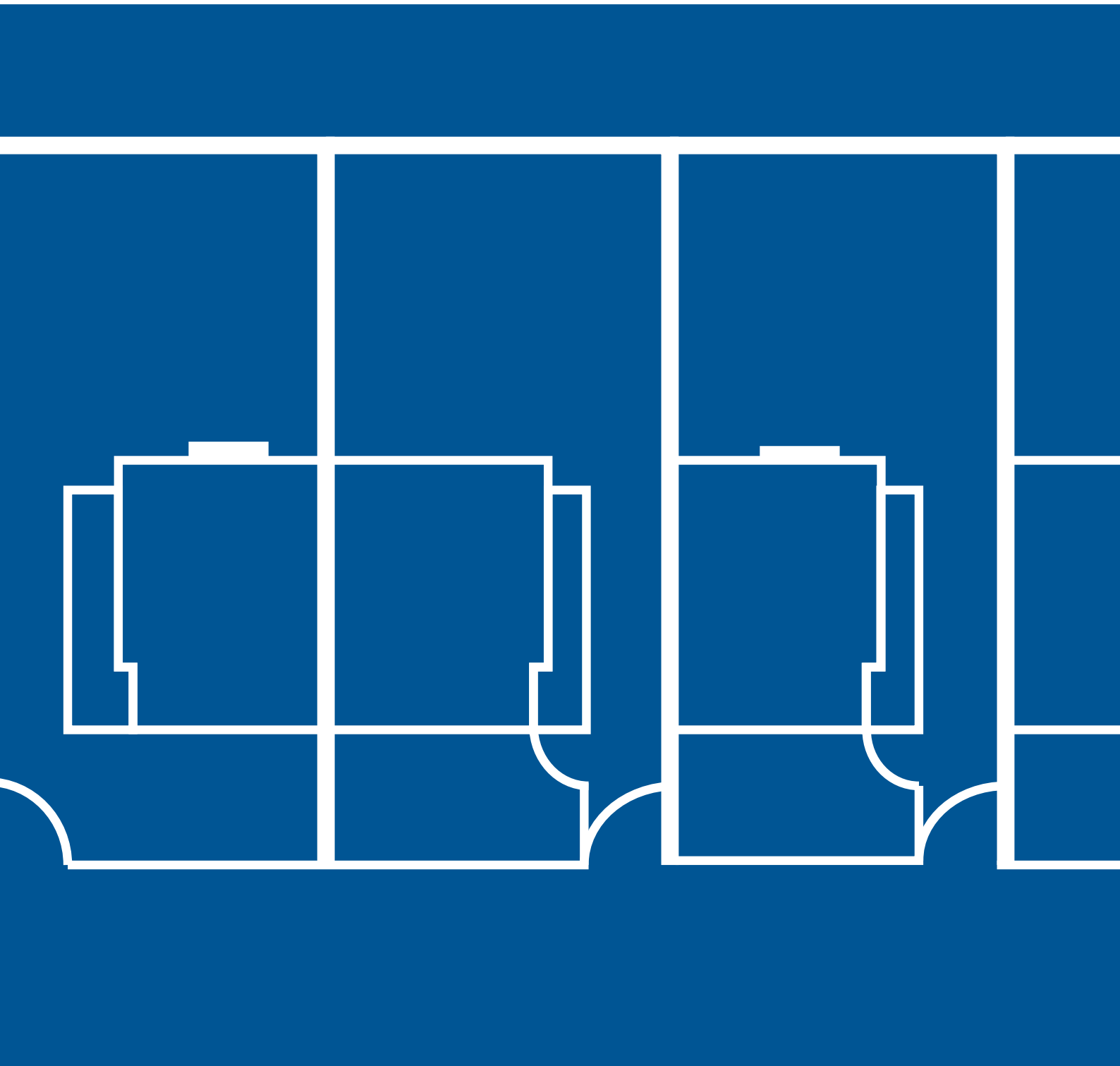


# Understanding the Quality of Housing Design

February 2013





This report has been produced by the City of Melbourne. It has been produced in collaboration with two other supporting papers:

- **Understanding the Social Outcomes of Housing** - produced by SGS Economics & Planning and AHURI, January 2013.
- **Understanding the Property and Economic Drivers of Housing** - produced by SGS Economics & Planning and CBRE, January 2013.

## **Issue 2 - Final report**

### **Understanding the Quality of Housing Design**

**February 2013**

#### **Disclaimer**

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# Key findings

## Why high quality housing is important

High quality housing has a vital role to play in ensuring Melbourne remains one of the most liveable cities in the world. Without a focus on design quality, there is a risk new homes will compromise residents' living experience and not be adaptable or flexible for future needs.

Good housing design goes well beyond what a building looks like and debate around particular architectural styles - it can add social, economic and environmental value and help create neighbourhoods and communities which are robust enough for future challenges and change.

Securing high quality housing is essential to successfully transforming our urban renewal areas and providing over 42,000 new homes by 2031 which meet the daily needs of residents, are fit for purpose in the long term and designed to accommodate the changing needs of occupants throughout their lifetimes.

## A reduced diversity of housing stock

A detailed analysis of housing stock and population in the City of Melbourne (reviewing the period from 2006 to 2012) was carried out to help inform the production of this paper and two other supporting papers on *Understanding the Social Outcomes of Housing* and *Understanding the Property and Economic Drivers of Housing*.

This research explored some key aspects related to the type of housing within the municipality which can be summarised as follows:

- 93 per cent of growth has been in the form of apartments.
- Most of our housing is rental stock - 57 per cent of all households are in rental accommodation.
- There has been an increase in the number of residential dwellings in higher density, taller buildings, particularly in buildings of 30 storeys or more.

- Very few three or four bedroom dwellings are being developed; half of all the residential growth over the last six years has been in the form of one bedroom dwellings.
- The size of dwellings is reducing, with 40 per cent of new dwellings having less than 50m<sup>2</sup> of floor space which is the recommended minimum size of a one bedroom apartment in comparable cities like Sydney, Adelaide and London.
- Additional evidence by Oliver Hume (2010), found that, from 2008 to 2010, the average size of a one bedroom apartment reduced from 52m<sup>2</sup> to 44m<sup>2</sup>. Similarly, the average size of a two bedroom apartment had reduced from 77m<sup>2</sup> to 67m<sup>2</sup>.

## Design issues

A case study analysis was undertaken to evaluate the quality of apartments in the City of Melbourne by assessing housing developments completed in the last six years. This desktop analysis enabled the identification of common design issues to explore further.

Twenty five case studies of housing developments within the City of Melbourne were analysed against 14 set criteria based on international best practice.

The analysis assessed buildings from three to 41 storeys, covering over 3,500 apartments across a range of suburbs. The overall scores for all 25 case studies assessed against the criteria resulted in only 16 per cent of schemes achieving a 'good' score. Just under half the developments scored 'average' and over a third were judged as 'poor'.

A number of common design issues were identified that led to the high proportion of 'poor' or 'average' results (84 per cent of all case studies and 100 per cent of all high rise case studies).

These common issues were:

- Small apartment size.
- Lack of apartment choice.
- Dominance of car parking.
- Poor internal amenity (light, ventilation and privacy).
- Poor building layout.
- Poor apartment layout.
- Limited flexibility and adaptability.
- Poor environmental performance.
- Limited communal space and facilities.
- Lack of storage and utility spaces.

For the purpose of this paper, the design issues have been explored as separate issues in order to help gain a good understanding of each one.

