

September 2012

## Tomorrow's suburbs

Building flexible neighbourhoods

Jane-Frances Kelly and Peter Breadon



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## Grattan Institute Report No. 2012-8, September 2012

This report was written by Jane-Frances Kelly, Grattan Cities Program Director, and Peter Breadon, Senior Associate. Peter Mares, Leah Ginnivan, Perry Jackson, John Gregson, Michael O'Toole and Brody Viney provided extensive research assistance and made substantial contributions to the report.

We would like to thank the members of the Grattan Institute's Cities Reference Group for their helpful comments, as well as numerous industry participants and officials for their input. In particular we would like to acknowledge Brendan Gleeson, Michael Barlow, Siobhan Toohill, Justin Ray, Jason Shaw, Paul Byrne, Daniel Khong, Marcus Spiller, Meredith Sussex and Robin Goodman.

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This report may be cited as:

Kelly, J.-F., Breadon, P., Mares, P., Ginnivan, L., Jackson, P., Gregson, J. and Viney, B. (2012) *Tomorrow's Suburbs*, Grattan Institute

ISBN: 978-1-925015-37-9

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## Overview

Australian cities are expanding rapidly. Streets, houses, parks and shops are appearing where recently all was paddocks and cows. Within a generation, these brand new communities will become a solid part of the urban fabric rather than its fluid fringe.

The irony is that as these greenfield areas mature and stabilise, they will also need to become more flexible. No matter how well they serve their initial residents – and they do so better today than in the recent past – suburbs must adapt over time to the shifting needs and preferences of changing populations.

Unfortunately, though, the focus on today's needs could be an obstacle to future change. That is why we need to build flexible suburbs right from the start.

A capacity to change has proved enormously valuable in existing urban areas, especially the older core of our cities. For much of the 20th century inner cities seemed to be in permanent decline as people moved out to the suburbs. But in recent decades residents were drawn back to the inner city, property prices rose and there was substantial investment and redevelopment.

By pure chance, certain characteristics of these older areas made renewal easier. The interweaving of residential buildings and commercial premises created mixed-use neighbourhoods that gave residents easy access to a range of shops and services. A diverse range of building types (including former factories and warehouses) enabled the conversion of existing structures to new uses. Rich public transport networks and proximity to jobs lifted land values and made redevelopment viable.

But the communities being established in greenfield areas lack these qualities. Instead of mixed use neighbourhoods, different activities are largely kept separate. Detached houses on similar lot sizes are the norm. Ownership is fragmented across large areas of land that are used for a single purpose. In the future this will make it hard to assemble larger parcels of land for redevelopment. Transport networks can be weak, jobs are often distant.

There are consequences for residents and for a city as a whole. If greenfield suburbs are dominated by dwellings of a similar size it can be difficult for residents to move house – into a smaller home, for example – as their needs change over time. If predominately attached housing proves hard to adapt, it will be more difficult for a suburb to regenerate by attracting a wide range of residents.

If a suburb cannot change to meet the needs of new residents, development is more likely to expand into new greenfield sites even further from the city centre. Congestion will grow, commuting journeys will lengthen, and greater investment in new infrastructure will be required.

This report recommends ways to make our suburbs, shopping centres, buildings and homes more adaptable to change, without imposing undue burdens or costs on current residents. We must make sure that greenfield developments are flexible enough to become the successful suburbs of tomorrow.

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## 1. Introduction

### 1.1 Why we wrote this report

This report is about the flexibility of our newest suburbs – communities being built on greenfield sites on the fringes of our cities, primarily on land that was previously used for agriculture.

These new suburbs have developed at a remarkable rate. Between 2006 and 2011, population increased two and a half times faster in urban growth areas than in Australia as a whole.<sup>1</sup> The number of new residents moving into growth areas was about a third of the national increase in population in the period.<sup>2</sup>

During the same years, almost 170,000 detached dwellings were added to the housing stock in growth areas – on average, a new house was completed every 15 minutes.

In recent years, private developers and public planners have made efforts to improve the quality of new communities. While results have varied, in general there has been greater attention than in earlier decades to factors such as:

- the walkability of neighbourhoods
- the allocation and distribution of green space
- urban design and landscaping to create a sense of place
- protection of environmental assets
- energy efficiency
- water retention and re-use
- the provision and location of shops and services
- community building.

Agencies such as Victoria's Growth Areas Authority or Queensland's Urban Land Development Authority have set higher planning standards and attempted to improve coordination between local and state governments. Compared to earlier decades, core infrastructure such as paved roads, footpaths, and sewerage is now in place before houses are completed and residents move in.

Getting the basic layout of a suburb right is important because while individual buildings come and go, and land is used for different purposes, the fundamental structure of streets and roads rarely changes (see Box 1).

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<sup>1</sup> 'Growth areas' is a term used in various ways in different states and different organisations. For the purposes of this report we have developed a statistical measure to define growth areas as outlined in Appendix 1.

<sup>2</sup> The population increase in these growth areas was 556,000 compared to Australian population growth of 1,652,000.

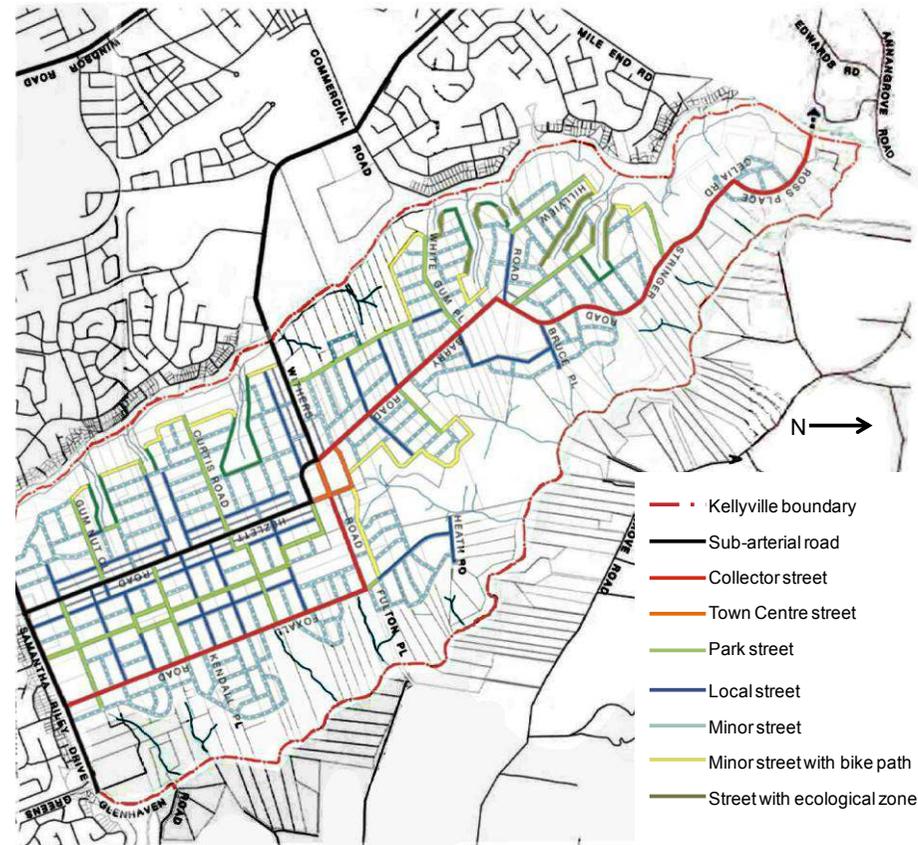
**Box 1 – Getting the bones right**

Greenfield development generally aims to follow good contemporary approaches to basic urban structure. For example, a clear distinction is made between the importance and purpose of different roads and streets, with highways placed away from town centres and residences, and capacity to widen routes where traffic volumes are anticipated to increase.

Curved, branching streets ending in cul-de-sacs were once popular in residential developments (in part because cul-de-sacs increased the number of building lots). Now the preference is for interconnected, grid-based street networks,<sup>3</sup> which make it easier to get around and which result in lots that are more versatile.<sup>4</sup> To illustrate the difference, Figure 1 contrasts a plan for a grid-like street layout with the cul-de-sacs of earlier developments at Rouse Hill in Sydney's north-west.

Source: NSW Growth Centres Commission (2008)

Figure 1: Town Plan for North Kellyville, NSW



<sup>3</sup> See, for instance, Council of Mayors (SEQ) (2011); Growth Areas Authority (2010)

<sup>4</sup> Grid-based street networks increase 'roundness', which oddly enough is a measure of how square a block of land is (since the squarer a block, the larger the diameter of the circle that can be fitted inside it). Roundness increases the flexibility of lots and is linked to higher rates of redevelopment – see Szafraniec and Holloway (2012).

But even with these improvements to greenfield developments, many problems remain. A shortage of public transport leaves people in greenfield communities heavily dependent on cars.<sup>5</sup> Meeting the demand for childcare, school places, recreation and social services remains a major challenge in growth areas.<sup>6</sup>

There is criticism, too, of the uniformity of dwellings built in greenfield suburbs. Detached family houses overwhelmingly predominate. Nearly nine out of every 10 (88 per cent) of homes in the fastest growing local government areas are detached, compared to 76 per cent nationally.<sup>7</sup>

These issues are quite rightly the subject of public debate. What is discussed less is how well greenfield suburbs will be able to adapt to future change.

The new suburbs of today will be the established suburbs of tomorrow. Within a generation, the demographic make-up of these areas will shift substantially, as households mature, residents move in and out, and communities change with broader social and economic trends.

Why should this be a problem? After all, older parts of our cities have generally adapted to the changing needs and preferences of residents, even though they were not built with adaptation in mind. Why will today's new suburbs be any different?

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<sup>5</sup> SGS Economics and Planning (2009); Currie (2010); Municipal Association of Victoria (2012); VCOSS (2011)

<sup>6</sup> The challenge of providing services to growth areas is such that the Victorian parliament has a joint investigatory committee to consider the issue – see Parliament of Victoria (2011). See also National Growth Areas Alliance (2012)

<sup>7</sup> ABS (2012a)

This report argues that older parts of Australian cities have been highly flexible and adaptable because they have characteristics that make change possible. They included a rich mix of different land uses clustered together, and the diversity of buildings that went with them. They also feature flexible shopping strips that can grow and change. Because these areas are well connected to a wide range of jobs, goods and services, residents and business can still get the resources they need, even if their needs change.

Many of Australia's newest suburbs, however, lack these characteristics. Land tends to be strictly separated into commercial, residential and other uses, and lot sizes are relatively uniform. This inhibits the changes in land and building use that have characterised older parts of cities.

As well, many greenfield suburbs are not well connected to other parts of the city – the transport situation in “fringe areas is poor from a private vehicle perspective, diabolical from a public transport perspective”.<sup>8</sup> Lack of connectivity means that local areas cannot always keep up with changing needs and preferences, and developers, residents and businesses have less incentive to adapt buildings.

This is not a problem *yet*. As outlined above, new suburbs are designed to meet the needs and preferences of their first generation of residents. But an inability to adapt will become a problem in the future as those communities mature and change.

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<sup>8</sup> SGS Economics and Planning (2009), p 9

## 1.2 What do we mean by adaptability?

An adaptable city is able to evolve in response to the changing needs and preferences of its residents. Cities respond to, and are shaped by, underlying shifts in the economy and society. For example, the decline of manufacturing and the rise of services have changed the locations of jobs. Social changes have produced smaller families and more people living alone. In the future, resource constraints and environmental pressures will force our cities to become less reliant on fossil fuels to meet energy and transport needs.

A range of factors can enhance or constrain the capacity of neighbourhoods to adapt to such changing circumstances. Some of these factors are physical. For example, the way land is originally subdivided or the way a building is first constructed may influence whether its use can be altered. Chapter 3 (Adaptable land) and Chapter 4 (Adaptable buildings) examine these issues. Factors such as zoning and covenants, which are more legal and contractual in nature, are analysed in Chapter 5.

The incentives to adapt can also vary from one area to another. As Chapter 6 explores in detail, a well connected neighbourhood gives residents access to diverse resources and opportunities and provides stronger incentives to invest and redevelop.

## 1.3 Why should we think more about adaptability?

People change and so do their needs and preferences. Babies are born, children grow into adults, families break up, new relationships form, people grow old and so on. Because of this, the population that lives in a greenfield suburb today will look very different to the population that lives in the same suburb in twenty

years' time, even if many of the residents are the same people who moved in when the suburb was first established.

Flexibility and adaptability are important because residents of the future need choices about where they live, work and play. Social service delivery, transport choices and housing options need to change as communities change.

Suburbs that do not adapt will become less desirable places to live. They will fail to attract new residents and new businesses and won't undergo the process of renewal that is essential to a vibrant city.

When we build new suburbs, we are not only creating new neighbourhoods, we are also laying the groundwork for the future shape of the city as a whole. The more flexible new suburbs are, the more productive, efficient and liveable our cities will be over time.

Yet current players in the system have little incentive to consider adaptability. Developers are understandably focussed on meeting the immediate needs and preferences of the new suburbs' first residents. Smaller developers do not have responsibility for an entire suburban precinct. Because they have significant borrowing costs and operate on tight margins, they must complete and sell projects quickly and are not greatly concerned about what happens in the future.

Larger developers may be responsible for entire master-planned communities over a much longer period, but even if their time horizons are 20 years, their primary concern is still with an area's first generation of residents.

Residents, for their part, are unlikely to consider what their new suburb will be like in the longer term. Australians move house relatively often, and it is hard to imagine life too far into the future. Homebuyers are unlikely to consider the potential adaptability of their dwelling. Like planners and developers, they tend to focus on affordable *housing* (up front cost) rather than affordable *living* (on-going and long term costs).

Similarly, local councils and state governments are preoccupied with providing infrastructure and services to meet the initial material and social needs of the first residents. While governments have more capacity to plan for the future, the dynamics of representative democracy push them to focus on the here and now, and the current generation that elects them, not future generations.

#### 1.4 What this report is not about

This report is not about the model of greenfield development *per se*. Our starting point is that many new suburbs are being built on the fringes of Australian cities and that this is likely to continue, given current policy settings. We are primarily interested in whether these new suburbs will meet the needs of future residents.

The focus is on the adaptability of land and buildings, rather than physical infrastructure (such as water mains or power supplies). Generally infrastructure is designed to efficiently manage anticipated needs with limited spare capacity.<sup>9</sup> In theory it would be possible to increase the flexibility of new suburbs by building in

extra capacity everywhere at establishment – for example by installing larger diameter water pipes. This would be expensive, however, and may not be necessary or practical. Given recent progress on developing resilient infrastructure that is adaptable to change,<sup>10</sup> this report does not consider questions of infrastructure capacity.

Nor does this report explicitly consider whether there are barriers to adaptation in more established parts of our cities. For example, we do not consider issues such as heritage overlays or disputes around infill development (though we have looked at some of these in earlier Grattan reports).<sup>11</sup> Instead, the report focuses on the challenges of adaptation in new neighbourhoods that will become the established suburbs of tomorrow.

It also concentrates on the question of adapting to demographic change. While adapting to other kinds of change is no less important, it is beyond the scope of this report to study our cities' potential to adapt to the major environmental, technological, economic and social challenges that lie ahead. We have chosen to focus on demography partly as a proxy for other types of change: if a suburb can adapt successfully to demographic shifts – through alterations in land use, in building form and function and so on – then it is more likely to be adaptable to other types of change as well.

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<sup>9</sup> See for example, Biggs, *et al.* (2010)

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<sup>10</sup> *Ibid.*

<sup>11</sup> See <http://grattan.edu.au/home/cities>

## 1.5 Report structure

Chapter 2 of this report examines how neighbourhood demographics change. Because the exact nature of these changes is extremely difficult to predict, flexibility is essential, especially as the consequences of a failure to adapt can be severe. It also outlines why adaptation may be harder in greenfield suburbs than it was in older parts of the city.

Chapters 3 and 4 look in turn at land and buildings – two areas that provide opportunities to improve greenfield adaptability.

Chapter 5 considers regulatory issues such as zoning rules and covenants that can reduce flexibility and the capacity meet changing needs.

Chapter 6 analyses the role of connectivity as a driver of adaptation: it argues that adaptation is more likely to occur in suburbs that provide residents with access to a rich mix of transport, goods and services.

Chapter 7 is a conclusion and summary of recommendations.

## 2. Why suburbs need to be flexible

From generation to generation, neighbourhood populations can change radically. Yet while there are some common trends, experience shows that change at the local level is hard to predict.

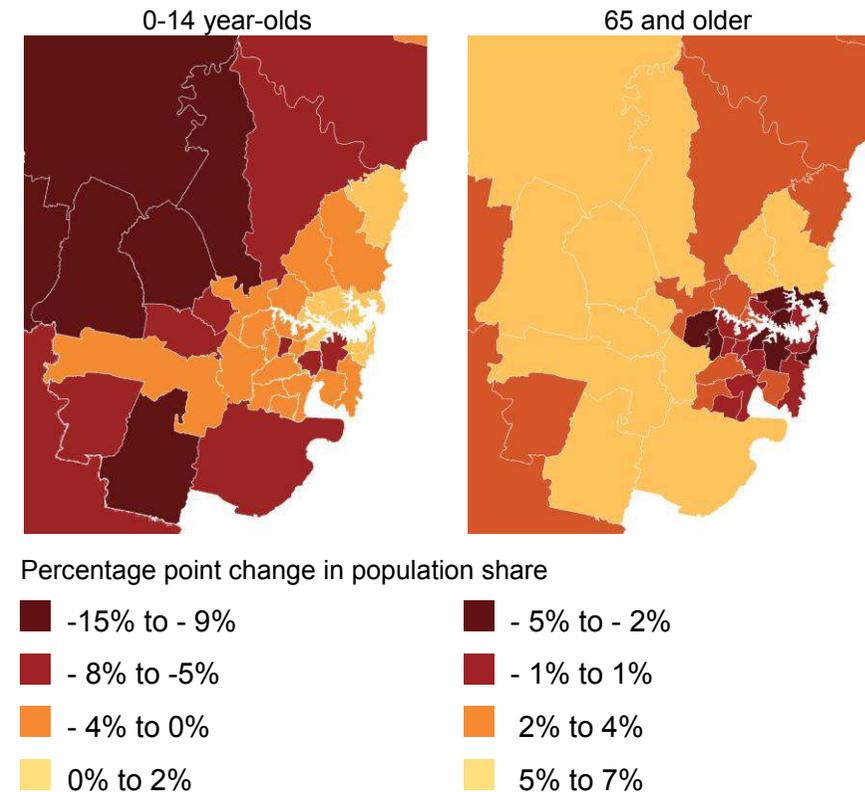
Adapting to change is also getting harder as our cities get larger. The oldest, inner parts of our cities turned out to have characteristics that made them more responsive to changing needs. The 'middle' suburbs have seen less adaptation so far, but have some flexible characteristics. By contrast, many development trends in greenfield areas may create major barriers to adaptability. Not adapting to change will have serious consequences for households, suburbs and cities, as the final section of this chapter shows.

### 2.1 Demographic change at suburb level

Neighbourhood populations can change significantly over time. Typically, newer neighbourhoods change most. A look at the scale of recent shifts in Sydney and Perth shows some common trends, but also that change is complex and hard to predict.

Figure 2 shows the shifting demographic mix in Sydney from 1981-2011. Although most outer areas have experienced growth in the proportion of older people, and a fall in the proportion of children, there is still striking variation in how their populations have evolved.

