesea and Nillumbik) and on the Mornington Peninsula.

When the percentage of the housing sector labour force to total employment is mapped, in Figure 55, a somewhat different spatial pattern emerges. Interestingly, regional towns/cities, such as the outer SLAs of Greater Bendigo; Greater Geelong; Surf Coast, La Trobe; Mansfield and Macedon Ranges have a high proportion of people working in the sector as compared to SLAs in Melbourne metropolitan areas. This might be due to the broader and more diversified nature, in the city context, of the employment base and greater proportion of people in the services sector.

On the other hand, Figure 56, presenting levels of concentration of the housing sector labour force in Victoria, shows a more uniform distribution of the housing sector labour force. This indicates that most SLAs have a more equal ratio of the housing construction sector labour force to total employment in the state. However, the ubiquitous distribution of the housing construction sector labour could also be due to the distribution of labour engaged in renovation, alterations and general house maintenance, such as electricians, plumbers and air conditioning and heating service providers.

In Queensland, similar areal differentiation to that of Victoria can be discerned in Figures 57, 58 and 59. Coastal towns and cities that are either tourism or mining towns, such as Whitsunday (S); Livingstone; Gladstone; Mackay; Bundaberg; and Hervey Bay, tend to exhibit higher concentrations of a housing sector labour force. Most SLAs in the inner and remote parts of Queensland have lower concentrations of labour force, except for Mount Isa. Within southeast Queensland, SLAs along the coast (e.g. Noosa, Maroochy, Caloundra in the Sunshine Coast; Southport, Surfers Paradise, Burleigh Heads, and Nerang in the Gold Coast) tend to attract more workers than their interior counterparts. The western parts of South East Queensland show concentrations, particularly around Ipswich, Wacol, Beaudesert, and Darra-Sumner. Brisbane City Inner, South Brisbane and Milton are the SLAs with a high concentration of housing construction labour force. The map also shows that most of the inner, middle, and even outer, SLAs in Brisbane tend to have a low concentration; with the housing sector labour force tending to segregate around peri-urban areas.