In reality, however, they are closely connected. For example, a poorly designed scheme is likely to contain apartments which are too small to be flexible to changing needs, which have insufficient storage and poor levels of internal amenity. Alternatively, a well designed scheme is likely to contain apartments which are of a good size and layout within a well designed development that offers good levels of internal amenity.

The reasons for why these design issues are occurring can be split between policy influences and market influences, as described below.

## Why this is happening

### Market influences

For reasons such as negative gearing taxation laws and the popularity of Melbourne as a location for foreign investment, the apartment market in central Melbourne has in large part primarily become an investment class or financial commodity rather than a home.

Approximately 85 per cent of apartments in the City of Melbourne are bought by investors. This means that many apartments are being designed and built to meet an investor friendly price point of around \$450,000, resulting in an increase in the proportion of one and two bedroom apartments.

In an environment of increasing construction costs this has been achieved through making apartments smaller. It is harder to achieve a good apartment layout, good levels of internal amenity, flexibility and storage in smaller apartments. When combined with the tight rental market and the high proportion of renters in central Melbourne, the apartments are being rented notwithstanding their size or quality of design.

### Policy influences

A benchmark analysis was undertaken to investigate and compare the planning policies and guidance related to housing design for the City of Melbourne with other national and international cities. The research focused on the issues identified within the case study analysis as described above.

The analysis included Adelaide, Sydney, Brisbane, Singapore, London, New York and Vancouver. These cities were chosen as comparable global cities which are experiencing similar issues to Melbourne in terms of population growth, higher density development and affordable housing.

The research found that Melbourne has the narrowest and least rigorous policy guidance on housing quality when compared to these other cities, where specific and measurable outcomes are often required, including minimum apartment sizes, apartment mix and internal amenity.

The City of Sydney uses State Environmental Planning Policy 65 - Design Quality of Residential Flat Development (SEPP65), which contains principles for

good design and provides guidance for evaluating the merit of design solutions, and the Residential Flat Design Code. The Code provides tools for improving the design of apartments and gives guidance on how the design quality principles provided under SEPP65 can be applied to new developments. According to the Department of Planning and Infrastructure, it is widely accepted that the design quality of residential flat buildings in New South Wales has improved since the introduction of SEPP65 and the Residential Flat Design Code in 2002.

While the Guidelines for Higher Density Development (Department of Planning and Community Development) is used in Victoria, the document focuses more on good practice urban design principles concerned with the interface between the public and private realms and is less specific and measurable on issues regarding internal amenity compared to SEPP65. An adjacent municipality, Moreland City Council, has recently produced a Higher Density Design Code to respond to the gap in planning policy guidance for higher density residential development.

### **How we could respond**

To achieve consistently good quality housing in the City of Melbourne, high quality design needs to be a core value shared by all those involved in delivering housing - architects, developers, investors, government and communities. While this is, therefore, a shared agenda and partnership which should be built up and developed over time, the leadership of government at all levels has an essential role to play in setting market expectations to help achieve good quality housing design.

The paper explores some possible ways the City of Melbourne could help set such expectations. They include developing design standards to help ensure higher quality housing design in the municipality (either as part of the Melbourne Planning Scheme or as a standalone best practice document), developing a Design Review Panel to help assess and improve design quality, and running a Housing Design Awards program to help create greater awareness and recognition of good quality housing design.





# 1 Introduction



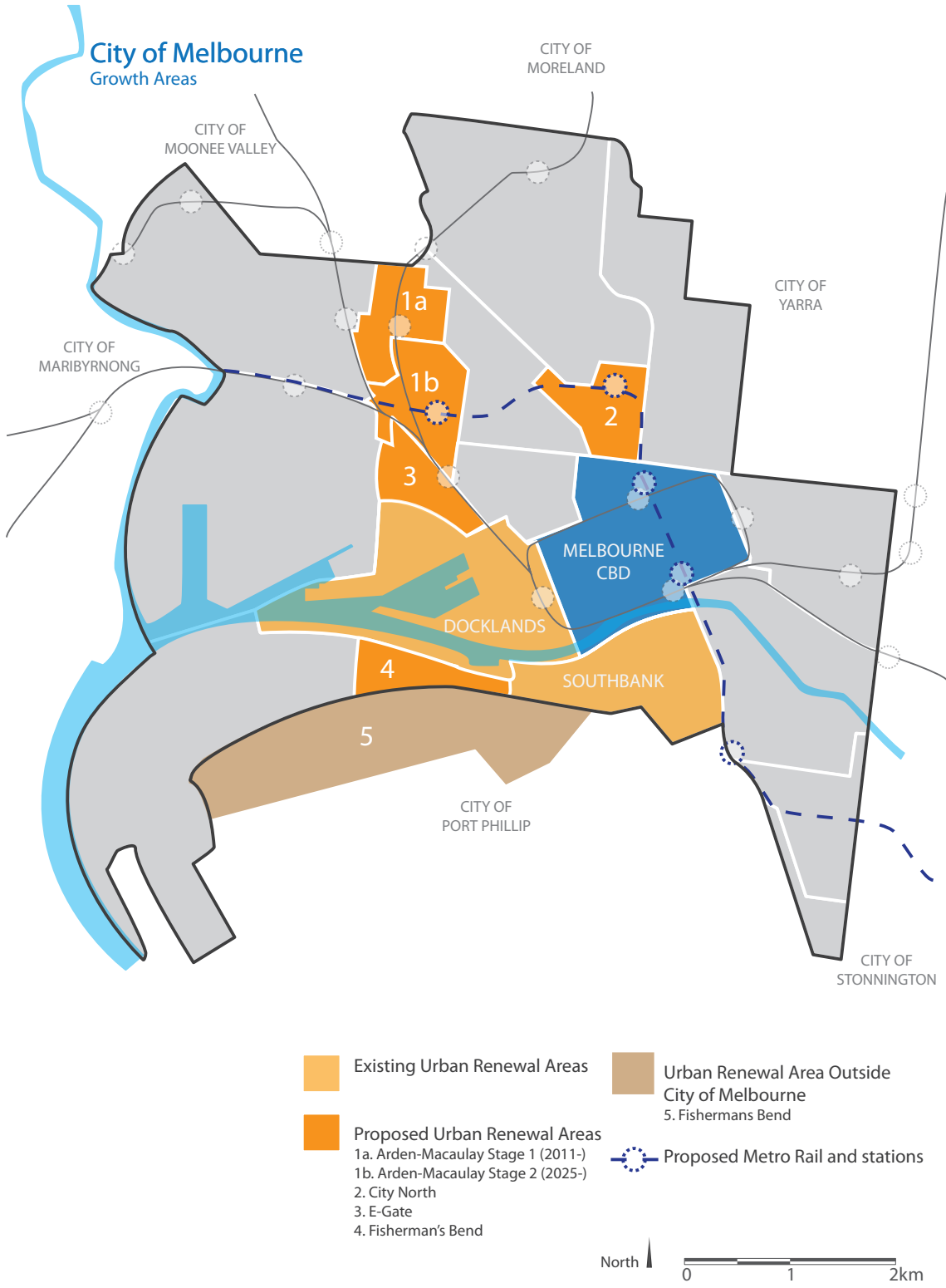


Figure 1.1: Plan showing the existing and proposed urban renewal areas as detailed in Council's Municipal Strategic Statement

# 1 Introduction

## 1.1 Background

Melbourne today is an attractive and liveable place to live and work. It is an international hub for business, retail, education, medicine, arts and industry. As the City of Melbourne attracts more residents, the provision of affordable and high quality housing is essential to ensure our city maintains its high standards of liveability and continues to be welcoming and accessible for people of all walks of life. This is confirmed by Future Melbourne (2009), the community plan for the City of Melbourne, which has a vision to be a bold, inspirational and sustainable city that creates a city for people.