**Figure 2: Change in the population share of older and younger people, Sydney, 1981-2011**



Source: ABS (1983); (2012b). Note: Pittwater data is from 1991-2011.

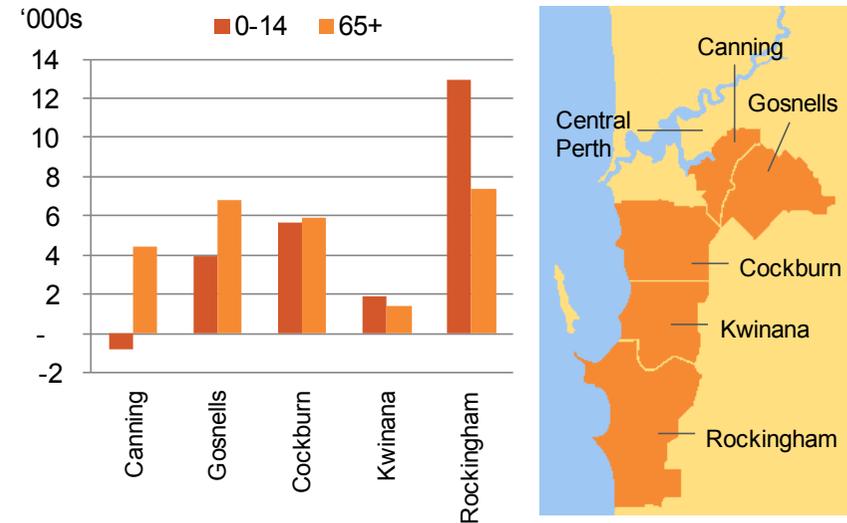
For example, Liverpool (south-west Sydney) has gained 16,000 under-15s since 1981. But in neighbouring Campbelltown the number of under-15s fell.<sup>12</sup>

Dramatic variations in demographic change are also evident in local government areas in Perth. In the 20 years to 2011, the population of inner city Canning grew by just 30 per cent while in the growth area of Rockingham it more than tripled. The nature of that growth also differed markedly in different areas, particularly in relation to changes in the number of children and older residents (see Figure 3).

These variations highlight the fact that suburbs need to be able to adapt in different ways as their populations change. The demand for school places will be much higher in Liverpool than Campbelltown, while the impact of ageing will be much greater in Canning than in Rockingham.

It is also very difficult to forecast demographic change accurately. Demography is influenced by national factors such as migration, fertility and macroeconomic growth, and by local characteristics such as transport availability, housing structures and the health of nearby industries.<sup>13</sup>

**Figure 3: Population growth in selected Perth local government areas, 1991-2011**



Source: ABS (1993); (2012a)

Even minor changes in trends or slightly incorrect assumptions can make long-term predictions wildly inaccurate. In 1954 the Melbourne Metropolitan Board of Works estimated that the city's population would reach 2.5 million by the year 2000. In fact it rose to almost 3.5 million. By contrast the Board's revised estimates in 1971 and 1976 were far too high.<sup>14</sup>

<sup>12</sup> Both Liverpool and Campbelltown had strong overall population growth of around 87,000 and 55,000 respectively.

<sup>13</sup> Chi and Ventura (2011)

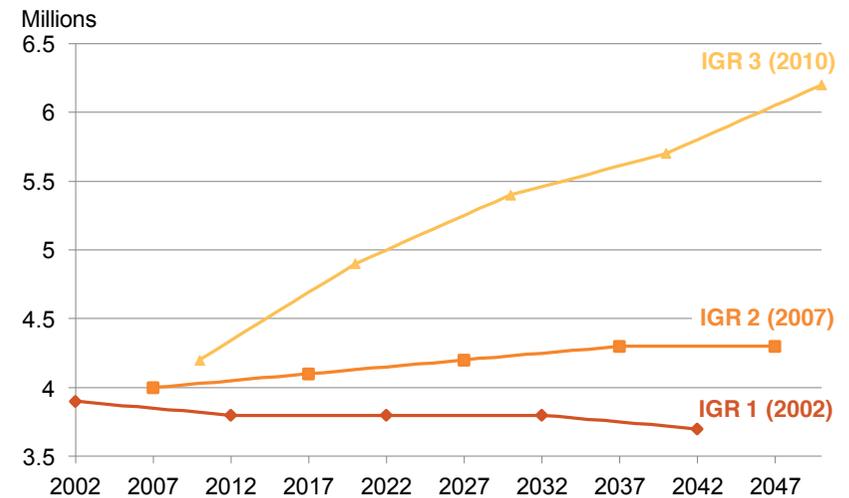
<sup>14</sup> Reynolds (2011)

Similarly, Commonwealth Treasury population projections in the three Intergenerational Reports vary dramatically in the space of just eight years (see Figure 4). In 2002, the number of Australians aged 0-14 was expected to fall by 200,000 over 40 years. But by 2010, a massive growth of two million was predicted for the same group in the same period. Even the 10-year projections of each report had been disproved by the time the next report was released, less than five years later.

Making accurate predictions for a particular city or a single section of the national population is even more difficult. It is well established that projecting demographic change for smaller areas is even harder than for larger ones. So accurate long-term predictions for suburbs or new developments are out of reach.<sup>15</sup>

Suburbs change in a range of ways, and do not necessarily follow broader trends. While projections are important, uncertainty and error are inevitable. This makes adaptability crucial.<sup>16</sup>

**Figure 4: Projections of 0-14 year-old population, Australia, 2002, 2007 and 2010**



Sources: Commonwealth of Australia (2002); (2007); (2010a)

<sup>15</sup> Hoque (2010)

<sup>16</sup> National Research Council (2000)

**Box 2 – Demographic divergence in two similar suburbs**

The suburbs of Auburn and Ryde are on different sides of the Parramatta River but share many historical similarities.<sup>17</sup> The two areas became municipalities in 1892 and 1870 respectively and their town halls were constructed just five years apart.<sup>18</sup> Both suburbs are located about 15km from the CBD and both saw intense development in the post-war period, with greenfield land mostly exhausted by the 1980s and the focus shifted to infill development.<sup>19</sup>

Of course these suburbs are not identical. Ryde has a bigger population and had a slightly older population in 1981. Nevertheless, it would have been very difficult to predict how radically their paths would diverge in the next thirty years. Auburn has had much faster population growth and a 40 per cent increase in under-15 year-olds, while the population aged over 65 has grown more slowly. In contrast, Ryde had a dramatic increase in the number of older residents, but the number of under-15s barely grew at all (see Figures 5 and 6).

Such differences have a real effect on the needs of a population. An extra three thousand children in Auburn will require primary schools, childcare and recreational facilities. Four and a half thousand extra elderly residents in Ryde will require greater capacity in the health and aged care sectors.

Despite being broadly similar, the evolution of these two suburbs has produced very different needs – a divergence that would have been hard to predict when they were first developed.

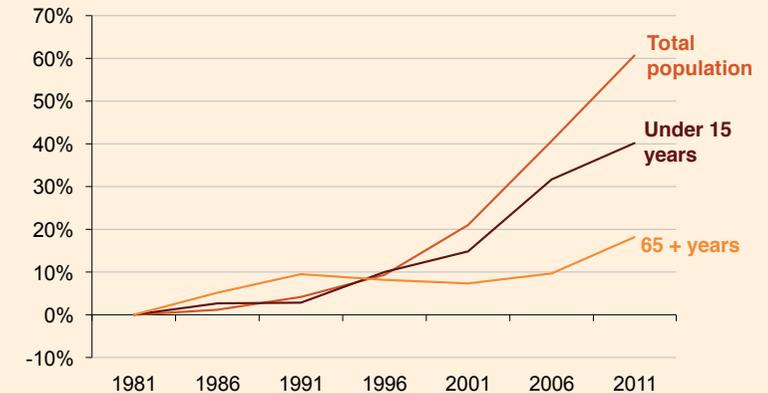
Source: ABS (1983); (1988a); (1988b); (1988c); (2000); (2002); (2007).

<sup>17</sup> Phippen (2008); Kass *ibid.*

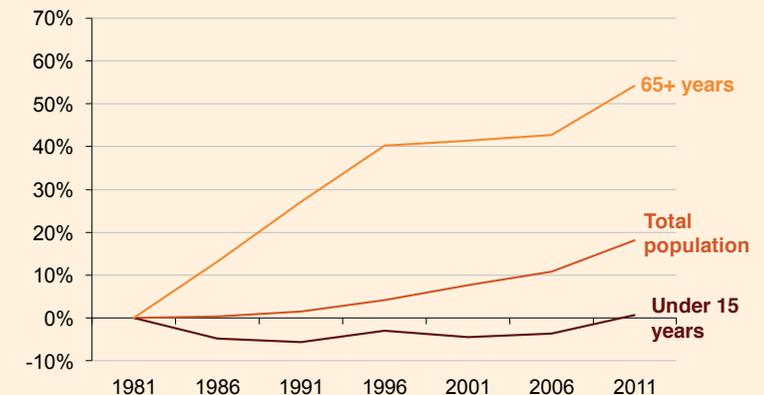
<sup>18</sup> Auburn City Council (2010); Ryde City Council (2011)

<sup>19</sup> .id Consulting (2010a); .id Consulting (2010b); Department of Finance and Services (NSW) (2011). Their property values were also very similar. Based on NSW Government data, in 1996 land values of representative properties in Auburn and Ryde ranked 32 and 36 respectively out of 56 suburbs (per m<sup>2</sup>).

**Figure 5: Population change, Auburn, NSW, 1981 – 2011**



**Figure 6: Population change, Ryde, NSW, 1981 – 2011**



## 2.2 Adaptation is getting harder

Large Australian cities essentially have three geographic areas: inner, middle and outer. While it is not possible to draw an exact line between them, these areas can be broadly categorised as representing different phases of urban development. Each exhibits different characteristics and levels of flexibility.

### CBDs and inner suburbs

The CBDs and inner suburbs are the oldest parts of our cities, built at a time when most industry was placed close to city centres and ports and within walking distance of workers' homes.<sup>20</sup> The population of these areas peaked after World War I, then declined for much of the 20<sup>th</sup> century as trains, trams, buses and cars increased mobility and saw residents move further out.

Since the 1980s however, people have begun moving back to inner areas. Land use and housing have changed considerably in the process. For example, in Melbourne, almost 30 per cent of land changed use between 1951 and 2005.

While there was a period when inner urban areas appeared to be in terminal decline, over the longer term they have proved remarkably adaptable. Characteristics that enhanced their capacity to change included:

- mixed land use within local areas
- land parcels of many different shapes and sizes

- considerable variation in the type, size and ownership structure of retail businesses
- a significant amount of government-owned land and property
- rich transport networks connecting residents quickly and easily to other parts of the city.

The adaptability of Australia's inner city areas was arguably a one-off – the result of big economic shifts that led to urban redevelopment in extensive areas of former industrial land. It may never be repeated.

### Middle suburbs

The term 'middle suburbs' is used in different ways in relation to Australian cities. For our purposes the term refers to areas built between the 1940s and the 1980s usually located between 10 and 30 kilometres from the CBD.<sup>21</sup> These suburbs developed with the rise of the car and so spread not only along tram or train lines, but also to areas between and beyond public transport routes.

In these years home ownership increased dramatically, from just 53 per cent of households in 1947 to 72 per cent in 1965.<sup>22</sup> In the earlier decades of middle-suburb development, it was common for people to build their own homes on new subdivisions.<sup>23</sup> As housing spread, public infrastructure often lagged behind. As late

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<sup>20</sup> Dodson and Sipe (2008) p12

<sup>21</sup> This is the definition used by Newton, *et al.* (2011)

<sup>22</sup> Dodson and Sipe (2008), p 15

<sup>23</sup> *Ibid.* p 16

as 1969, a quarter of roads in Australian capital cities remained unsealed.<sup>24</sup>

Like inner urban areas, middle suburbs are “rich in service, transport, amenity and employment”.<sup>25</sup> However, there tends to be a greater segregation of land uses in middle suburbs, with residential areas often set apart from commercial and other activities.

The housing stock in middle suburbs was generally built in the same era and is consequently ageing at the same rate. The Grattan Institute report, *The housing we'd choose*, identified significant unmet demand for housing in established suburbs in Melbourne and Sydney.<sup>26</sup>

Yet rather than wholesale redevelopment, change in middle suburbs has tended to take the form of individual free-standing houses being replaced by small-scale multi-unit developments: “piecemeal infill ... which is often unsympathetic to both neighbours and neighbourhood character”.<sup>27</sup>

The capacity to build high-quality projects that are well integrated with the existing suburb is constrained by a range of factors, not least fragmented land ownership. This makes it difficult to assemble contiguous, separately-owned lots to create parcels of

land big enough to deliver an economic return.<sup>28</sup> There is also less former industrial (or ‘brownfield’) land available in middle suburbs than in inner urban areas.

In earlier work we recommended ways to address challenges to redevelopment in middle suburbs.<sup>29</sup> The characteristics that reduce flexibility in middle suburbs are even more pronounced in ‘outer’ suburbs built since the 1990s, including today’s greenfield developments.

### Outer suburbs

‘Outer suburbs’ refers to areas that have been built since the 1990s. These areas, including today’s greenfield developments, often encompass large swathes of land that have been designated as growth areas – that is, set aside in government planning schemes to accommodate anticipated demand for new housing in coming decades.

Outer suburbs differ from middle suburbs and even more strongly from inner urban areas, notably in these ways:

- land is more highly segregated with an entrenched separation between residential and other uses
- residential lots are relatively homogenous and declining in size (see Figure 7)

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<sup>24</sup> Dodson and Sipe (2008), p 16

<sup>25</sup> See Newton, *et al.* (2011), referring to Melbourne.

<sup>26</sup> Kelly, *et al.* (2011)

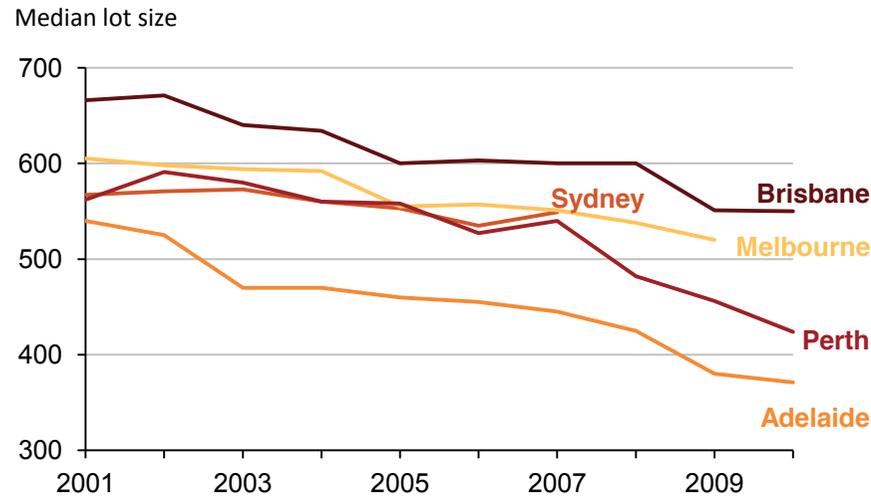
<sup>27</sup> Newton (2010)

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<sup>28</sup> Newton, *et al.* (2011). *The housing we'd choose*, Kelly, *et al.* (2011) identified other constraints on redevelopment including community resistance, the planning system and the higher construction costs of non-detached housing

<sup>29</sup> Kelly, *et al.* (2011)

Figure 7: Lot sizes, Australia, various cities, 1989-2011



Source: Urban Development Institute of Australia (2012), p 5. Note: Perth median also includes Peel.

- buildings increasingly extend to the edge of lots (see Figure 8)
- lots can carry covenants that restrict changes to buildings, generally in perpetuity
- retail is centralised in both form and ownership, leaving limited opportunity for local entrepreneurship
- weak transport networks can limit connectivity to other parts of the city.

Following chapters explore these issues, which can be significant barriers to adaptation.

Figure 8: Houses that take up most of the lot, Carina, Brisbane



© 2012 Google. Imagery © 2012 DigitalGlobe, GeoEye, Sinclair Knight Merz & Fugro

Carina example taken from Hall (2009)

### 2.3 Lack of adaptation has consequences for households...

As our life circumstances change, so do our needs and preferences, and what matters most to us about where we work, live and relax. For example, families with children will generally place greater emphasis on the physical features of a dwelling, such as the number of bedrooms and living areas and whether the house is detached and has a backyard. In contrast, older people without children will focus on whether a dwelling is close to health services, family and friends and local shops.<sup>30</sup>

A growing family may need to add extra rooms or move to a bigger home. Conversely, parents whose children have left home may wish to downsize. A house that suits a middle-aged couple with teenage children may become inappropriate in later life as mobility declines: stairs, steps and narrow doorways can become barriers that require expensive retrofitting; a once-loved garden can become a burden and cleaning and physical maintenance can become too difficult.

There is evidence that as they age, many people prefer to stay in the same area, although not necessarily in the same house.<sup>31</sup> There can be strong reasons for wanting to relocate *within* a suburb: it enables residents to stay in a familiar area, maintain contact with a local doctor and other services and remain close to family, friends and acquaintances – connections that are all the more important after traumatic changes such as divorce or the death of a spouse.

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<sup>30</sup> Weidmann and Kelly (2011)

<sup>31</sup> Olsberg and Winters (2005)

Of course, people do not *have* to downsize as they age. Many continue living happily and independently in the home they have occupied for decades; others do so with the support of family, friends, neighbours and social services. However, it is important that people have the option to move to a different type of dwelling should they choose or need to do so.

Similarly when families break up, their housing needs often change. One partner might stay in the same home and be the primary carer; another may move out but wish to live in a smaller home nearby to be close to the children. Or both partners might want to move to new but less expensive housing, while staying in the same area to avoid disrupting children's schooling.

Whatever their reasons for change, the potential for people to move house depends on the availability of suitable accommodation. Yet greenfield suburbs are overwhelmingly dominated by family-sized detached houses when they are first built. If, unlike older areas, these suburbs can't change over time, they will lack the flexibility to meet the changing life circumstances of their residents.

Housing preference is not the only thing that can alter with time. As households change they call on different facilities and services at different rates. A family with young children will want easy access to a local playground while teenagers will seek out different forms of entertainment. The amount people drive tends to decline with age, so proximity to shops and public transport can become more important in later life.

If a suburb cannot change as households change, then residents' quality of life will be diminished.

... for suburbs...

If a suburb is dominated by one particular type of dwelling this can limit regeneration and renewal.

Greenfield suburbs offer large amounts of detached family housing but couples with children make up only one segment of the housing market. People who prefer to live alone may be less likely to be move to a suburb that is dominated by detached family-style homes. Given that people living alone account for about a quarter of all households, this could significantly reduce the potential market for real estate.

Uniform housing also limits choices for residents who wish to stay in the area but downsize. People can end up living in housing that is not well matched to their needs. For example, homes built to accommodate a family will have only one or two occupants. This in turn can reduce the housing on offer to younger families who may want to move into the area.

If a suburb fails to adapt then it will become a less desirable place to live. If it fails to attract new residents, shops and businesses then it won't undergo the process of renewal that is essential to a vibrant city. A falling population (or an ageing population with less money to spend) may be unable to sustain local businesses.

Shops may close and traders re-locate, reducing both local commerce and employment. If fewer residents are travelling (because fewer of them are going out of the suburb to work or study) then reduced patronage on public transport may lead to more infrequent buses and other service cuts.