Figure 54: Spatial distribution of the housing sector labour force in Victoria

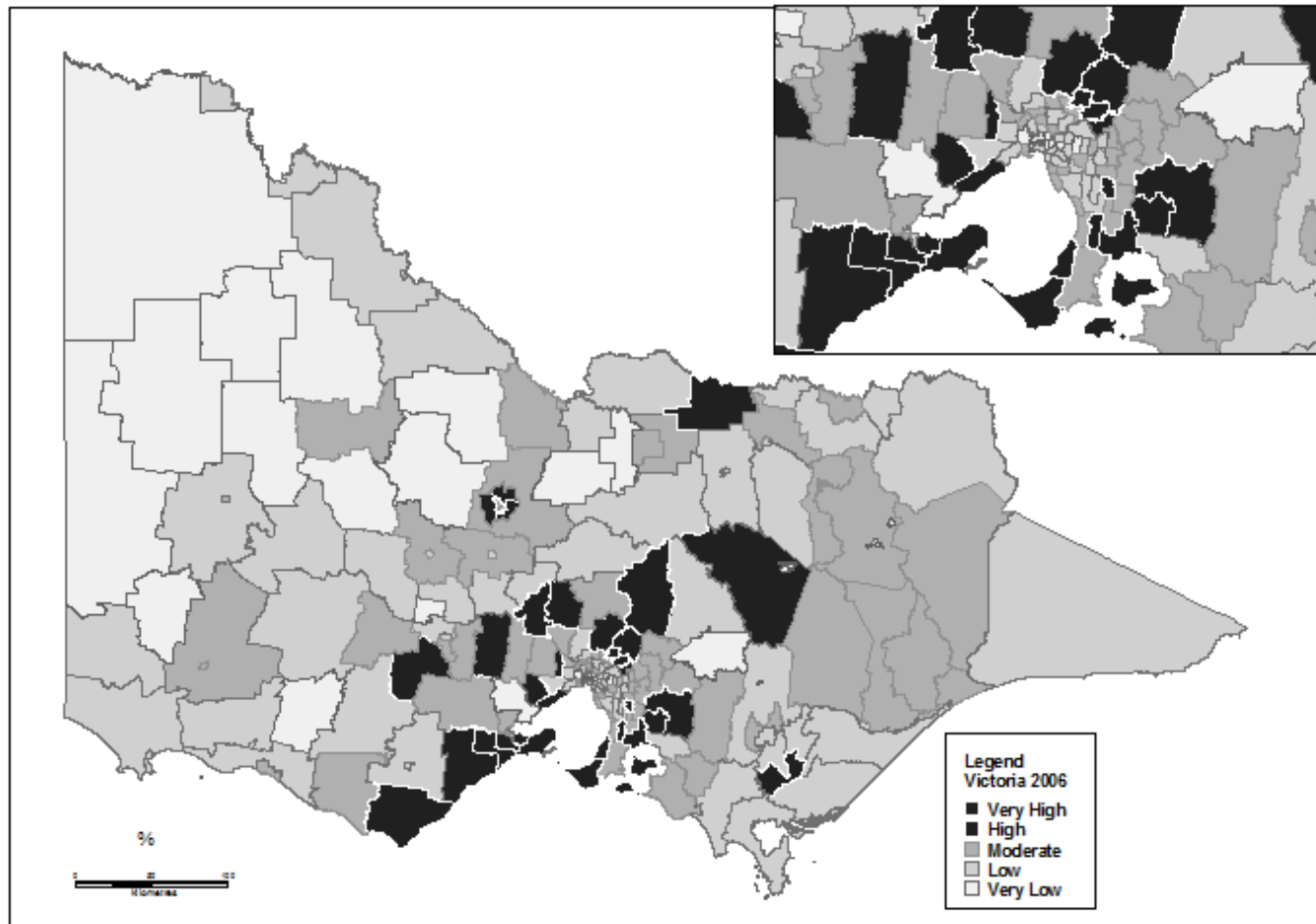


Figure 55: Percentage of the housing sector labour force to total employment in Victoria