Since the early 1990s, the residential population in the City of Melbourne has significantly increased. The Central City's revival as a place to live as well as work began with the redevelopment of Southbank and innovative programs such as Postcode 3000 which promoted apartment living in the Hoddle grid. In the 2000s, the Central City expanded again with the urban renewal of Docklands, providing high density residential development. The residential population in the City of Melbourne has approximately doubled since 2001 to over 100,000 people today.

The population growth is forecast to continue to over 180,000 residents by 2031, requiring in the order of 45,000 new homes in the municipality. Council's Municipal Strategic Statement recognises that housing growth in the Hoddle grid, Southbank and Docklands will continue and identifies opportunities for future growth in the new urban renewal areas of City North, Arden-Macaulay, E-gate and Fishermans Bend (refer to figure 1.1).

This growth offers a significant opportunity to deliver affordable, diverse and high quality housing. This paper is one of three supporting papers which will inform the development of a Housing Discussion Paper. Two other supporting papers have been produced on Understanding the Social Outcomes of Housing and Understanding the Property and Economic Drivers of Housing. Each supporting paper will investigate the role that the City of Melbourne can have in influencing positive housing outcomes in the municipality.

## 1.2 The importance of high quality housing design

High quality housing design has a vital role to play in ensuring Melbourne remains one of the best and most liveable cities in the world. Without a focus on the design quality of new homes, there is the risk of creating homes where the living experience is compromised or which aren't adaptable or flexible for future needs.

Good housing design goes well beyond what the building looks like and debate around particular architectural styles. It can improve social well being, quality of life and a community's sense of pride, help achieve higher residual values and create more sustainable developments built to last. It can help create neighbourhoods and communities which are robust enough for future challenges.

This is recognised in The Future of Design in the Built Environment, a recent report produced for Design Council CABE in the UK, which states:

***Past failures to achieve good housing design are clearly recognisable – badly-designed places impose costs on their occupiers, their neighbours and society. At a time of scarce resources, design costs are in effect social costs, born by all and requiring careful justification.***

(Design Council CABE, *The Bishop Review – The Future of Design in the Built Environment*, 2012, 6.3, p21).

The identification of new urban renewal areas within the City of Melbourne will transform underutilised central and inner city areas into sustainable living and working environments incorporating medium and higher density development. This is already occurring in the existing urban renewal areas of the Docklands and Southbank. The benefits to this approach are generally well-recognised and understood: helping to create a compact and connected city which supports a diverse range of uses and makes the most efficient use of land; where people live, work and enjoy leisure time within close proximity; and is well integrated with public transport and adaptable to future change.

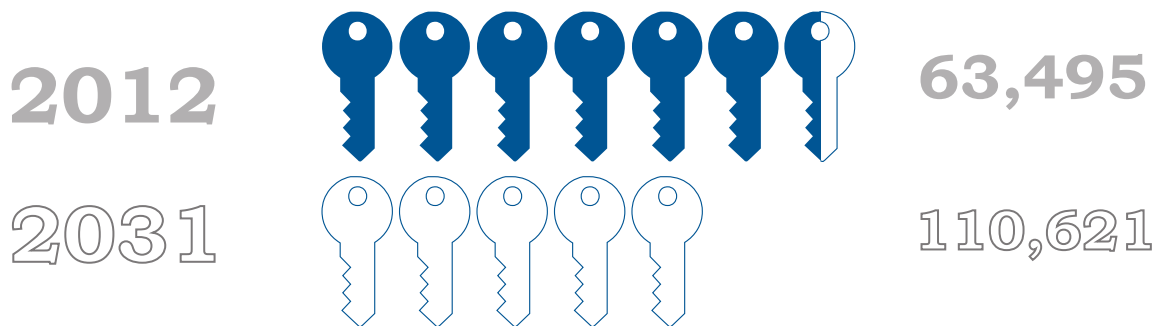
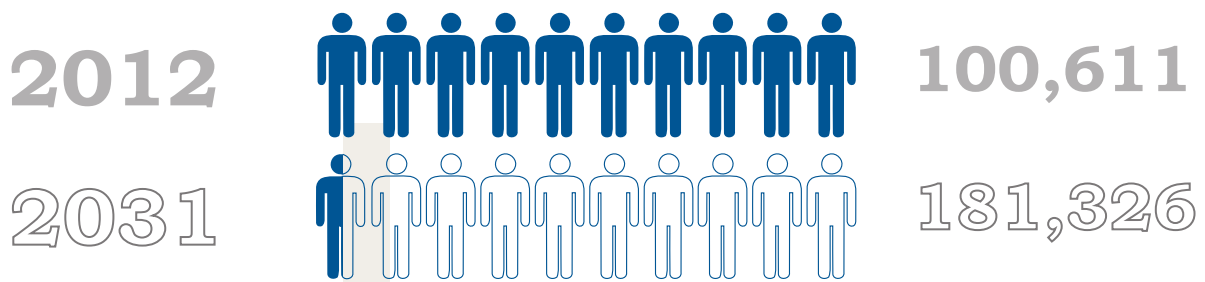


Figure 1.2: Current population of the City of Melbourne and projected population by 2031 (top) and current number of dwellings and project dwellings by 2031 (bottom)  
 Source: City Research, City of Melbourne, 2012

The recent Metropolitan Planning Strategy Discussion Paper Melbourne, Let's talk about the Future recognises that development and urban renewal in an expanded Central City will be at a scale not previously contemplated. The paper states that the demand for new housing will grow faster than the population as the population ages and household sizes get smaller.

The approach towards higher densities, often incorporating apartments rather than standalone houses, means the design of housing is even more crucial in ensuring good levels of amenity, space and choice in a more compact environment, responding to the changing aspirations and future trends of individuals and families.

This is recognised in Section 21.07 of the Municipal Strategic Statement, which states:

***Residential growth must be managed to ensure a good quality of life and amenity for existing and future residents and that high standards of on-site amenity should be provided in all residential developments including good access to sunlight and daylight and privacy.***

The quality of new housing in the City of Melbourne is just as important as the number of new homes built. Housing design is a key element in helping to accommodate successfully the proposed population growth in the City of Melbourne and create a positive legacy of city living for future generations.

## 1.3 Research objectives

The objective of this paper is to understand the quality of housing design in the City of Melbourne. To achieve this objective the following four research questions were investigated:

### *1. What housing do we have and why?*

This involved understanding the quality of housing stock currently provided in the City of Melbourne, identifying any common issues relating to design quality and investigating the impact of planning policy and guidance on housing design.

### *2. What housing do others have?*

This involved comparing the City of Melbourne's planning policies and guidance on housing design to other Australian and international cities and identifying case studies of high quality housing design.

### *3. What housing do we need in the future?:*

This involved exploring the type of housing suitable to meet the future needs and investigating next practice in relation to thinking about housing design for future needs.

### *4. How we get it?*

This involved exploring different options to help facilitate good quality well designed housing in the City of Melbourne.