The services and recreational opportunities that a suburb offers also need to change as populations change. This is evident in the example of Norwood Primary School. It was opened in 1956 to accommodate the baby-boomer children of North Ringwood, which was then at the edge of Melbourne's suburban expansion. Yet by the mid-1990s, Norwood Primary School had closed and the site now caters to a very different demographic as the home to the Ringwood Bowls Club.<sup>32</sup>

In this case the land occupied by the primary school could be adapted to meet new circumstances. It could conceivably be adapted back the other way if required. However some changes to land use are much harder to undo. In the 1990s, the Victorian Government closed around 350 state primary and secondary schools and some were subdivided and redeveloped as housing.<sup>33</sup> Some of the areas where schools were closed now have increasing numbers of children and are struggling to meet demand for school places. Residents' groups in suburbs such as Coburg, Seddon, Kingsville, Yarraville, Richmond, Prahan and Oakleigh have pushed for the re-opening of schools in their area but finding the land on which to build them can be difficult.<sup>34</sup>

The planning of new greenfield developments provides for schools, and sets aside land for parks and playgrounds. Yet as these children grow up, there is criticism that recreational facilities suitable for teenagers are lacking. A major survey of residents in growth areas found concern about the lack of recreational facilities and activities – particularly sporting clubs – to occupy

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<sup>32</sup> Only Melbourne (2012)

<sup>33</sup> Tomazin (2009); Topsfield (2010)

<sup>34</sup> Milburn (2012)

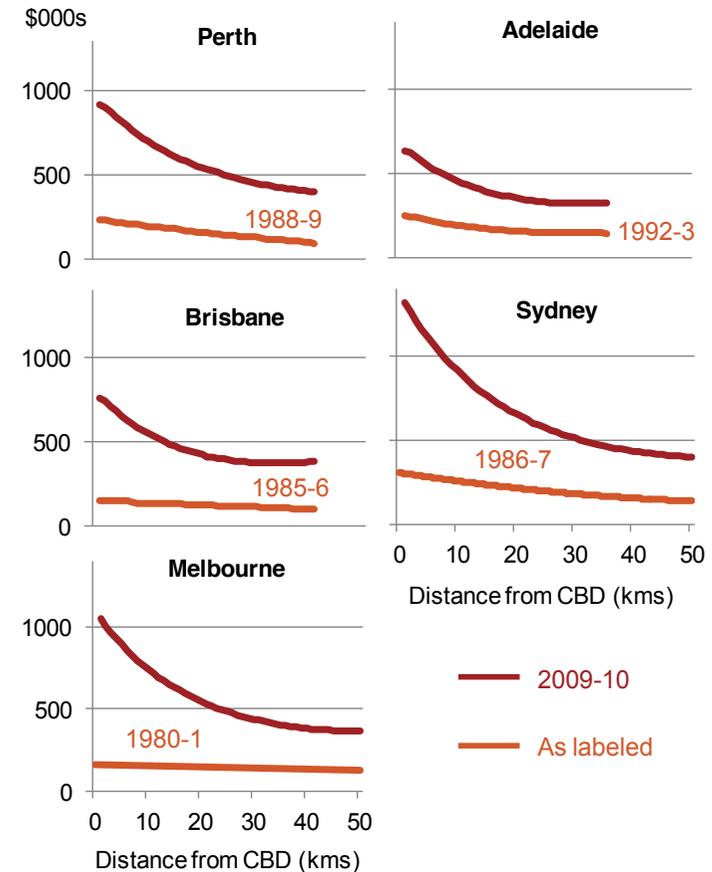
young people and a low level of satisfaction with services, such as youth workers and centres that support them.<sup>35</sup>

... and for cities

As we have seen, a lack of housing diversity can limit people's choices. As shown in Figure 9, houses have become much more expensive the closer they are to the CBD. A similar change has happened in apartment prices.<sup>36</sup> If their local area can't change, it can be extremely difficult for people living in a greenfield area to find more appropriate housing – options closer to the middle of the city are often much more expensive. This contributes to a mismatch of housing across the city as a whole, particularly affecting people in outer suburbs who are most vulnerable to higher transport and mortgage costs.<sup>37</sup>

If greenfield suburbs are not flexible, this also affects the shape of the city as a whole. If housing cannot be adapted to meet the needs of new kinds of residents, governments and developers are likely to pass over those suburbs and push residential development into new greenfield areas further from the city centre.

Figure 9: Real house prices by distance from CBD (2009-10 dollars)



Source: Yates (2011), p 273

<sup>35</sup> National Growth Areas Alliance and Auspoll (2010)

<sup>36</sup> Kulish, *et al.* (2011)

<sup>37</sup> Dodson and Sipe (2008); Kelly, *et al.* (2011)

If suburbs don't offer access to a wide range of goods and services then residents will have to travel further to meet their needs. If public transport networks are weak and households remain heavily reliant on private cars, then traffic congestion will worsen. If homes are distant from jobs, then commuting journeys will lengthen. There will be a greater call on the public purse for investment in new infrastructure, and the benefits of agglomeration – the increased productivity that flows from concentrating jobs and skills in a particular area – will be reduced.

If our greenfield suburbs fail to adapt to demographic change, then we risk ending up with less efficient and productive cities that fail to offer residents a high quality of life.

In the following chapters we suggest some measures that could increase the future flexibility of land and buildings in new developments.

### 3. Adaptable land

Older parts of Australian cities have adapted by finding different uses for land over time. Housing close to growing commercial centres has been converted into businesses. Pockets of commercial, industrial or government land have been redeveloped as housing.

Many factors can prompt shifts in land use, including flexible buildings and connectivity (which are discussed in later chapters). But a vital factor is the land itself – how it is divided and what it is used for.

Older suburbs, typically near the centre of cities, have benefited from including, or being near, a wide range of land uses. This has helped the suburbs develop new roles and activities, and new kinds of buildings as they are needed. Like diversity in an ecosystem, diverse land uses have made these suburbs resilient and adaptable.<sup>38</sup>

Most new neighbourhoods, however, lack such flexibility. Land uses are much more segregated than they used to be. Lot sizes are also relatively uniform. In residential areas, lots are typically smaller than in older suburbs, and they are shrinking. In commercial centres they are often large, and are rarely surrounded by land that can easily change use if the centre grows. In both cases, lack of diversity makes it hard for new suburbs to change.

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<sup>38</sup> A close link has been drawn between diversity of species, and diversity in their responses to change, and ecosystem resilience. See for example Elmqvist, *et al.* (2003); Folke (2006); Walker and Salt (2006).

#### 3.1 Availability of land that can change use

Older suburbs have often flourished by using land in different ways over time. The history of land use change in Melbourne shows this clearly. More than a quarter (27 per cent) of the entire developed area of 1951 had changed use by 2005.<sup>39</sup>

Within this area, land use changes were widely distributed, enabling many local areas to adapt to new activities, such as light industry turning into office space, or housing being developed on former government land. Many different types of land played a role and each type of land changed in a variety of ways (see Appendix 2 for more detail).

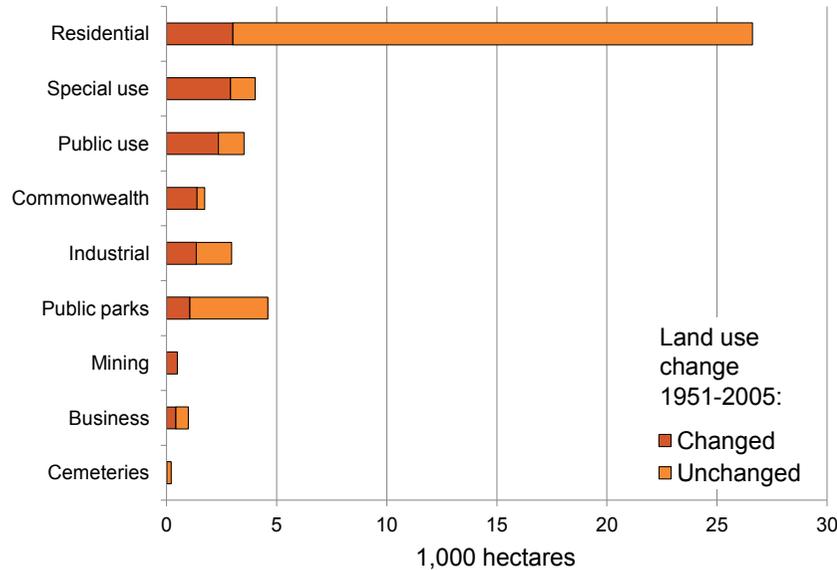
New suburbs don't have as many options to change land use. Firstly, many of the types of land that changed use most often in the past are scarcer in new areas. Although more residential land changed use from 1951 to 2005 than any other type of land, it accounted for less than a quarter of all changes in land use (see Figure 10). Further, residential land was far less *likely* to change than any other type of land, except for cemeteries.<sup>40</sup>

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<sup>39</sup> See Appendix 2 for the methodology used and additional data. Intensity of use has also changed, but we could not find similar long-term data on this.

<sup>40</sup> Only 11 per cent of residential land changed use, and the next least likely to change use was public parks, almost a quarter of which changed use (23%).

Figure 10: Land use change in Melbourne, 1951-2005, by 1951 use



Source: Grattan Institute, based on Department of Planning and Community Development (Vic) (2006)

Special use is private schools, private open space and religious institutions. Public use includes transport, public services, government offices and public utilities

The land uses that changed most often in the past are much less common in new neighbourhoods. In 1951, non-residential land made up 42 per cent of the city. In 2005, only 25 per cent of newer suburbs (built since 1971) were non-residential. The share of the three land uses that changed the most from 1951 to 2005 (mining, Commonwealth and special use) was 16 per cent in

1951, and only 7 per cent in newer suburbs.<sup>41</sup> One reason that these kinds of land changed use often is that they are in lots that are larger than residential lots, and usually have only one owner.<sup>42</sup>

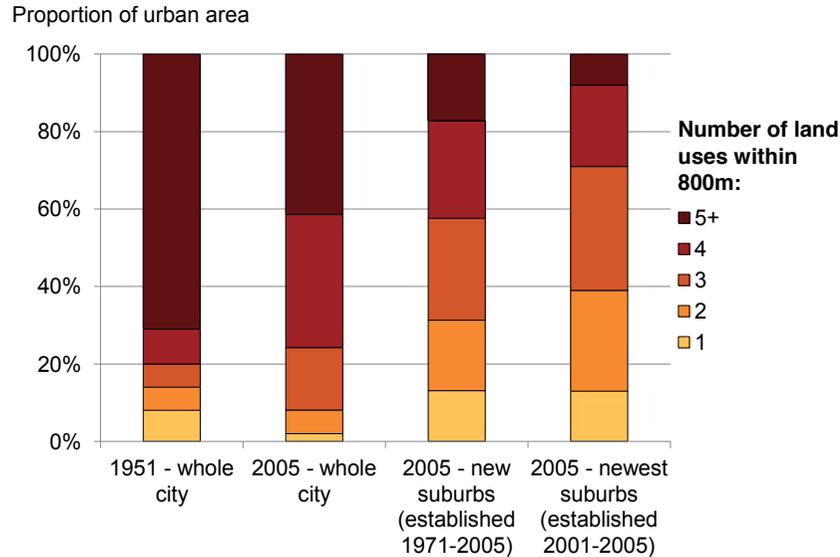
Newer suburbs have less of the types of land that changed in the past, and where they do exist, they are much more concentrated, often into large blocks. This means that individual areas often have only one or two land uses. In 1951, 80 per cent of the city had four or more land uses within 800 metres. In 2005 this had fallen to 27 per cent in recently-built areas (see Figure 11).

Industrial land is a good example of this trend. In newer areas, it is much more concentrated than it has been in the past. In 1951, industrial land was, on average, surrounded by 3.6 different land uses. By 2005, the average was 3.2, and only 1.9 for suburbs built since 1971. Like industrial land, other types of land that changed in the past are much less dispersed (see Appendix 2). This leaves new suburbs less diverse and provides fewer options to change over time.

<sup>41</sup> The share of the five land uses most likely to change (mining, Commonwealth, special use, public use and industrial) was 30 per cent in 1951 and 20 per cent in newer suburbs in 2005.

<sup>42</sup> A substantial literature on development in established areas highlights how fragmented ownership presents a serious barrier to finding new and better uses for land. See Fennell (2010); Heller (2008). For a summary of experimental evidence on costs and delays associated with multiple ownership, see Cadigan, *et al.* (2011).

**Figure 11: Number of land uses within 800m, Melbourne, 1951 and 2005**



Source: Grattan Institute, based on Department of Planning and Community Development (Vic) (2006)

The way land changes may be very different in the future. But the lower diversity of land in new suburbs is a concern. In these areas, the types of land that have changed use before are rare. Where they exist, they are highly concentrated in specific areas. Residential land – a large proportion of new suburbs – has been unlikely to change use in the past. It may be even less likely to change use in the future, due to smaller lot sizes, larger houses, and less diverse land uses nearby.

We cannot turn back the clock. Returning to wider distribution of industrial lots, large areas of private open space or government-owned land is unrealistic. In many cases, it would also be problematic. For example, setting aside government land would increase the cost of new housing, and would require expansion of the urban area to provide the same number of new homes (see Appendix 3 for a discussion of five different options to facilitate future changes in land use).

### Creating options for change

New residential areas need new ways to create the flexibility that helped older neighbourhoods respond to change. One option is to allow a group of neighbouring home owners to sell or redevelop their land as one large site in the future. This would be a much less costly option for developers, home-buyers and governments than alternatives such as setting aside land to be developed decades later.

In some other countries, if a large majority of the owners of apartments in a building agree, the building can be sold or redeveloped. In Singapore, this has unlocked substantial new development, leading to benefits for owners, developers, and the residents of the redeveloped building.<sup>43</sup> While this model has not previously been applied to detached residential developments, a small proportion of houses could be sold under a similar arrangement.

<sup>43</sup> See Singapore's *Land Titles (Strata) Act (1967)*. In 2002, the UK introduced 'Commonhold' which is similar to strata title, and property can be sold with agreement of 80% of the owners. Japan, Israel and Nova Scotia in Canada all have similar arrangements. This proposal has also been discussed in Australia – for instance see Property Council of Australia (2003); Shelter NSW (2011).

In a designated part of a suburb, people would buy a normal title, but with an option to make a joint sale after 25 years. After that point, if 90 per cent of owners agreed to an offer, they could sell the land.<sup>44</sup> A group of 10 or 20 neighbours might receive an offer from a developer that wanted to build townhouses, or a government planning to build a primary school. The owners would then be able to review the offer and proceed with the sale if at least 90 per cent of them agreed.

The joint sale option would yield significant financial benefits to the home owners if they agreed to sell. It would also mean that one person refusing to sell could not stand in the way of a substantial windfall for their neighbours.

There are some drawbacks to the joint sale option. People often buy houses because of the strong sense of security it provides. Knowing their house could be the site of a redevelopment in the future might detract from this sense of security. This is one reason the joint sale option does should not come into force until 25 years after the houses are first sold. A 25-year delay also puts off any joint sales until local needs will probably have changed.

The uncertainty resulting from the joint sale option might reduce land prices in affected areas somewhat.<sup>45</sup> However, costs are likely to be small compared to other options (see Appendix 3), and the long-term increase in flexibility could be large. The land would

still be used profitably to create new housing, but with an option for change in the future.

The joint sale option would create opportunities for redevelopment in the future. Assembling land is a big barrier to redevelopment in older areas.<sup>46</sup> In new suburbs, with smaller lot sizes, it is likely to become an even bigger problem. No single recommendation can deal with every future problem. For example zoning laws, covenants and heritage overlays may still rule out some kinds of redevelopments. However, a joint sale option would go a long way towards increasing the flexibility of new suburbs.

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<sup>44</sup> If the property was sold in the meantime the joint sale option would be transferred with the property.

<sup>45</sup> It is also possible that prices could rise due to the greater likelihood of redevelopment.

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<sup>46</sup> See footnote 42.

### 3.2 Town centres that can grow and change

Three important factors can make town centres adaptable and resilient: street-level activity, diverse businesses and services, and buildings that can be adapted to new roles.<sup>47</sup> Retail centres are the best – and often only – opportunity to create a vibrant town centre in new suburbs. But many retail centres in greenfield areas are not well integrated into surrounding areas. Their buildings are hard to change, and they lack diverse shops that can respond to local needs.

In Brisbane and Melbourne, the number of large centres under single ownership or management is growing rapidly (see Figures 12 and 13), while small-scale, mixed-ownership shops haven't grown, and may have declined.<sup>48</sup>

There are a number of reasons for the dominance of big, centrally-owned or managed centres. Partly it flows from concentration of ownership in the Australian retail market (exemplified in the dominance of Coles and Woolworths). The commercial viability of a new shopping centre may depend on attracting one or two larger stores that act as 'anchor tenants', creating a critical mass for other businesses to build on. Without them, a retail zone may never become a significant centre.

<sup>47</sup> Griffiths, *et al.* (2008); Vaughan, *et al.* (2010)

<sup>48</sup> The authors note that there has been little research on urban retail forms in Australia, and data on traditional shopping streets is limited. Their conclusion is based on field surveys, earlier research and evaluation of new developments.

Figure 12: Retail floorspace in corporate-owned / managed centres, middle and outer Melbourne and Brisbane, 1993 and 2008

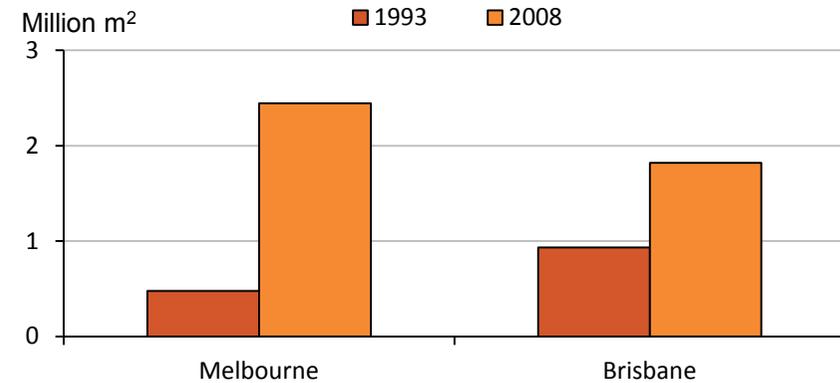
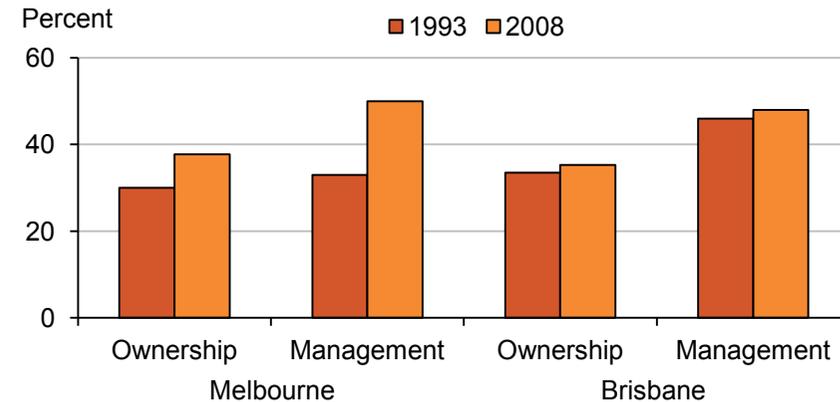


Figure 13: Market share of top five corporate owners / managers of retail floorspace, Melbourne and Brisbane, 1993 and 2008



Source: Goodman and Coiacetto (2012)

Bigger stores are typically the only businesses that can make investments in the early stages of greenfield developments. They can absorb short-term losses as surrounding neighbourhoods develop and a customer base emerges. The economics of this type of retail make it a good way to get enough shops into new suburbs at the outset.