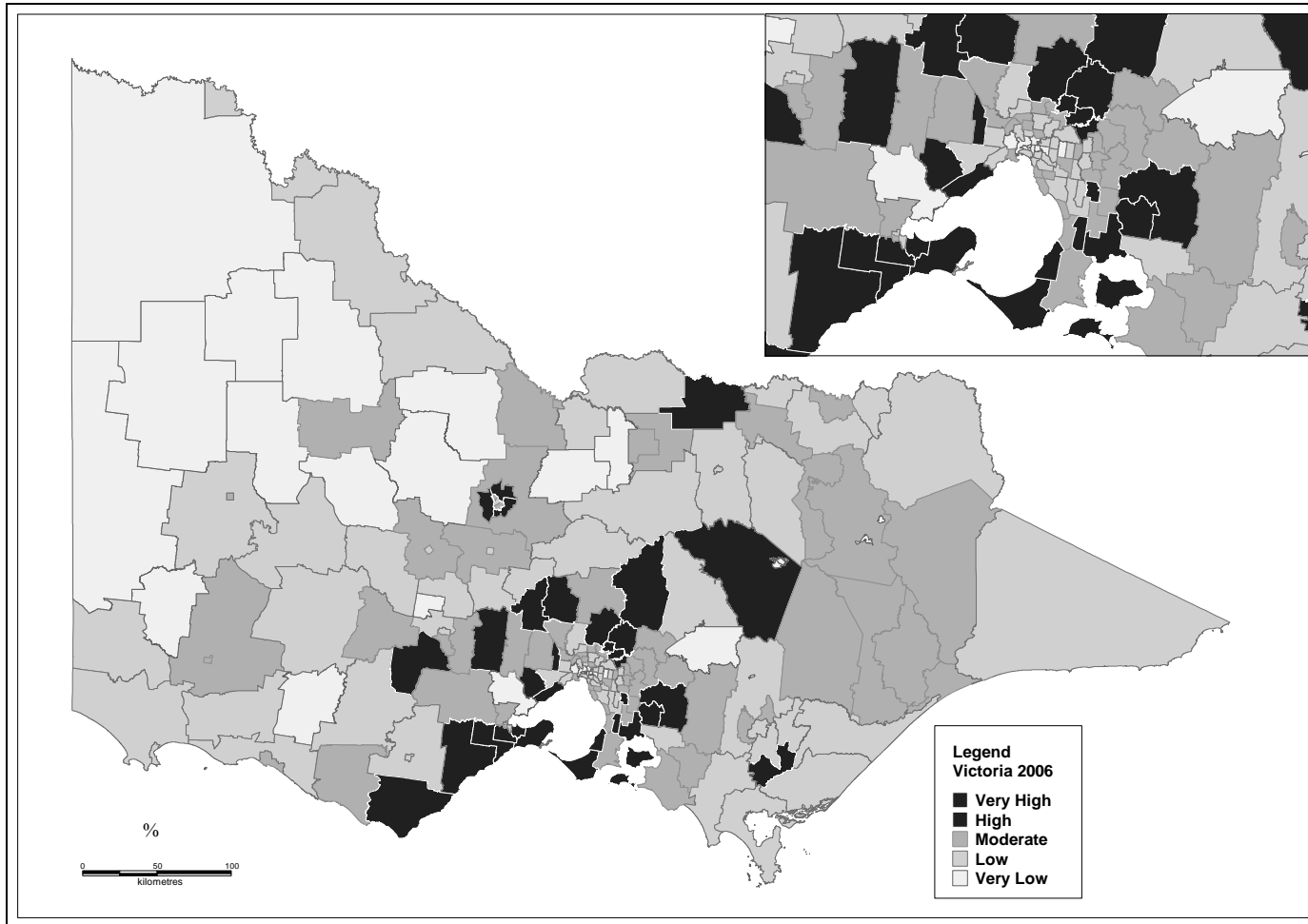


Figure 56: Concentration of the housing sector labour force in Victoria