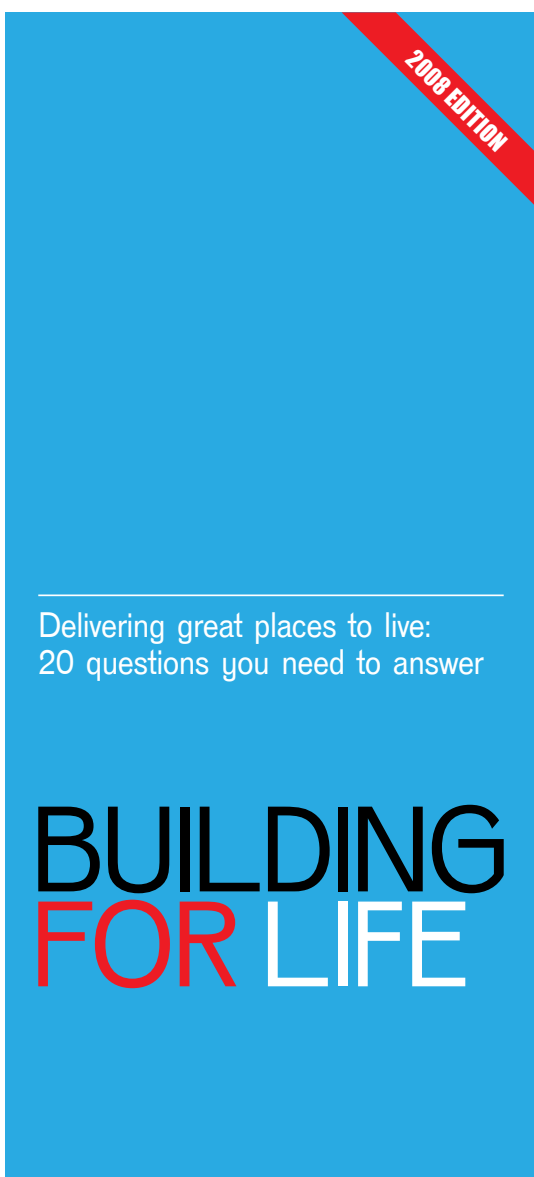


Figure 1.3: Front covers of CABE's/Design Council CABE's Building for Life (2008 version on the left, 2012 version on the right) - the UK's industry standard for over 10 years to assess well designed homes. Building for Life is used in Section 2 of this paper.

Source: CABE, 2008/Design Council CABE, 2012

## 1.4 Methodology and structure

In order to respond to this objective, the paper is based around the concept of 'current practice', 'best practice' and 'next practice'. Current practice refers to what is happening now, in terms of housing developments which are currently being approved and built and the planning policies and guidance which are currently used to help inform and assess housing design. Best practice refers to good examples of residential developments or related policies, guidance and initiatives. Next practice relates to thinking about housing for future needs, responding to changing demographics, climate change and construction techniques and the impact on how we design for new housing.

The paper is structured as follows:

### Section 1 - Introduction

This section provides a background to the work, highlights the importance of housing design and explains the objective and methodology of the paper.

### Section 2 - Current Practice: identifying what we have

This section aims to identify what we have in the City of Melbourne with regard to the quality of housing design. This is achieved by:

- Highlighting the current stock and trends in the City of Melbourne; and
- Analysing the quality of housing stock in the municipality - this is achieved by assessing 25 case studies of housing developments within the City of Melbourne and identifying any common issues regarding their design quality.

### Section 3 - Current Practice: understanding what we have

This section attempts to understand the issues raised in Section 2 and uses the following structure to help understand each issue:

- What is the evidence? This including a summary of the findings from the case study analysis.
- What are the key considerations?
- Why is this happening - including the policy influences and market influences?
- What is the policy approach of other cities? This is achieved through a benchmarking analysis against other selected Australian Capital Cities and international cities.
- How could the City of Melbourne respond to the issue?

### Section 4 - Best and Next Practice

This section provides a range of good examples of residential developments in Australia and internationally and starts to think about future housing design for changing needs.

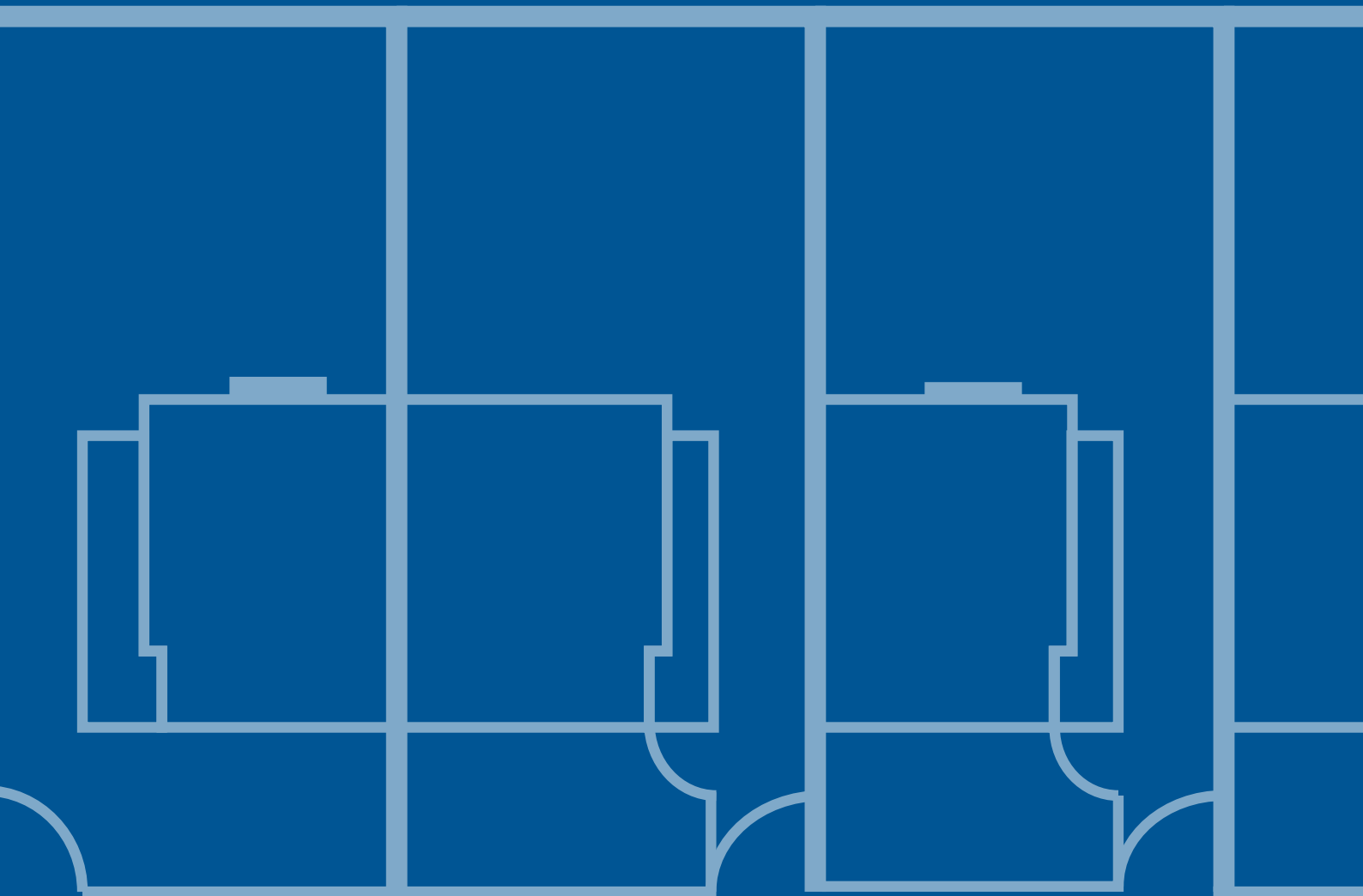
### Section 5 - Summary

The final section of the paper provides an overall conclusion, discusses potential options for the City of Melbourne to facilitate good design and identifies any further information and research which may be required.