However, the standard ownership and management structures of these big shopping centres can lead to problems as well. A study of activity centres in three Melbourne growth areas found that most new centres did not promote public transport access, connection with the surrounding area, and diverse shops and services (Figure 14). Only one of 17 centres was accessible by foot, bicycle and wheelchair. Fewer than a third had shops facing the street or had car parking at the rear or undercover.<sup>49</sup>

The problem is that large, centrally-owned or managed centres don't have a strong incentive to provide individual buildings that are adaptable over the long-term, or to include diverse, local or family businesses, such as food stores that cater to the particular tastes of migrant communities.<sup>50</sup>

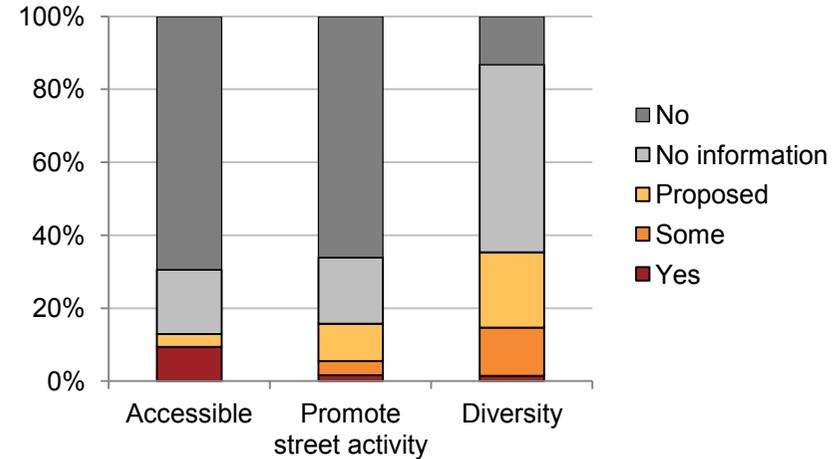
Instead, they often focus on providing the logistics needed by large anchor tenants, and on attracting low-risk chains and

<sup>49</sup> These two features were proposed in four developments and only confirmed in one – see Goodman and Coote (2007). While there was no information about some of these characteristics (see Figure 14), this itself is a concern, as they are so important in creating successful, adaptable town centres.

<sup>50</sup> For example, two major operators of large retail centres estimated that between 60-80% of their tenants were members of major chains or franchises, see PC (2008), p 31

franchises that can meet the higher rents and fit-out costs associated with larger shopping centres.<sup>51</sup>

**Figure 14: Evaluation of 17 activity centres in three growth areas, Melbourne, 2007**



Source: Goodman and Coote (2007)

The chart shows the percentage of assessed centres with any of the following measures:  
 Accessible: 1) within 800m safe walk of a railway station; 2) within 400m safe walk of a bus or light rail stop; 3) frequent fixed / light rail service 4) frequent bus service; 5) accessible by foot, bicycle and wheelchair from all surrounding areas.  
 Promote street activity: 1) majority of car parking at rear or undercover; 2) shops face directly onto the street with minimum setbacks; 3) Suitable places for social gathering and community use.  
 Diversity: 1) range of community, civic, health, other services; 2) good variety of fresh food outlets; 3) good range of alternative businesses; 4) opportunities for new businesses to start up.

<sup>51</sup> Ibid., Ch 7

As a result, shops tend to be homogenous. While this may reduce risks for landlords, it makes the centres less diverse, and leaves few places to start local businesses.

The size and design of many new shopping centres can also cut them off from their surrounding areas.<sup>52</sup> The centres are usually designed for car access, have large open areas of parking space dominating one or more sides of the centre, and might be located away from other retail and commercial uses.<sup>53</sup> This seriously reduces the adaptability of the area.

When shopping centres are well integrated into surrounding streets, less expensive 'side-street' and 'back-street' areas can provide a place to establish new, local businesses. Traditionally, these less expensive areas attract many offices, services or light industrial businesses, or local entrepreneurs who can adapt better than larger businesses to emerging community needs. Despite the usual government focus on more visible retail uses, UK research has shown that these smaller, local businesses are a crucial part of what makes a centre lively, successful and resilient.<sup>54</sup>

Finally, centres with one owner tend to consist of one large building rather than many smaller buildings that can be changed independently. In traditional shopping streets, individual buildings can be sold, redeveloped, or replaced, as different landlords respond to changing demand. This is much harder in large

developments with one owner – often a relatively distant investment fund.<sup>55</sup>

The difference is illustrated by how different towns were rebuilt after World War II (see Figure 15). Coventry in the UK was rebuilt with large, monolithic town centre buildings. Because they were built as one structure, change was difficult and expensive. Typically, they went into a decline that was very costly to reverse.

Some German cities, by contrast, took a different approach. Cologne was redeveloped using traditional lot sizes and building heights. The result, according to one researcher, was “an attractive lack of regularity, many hidden spaces and buildings that can be removed and replaced over time” and “a richly textured urban environment.”<sup>56</sup>

Retailing is going through significant changes. Large, 'big box' stores have multiplied, drawing customers away from some town centres.<sup>57</sup> Online shopping is growing rapidly, reducing the demand for some kinds of shops. It is unclear how this will develop.

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<sup>52</sup> Goodman and Coiacetto (2012)

<sup>53</sup> Ibid.

<sup>54</sup> Vaughan, *et al.* (2010)

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<sup>55</sup> See PC (2008), Table 2.2 for information on concentration of ownership and the prevalence of investment / superannuation funds as landlords.

<sup>56</sup> Alexander (2009)

<sup>57</sup> For information on growth in 'big box' retail in Australia see PC (2008); PC (2011a). For a discussion of the lack of adaptability of big box buildings see Schindler (2012).

Figure 15: Adaptable and inflexible commercial centres



Cologne, Germany



Coventry, UK

Source: Alexander (2009); Copyright Ian Rob, licensed for reuse under Creative Commons

Despite this, town centres remain important. As some forms of retail have declined, others, like personal services and cafes, have grown. People still need to buy many goods and services in person, and it still makes sense for them to be located in one place. New uses for town centres have also emerged, such as hubs for working remotely. Town centres also serve as important points of interaction, helping to meet the fundamental human need for social connection.

These shifts are not the first major changes that retailing has gone through, and we can expect more in the future. Town centres will be better able to respond to these changes if they have diverse businesses and buildings and are well integrated with their local area and neighbouring streets.

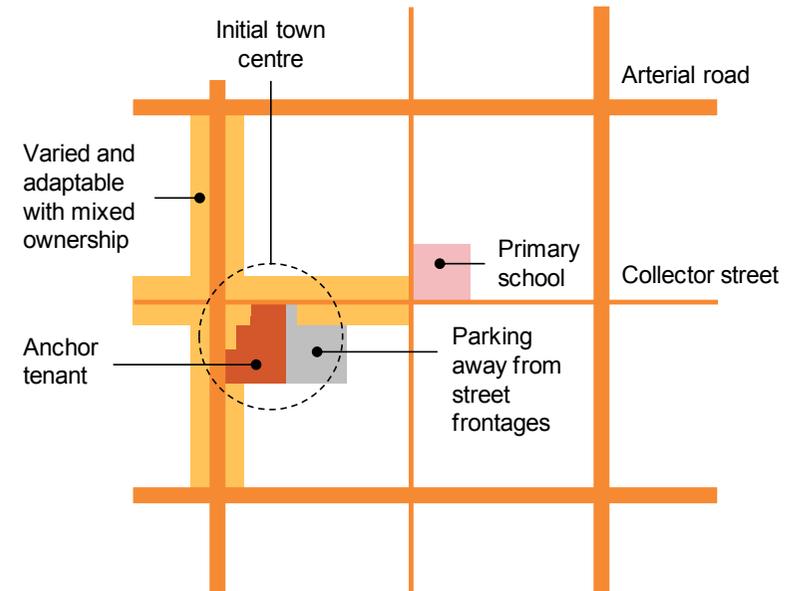
### A hybrid model

The current approach can be improved with a hybrid model that attracts initial investment from larger stores but does not create an isolated, monolithic structure. Instead, town centres should be surrounded with adaptable buildings that can change over time.

Shopping centres, car parking and loading areas should be hidden behind different kinds of buildings, all facing the street, and all of which can be adapted to a variety of uses (such as the model town centre shown in Figure 16). Figure 17 shows how facing the street (combined with flexible zoning, which is discussed below) allowed almost all the houses on one side of a road to be adapted to commercial uses. The houses opposite back onto the road, and have no service road, resulting in a row of back fences instead of a row of businesses.

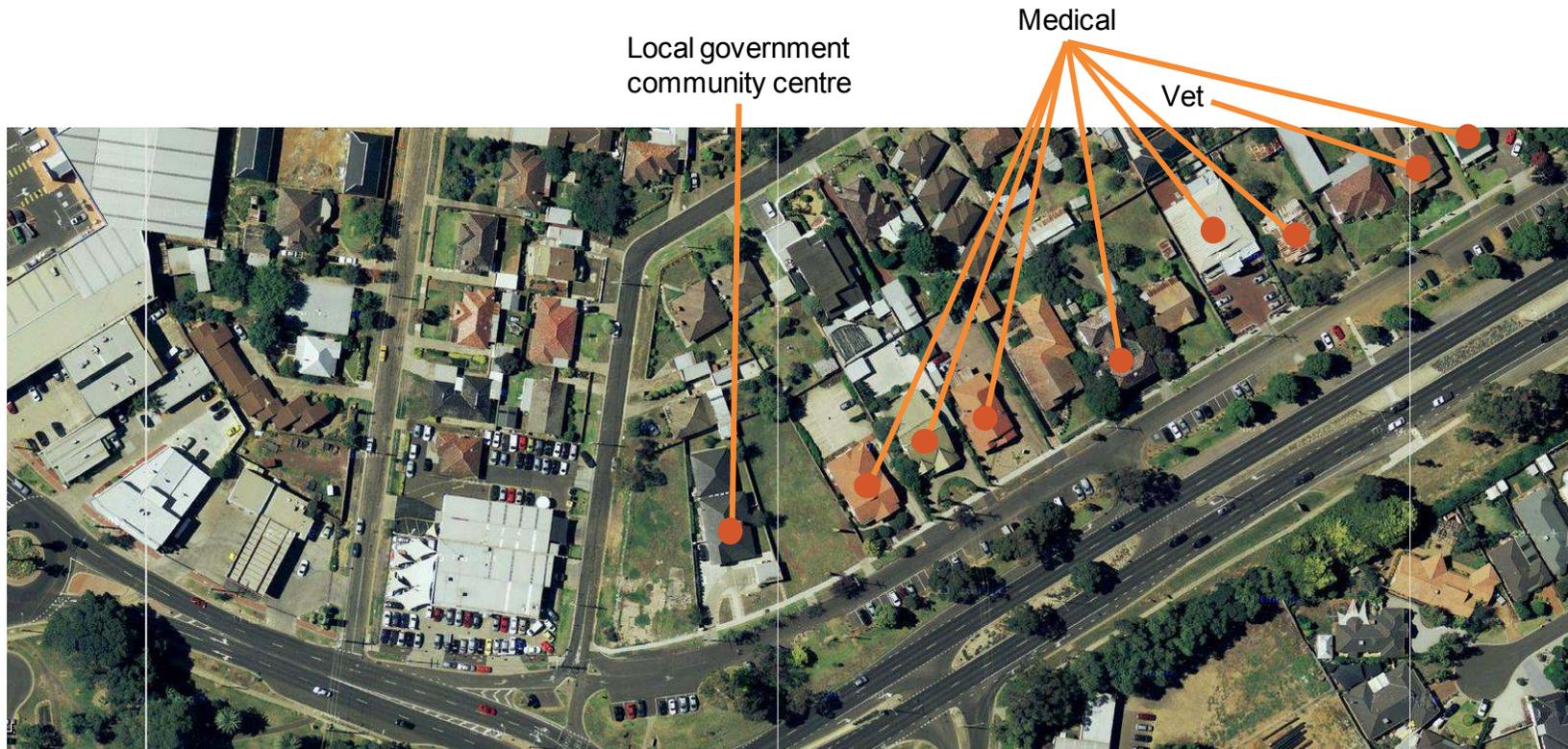
Clear minimum standards for the areas immediately around town centres can ensure that they are surrounded by diverse, adaptable buildings. These standards would require that buildings face the street, that there are a minimum number of frontages for a given length of street, and a mix of building widths.

Figure 16: A local town centre layout that is adaptable to change



Source: Grattan Institute

Figure 17: An organic transition from residential to business uses, Werribee, Melbourne



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Imagery © 2012 DigitalGlobe, GeoEye, Sinclair Knight Merz & Fugro

Gradually, most of the houses on one side of an arterial road leading into the Werribee shopping centre became medical businesses. Most retain their original structure, but some of these detached houses on larger blocks have been redeveloped.

## 4. Adaptable buildings

A building is adaptable when it can change with the needs of the people who use it. These changes might be big, such as building a second storey as a family grows, or smaller, such as turning a bedroom into a home office, or using a garage for storage instead of car parking.

Our buildings last a long time.<sup>58</sup> Adapting them is far cheaper, less disruptive and more environmentally sustainable than demolishing buildings and starting again whenever people's needs change.<sup>59</sup>

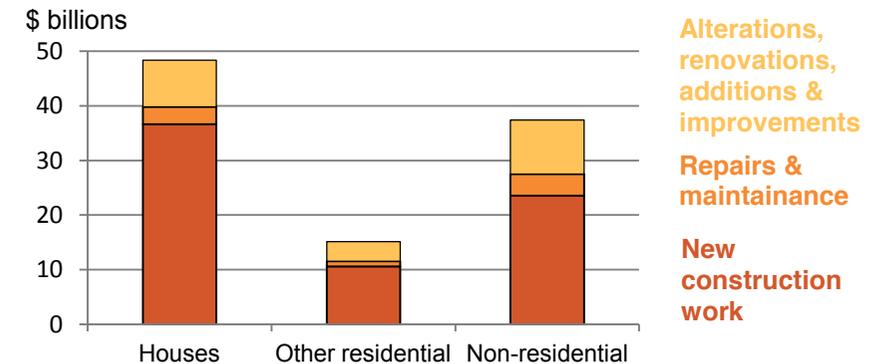
Australians spend a lot on adapting buildings. In 2002-03, they spent more than \$12 billion to renovate their homes, and nearly \$10 billion on improving non-residential buildings (Figure 18).<sup>60</sup>

Research has primarily focussed on the adaptability of large scale office or apartment buildings, where the benefits are clear.<sup>61</sup> In the first 50 years of an office building's life, the cost of adapting services and changing the internal layout can more than double the initial cost of the building (see Figure 19). Making buildings

more adaptable from the start can reduce these costs, and make other changes possible, too.<sup>62</sup>

Based on this research, we identify three principles that make buildings adaptable.<sup>63</sup> These principles apply to all kinds of buildings, yet we know much more about the costs and benefits of implementing them in larger apartment and commercial buildings than in houses.<sup>64</sup>

**Figure 18: Income from trade services, building and construction, Australia, 2002-03**



Source: ABS (2004)

<sup>58</sup> Snow and Prasad (2011) report the mean lifespan of Australian brick homes and timber homes to be 88 and 58 years respectively.

<sup>59</sup> Power (2008); *ibid.*; Grinnell (2011b)

<sup>60</sup> This made up 18%, 24% and 26% of trade services income for houses, other residential homes and non-residential buildings respectively. This income is used to cover the costs of labour, services, materials, and profit.

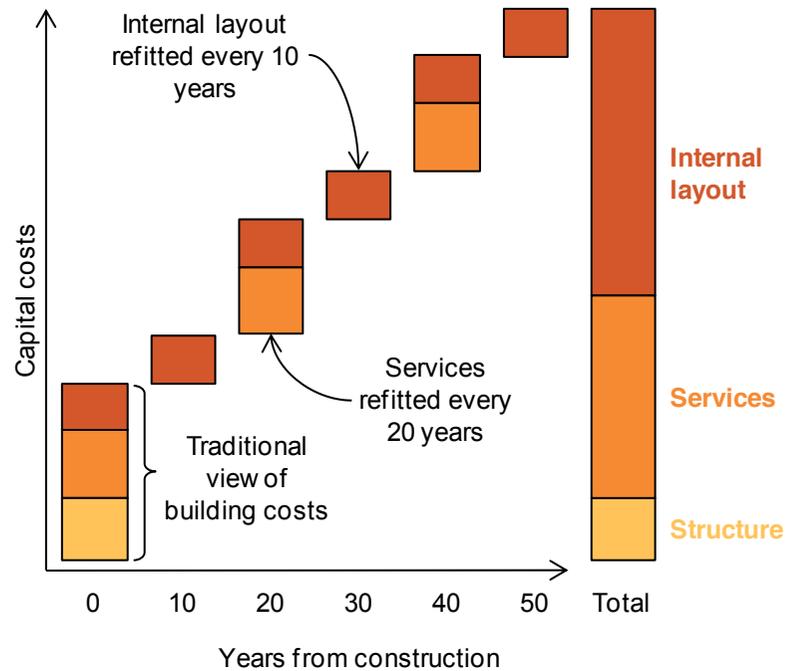
<sup>61</sup> Brand (1994); Friedman (2002); Bullen and Love (2010); Schmidt III (2010b); Eguchi (2011).

<sup>62</sup> Schneider and Till (2007), p 43. For instance, building in adaptability to enable later retrofitting for accessibility can save tens of thousands of dollars.

<sup>63</sup> We have synthesized research from: Brand (1994); Residential Open Building by Teicher and Kendall (2000); Friedman (2002); Eguchi (2011); Till, *et al.* (2006); Schneider and Till (2007).

<sup>64</sup> Teicher and Kendall (2000), p 15

Figure 19: Indicative life-course costs of building adaption



Source: Adapted from Duffy and Henney (1989)

Note: 'Internal Layout' is the spatial arrangement of each floor into separate rooms. 'Services' includes, for example, electrical, communication technologies, plumbing, and air conditioning services. 'Structure' includes the building structure and foundations.

#### 4.1 Three principles of adaptable design

The most important aspects of adaptability can be grouped under three principles: 'independent layers', 'space to change', and accessibility.

'Independent layers' means keeping building components separate so that they can be changed more easily. For example, an internal wall can be moved to create a new room without requiring major changes to the building's structure.

'Space to change' provides extra capacity that allows a building to change. For example, its foundations and structure are strong enough to allow an additional storey to be built, or there is room in the back garden for a granny flat to be added.

Accessible buildings are designed to allow people of all ages, and people with disabilities, to use them comfortably.

These principles allow buildings to change more cheaply, more easily, and in more ways. We now consider each of these principles in detail.

### Principle 1: Independent layers

Making the component parts or 'layers' of a building independent of each other is one of the best ways to make it adaptable.<sup>65</sup>

Figure 20 shows a building's six functional components: site, skin, structure, services, internal layout and stuff.<sup>66</sup> Wherever possible they should be separated, allowing the building and its functions to be adapted or replaced without unnecessary and costly interference with other layers.<sup>67</sup>

For large buildings, this means keeping the structural layer independent of the internal layout. This way internal spaces can be changed easily to suit different businesses and uses. Independent layers also makes sure that services such as air conditioning and communication technologies are easy to reach and upgrade as requirements change, without interfering with other parts of the building.