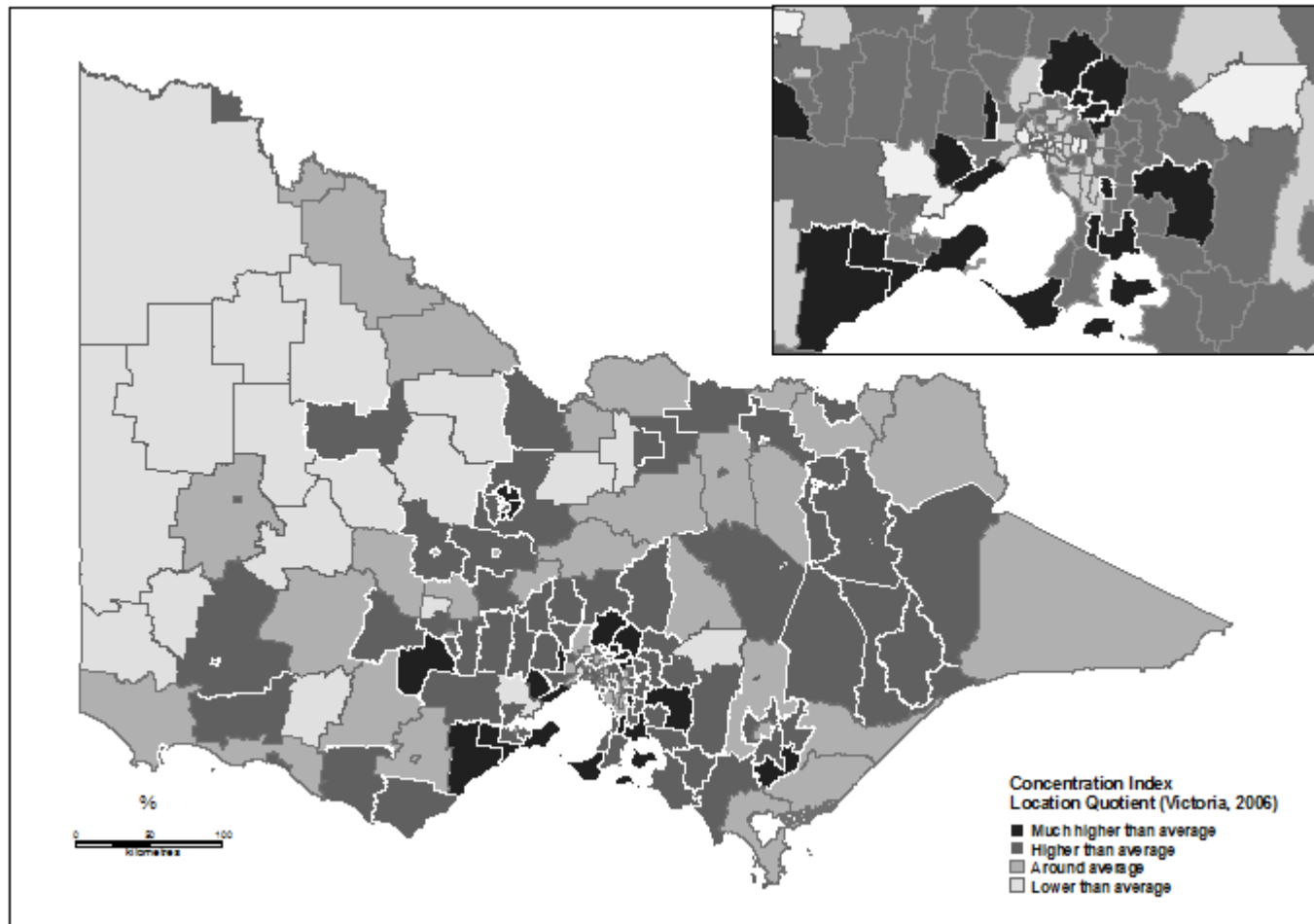


Figure 57: Spatial distribution of the housing sector labour force in Queensland