## 2 Current practice: identifying what we have



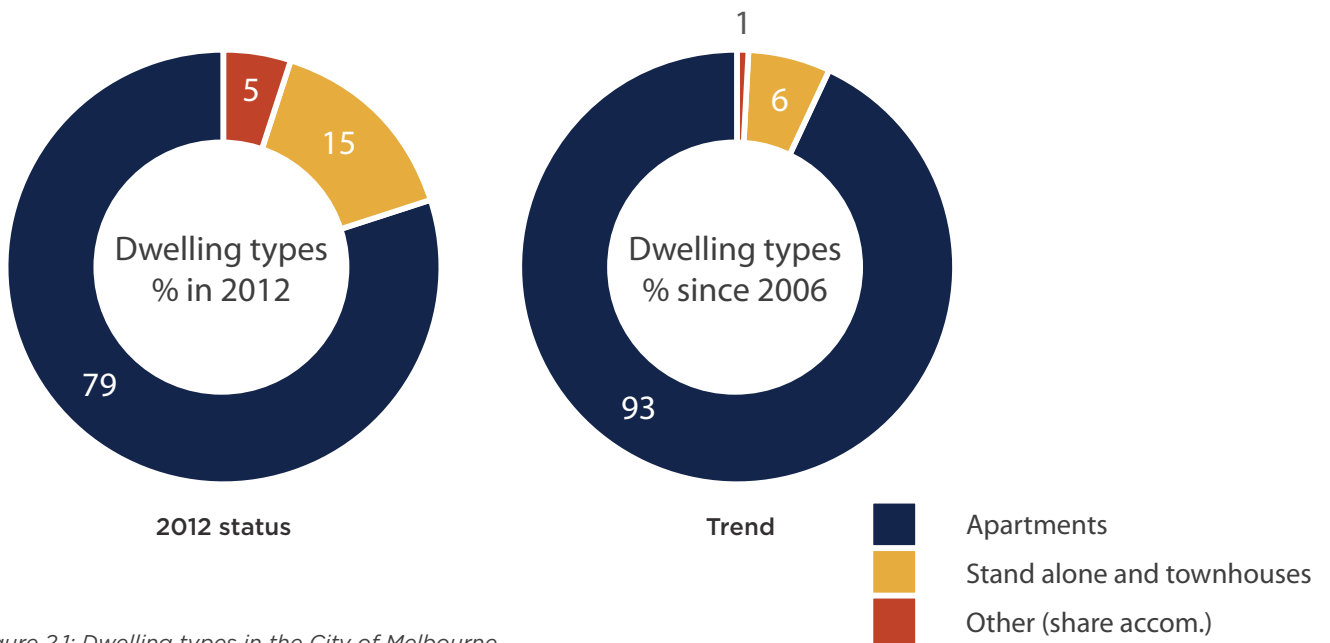


Figure 2.1: Dwelling types in the City of Melbourne  
 Source: City Research, City of Melbourne, 2012

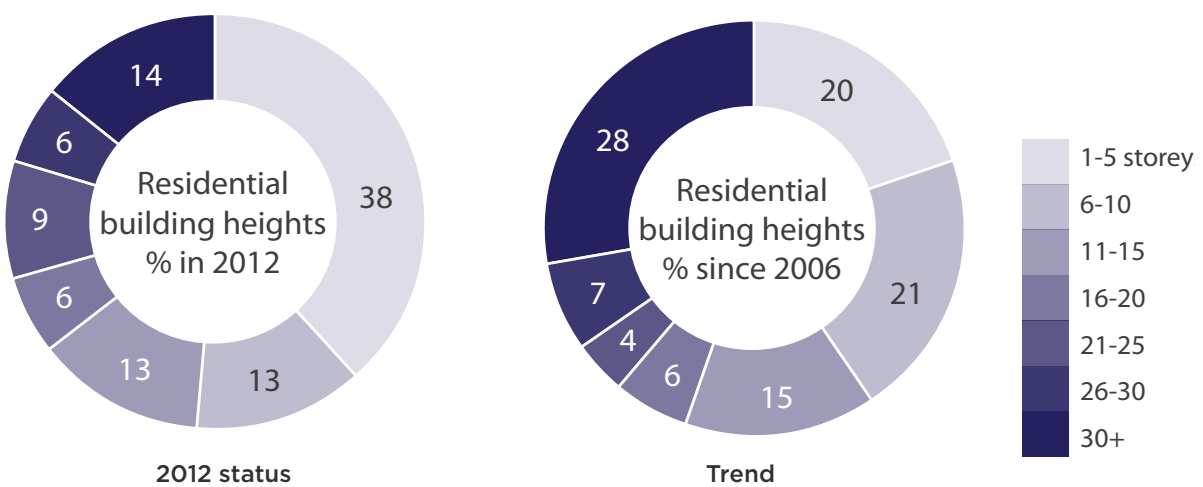


Figure 2.2: Residential building heights in the City of Melbourne  
 Source: City Research, City of Melbourne, 2012

## 2 Current practice: identifying what we have

### 2.1 Housing stock

In order to understand issues around housing and population, the City of Melbourne's City Research team undertook a detailed analysis of housing stock and population within the municipality to help inform the supporting housing papers.

This research, from 2006 to 2012, covered some key aspects related to the quality of housing design within the municipality which can be summarised as follows:

- 93 per cent of growth is in the form of apartments.
- Increase in higher density, taller buildings, particularly the number of 30+ storey residential buildings.
- Very few three or four bedroom units are being developed; a greater number of one bedroom units are being delivered.
- Dwelling size is shrinking, with 40 per cent of new dwellings having less than 50m<sup>2</sup> of floor space.

The research also highlighted that since 2006 the proportion of individuals aging in place has increased. The turnover of residents leaving the City of Melbourne, however, is still significant. In 2006, 76 per cent of the population did not live here five years ago. This has decreased to 70 per cent in 2011.

The following outlines the recent movement patterns of the current population:

- 37 per cent of City of Melbourne residents from 2006 have stayed to 2011.
- 26 per cent of City of Melbourne residents from 2006 have moved to other local government area in Victoria by 2011.
- 5 per cent of City of Melbourne residents from 2006 have moved interstate by 2011.
- 31 per cent of City of Melbourne residents from 2006 have not responded to the 2011 census (likely to mean they have moved overseas).

One of the major reasons for the high turnover rate is likely to be the high student population in the City of Melbourne. The high turnover, however, may also relate to the available housing stock and choice in the municipality. In particular trends identified above in relation to shrinking dwelling sizes and the fact that very few larger apartments are being built.

Furthermore, the research highlighted that just over two thirds of all dwellings in the City of Melbourne are not held by owner occupiers. This could have an impact on the quality of design which is focussed for investors and renters rather than home owners who may require greater choice, space, adaptability and flexibility in the long term. Further information on this research can be found in Section 3.

This could also influence the number of households with children. In 2012, 17 per cent of all households in the City of Melbourne included children, however, the trend since 2001 has been that only 13 per cent of new households included children. The research also highlighted that there are very few dwellings in the municipality that would be affordable to the lowest income quartile of households. This issue is explored further in the other two supporting papers, *Understanding the Social Outcomes of Housing* and *Understanding the Property and Economic Drivers of Housing*.