For houses, internal walls should be non-load-bearing – in other words, independent of the structure. This makes space easy to reorganise. For example, a wall can be removed to create a larger living space, or a room divided to create two bedrooms.

Wet areas such as a bathroom or kitchen should be located close together to reduce plumbing and allow easy access for

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<sup>65</sup> See for instance, Duffy and Henney (1989); Brand (1994); Teicher and Kendall (2000); Schmidt III (2010b).

<sup>66</sup> Brand (1994)

<sup>67</sup> Ibid.

maintenance and upgrades. Their location should not interfere with possible future expansion of the building.<sup>68</sup>

In all buildings, independent layers also allow modular building, using whole panels, walls or even rooms that have been produced off-site. This can reduce cost and allows buildings to be easily altered or expanded.<sup>69</sup>

Australian modular building was once associated with low-quality temporary school buildings, but has recently improved, with high-quality modern design and construction techniques.<sup>70</sup> Where modular buildings and internal layouts have been tried, people have been quick to use them to tailor their work and living spaces to their needs.<sup>71</sup>

Figure 20 shows some further examples of how the principle of independent layers can be applied to adaptable housing.

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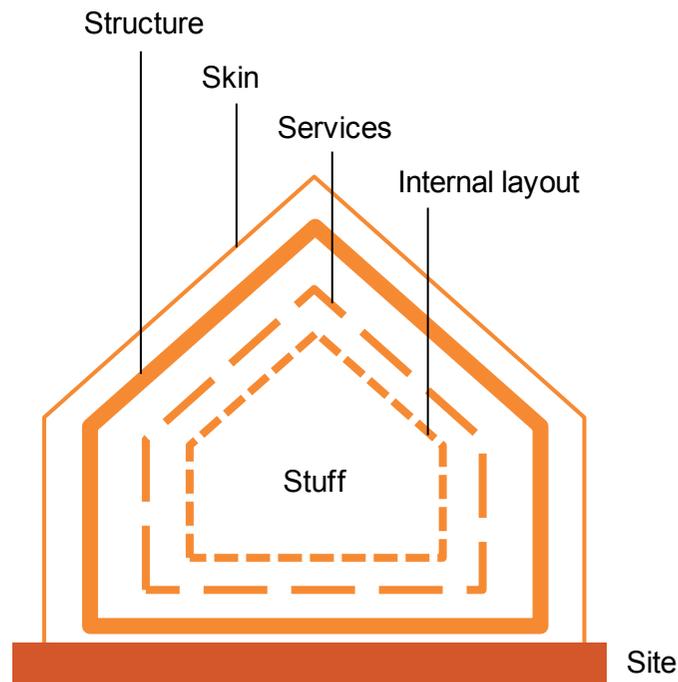
<sup>68</sup> Friedman (2002)

<sup>69</sup> For instance, modules allowed significant cost savings in 'The Next Home' to meet affordable housing goals in Canada, see Friedman and Krawitz (1998) for details; Future Proofing Schools (2012) research notes that modular prefabrication in Australia can result in multiple cost savings.

<sup>70</sup> Future Proofing Schools (2012)

<sup>71</sup> Brand (1994) notes that there are few examples where buildings have been evaluated for adaptability once occupied. Till, *et al.* (2006) reports one study of 'flexible flats' built in Sweden in 1951, which were assessed after 10 years of occupation. The modular internal walls allowed residents to customise their internal layout – the study recorded extensive adaptation as a result.

Figure 20: Adaptability benefits of independent layers for housing



Layer	Description	Service life	Examples of adaptability from layer independence
Site	Building location	Eternal	Building can be demolished or removed from site easily
Structure	Walls / beams	30 – 300 years	Extension into backyard or addition of 2 <sup>nd</sup> storey doesn't disrupt services
Skin	Roof / windows	20 years +	Roof space allows attic conversion. Rooms can be divided into two, and each new room can have windows
Services	Water / electrical	7 – 15 years	The bathroom can be renovated and new lighting and plumbing installed. Plumbing doesn't make extension of structure difficult (e.g. bathroom on back wall)
Internal layout	Internal walls / benches	3 – 30 years	Few internal load-bearing walls means rooms can be merged easily
Stuff	Television / bed	1 year +	What a room is used for should be independent of the internal layout – where possible, rooms should work as offices, bedrooms, or living rooms

Source: Brand (1994); Grattan Institute

### Principle Two: Space to change

Adaptable buildings have the space to change. A designer can achieve this by including some slack in the building's design: more space, strength or capacity than is initially needed.<sup>72</sup>

Inside buildings, room size is important. The danger is tight-fit functionalism, where rooms have just enough space for a specific purpose.<sup>73</sup> Providing a little extra space, including in floor-to-ceiling heights, can enable the ground floor of a building to be used as a home, shop or office, for example. One example is the 'Growhome' in Canada, which provides unfinished rooms to not only reduce construction costs, but also allow adaptation as needs and finances allow.<sup>74</sup>

Outside buildings, space to change can allow extensions or new entrances. Row houses can be extended out the back. Detached houses have setbacks, patios and gaps between buildings and rear yards, which provide further options. A loft extension can add another room.

Multiple entries to a building or site also create space to change. Rear laneways are a feature of many inner-suburban sites, and some greenfield developments are now including them. Having a laneway can allow subdivision, or the addition of a granny flat with a separate entry.<sup>75</sup> It can also provide a separate entry for a

business, making it more adaptable to potential commercial uses.<sup>76</sup>

Providing a building with more strength than it initially needs also creates the potential for change. Stronger foundations and structures can allow an extra storey to be built without the need for expensive retrofits.<sup>77</sup> In larger buildings, providing more capacity in services such as plumbing and communications makes it easier to upgrade them.

Buildings with both space to change and independent layers can more easily accommodate different uses over time. This is especially important when the service requirements of a community change – when there is greater need for aged care services and less for schools, for example (see Box 3).

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<sup>72</sup> Kincaid (2000); Eguchi (2011)

<sup>73</sup> Rabeneck, *et al.* (1973); Friedman (2002)

<sup>74</sup> The Canada Mortgage and Housing Corporation (2012) reports that over 10,000 'Growhomes' have been sold.

<sup>75</sup> The Canada Mortgage and Housing Corporation introduced significant adaptability through simple features that allowed subsequent division of a unit

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into a duplex. This allowed potential rental income in the future. Simpson and Kelly (2008) developed design principles to do the same in Australia.

<sup>76</sup> Holliss (2012), Friedman (2002). As of 2008, the ABS (2008) reports that 24% of the working population spends some part of the week working from home.

<sup>77</sup> Russell and Moffatt (2001)

### Box 3 – Buildings that enable flexible service delivery

The principles of independent layers, space to change and accessibility increase the flexibility of all buildings, including offices, hospitals and schools. Adaptable buildings help governments provide social services, education and healthcare when and where a community requires them.

Independent layers and space to change allow modular buildings – where separate rooms can be added over time. For example, Australian education departments use modular and relocatable buildings to cater to changing local populations. In some states portables accommodate up to a third of all students.<sup>78</sup> Portables, which in the past were often seen as low standard, temporary structures, are now being designed with flexible spaces to meet the demands of 21<sup>st</sup> century education (see figure at right). At the Australian National University, modular shipping containers have been used to quickly expand student accommodation.<sup>79</sup>

In the health sector, modular buildings with hospital-grade bathrooms and consultation rooms pre-installed have been added to Lake Macquarie, Shepparton and St George Private Hospitals.<sup>80</sup>

Buildings that feature the three principles of adaptable design can accommodate multiple uses over time. Many governments have expressed a wish to bring a range of social services into one place.<sup>81</sup> Flexible buildings can help them to do so.



School environments have changed significantly over the years, and will continue to. Making them adaptable now will help schools keep up with changing education demands and varying student numbers in the future.



Images top to bottom: 1. Boys School, Victoria, circa 1920; 2. McKinnon Primary School, Victoria; 3. Wooranna High School, Victoria (Mary Featherston Design); 4. Future Proofing Schools Competition Entry. Source: Future Proofing Schools (2012)

<sup>78</sup> Future Proofing Schools (2012)

<sup>79</sup> The Australian National University (2010)

<sup>80</sup> Building Productions News (2011); Ramsayhealth (2008)

<sup>81</sup> Since August 2011, over 50 Department of Human Services (2011) offices have co-located services.

### Principle 3: Accessibility

The third principle of adaptable buildings is accessibility for people at every stage of life, including the very young, older people and people with a disability.

An accessible building can be visited by someone with a disability. It has enough space to manoeuvre a wheelchair, baby pram or someone on crutches. It has switches, taps, and toilets that all people can easily access. It means that a handrail can be added to the bathroom wall, when needed – without expensive retrofitting.

The Livable Housing Australia guidelines<sup>82</sup> identify how to incorporate accessible features into housing. It describes seven core elements of a Livable House, with a further nine elements that lead to increased levels of access. The seven core elements relate to minimum dimensions for entrances, hallways and internal doors, and specifications for a ground floor toilet and bathroom.

The guidelines cover many of the most important features of the Australian Standard for Adaptable Housing.<sup>83</sup> Importantly, they both recognise that some accessibility features may not be wanted or needed now, so provides designs that are upgradable for adaptation at a later date. For instance, one of the core Livable Housing elements includes the strengthening of bathroom walls so that handrails can be installed later, without costly retrofitting.

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<sup>82</sup> The Livable Housing Australia (2012) guidelines are the result of national agreement between government, developers and disability advocates.

<sup>83</sup> Australian Standard AS 4299-1995. Many other organisations have developed their own guidelines, for example: Landcom (2008) and the Australian Network for Universal Housing Design (2012).

### 4.2 How are we doing on these principles?

Larger buildings at commercial scales already feature independent layers, space to change and accessibility.<sup>84</sup> Some apartment buildings and houses are designed for easy customisation to suit individual needs.<sup>85</sup> Public buildings are required by law to be accessible, with those built before 2011 to become accessible with upgrades over time.<sup>86</sup>

But it is less clear how well residential buildings in new neighbourhoods align with these three principles. Ways of measuring the adaptability of typical greenfield housing are only starting to be developed.<sup>87</sup>

We know that good and bad practices exist. On the downside, the size of homes has grown, while lot size has shrunk, leaving little space for buildings to change. Building layers aren't always independent, making dwellings harder to change.

At the same time, other features make houses in new areas adaptable. Many designs are open plan, and rooms are often large enough to serve more than one purpose. Garages are often integrated into the structure of houses, meaning they can be

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<sup>84</sup> Teicher and Kendall (2000), p15

<sup>85</sup> One such apartment building is the Jarnbrott apartments of Sweden as reported by Till and Schneider (2005b). Some other customisable houses are reported by Canada Mortgage and Housing Corporation (2012).

<sup>86</sup> Refer to the Disability (Access to Premises – buildings) Standards in Commonwealth of Australia (2010b). Public buildings are defined by the standard and include office and government buildings, sports facilities etc.

<sup>87</sup> See for instance: Bullen and Love (2010); Friedman (2011), Russell and Moffatt (2001), Geraedts (1998).

adapted into bedrooms, offices or convenient storage areas as needed. Many of these features are inexpensive and widespread (see Box 4).

There has also been progress in accessibility with many new homes in greenfield areas that approach some of the space requirements of the Australian Standard.<sup>88</sup> The construction industry is also taking steps to build on this progress. Livable Housing Australia has set a target that all new housing will achieve the seven core elements by 2020. It aims to do this through wide stakeholder support, promotion of the guidelines and accreditation of buildings.

### What should be done?

Of the three principles, the costs and benefits of accessible housing are the best understood. A 1999 study showed that it is much cheaper to build in the capacity to upgrade for accessibility than to retrofit without it (see Table 1).<sup>89</sup> A more recent Victorian Government study assessed the costs of including a minimum accessibility requirement – similar to the core elements of the Livable Housing Australia guidelines – in the Building Code of Australia. The study found that the cost of these variations for a single dwelling was \$870, or just 0.2 per cent of the construction cost.<sup>90</sup>

The initial costs are so low because the required features can be achieved with minor design alterations. By contrast, the cost of retrofitting houses that are not upgradable is up to 22 times higher.<sup>91</sup> This means that if more than one in every 22 homes needs to be changed across its lifetime, it makes financial sense to make them all upgradable.<sup>92</sup>

A homeowner might move before they need to upgrade their home. But society as a whole benefits from a greater stock of accessible housing, both financially and from better access for all.

**Table 1: Comparative cost expressed as % of total cost and net present value**

Dwelling type	Meeting minimum requirements of the Australian Standard	Cost of making home accessible if minimum requirements have been met	Retrofitting without minimum requirements
Single Dwelling	0.5 - 1.0%	0.7 - 1.2%	8.7 - 12.0%
Townhouse	0.5 - 1.0%	5.7 - 6.7%	19 - 23.8%
Low-mid rise	0.3 - 5.8%*	0.3 - 7.0%*	10.3 - 21.9%
High-rise	0.3 - 0.7%	0.3 - 0.7%	9.2 - 12.9%

\* Higher percentage due to the added cost of a lift. Source: Hill PDA (1999)

<sup>88</sup> One study by Coleman (2008) reviewed house and land packages across Australia and found the provision of space (except for the critical kitchen and bathroom) is in general approaching the Australian Standard requirements.

<sup>89</sup> Hill PDA (1999)

<sup>90</sup> Department of Planning and Community Development (Vic) (2009)

<sup>91</sup> Ibid.

<sup>92</sup> Livable Housing Australia (2012) cites international evidence which suggests that 60% of all housing will at some stage be occupied by someone with a disability.

It makes financial sense for the Livable Housing Australia guidelines to be adopted as the industry standard sooner rather than later. Every year that their implementation is delayed tens of thousands of new homes in growth areas will be built without accessibility and adaptability. Because the costs of not being accessible are so high – to people, households and government – the progress of Livable Housing Australia should be reviewed before their 2020 deadline. Depending on its development, it may be necessary to mandate accessibility in the Building Code of Australia.<sup>93</sup>

While it is clear that the benefits of accessibility outweigh the costs, it is less clear for the other two principles of adaptable buildings. Some limited evidence shows that building flexibility can result in substantial cost benefits.<sup>94</sup> We know that adding more structural strength or space than is initially needed adds costs. However, these could be offset by reducing the size of the houses we build. A house with fewer, larger rooms and more outside space is cheaper and can be expanded in future.

These trade-offs are complex and hard to evaluate. Yet given the high costs of inflexible buildings, researchers and governments should work to better understand them, including by developing an evaluation tool to measure adaptability.<sup>95</sup>

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<sup>93</sup> Self-regulation has many advantages including potential innovations and lower costs, but VCOSS (2008) and the Department of Planning and Community Development (Vic) (2009) have found that it is not always successful at increasing accessibility. For this reason, it will be important to assess progress regularly.

<sup>94</sup> Schneider and Till (2007) provide qualitative evidence that flexible buildings last longer and are cheaper to maintain. Teicher and Kendall (2000) report on over 100 buildings designed through 'Open Building' – which incorporates layer independence and space to change – that resulted in substantial cost benefits.

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<sup>95</sup> Work is already progressing in this area. For instance in decision making: Bullen and Love (2010); Friedman (2011). In evaluation tools: Geraedts (1998); *ibid.*; Russell and Moffatt (2001); Schmidt III (2010b)

**Box 4 – House 4, Habitat21, Dandenong South, Melbourne**



*Notes: House 4 was designed by Metropolitan Housing Laboratory and Antarctica.  
Source: VicUrban (2010)*

In 2010 several architectural firms, government agencies and Burbank, a large-scale developer, formed a partnership, Habitat21. They built five adaptable, accessible, sustainable and affordable houses in a greenfield area of Dandenong South in Melbourne. Each cost about \$1,250 per square metre, less than homes of a comparable standard. Including land, they were valued in the low \$400,000 range, close to the \$380,000 median house price of the area. All have sold.

House 4 provides good examples of independent building layers, space to change, and accessibility:

- As the plan at left shows, the master bedroom is offset from the main house with a separate bathroom and independent entry from the carport. The goal is to enable independent living for a family member or conversion to a home office.
- The house is built of durable brick in a largely rectangular plan. This allows a wide range of internal layouts. To facilitate this, some internal walls are non-structural.
- The house is generally accessible with wide passageways and bathrooms.
- The carport is a flexible outdoor space, or can be converted into another room.
- Room sizes are generous, potentially allowing multiple uses.
- The number of windows within the living area enables future division into two separate rooms with natural light.
- Space around the house could allow expansions and renovations.
- Some features are inflexible. Services are embedded within walls and the concrete foundation, preventing easy access. Rooms with built-in wardrobes and limited natural light are difficult to use for any purpose other than as bedrooms.

## 5. Barriers to change

Even when buildings are adaptable – when they have independent parts, space to grow, and are accessible – there can be barriers to changing them. This chapter discusses zoning regulations, which affect both land use and buildings. It also considers restrictive covenants: legally binding agreements that often determine the size, type, style and usage of buildings in greenfield developments and generally have no expiry date.

Zoning and covenants shape neighbourhoods. Zoning attempts to ensure that residents' initial needs for services and shops are met, and to protect landowners from disruptive land uses. Covenants seek to give residents certainty about the look and character of their new neighbourhood. But in playing these roles, zoning and covenants can lock in certain types of buildings and land uses long after people's needs and preferences have changed.

### 5.1 Zoning

Zoning regulates what can be built in an area and the activities that are allowed there. From its origins as a tool to separate 'incompatible' activities, such as keeping heavy industry away from homes and schools, zoning is now expected to meet a growing range of objectives. It provides green space and protects biodiversity, maintains heritage and cultural values, and creates space for the infrastructure and services residents want.<sup>96</sup>

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<sup>96</sup> PC (2011b), p xxi

But zoning has become extremely complex. NSW has amended its *Environmental Planning and Assessment Act* more than 150 times since its introduction in 1979 – an average of nearly five amendments a year.<sup>97</sup> Complex zoning systems with many narrow zones tend to favour the status quo and limit adaptability, in both new and more established areas.<sup>98</sup>

Zoning may not actually 'protect' residents from undesirable activities, and can exclude activities that would benefit a local area, drive up the cost of land, and impose a substantial compliance burden on residents and businesses.

Exclusionary zoning, which is common, can reduce adaptability by only allowing a narrow range of building types and activities in a specific area. For instance, a residential zoning regulation may not allow businesses to operate out of home offices, or require them only to employ people who live in the house.<sup>99</sup>

Zoning often makes detailed prescriptions about different activities such as management of heritage, waste and environmental impacts, as well as opening hours and the number of car parks.<sup>100</sup>

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<sup>97</sup> NSW Government (2012), p 2

<sup>98</sup> See Pogodzinski and Sass (1990); Elliott (2008), p 133. This type of zoning is often referred to as 'Euclidean zoning'.

<sup>99</sup> Yarra Ranges Home Occupation Regulation no. 52.11-1, for instance, only allows one non-resident to be employed in a home business.