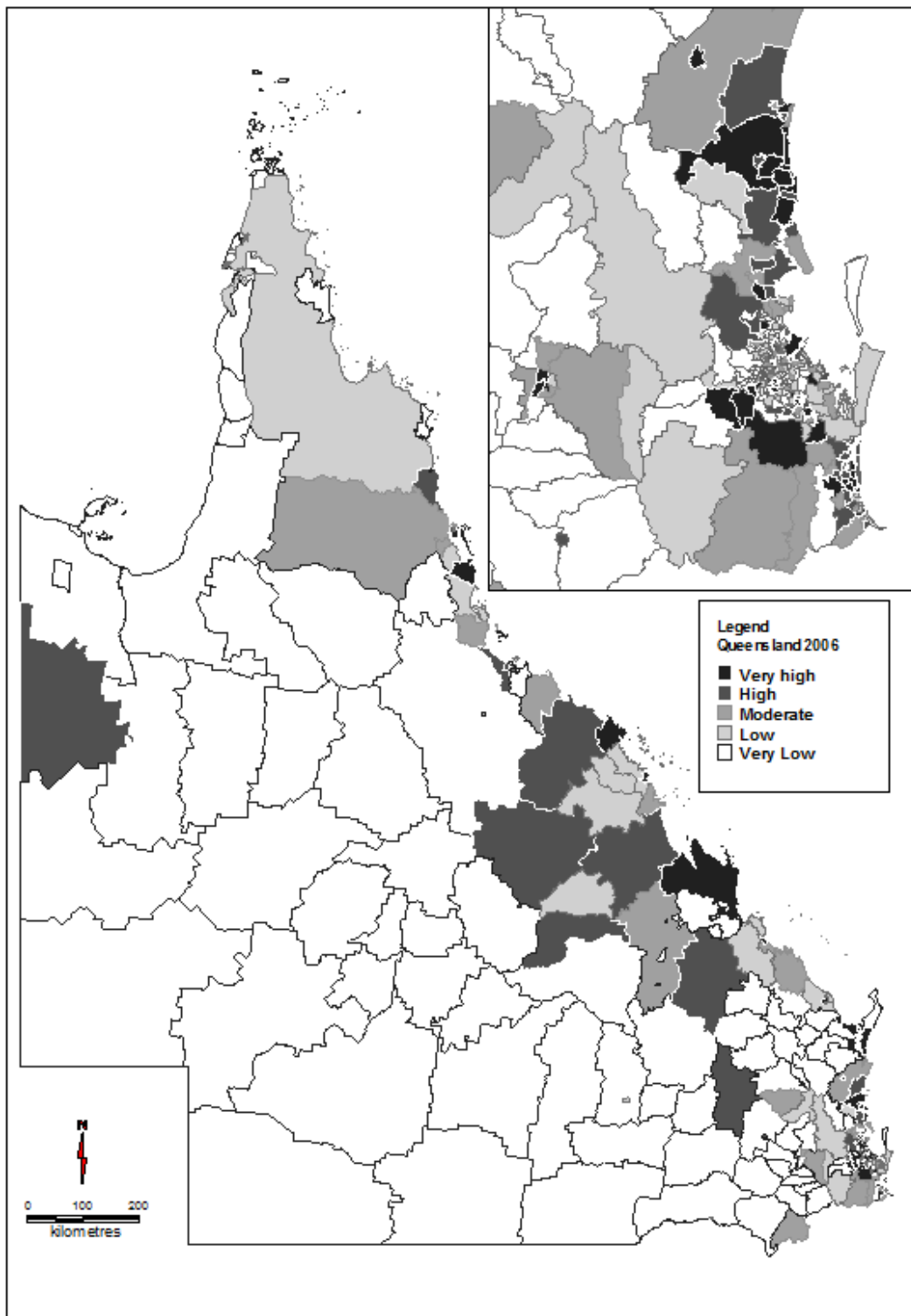


Figure 58: Percentage of the housing sector labour force to total employment in Queensland