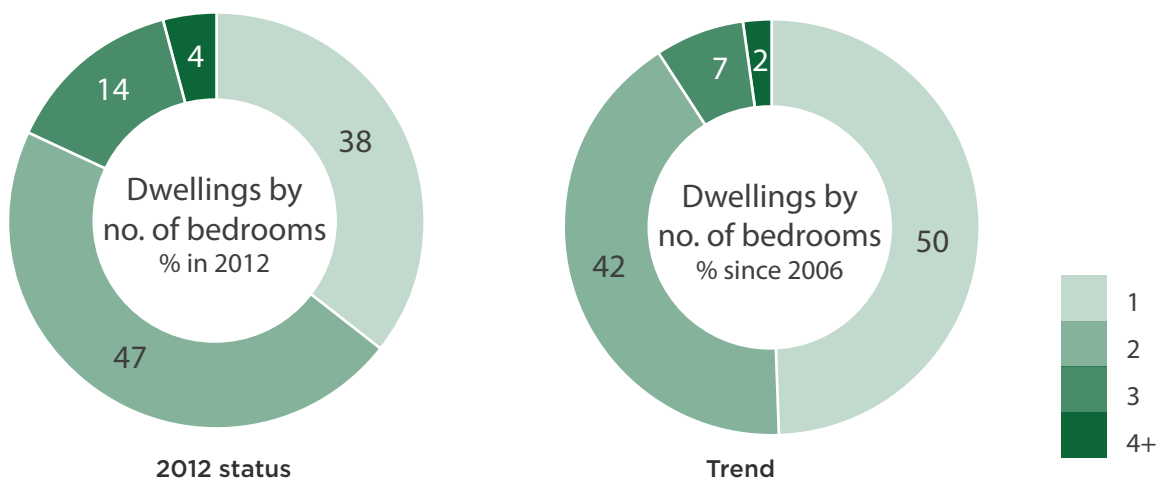


Figure 2.3: Dwelling types by number of bedrooms in the City of Melbourne  
 Source: City Research, City of Melbourne, 2012

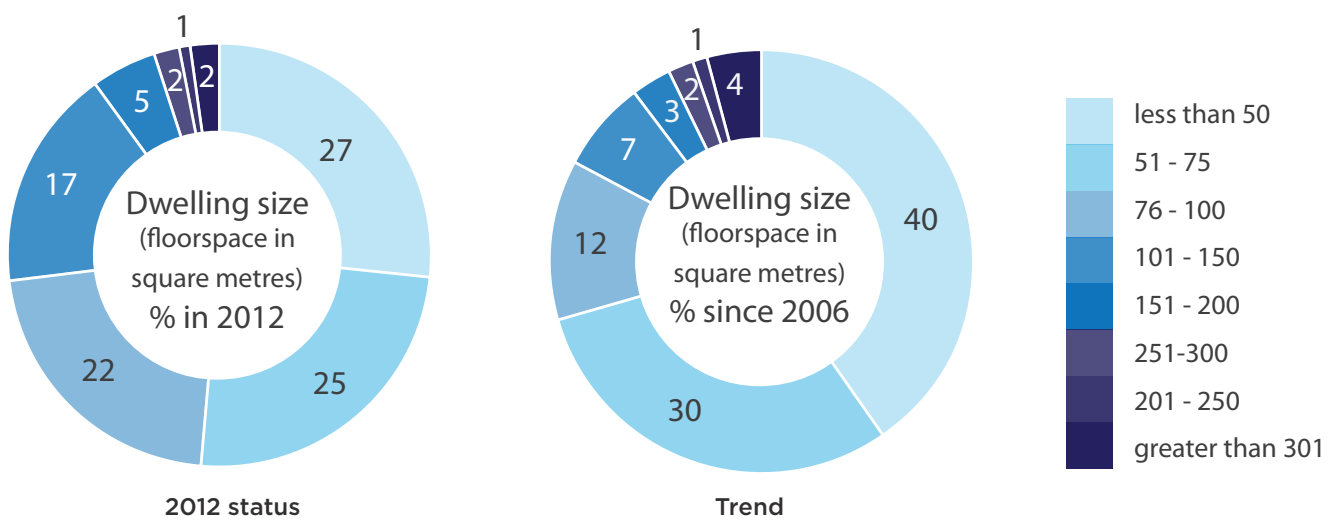


Figure 2.4: Dwelling size (floorspace in square metres) in the City of Melbourne  
 Source: City Research, City of Melbourne, 2012

## 2.2 Housing quality

A case study analysis was undertaken to evaluate the quality of housing in the City of Melbourne by assessing built housing developments and identifying any common design issues to explore further. There are no established and industry accepted methods for assessing housing quality in Australia. Research on established international methods for assessing the quality of housing design led to the use of the Design Council CABA's *Building for Life*. This has been the UK's industry standard, endorsed by Government, for well designed homes and neighbourhoods for over 10 years.

Building for Life is used at all stages of the development process - including during pre-application discussions and to assess the quality of proposed and completed developments. *Building for Life 12*, released in September 2012 to replace *Building for Life (2008)*, uses 12 criteria which reflect what new housing developments should be: attractive, functional and sustainable places.

The criteria used for *Building for Life* is based on a recognised need to build more homes, better homes and to involve local communities in planning. These goals are equally applicable in the City of Melbourne. The criteria, however, were modified for the task to ensure they were suited to the context of the City of Melbourne. Two of the *Building for Life 12* criteria are more applicable to larger suburban sites and were removed. Four additional criteria were added which related to environmental performance and the design of the home.

The 14 criteria were split into the following three sections:

- Section 1: Integrating into the Neighbourhood (four criteria)
- Section 2: Creating a Place (three criteria)
- Section 3: Streets and Home (seven criteria)

The case studies were chosen based on recent trends of dwelling stock in the City of Melbourne. Only housing developments containing apartments were considered as they accounted for 93 per cent of all housing development in the City of Melbourne since 2006. To link the case studies to recent trends, to attempt to gain a good geographical coverage of the municipality and to analyse a wide range of apartment types, twenty five case studies were chosen objectively based on their height from a list of approved and built (or being built) developments from the past five years.

The height categories used by City Research (see figure 2.2) were simplified into three categories of low rise, medium rise and high rise. The number of case studies in each height category related to the trend since 2006. For example, 36 per cent of case studies analysed housing developments of six to 15 storeys as they have accounted for 36 per cent of residential development since 2006.

The number of case studies in each category was therefore as follows:

- Low rise (5 storeys or less): 5 case studies
- Medium rise (6-15 storeys): 9 case studies
- High rise (16 or more storeys): 11 case studies

The analysis assessed buildings from three to 41 storeys, covering 3,670 apartments across a range of suburbs. This included 558 student dwellings. The assessment included approximately 30 per cent of all apartments constructed since 2006 in the City of Melbourne - the equivalent to the total number of dwellings in East Melbourne or South Yarra.

## Section 1 - Integrating into the Neighbourhood

### 1 Connections

Does the scheme integrate into its surroundings by reinforcing existing connections and creating new ones; whilst also respecting existing buildings and land uses along the boundaries of the development site and how/where do all users enter/exit the development and is this well designed?

### 2 Facilities and services

Does the development provide, or is it close to, public community facilities, such as shops, schools, workplaces, parks, play areas, pubs or cafes?

### 3 Public transport/cycle parking

Does the scheme have good access to public transport and incorporate sufficient cycle parking to help reduce car dependency?

### 4 Meeting local housing requirements

Does the development have a mix of housing types and tenures that suit local requirements?

## Section 2 - Creating a Place

### 5 Character

Does the scheme create a place with a locally inspired or otherwise distinctive character?

### 6 Working with the site and its context

Does the scheme take advantage of existing topography, landscape features, wildlife habitats, existing buildings, site orientation and microclimates?

### 7 Creating well defined streets and spaces

Are buildings designed and positioned with landscaping to define and enhance streets and spaces and are buildings designed to turn street corners well?