<sup>100</sup> PC (2011b), p 228-31

While all of these issues are important, too often zoning regulates them in a complex, confusing and costly way.<sup>101</sup>

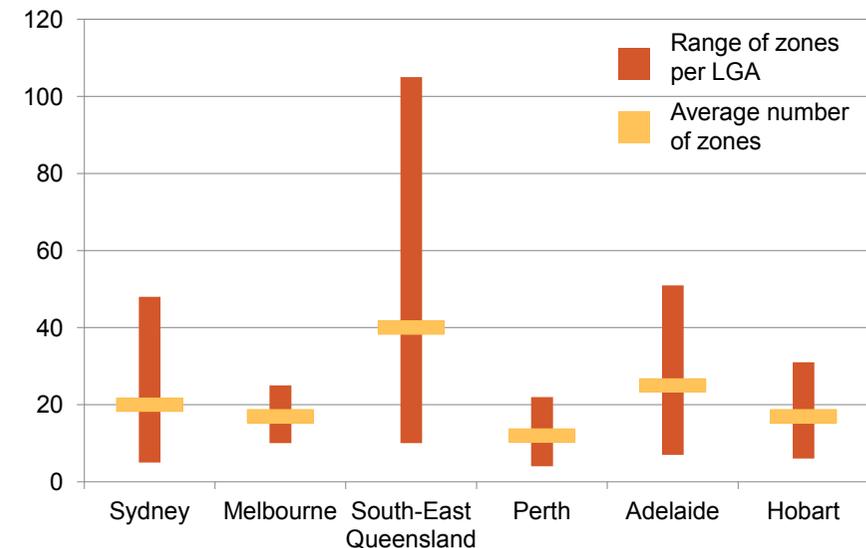
Zoning can over-regulate, restricting not just the height of buildings, but uses that would have little impact on the character of an area. Melbourne's Yarra Ranges Council requires that 'Dependent Persons Units' (or 'granny flats') are built from moveable materials and must be removed no more than three months after they are no longer being used. Further, the only person who can live in the unit must be proven (typically through a doctor's letter) to be heavily dependent on a resident in the main dwelling.<sup>102</sup>

As well, zoning regulations often have either restrictively narrow or vague definitions of how land can be used. Within state and territory planning systems, local governments administer their own zones, overlays, building requirements and restrictions on activities that can be undertaken in specific areas. The number of zones in each Local Government Area (LGA) varies dramatically, as Figure 21 shows.

This is often because councils create new zones to meet the specific land-use requirements of local developments. The Logan City Council (one of the fastest-growing LGAs in the country) created several different zones for each of its town centres, as well as a separate 'Local Business Zone', as shown in Figure 22. Creating or altering zones on an *ad hoc* basis might respond to immediate needs, but it can lead to a rigid set of rules and

conditions that vary across a suburb, sometimes even within the same block.

Figure 21: Number of zones in Local Government Areas by city

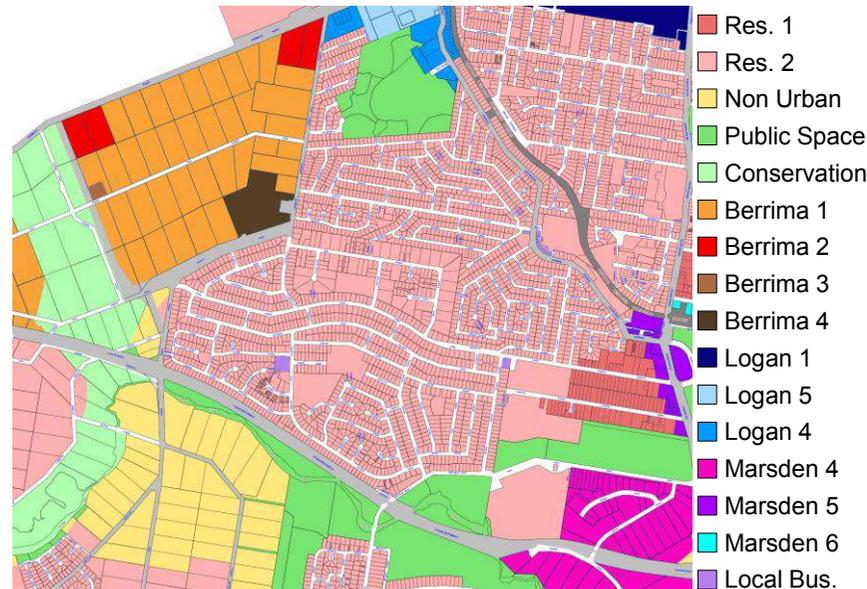


Note: There are 23 zones in the ACT Territory Plan and 32 zones in the Northern Territory Planning Scheme (for Darwin). Source: Productivity Commission (2011), p 129.

<sup>101</sup> Underwood, *et al.* (2011)

<sup>102</sup> Yarra Ranges Council (2012)

Figure 22: Residential and commercial zones in Logan, Queensland



Note: 'Local Bus' is a special zone for local business. Berrima, Logan and Marsden zones all refer to various 'city centre' zones. Source: Grattan Institute based on Logan City Council (2012)

Zoning can also make businesses less profitable or force them to move. Setting aside a limited amount of space for mixed-use, commercial, or industrial uses drives up the cost of that land.<sup>103</sup> This can price smaller local businesses out of an area, even when there is strong local demand for their services.<sup>104</sup>

<sup>103</sup> PC (2011b), p 101-4

<sup>104</sup> Ibid., p 100-7; 149

All of this complexity can impose heavy costs and compliance burdens on businesses and home-owners. Development approval processes, the need for permits, and a lack of consistency in different areas, make it harder to change what land and buildings are used for.

### The difficulty of rezoning

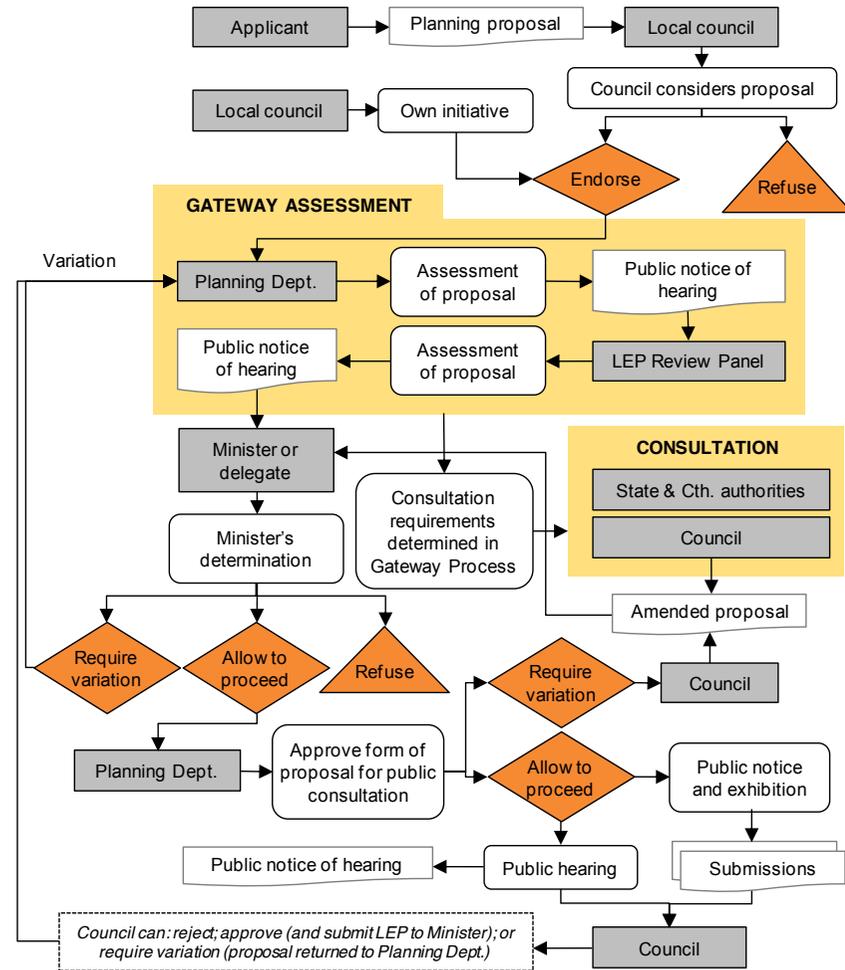
Not only is zoning excessively complex in many cases, it is also hard to amend. When zones are too restrictive, or have outlived their relevance to a property or an area, an application for rezoning can be made. Parents may want to subdivide a large block of land and build a smaller home when their children move out of the family home. A business may want to open for more hours, or change the type of services it provides.

But in practice, rezoning tends to be costly, dauntingly complex and time-consuming. Figure 23 shows a simplified version of the rezoning process in Sydney (which the State Government is attempting to reform).<sup>105</sup> The costs (including fees and charges, compliance costs, lawyers and consultants, and delays) can dissuade people from rezoning an area or a piece of land, even when there is a strong case for doing so.<sup>106</sup>

<sup>105</sup> NSW Government (2012), p 65-6

<sup>106</sup> PC (2011b), p 228-9

Figure 23: The rezoning process in Sydney (simplified)



Source: PC (2011b), p 626-7

**Flexible, mixed-use zones**

Some state governments are moving to simplify their zoning codes.<sup>107</sup> However, that does not necessarily make zoning more flexible or less restrictive. For instance, the proposed ‘Residential Neighbourhood Zones’ in Victoria will block a wide range of changes, setting limits on height and subdivisions in areas of predominantly detached housing.<sup>108</sup> Proposals for a ‘Suburban Character Zone’ in NSW seek to achieve a similar outcome by allowing local councils to exclude medium or high density development.<sup>109</sup> Some proposed reforms, on the other hand, aim to increase flexibility. NSW has also proposed mixed-use ‘Enterprise Zones’ which will permit more kinds of development if they meet environmental targets.<sup>110</sup>

Mixed-use zones allow several different activities in the same area. A mixed-use residential and commercial area might have shops and cafes at ground level, with apartments or offices above. Mixed-use zones reduce the need for planning or rezoning approval when a building changes use. As a result, they reduce compliance costs for businesses and administration costs for councils.<sup>111</sup> Mixed-use zones also allow land to be allocated efficiently for various purposes, helping to reduce pressure on land prices and rents.<sup>112</sup>

<sup>107</sup> See for example Department of Planning and Community Development (Vic) (2012b); NSW Government (2012).

<sup>108</sup> Department of Planning and Community Development (Vic) (2012a)

<sup>109</sup> NSW Government (2012), p 43

<sup>110</sup> Ibid.

<sup>111</sup> Elliott (2008), p 153; PC (2011b); p 352-4

<sup>112</sup> PC (2011b), p 282

### Periodic review of zoning regulations

Once zoning is set, it is very hard to change, even when change is needed. The set-and-forget nature of current zoning practices leads landowners and residents to expect that their neighbourhood will remain more or less the same. The people rezoning tends to benefit – people who want to move into an area, or to change what their building is used for – tend not to be organised and have little influence over zoning.<sup>113</sup> As a result, large areas of cities can be locked up and unable to change.

To ensure that zoning reflects a longer-term perspective and a wider range of interests, cities should have comprehensive periodic reviews of their zones.<sup>114</sup> Such reviews would set out the options for zoning changes across the city and in local areas, for example, expanding a mixed-use zone around a shopping centre. To succeed, these reviews must engage residents and explain the benefits of different rezoning options.<sup>115</sup>

Other cities have seen the benefit of such engagement. In 2006, Washington, DC embarked on a comprehensive review of its zones.<sup>116</sup> The process involved extensive consultation, public working groups and online information letting residents easily see different zones through a Google Maps tool.<sup>117</sup> Importantly, the review made zoning much easier to understand.

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<sup>113</sup> Bradford (2012)

<sup>114</sup> District of Columbia Office of Planning (2012)

<sup>115</sup> Kelly (2010)

<sup>116</sup> Alpert (2012a)

<sup>117</sup> District of Columbia Zoning Commission (2012); Alpert (2012b)

The changes that were agreed following the review have helped to make neighbourhoods easier to walk around and allowed more granny flats and low-impact shops in residential areas. In various Canadian towns and cities, rezoning has been used to increase availability of in-demand land in established areas, and to allow mixed-use development in downtown areas.<sup>118</sup>

Although zoning has useful short-term goals, it is often inflexible and hinders adaption. There are other ways to achieve the same goals in a less restrictive way, such as licensing and through existing laws that deal with neighbourhood complaints.<sup>119</sup>

Having a smaller number of broad, flexible zones and regular, transparent rezoning processes could increase the adaptability of Australia's current and future greenfield developments.<sup>120</sup>

### 5.2 Restrictive covenants

Restrictive covenants are legal conditions in contracts for new homes that define aspects of the size, type, style and usage of buildings.<sup>121</sup> They usually apply to new master-planned residential developments.<sup>122</sup> Unless they have a specified end-date, covenants are perpetual and bind any future purchasers.<sup>123</sup>

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<sup>118</sup> Affordability and Choice Today (2011)

<sup>119</sup> Elliott (2008), p 23-6

<sup>120</sup> Henry, *et al.* (2010), E4-4.

<sup>121</sup> For examples, see Department of Planning and Community Development (Vic) (2012c); Western Australian Planning Commission (2008)

<sup>122</sup> Goodman, *et al.* (2010)

<sup>123</sup> Department of Planning and Community Development (Vic) (2012c).

Conveyancing law is complex, and to remove uncertainty some covenants may explicitly require binding of the subsequent owner as a condition of sale.

Restrictive covenants have benefits for developers and initial residents.<sup>124</sup> Developers use them to stop early buyers from reducing the value of other homes with poor quality or unfinished buildings. Covenants can also ensure a consistent standard of urban design, especially when many different builders are developing an area. Initial residents, unsure what a 'finished' neighbourhood will be like, often rely on covenants to provide some guarantees about the character and quality of their new neighbourhood.<sup>125</sup>

Nevertheless, restrictive covenants also have drawbacks. As well as being complex and difficult to understand, they can make it impossible to adapt homes to meet changing needs. They dictate aspects of the initial building and limit the changes that can be made over time (see Box 5). Modifying or removing a covenant generally requires either court orders or planning changes that take into account the potential effect on all surrounding properties. This makes them very hard or expensive to remove.<sup>126</sup>

The benefits of covenants are only short-term.<sup>127</sup> Developers no longer need them once all their properties are sold. New residents no longer need them once the character of the area is well established; normal planning provisions are enough. While it is not common, in some master-planned developments, covenants

already expire after only a few years. To keep the benefits of covenants, but still allow homes to change over time, all new restrictive covenants should be limited to 15 years.

#### Box 5 – Examples of restrictive covenants

Requirements for minimum size of houses and garages:

*“...a residence with a minimum floor area of 155m<sup>2</sup> for any lot up to 400m<sup>2</sup> in area; 165m<sup>2</sup> for any lot ranging from 401m<sup>2</sup> to 589m<sup>2</sup>; 180m<sup>2</sup> for any lot greater than 589m<sup>2</sup>; and an enclosed garage for not less than two motor vehicles side by side.”*

Restrictions on subdivision or multiple dwellings:

*“...re-subdivision of your block is not permitted.”*

*“The land shall only be used for a single unit private dwelling.”*

Requirements about aesthetics, style and finishes; landscaping and fencing; visibility of air conditioners, solar panels, clotheslines etc:

*“The design of the home [...] and use of materials and colours are subject to approval. [...] The front garden is to include a substantial quantity of trees and shrubs. [...] Clotheslines, air-conditioners and water tanks...must be screened from public view.”*

*Sources: Covenant documentation for a master-planned estate in Mandurah, WA; Melbourne, VIC and SE QLD*

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<sup>124</sup> Goodman, *et al.* (2010)

<sup>125</sup> Cheshire (2010); Goodman, *et al.* (2010); Johnson (2010)

<sup>126</sup> Department of Planning and Community Development (Vic) (2012c).

Changes generally require an assessment of the impact upon all benefitting properties. Identifying all such properties is not straightforward.

<sup>127</sup> Reflecting this, U.S. research by Rogers (2010) shows that the financial benefits of covenants decline over time, and that after 25 years they have no value.

## 6. How connectivity helps suburbs adapt

### 6.1 Why connectivity is important

Connectivity – being able to get around – is vital to living in a modern city. More than ever before, people want to be able to reach a wide range of goods, services, jobs and opportunities.

When people choose a home, five of their top 10 priorities are directly related to connectivity, according to research commissioned by the Grattan Institute.<sup>128</sup> People want to be near family and friends, local shops, a shopping centre and a public transport stop, and they want freedom from traffic congestion.<sup>129</sup>

Connectivity shapes the adaptability of a city or an area in two ways. First, being well connected to a broad range of opportunities enables people to adjust to change.<sup>130</sup> For example, as the economy and employment prospects change, a worker who can reach a variety of jobs is in a far stronger position than one who cannot. A variety of ways to reach different opportunities is also important. A neighbourhood with good public transport and

local shops will enable older residents to get to places they need to go, even if they can no longer drive.<sup>131</sup>

Second, well connected residents and businesses are far more likely to want to remain where they are, and go to great lengths to adapt their buildings. In well connected parts of Australian cities, where land values are high, older buildings have been renovated, expanded and improved over decades. These investments have revitalised suburbs and reshaped them to meet current needs.

Connectivity shapes the choices people make about housing. In areas with good connectivity, land values are higher. An analysis of 'effective job density' shows this clearly. Effective job density is a good measure of connectivity, because it shows how many jobs people can reach within a given amount of time. Being able to reach jobs also means being able to reach businesses and the goods and services they provide.

Effective job density accounts for around half the variation in house prices in Melbourne, as shown in Figure 24. In other words, people pay higher house prices to be well connected. In turn, this creates an incentive to adapt buildings to meet changing needs.

Higher effective job density is good for employers and employees. Easy access to a range of jobs in a short amount of time makes it more likely people will be able to find the work that is best suited to them. Businesses that can choose from a wider pool of

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<sup>128</sup> Weidmann and Kelly (2011), p 7. See also Lei and Church (2010) for a discussion of 'access'.

<sup>129</sup> Although the internet provides 'connectivity' in a sense, it does not replace physical connectivity. While people may use more online services in the future (such as shopping or e-health provision), or work from home, people still need to be able to get to places in their cities. See Kelly, *et al.* (2012) for more on the need for face-to-face connection in cities.