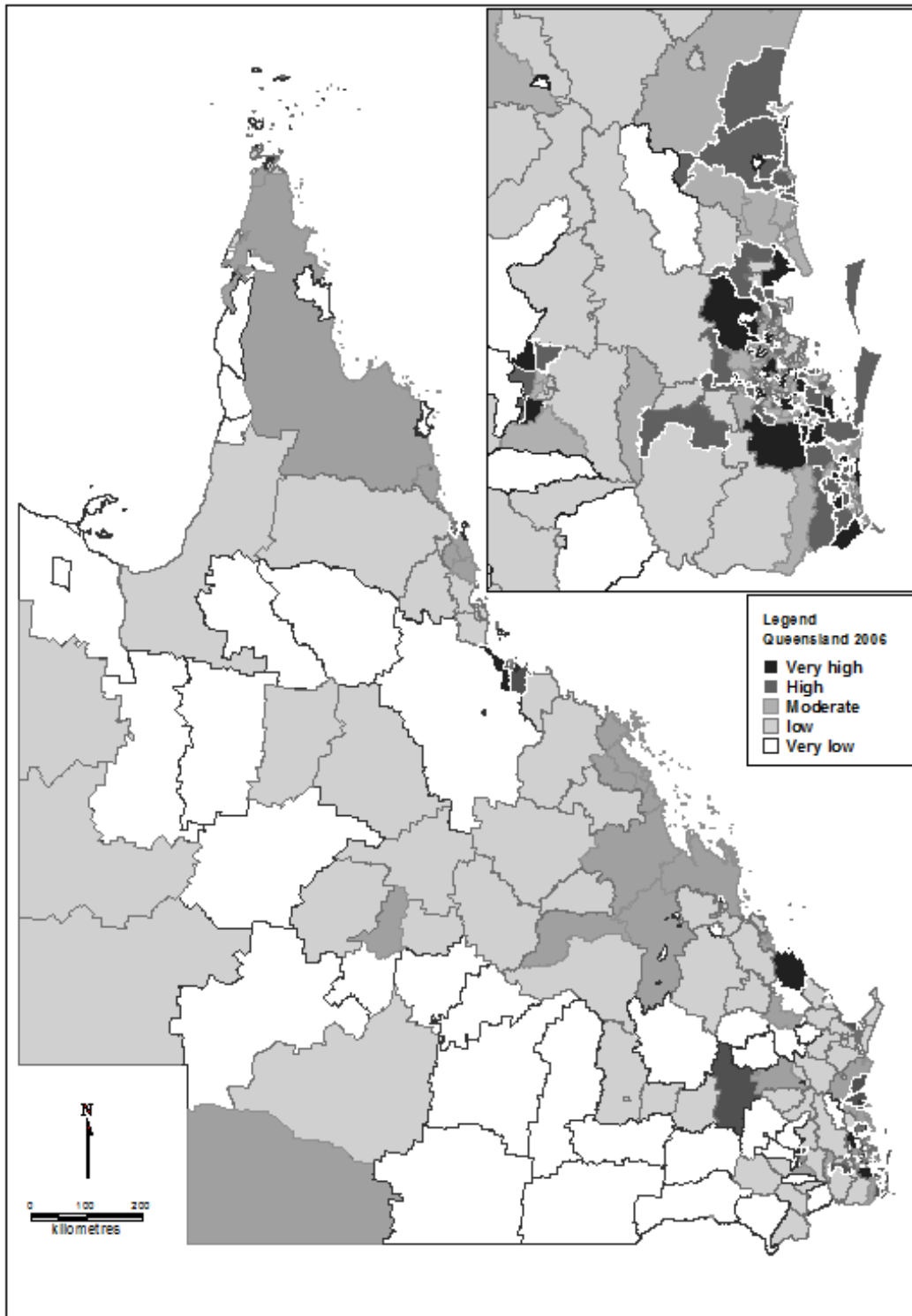