## Section 3 - Streets and Home

### 8 Car parking

Is resident parking well designed and integrated so that it does not dominate the street?

### 9 Public and private spaces

Will public and private spaces be clearly defined and designed to be attractive, well managed and safe?

### 10 Creating well defined streets and spaces

Is there adequate external storage space for bins and recycling (in addition to that for cycles and vehicles) and is this well designed and integral to the overall development? Is it easily accessible and safe? Is there adequate external storage space for each apartment?

### 11 Design and Construction

Has the scheme made use of advances in construction or technology that enhance its performance, quality and sustainability?

### 12 Size

Do the majority of apartments meet (at least) the best practice minimum space standards for apartments as found in the London Plan? OR for student housing schemes, does it accord with the space requirements as stated in the Melbourne Planning Scheme?

### 13 Internal amenity

Does the scheme incorporate good standards of amenity for new and existing residents, in terms of daylight, sunlight and privacy?

### 14 Flexibility, adaptability, accessibility

Does the scheme incorporate flexible and adaptable measures for future changing needs?

Figure 2.5: Criteria for the case study analysis

Source: adapted for the City of Melbourne from *Building for Life 12*, Design Council CABE, UK

The analysis was undertaken through a desktop assessment of approved planning drawings and GIS data. The housing design quality assessment was based on the selected criteria and not whether the developments were compliant with the Melbourne Planning Scheme and/or the Building Code of Australia.

Each criterion was scored as 1, 0.5 or 0 with the scoring based on the following explanations:

- 1 - implies the criteria has been successfully met
- 0.5 - characteristics of the scheme make full compliance with the criteria impossible, or that further thought should have been given to improve the design
- 0 - fails to respond successfully to the criteria and should have been reconsidered

Scores were compiled for each section (Integrating into the Neighbourhood, Creating a Place and Streets and Home) which led to an overall assessment expressed as a mark out of 14 and graded as:

- Good: 10-14
- Average: 5-9
- Poor: 0-4

The case studies serve as a method of identifying and exploring emerging issues relating to the quality of housing design in the City of Melbourne.

## Results

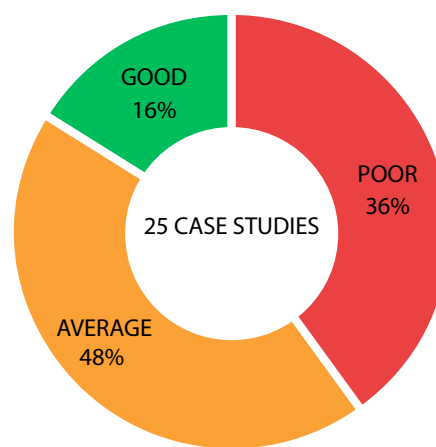


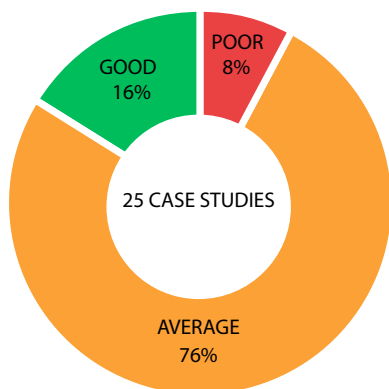
Figure 2.6: Overall results of the case study analysis  
Source: Strategic Planning and Urban Design, City of Melbourne, 2012

Only 16 per cent of schemes were assessed as 'good' i.e. achieving a score of 10 or more, as shown in figure 2.6 above. Just under half of the schemes were classed as 'average' and a little over a third were classed as 'poor' i.e. scoring 4 or less against the criteria.

### Results by section (see figure 2.7 below)

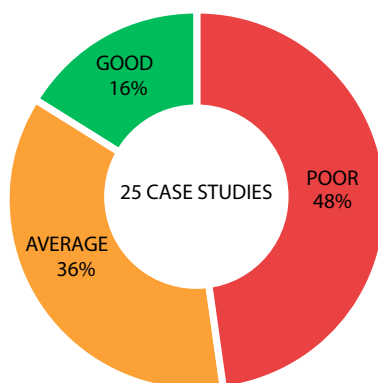
The percentage of developments assessed as 'poor' for each section of the criteria increased as the emphasis moved from the neighbourhood to the street and the home. Whereas only 8 per cent of schemes were assessed as 'poor' in the 'Integrating into the Neighbourhood' section (a likely indication of the good range of facilities, services and public transport found within the municipality, good levels of ground floor activation of the developments and the good levels of bicycle parking provided), nearly half of developments were assessed as 'poor' for the 'Creating a Place' section, and nearly two thirds were assessed as 'poor' in the 'Streets and Home' section. Sixteen per cent of developments were assessed as good for each category, a likely indication of those developments which scored 'good' overall.

#### Section 1: Integrating into the Neighbourhood



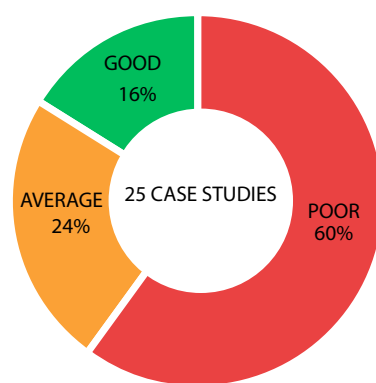
Good - 3-4  
Average - 1.5-2.5  
Poor - 0-1

#### Section 2: Creating a Place



Good - 2.5-3  
Average - 1-2  
Poor - 0-0.5

#### Section 3: Streets and Home



Good - 5-7  
Average - 3-3.5  
Poor - 0-2.5

Figure 2.7: Case study results for each section of the criteria

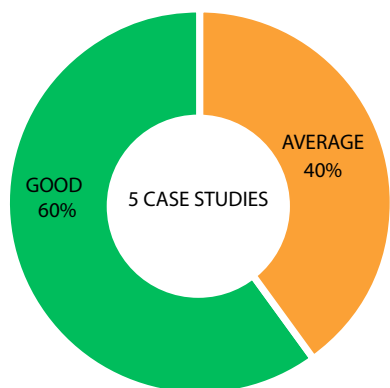
Source: Strategic Planning and Urban Design, City of Melbourne, 2012



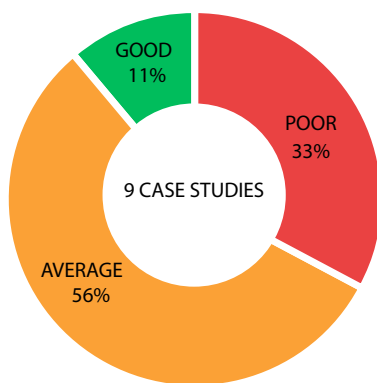
### Results by height category (see figure 2.8 below)

The largest proportion of developments assessed as 'good' were within the low rise category, where over half of the developments scored 10 or more and none were assessed as 'poor'. Only 11 per cent of developments were assessed as 'good' in the medium rise category, with over half assessed as 'average' and over a third as 'poor'. No developments were assessed as 'good' in the high rise category, which comprised of just under half assessed as 'average' and just over half assessed as 'poor'.