<sup>130</sup> Dodson, *et al.* (2006)

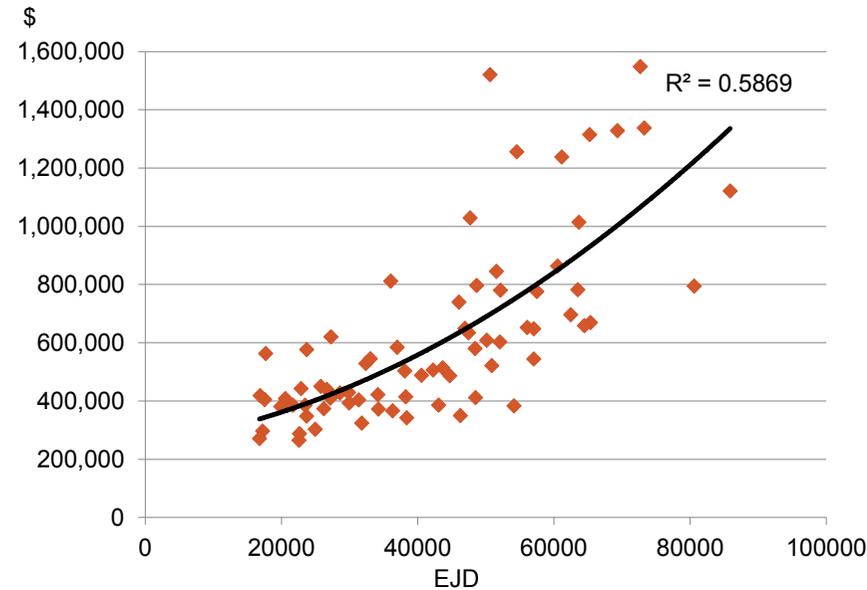
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<sup>131</sup> See Pocock, *et al.* (2012) for a discussion of the 'spatial leash' – people's ability to get to work and family obligations within certain time frames.

potential workers are also more likely to find the ideal person to fill a particular position.<sup>132</sup>

This is one reason that strong transport links can help boost productivity in cities (see Box 6 for an analysis of Melbourne's Eastlink).<sup>133</sup>

Figure 24: House prices vs Effective Job Density in Melbourne

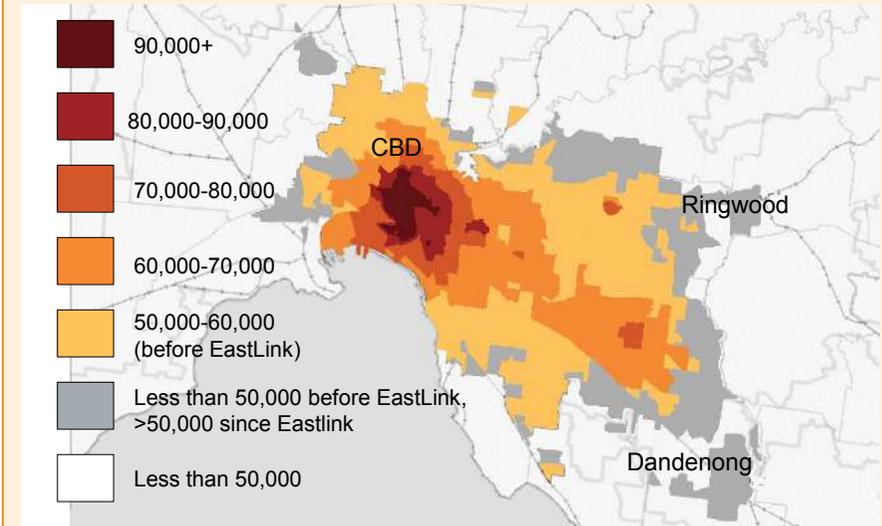


Source: Spiller (2012), p 18

<sup>132</sup> For discussion of the productivity benefits of this kind of labour market matching see Moretti (2012), p 125.

<sup>133</sup> See Department of Infrastructure and Transport (2011), Chapter 3.

Box 6 – Effective Job Density before and after construction of EastLink



Source: Spiller (2012), p 5

This map shows the effective job density of the Melbourne metropolitan area before and after the construction of the EastLink tollway, which connects the eastern and south-eastern suburbs.<sup>134</sup> As shown, these suburbs experienced growth in effective job density once the tollway was built. This improvement in connectivity led to an increase in property prices even before Eastlink opened in 2008.

Note: Although not shown above, there would also have been an increase in effective job density in surrounding areas (i.e. increases in the range 0-50,000).

<sup>134</sup> ConnectEast (2012)

## 6.2 Connectivity in greenfield areas

New neighbourhoods often struggle to provide connectivity.<sup>135</sup> They are typically on the edge of urban areas, away from existing services. Their housing is predominantly detached, and their populations spread out. Parts of new suburbs can be located away from existing major transport infrastructure, such as light rail or train lines.

Not all areas need the same level of connectivity. Not everyone has the same requirements for transport, services and jobs. Maximising the number of options people have is not an end in itself. People may not need to reach a large number of jobs or businesses, provided they can get to the right ones. Or they may choose to have lower access in order to be able to afford more space or a different kind of home.

All the same, most people benefit from a basic level of connectivity – being able to travel to at least a small number of goods, services and jobs in a reasonable amount of time. Poor connectivity can jeopardise people's wellbeing, health and social contact. Long commutes on congested roads or crowded public transport can increase stress and limit the amount of time spent with family and friends.<sup>136</sup>

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<sup>135</sup> See discussion in Currie, *et al.* (2007).

<sup>136</sup> Pocock, *et al.* (2012), Stutzer and Frey (2008), and Kelly, *et al.* (2012). See Currie (2009) for a discussion of how different social groups are affected by varying levels of access.

## 6.3 Measuring connectivity

Connectivity is created by many factors, including road networks, bus routes and timetables, topography, and the location of public services and town centres.<sup>137</sup> This makes it hard to measure. Current measures usually focus on proximity – to public transport stops and town centres in particular – rather than how long people have to spend to get where they need to go, including by car.

Victorian planning guidelines stipulate that 95 per cent of new residential land should be within 400 metres of 'safe walking distance' of a public transport stop. Medical, educational, and community facilities should be 200 metres from a stop.<sup>138</sup> But the guidelines do not state how often services should run or how quickly they can transport residents to workplaces or other destinations. Distance-based standards also don't take into account people's behaviour: someone might prefer to walk a kilometre to a train station with a fast and regular service, rather than wait at a bus stop with unpredictable arrival times.<sup>139</sup>

In Perth, a 'Liveable Neighbourhood' code was introduced in the late 1990s to improve walkability and public transport access. A target was set to provide a public transport stop within 400 to 500 metres of most residents.<sup>140</sup> However, residents reported little

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<sup>137</sup> For a discussion of these factors see Geurs and van Wee (2004); Curtis and Scheurer (2010).

<sup>138</sup> Department of Transport (Vic) (2008), p 7

<sup>139</sup> See Wardman (2004); Walker (2011) for a discussion.

<sup>140</sup> Western Australian Planning Commission and Department for Planning and Infrastructure (2009), p 1.

difference in connectivity compared to residents in conventional neighbourhoods.<sup>141</sup>

A range of tools have emerged to address some of these issues.<sup>142</sup> For example, Queensland's Land Use and Public Transport Accessibility Index (LUPTAI), is sophisticated mapping software that focuses on how long it takes people to get to important destinations. It analyses including transport as a *means* of access to other things, rather than seeing public transport stops as destinations in themselves. It measures all modes of access (walking, cycling, public transport or car) to key destinations such as health centres, shops, banks, schools, universities and jobs.<sup>143</sup>

LUPTAI can also be used to build and compare plans for future land use and transport infrastructure. This is useful in identifying gaps in government service provision and access, and figuring out the best way to fill them. For instance, a school or shopping centre can be added to a model to see how many people could reach it by different modes of transport. It can also measure the

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<sup>141</sup> Falconer (2008), p 341-8

<sup>142</sup> These Geographic Information Systems (GIS) tools draw on an extensive body of research. 'Space syntax' investigates, among other things, the link between urban form, transport networks and patterns of human movement. In the UK, large government databases have been integrated into tools such as Accession which is extensively used by local governments in charting the connectivity of an area and designing efficient and targeted public transport. See United Kingdom Local Transport Planning Network (2006); Caldwell (2011b); Caldwell (2011a). In Australia, the Spatial Network Analysis for Multimodal Urban Transport Systems (SNAMUTS) tool has been applied to transport planning in Perth. See Curtis and Scheurer (2010)

<sup>143</sup> Pitot, *et al.* (2005), p 4. The LUPTAI tool was initially built at Griffith University, and further developed in the Queensland Department of Transport and Main Roads.

impact of an additional transit stop, moving or adding a new public transport service, footpath, cycle-way, or changing the mix of land uses.

LUPTAI allows planners to respond to the real experience of travel. For example, it can differentiate between time spent walking to a stop, waiting at a stop – which is frustrating for transport users – and time spent on a bus, train or ferry.

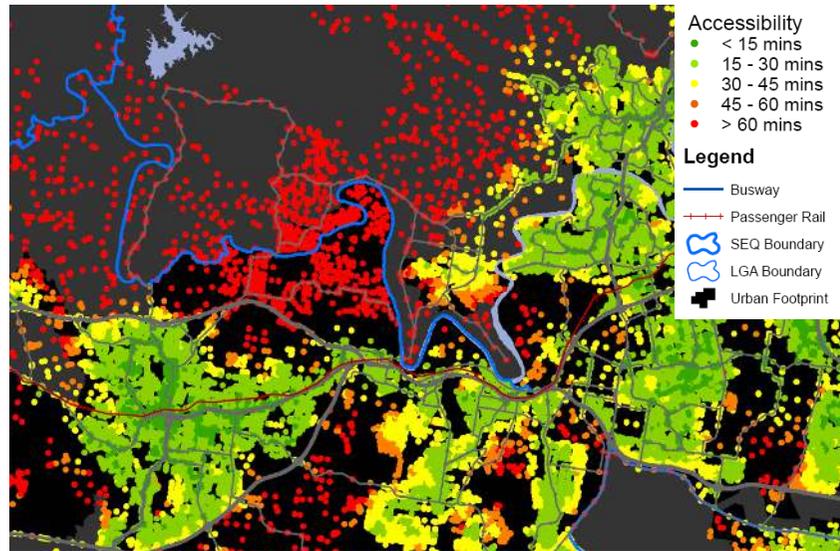
Figure 25 shows different levels of connectivity via walking and public transport near Ipswich, Queensland, based on LUPTAI measures of access to jobs, schools and a range of goods and services.

The public can use these tools to see levels of connectivity in different suburbs and streets. Walk Score, a US company, uses a similar program to calculate a 'Walk Score' out of 100 for residential addresses (see Figure 26). Walk Score ratings are used on a number of real estate websites in the US and Australia. In the US, an additional one point on Walk Score was correlated with a \$500-\$3,000 increase in average house prices.<sup>144</sup> This information helps future residents evaluate properties without having to compile information on public transport timetables, congestion in peak hours, location of supermarkets or travel time to schools.

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<sup>144</sup> Cortright (2009)

Figure 25: LUPTAI Accessibility composite, Ipswich/Brisbane, 2011

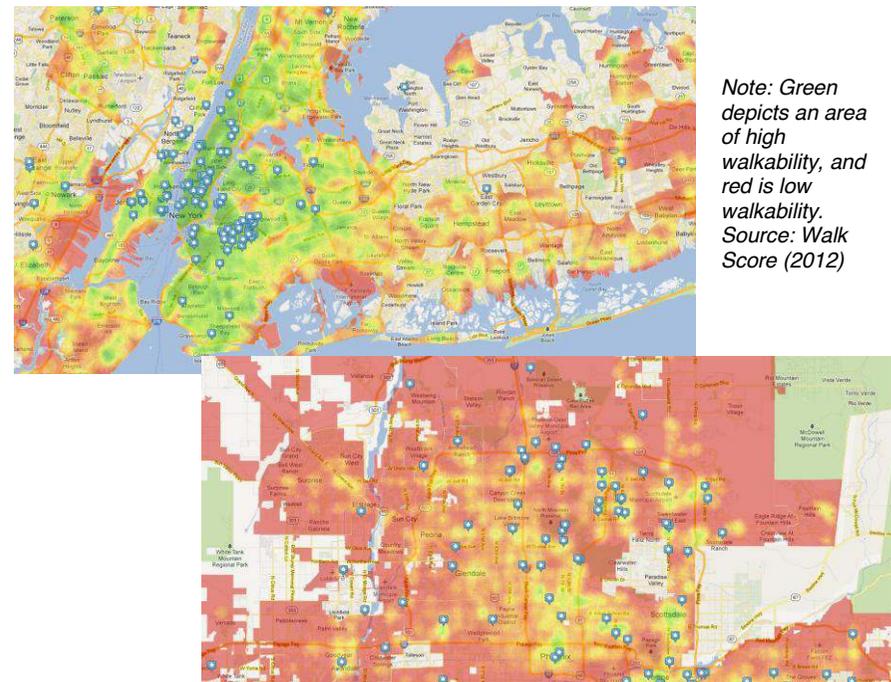


Source: Queensland Department of Transport and Main Roads

Current measures for assessing connectivity are easy to use, but can let residents of new suburbs down. Being connected – being able to get to the places people need to go – is one of the most important aspects of life in a city. Yet the measures used in many jurisdictions, such as the 400m walking distance to a public transport stop, do not give a meaningful understanding of what people in new neighbourhoods can reach. The Queensland Department of Transport and Main Roads is already using a more meaningful model which could be applied much more broadly around Australia.

LUPTAI, or a similar tool, should be a central part of planning new suburbs, setting targets for connectivity and assessing how well they work. This tool would measure how long it takes to get to a mix of jobs, goods, and services, by car, walk, bike and public transport. Ideally, it could measure the diversity of the jobs within reach, and therefore how well a suburb can adapt to change. A public version would help people understand how well-connected different areas are, and make choices that are right for them.

Figure 26: Walk Score heat map, New York and Phoenix



## 7. Conclusion and summary of recommendations

In the baby boom years after WWII, Australia's cities grew outwards at a rapid rate. New subdivisions were laid out with surveyors' pegs, often along dirt roads and many people built their own homes at the weekend. Frequently there was no sewerage connection and it could take years to get the phone on.

Today greenfield residential developments are subject to detailed planning: land is set aside for schools, community centres, open space and so on; infrastructure like paved roads, footpaths and street lights are completed before the first houses are built and residents move into homes that are already connected to the internet. Whatever the shortcomings of our newest suburbs – such as inadequate public transport – it's clear that we've come a long way.

The problem identified in this report is that greenfield residential developments may be less adaptable to shifting community needs and preferences than older parts of our cities.

We cannot predict exactly *how* communities will change in the future but we can say with a high level of confidence that they *will* change. If today's suburbs are to be tomorrow's suburbs too, then they must be flexible enough to change with the people who live in them.

Renewal is essential to a vital city: ageing building stock being renovated or replaced, new types of shops and enterprises superseding declining businesses, and one generation of

residents giving way to the next. If neighbourhoods are not flexible then renewal cannot happen. This will damage the suburb and the city as a whole.

Understandably, private developers and public planners have concentrated on meeting the immediate needs of the first generation of residents in greenfield areas. However attention also needs to be focussed on the future.

As we have argued in this report, there are measures we can take in new developments today that will enhance adaptability tomorrow. Specifically we recommend:

- a joint sale option that lets owners sell their land together if at least 90 per cent of them agree, starting 25 years after the initial purchase
- town centres that can grow and change, surrounded by a variety of buildings that face the street
- a 15 year limit on restrictive covenants
- broader, mixed-use zones, with regular reviews of zoning across the city
- new standards for connectivity based on how long it takes residents to get to a mix of jobs, shops and services.

## Appendix 1 – Defining new growth areas

This report focuses on greenfield projects – new suburbs built on previously undeveloped land. Greenfield development generally takes place in ‘growth areas’, a term used by state and local governments to refer to regions where population and housing supply are growing fast and to designate areas for future growth. There is no standard definition for what constitutes a growth area.

This report adopts a retrospective statistical measure that uses ABS data to identify Local Government Areas (LGAs) with a minimum of 10,000 detached dwellings, where at least 1,000 new detached dwellings were constructed between the 2006 Census and the 2011 Census and where this resulted in an increase of 10 per cent or more in the stock of detached homes. This measure identified 24 ‘Grattan growth areas’ in six states, and includes 19 LGAs that are members of the National Growth Areas Alliance (NGAA), which represents 25 of Australia’s fastest growing municipalities.

The characteristics of Grattan and NGAA growth areas are also very similar. From 2006 to 2011, population grew by 556,000 in ‘Grattan’ areas and by 585,000 in ‘NGAA’ areas. Detached houses increased by 22 per cent and 20 per cent respectively. However as illustrated below, the two lists are not identical. For example, the Grattan measure excludes some councils in NSW that have not experienced rapid growth in the last five years, but where future development is anticipated. The Grattan measure includes some LGAs that are not NGAA members. We are not suggesting that Grattan’s measure for identifying growth areas is better than that of the NGAA or other organisations.

	NGAA members	Grattan ‘growth areas’
NSW	Blacktown	Camden
	Camden	
	Campbelltown	
	Liverpool	
Victoria	Penrith	Casey Cardinia Wyndham Melton Hume Whittlesea Mitchell Brimbank Macedon Ranges
	Casey	
	Cardinia	
	Wyndham	
	Melton	
	Hume	
	Whittlesea	
Queensland	Ipswich	Ipswich Logan Moreton Bay
	Logan	
	Moreton Bay	
WA	Wanneroo	Wanneroo Swan Cockburn Mandurah Serpentine-Jarrahdale Kwinana Armadale Rockingham Gosnells
	Swan	
	Cockburn	
	Mandurah	
	Serpentine-Jarrahdale	
	Kwinana	
	Armadale	
Rockingham		
Gosnells		
SA	Mount Barker	Mount Barker Playford
	Playford	
Tasmania		Kingborough

## Appendix 2 – Land use analysis methodology and data

### Land use change

Melbourne's development and land use is presented in the Melbourne Atlas.<sup>145</sup> A special data request to the Department of Planning and Community Development (DPCD) enabled land use data for 1951 and 2005 to be analysed in more detail to understand where and how land use has changed. This analysis formed the basis for the discussion in Chapter 3.

Land use in Melbourne is categorised as shown in Table 2 overleaf.<sup>146</sup> Because naming conventions differ between 1951 and 2005, land uses in 2005 have been grouped with those in 1951 to enable a 'like for like' comparison. We first divided the 1951 and 2005 Melbourne city into a grid of 10m by 10m 'cells', with each being assigned a land use based on the overlying DPCD data.<sup>147</sup> This enabled a quantitative comparison between land uses in 1951 and 2005. It is important to note that 2005 land not previously zoned in 1951 – because the city has expanded beyond the 1951 boundaries – was ignored in the land use change calculations.

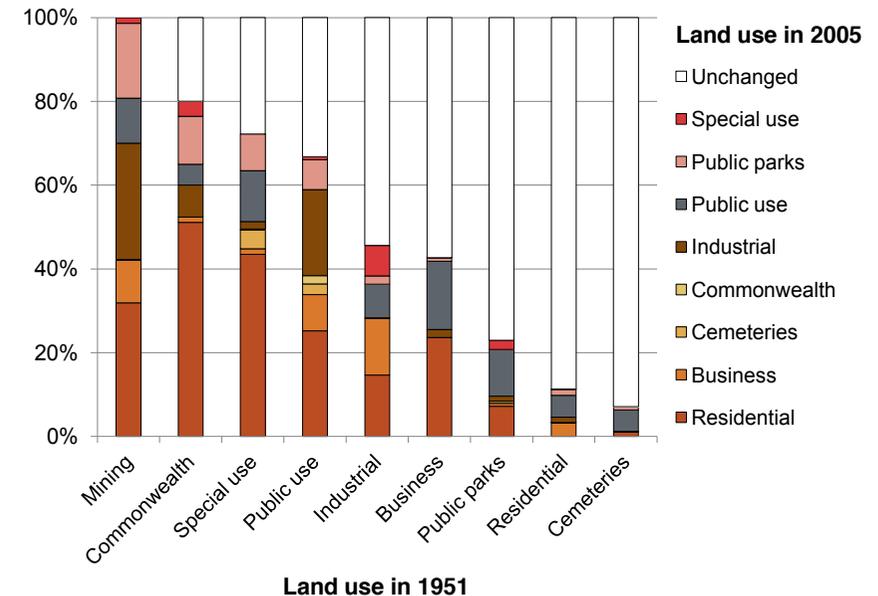
<sup>145</sup> Department of Planning and Community Development (Vic) (2006)

<sup>146</sup> There are two small discrepancies in the data. Some small quarries remain in 2005 and are not zoned 'Mining', but this has a negligible impact. Secondly, many roads in 1951 were zoned as Residential, not Public use or Main roads. This means that these roads were incorrectly identified as 'changing' land use by 2005 (when they were recorded as Main roads). This accounts for less than 2 per cent of all land use change, and has been removed from our calculations.