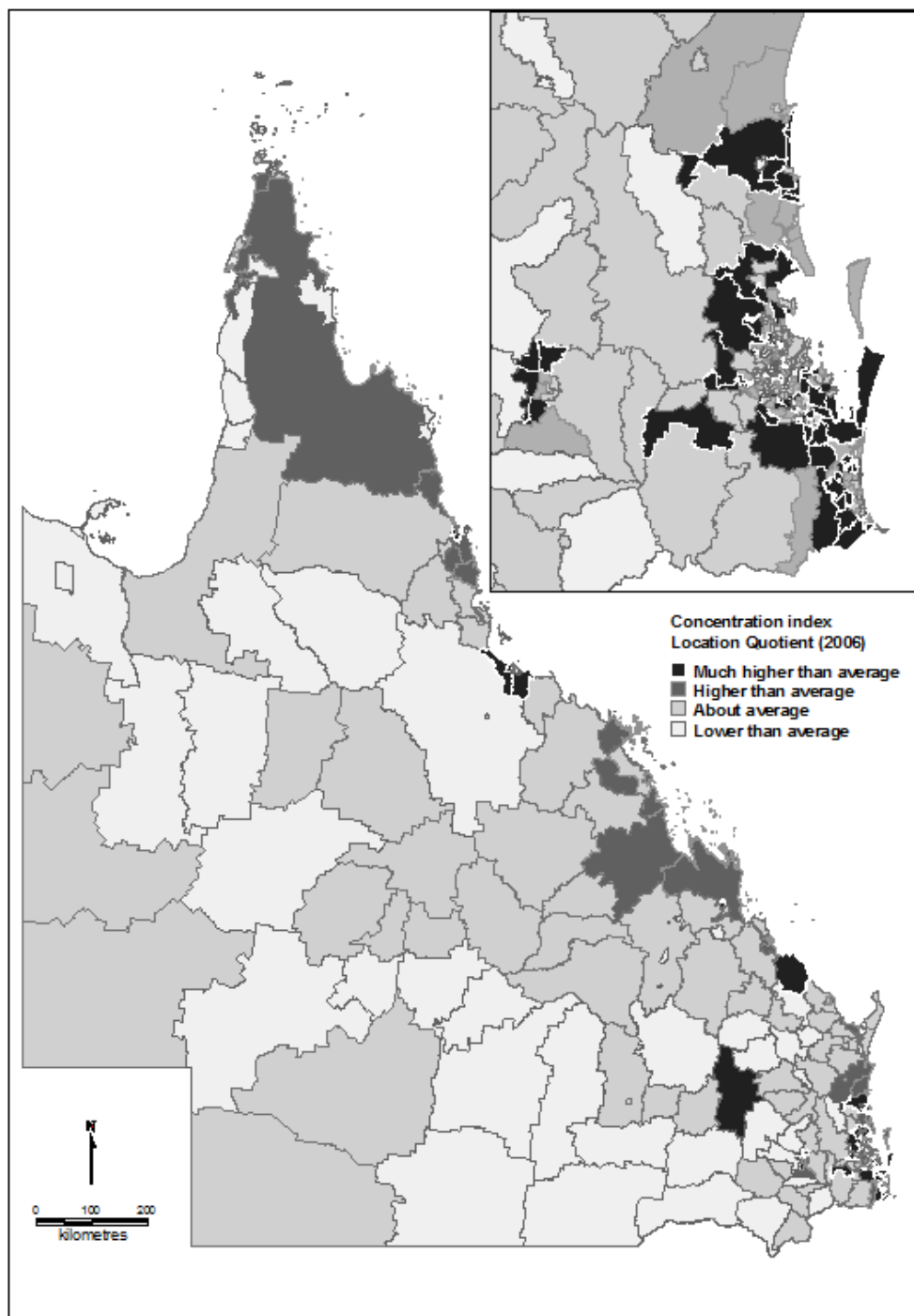