<sup>147</sup> We used GIS software by ESRI to create land use 'raster' files based on a 10m by 10m grid from the land use polygon shapefiles. We checked our figures with the DPCD Atlas data to ensure an accurate conversion.

As discussed in Chapter 3, the comparison of land use between 1951 and 2005 shows that the largest contributions to land use change came from Residential, Special use, Public use and Commonwealth land (see Figure 10 in text). However excluding Mining land (less than 1% of the 1951 city), the land most likely to change use was Commonwealth, Special use and Public use land – in other words, a greater *proportion* of land used for these purposes in 1951 changed use by 2005 (see Figure 27).

Figure 27: Land use change, Melbourne, 1951 - 2005



Source: Grattan Institute, based on data from the Department of Planning and Community Development (Vic) (2006).

**Table 2: Land use categories and descriptions, Melbourne**

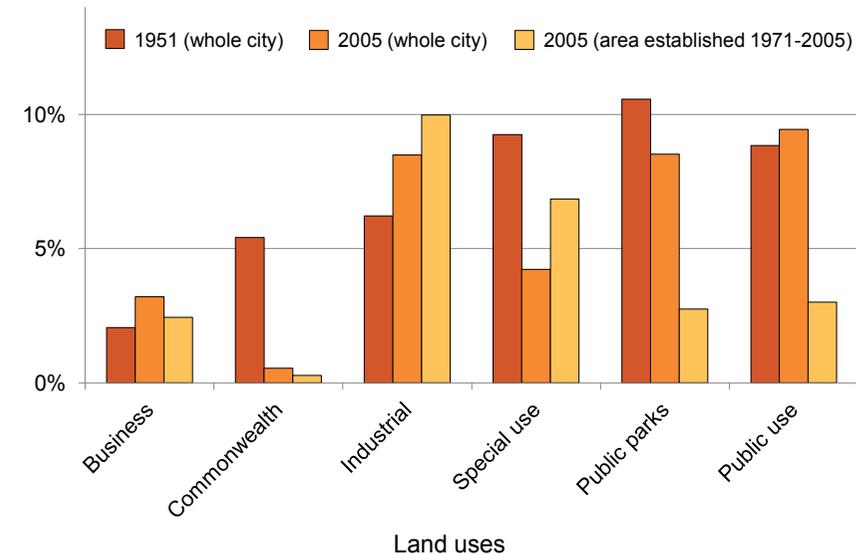
Land use categories	1951 Land use	2005 zones included
<b>Residential</b>	Dwellings, kindergartens, churches	Residential Residential low density Comprehensive development (e.g. Docklands)
<b>Business</b>	Land for commercial purposes	Business Priority Development
<b>Industrial</b>	Land used for industrial purposes	Industrial
<b>Public Use</b>	Transport, hospitals, schools, higher education, government offices, utilities.	Public use  Main roads
<b>Public parks</b>	Conservation land, reservoirs, wharves, waterways	Public Parks Stream and floodways
<b>Cemeteries</b>	Cemeteries and crematoria	Cemeteries and crematoria
<b>Special use</b>	Private schools, private open space and religious institutions	Special Use
<b>Commonwealth land</b>	Airports, defence uses	Commonwealth land
<b>Mining</b>	Land used or previously used for mining	Mining

Source: Grattan Institute; Department of Planning and Community Development (Vic) (2006).

The proportion of land devoted to each use has also changed from 1951 to 2005 (see Figure 28). For the urban area built between 1971 and 2005, there is less of the land that was most likely to change in the past (Commonwealth, Special use and Public use land). Figure 29 shows an area of Melbourne that spans the edge of the city in 1951, highlighting land uses that were most likely to change. In 1951 this land was more distributed throughout the urban fabric, while in 2005, these types of land are more concentrated in specific areas.

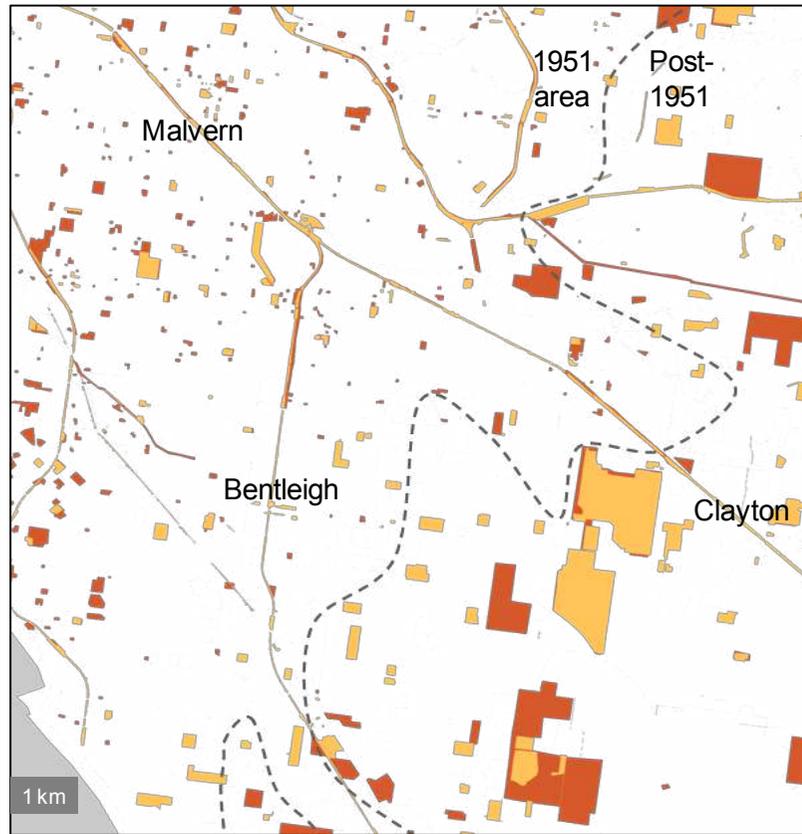
**Figure 28: Urban land use, Melbourne, 1951, 2005 and the urban area built between 1971 and 2005.**

Proportion of urban area



Source: Grattan Institute; based on data from the Department of Planning and Community Development (Vic) (2006).

Figure 29: Land uses that have been likely to change, southeast Melbourne, 1951 – 2005



Commonwealth, Special use and Public use land in:  1951  2005

Source: Grattan Institute; based on data from the Department of Planning and Community Development (Vic) (2006).

### Land use distribution

Not only has there been significant change in land use in Melbourne, but the distribution of different types of land throughout the city has also changed.

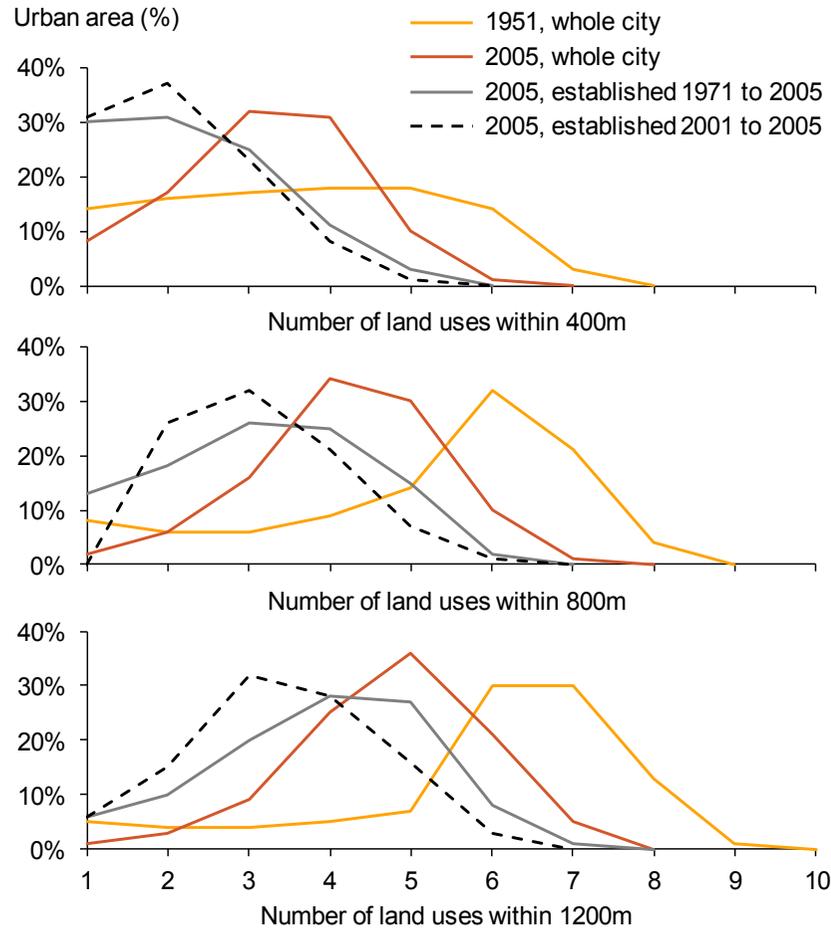
To measure how land use is concentrated, we analysed the variety of land uses within a 400m, 800m and 1200m radius at every point within the 1951 and 2005 cities.<sup>148</sup> We also measured land use concentration for the proportion of the city built between 1971 and 2005, and 2001 and 2005.<sup>149</sup>

Generally, concentration of land has increased – in other words, land use has become more segregated. Figure 30 illustrates this in detail. It shows that in 2005 newer parts of the city (built from 1971 to 2005 and from 2001 to 2005) generally only have one or two land uses nearby. In the city as a whole, however, there are often four or five types of land use nearby (e.g. residential, public use, industrial, and commercial). At all the scales measured, local land use has become much less diverse over time, with a marked drop since 1951. Diversity of land uses has also declined around almost every type of land (see Figure 31).

<sup>148</sup> That is, for every 10m by 10m cell within the 1951 and 2005 cities we counted the number of different land use types within a circular radius of 400m, 800m and 1200m. We used a 'focal statistic', an in-built tool in the ESRI software.

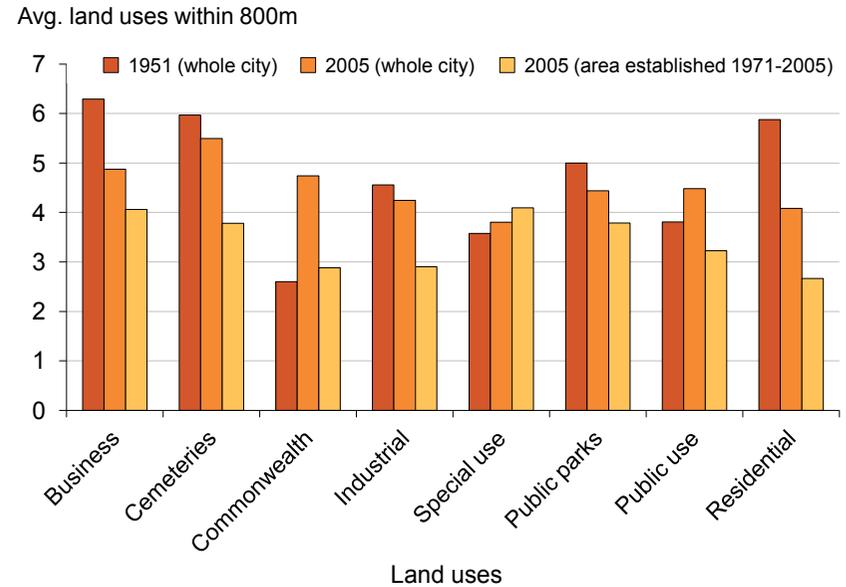
<sup>149</sup> A special data request to the Department of Planning and Community Development (Vic) (2006) let us determine Melbourne's development between 1951 and 2005 by age.

Figure 30: Local land use diversity, Melbourne, 1951 and 2005



Source: Grattan Institute; based on data from the Department of Planning and Community Development (Vic) (2006)

Figure 31: Diversity of land use within 800m, for each land use type, Melbourne, 1951 and 2005



Source: Grattan Institute; based on data from the Department of Planning and Community Development (Vic) (2006).

## Appendix 3 – Rejected recommendations

As discussed in Chapter 1, there is often a shortage of adaptable land in new neighbourhoods. In earlier periods, industrial, Commonwealth-owned and special use land was much more widely distributed. This meant that large pieces of land under single ownership were available in more places for ready redevelopment.

There are few examples of land being deliberately set aside in new suburbs for development in the long-term future. When land has been set aside, it tends to be by accident. For example, in Melbourne there was little development in land between rail corridors until cars became widely adopted.<sup>150</sup> If these wedges had not been developed many decades after the areas next to train lines, middle and inner suburbs would be much more homogenous today.

This report proposes a joint sale option which would allow residents in specific areas to collectively sell their homes if more than 90 per cent agree to the sale. However there are several ways that land could be set aside, or kept under single ownership, to create this kind of adaptability. We assessed five options:

1. land being set aside and held by governments;
2. land being set aside and held by community trusts;
3. interim restrictions to temporary uses;

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<sup>150</sup> This is illustrated in the data used to zone Melbourne by age (see Appendix 2).

4. interim bans on subdivision of specific land parcels; and
5. joint sale option for specific groups of properties with the consent of 90 per cent of owners after an interim period.

Each option comes with different costs, and with a different likelihood of increasing the adaptability of a suburb. There is little evidence about how these different options might work, and different analyses might rate them differently. However, options 2 and 3 have serious disadvantages that make them unattractive in the context of greenfield development. Options 1 and 5 seem to be the most promising, and option 5 (the joint sale option) is lower cost and may be more likely to increase adaptability.<sup>151</sup>

### Option 1: Government sets aside land

Governments can reserve land for future development. The land could be used temporarily, for instance as an open recreational space or to provide government services.

However, governments would typically have to purchase the land, and would then be responsible for maintenance and management. Successive governments may be tempted to sell off land when budgets are tight. There is also a chance that the temporary uses will be preferred by the community. For instance, a space that has been used as a recreation area may be valued by local residents, who could oppose attempts by the government to change it. This option would therefore come with a fairly high

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<sup>151</sup> See below for a discussion of the joint sale option.

degree of risk that change of use either happens prematurely or does not occur at all.

*Cost*                    *High – government purchase and management of land*

*Interim uses*        *Risk of low productivity interim uses*

*Adaptability*        *Risk that change in use happens too soon or not at all*

### **Option 2: Community land trusts set aside land**

Community land trusts could also be formed to set land aside for future development. There are a range of forms these organisations could take.

Greenfield areas usually lack an existing community, and it takes time for them to develop. When land is being allocated for development, it is unclear whether residents will have the capacity or inclination to collectively manage land.

Under community management, land may not be used very productively. All things being equal, housing or commercial activities would be displaced. To provide the same amount of housing or businesses, the size of the city would need to be expanded, with associated infrastructure and environmental costs.

*Cost*                    *High – government purchase of land*

*Interim uses*        *Risk of low-productivity interim uses*

*Adaptability*        *Risk that change in use does not occur*

### **Option 3: Mandating temporary uses**

Governments could mandate that only temporary uses happen in certain areas, for a certain amount of time.

This could stimulate innovation in, for example, temporary, transportable housing. However, it would present risks to the attractiveness and value of the area in the interim period. Temporary uses might be storage, parking, or low-cost rental. To genuinely increase adaptability, land uses would need to be tightly regulated. Either the 'temporary uses' would have to be prescriptively defined, or there would need to be a requirement for land to be returned to an unimproved state after the interim period. This would imply a large administrative and compliance burden both for developers and governments.

The interim period would need to be determined in advance, and may expire before different uses were needed. Something very close to the initial development pattern may be repeated, resulting in no increase in diversity or adaptability.

*Cost*                    *Medium – restriction to lower-value activities would be borne by land-owners and developers*

*Interim uses*        *Risk of low-productivity interim uses, which may also reduce local character and land values*

*Adaptability*        *Risk that redevelopment is premature*

#### Option 4: Ban subdivision on large blocks

Subdivisions of some lots of land could be prohibited for a certain period. This would facilitate redevelopment of these blocks in the future.

This would be relatively easy for governments to legislate. However it could be costly for land-owners. In residential areas, the interim uses of these blocks are likely to be low-value.

As with option 3, the interim period would need to be determined in advance, and may expire before different uses were needed. Something very close to the initial development pattern may be repeated, resulting in no increase in diversity or adaptability.

*Cost*                      *Medium – restriction to lower-value activities would be borne by land-owners and developers*

*Interim uses*            *Risk of low-productivity interim uses, which may also reduce local character and land values*

*Adaptability*          *Risk that redevelopment is premature*

#### Option 5: Joint sale option

A small percentage of land could be designated under a 'joint sale option' for possible redevelopment as an area changes. After 25 years, if 90% of residents in an affected area agreed, the land could be sold. This would prevent beneficial redevelopment being blocked by a very small proportion of residents. After the interim period expired, residents would not necessarily have to take the

first offer that came along, but could wait for offers from several buyers.

An important benefit of this approach is that interim uses would be relatively unchanged. The joint sale option is the only approach that allows high-value homes to be built in the area from the start.

As well as being efficient during the interim period, this option is the least likely to result in redevelopment that replicates initial development patterns. In order to be worth doing, redevelopment would have to be substantially different from what is already built (i.e. representative greenfield properties during first establishment of the suburb).

This option would, however, create uncertainty for land-owners, which would probably result in lower initial sale prices, but the land would still be developed profitably, and would provide the same volume of housing as the land would yield without the joint sale option.

*Cost*                      *Low – the option would only apply to a small minority of homes, and would probably only reduce home prices by a small fraction*

*Interim uses*            *High-value interim uses*

*Adaptability*          *Redevelopment delayed until needs change significantly*

Figure 32: Facilitating changing land uses in new residential areas – costs and risks of potential approaches

Option	Implementation costs (government)	Cost to land-owners / developers	Risk change in use is premature or does not occur	Loss of productivity during interim period	Comments
Government-owned land set aside for future development	High	Medium	High	High	<ul style="list-style-type: none"> <li>Likely pressure to sell land prematurely (e.g. fiscal pressure)</li> <li>Likely community pressure to maintain interim uses (e.g. open space or government services)</li> <li>Probable reduction in prices paid to land-owners/developers</li> </ul>
Community trusts that own land for future development	High	Medium	Medium	High	<ul style="list-style-type: none"> <li>Community may not develop capacity / interest in administering trusts or using land effectively</li> <li>Requires expansion of urban area to provide the same quantity of housing</li> <li>Costs would be borne by government and/or developers</li> </ul>
Restriction to temporary uses for an interim period	Medium	Medium	Medium	Medium	<ul style="list-style-type: none"> <li>Interim uses may be unproductive and may reduce local amenity</li> <li>Demolition or changes of use required after interim period, regardless of commercial returns, raising costs for developers / land owners, as well as enforcement costs for government</li> <li>Interim period may expire before local needs have changed, or when investment in new uses is unavailable</li> </ul>
Interim ban on subdivision of some large lots	Low	High	Medium	Medium	<ul style="list-style-type: none"> <li>Interim uses may be unproductive and may reduce local amenity</li> </ul>
Allow joint sales with 90% agreement after interim period	Low	Low/Medium	Low	Low	<ul style="list-style-type: none"> <li>May lead to decreased initial sale prices in affected areas, but the impact would be lower than for other options – the product and market for the affected areas are not fundamentally changed</li> </ul>

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