Figure 59: Concentration of the housing sector labour force in Queensland



The housing industry has a spatial dimension with two key features. The first is defined by where workers live within large metropolitan cities. The second is the location of both new residential building sites and renovation projects.

The demand and supply relationship for labour in this spatial context is explored in a preliminary way in this chapter through two case studies—Melbourne and South East Queensland. The preliminary evidence shows a definite pattern in the home location of the broader construction industry workforces and the housing sector labour force. On this basis there are grounds to investigate a potential mismatch between the sites of housing sector labour supply and demand for labour. The methodology for such an analysis, which will be undertaken in the next phase of this research, is outlined.

6 CONCLUSIONS AND NEXT STEPS

By drawing together the threads of the accounts of housing demand and output, institutional structure, and key dynamics and trends in the HSLF, it is possible at this preliminary stage in the research to shed some light on the issues that form the central research question for this project:

What are the key features and trends in the structure, conduct and performance of the core parts of the housing industry and what are the main dimensions of the labour force working in these parts in the context of considerable fluctuations in the level of activity in the housing industry?

The observations and conclusions here reflect the order of the three secondary research questions presented in Section 1.2.

The level of housing production in Australia fluctuates, as does the industry in other countries. These fluctuations across the states are only partly synchronised, suggesting that approvals relate to both national and to more locally based state supply and demand factors. Alongside this pattern, measures of reinvestment in the existing housing stock vary and tend to under-report the scale of the housing maintenance, retrofitting and renovation industry, which may account for up to half of the gross fixed capital formation in the housing stock. It is clear from this that any study of the HSLF cannot ignore the labour engaged in alterations and additions.

The construction industry as a whole is dominated by small businesses and, within house building, there is limited overlap between new build and alterations and additions sub-sectors. There is also considerable diversity in both the geographic spread and range of activities of residential building companies. Most residential building companies base their operations in just one state, and it would appear that a period of expansion of geographic activity has, in recent years, given way to a refocussing on core business, at least among the top 100 housing companies. The limited overlap with alterations and additions work and with commercial building work or property management has tended to fluctuate or show no marked trend.

The literature review and preliminary interviews undertaken in the current study indicate that there are five key issues facing the HSLF. The first of these confirms the widely reported problem of rising demand for labour associated with the expansion of the natural resources sector. The second stems from competition for labour required to build new dwellings with that servicing maintenance and upgrading of the existing stock, particularly given the need to improve this stock in the context of climate change and resource scarcity. The third is the significant gender imbalance in the HSLF, dominated as it is by male workers. The fourth is the considerable loss of apprentices out of the system each year. The fifth is the potential exacerbation of labour shortages due to spatial mismatches between HSLF demand and supply.

The spatial mismatch concept relates to the non-labour market factors which shape the settlement patterns of workers, that is, the factors which operate against the geographic alignment of labour supply and demand. The housing industry is labour intensive, with its main product, that is new dwellings and renovated dwellings, being site specific. Therefore, workers must travel to undertake on-site work; and there are preferences for and limits to the mobility of HSLF workers. Applying the 'spatial mismatch' concept to HSLF census data provides a conceptual framework for analysing supply and demand and a preliminary analysis of Victoria and Queensland HSLF markets is presented in this Positioning Paper. In summary, there are differences in the urban morphology and settlement patterns of the two areas and we

anticipate a greater flexibility in the movement of labour in Victoria when compared to Queensland because of a more compact settlement pattern.

6.1 Next steps

This Positioning Paper has indicated that, while temporal dynamics of the HSLF are understood in broad terms, there is a significant gap at the local level in understanding the spatial dimensions of the HSLF, including in its broader industry context. In order to address this, the research will now examine the spatial variations at the local level, through modelling and interviews.

The preliminary modelling has developed initial definitions and characteristics of four-digit industry class ABS data. The difficulty in the selection and elimination of classes was reported and a graphical representation of the spatial distribution of the housing construction labour force was outlined. Through a consultative process, these industrial classes will be revisited and revised to ensure all critical components of the HSLF are included. Once the sector is formalised, further analysis will be conducted to split the proportion of residential from non-residential housing sector labour force (e.g. office). This will then be further developed by disaggregation of the residential housing sector into new build and, alterations and renovations sub-sectors.

The relationship between the amount of housing sector labour supply and the demand for housing will be estimated using the theoretical framework presented in this Positioning Paper. The final stage of the spatial analysis will build a statistical model that estimates the effects of spatial and contextual variables on the supply of the housing sector labour force.

The application of the spatial mismatch approach will enable the socio-economic and spatial constraints underpinning the spatial distribution of the housing sector labour force to be identified. The relationship between dwelling demand (measured using the surrogate of age-specific population growth) and the supply of HSLF will be modelled. Other constraining factors such as region type (urban versus rural; metropolitan city, town etc.), labour market conditions (e.g. unemployment rate), accessibility to the coast and the closest CBD, the degree of remoteness, and levels of socio-economic disadvantage will also be used as model variables. A spatial economic model will then be developed to estimate the effects of these variables on characteristics of the HSLF. Interviews with HSLF participants will be used to provide cross-comparison and validation of relationships between these variables as indicated in the model.

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