**Low rise:**  
5 storeys or less



**Medium rise:**  
6-15 storeys



**High rise:**  
16 or more storeys

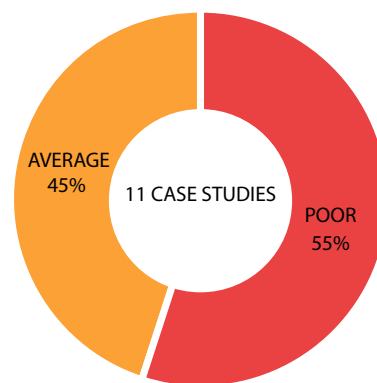


Figure 2.8: Case study results for each height category  
Source: Strategic Planning and Urban Design, City of Melbourne, 2012



### 3 Current practice: understanding what we have





# 3 Current practice: understanding what we have

## 3.1 Introduction

### Design issues

A number of common design issues were identified that led to the high proportion of 'poor' or 'average' results (84 per cent of all case studies and 100 per cent of all high rise case studies).

These common issues were:

1. Small apartment sizes
2. Lack of apartment choice
3. Dominance of car parking
4. Amenity:
  - (a) Poor light
  - (b) Poor natural ventilation
  - (c) Visual privacy
5. Poor building layout
6. Poor apartment layout
7. Limited flexibility and adaptability
8. Poor environmental performance
9. Limited communal space and facilities
10. Lack of storage and utility spaces

These issues are explored below. A current issue related to the internal amenity of apartments, but not possible to be identified through the desktop case study analysis, is that of unacceptable noise. This issue will be explored further in the Housing Discussion Paper.

### Comparator cities benchmark analysis

A benchmark analysis was undertaken to investigate and compare the planning policies and guidance related to housing design for the City of Melbourne with other national and international cities. The research focused on the issues identified within the case study analysis as described above. The analysis included Adelaide, Sydney, Brisbane, Singapore, London, New York and Vancouver. These cities were chosen as comparable global cities which are experiencing similar issues to Melbourne regarding population growth, higher density development and affordable housing. These same cities are also explored within the other two supporting papers *Understanding the Social Outcomes of Housing* and *Understanding the Property and Economic Drivers of Housing*.

The following documents for each city were used in the analysis:

#### Melbourne

- Guidelines for Higher Density Residential Development (Victorian Government Department of Sustainability and Environment, 2004)
- Melbourne Planning Scheme, City of Melbourne, 2012

#### Adelaide

- Adelaide Development Plan

#### Brisbane

- Brisbane City Plan, Brisbane City Council, 2000 (specifically Chapter 5, Residential Design - High Density Code)

#### Sydney

- State Environmental Planning Policy No.65 (SEPP65) - Residential Flat Design Code
- Local Environmental Plan, City of Sydney, 2012
- Central City Development Control Plan (DCP) 1996 (Supports the Local Environment Plan 2012)

## London

- The London Plan, Greater London Authority, 2011
- Housing - Supplementary Planning Guidance, Greater London Authority, 2012
- London Housing Design Guide, Greater London Authority, 2012

## New York

- PlaNYC, New York City Planning Commission
- Article II: Residence District Regulations, Chapter 8 - The Quality Housing Program, New York Department of Housing Preservation and Development

## Vancouver

- Housing and Homelessness Strategy, 2012-2021, Vancouver City Council
- Zoning & Development Bylaw 3575, RM District Schedules (Multiple Dwelling), Vancouver City Council, 2012

## Singapore

- Singapore Concept Plan (2001), Urban Redevelopment Authority
- Singapore Masterplan (2008), Urban Redevelopment Authority
- Space standards, Housing Development Board
- Industry Guide of Good Practices, Urban Redevelopment Authority

It is recognised that differences in governance and legislative structures and population, along with different political, social, cultural and economic factors, can mean that findings from the benchmark analysis, particularly regarding the international cities, may not be directly transferable to the context of the City of Melbourne.

By exploring the approaches developed within these cities, however, it is possible to identify and understand a range of different approaches and policies related to housing design quality that could be further explore and developed.

The findings from the comparator cities are discussed within the relevant issue as explored below in the following sub-sections.

## 3.2 Small apartment sizes

Apartment size refers to the amount of internal floor space available for residents to live in, and the external floor space provided for private open space. The total internal and external floor area is measured in square metres (m<sup>2</sup>). Apartment size impacts the use of a dwelling and its long term adaptability to suit growing families or new owners and tenants of all tenures. It determines the amount of space available for activities within the home. Small apartments generally do not support multiple functions to occur simultaneously as they do not incorporate adequate or separate places to cook, study, socialise, eat, play and recreate while allowing enough space for circulation and storage.

### What is the evidence?

In the City of Melbourne, there has been a significant shift towards smaller sized apartments over the last six years (*Dwelling Stock and Diversity in the City*, City Research, 2012). In 2012, 27 per cent of all residential types in the City of Melbourne have a floorspace of 50m<sup>2</sup> less, 25 per cent have a floorspace between 50m<sup>2</sup> and 75m<sup>2</sup> and 22 per cent have a floorspace of 75m<sup>2</sup> to 100m<sup>2</sup>. Since 2006, however, there has been a growth in the number of units with a floorspace of 50m<sup>2</sup> or less, accounting for 40 per cent of all dwellings, whereas only 12 per cent have a floorspace of between 75m<sup>2</sup> and 100m<sup>2</sup> (see figure 2.4).

There has been a slight increase in the number of units of between 50m<sup>2</sup> and 75m<sup>2</sup>, accounting for 30 per cent of all new dwellings since 2006. The average size of a two bedroom apartment in Melbourne, however, has decreased by 10m<sup>2</sup> from 2008-2010 and a one bedroom apartment by 8m<sup>2</sup> (research by Oliver Hume, 2010). This is reducing the functionality and adaptability of housing.

### Summary of case study findings

- The majority of 1 or 2 bedroom apartments within 40 per cent of the case studies analysed contained apartments which are smaller than the minimum space standards contained in the London Plan (and subsequently the space standards for Sydney and Adelaide).
- There was a limited diversity of apartment sizes within a building
- Most of the apartments have some element of private open space (terraces, balconies and courtyards), though many balconies were small and narrow and incorporated air conditioning units, further reducing the amount of usable space.

### What are the key considerations?

- Apartments which are too small may not be adaptable and flexible over time for changing circumstances (for example household composition or disabled people) or a wide range of residents (for example, residents on lower incomes generally spend more time in their home than those on higher incomes).
- Apartments which are too small may not be able to accommodate basic furniture, sufficient circulation and storage space.
- Apartments which are too small generally do not support multiple functions to occur simultaneously.
- Apartment size directly impacts the cost and thereby affordability of the unit, and may impact on living costs associated with heating, cooling and lighting.

## Why is this happening?

### Market influences

For reasons such as negative gearing taxation laws and the popularity of Melbourne as a location for foreign investment, the apartment market in central Melbourne has in large part primarily become an investment class or financial commodity rather than a home. Approximately 85 per cent of apartments in the City of Melbourne are bought by investors. This means that many apartments are being designed and built to meet an investor friendly price point of around \$450,000. In an environment of increasing construction costs this has been achieved through making apartments smaller. When combined with the tight rental market and the high proportion of renters in central Melbourne, the apartments are being rented notwithstanding their size or quality of design.

With the high risks involved in apartment construction and sales, both developers and particularly financiers seek to lower the risks by developing apartment products that have a proven track record of being sold and sold quickly. Given the successful sales record of such investor friendly, smaller apartments, it is easier for a developer to obtain finance for these developments as opposed to developments that are testing new apartment products.

### Policy influences

The Guidelines for Higher Density Development by the Victorian Government do not contain minimum apartment sizes. Objective 5.1 states developments should provide a range of dwelling sizes and types in higher density residential developments

The Melbourne Planning Scheme does not include minimum apartment sizes. With regard to student housing, it does contain a suggested minimum floor space of 10.8m<sup>2</sup> for a basic single student bedroom.

## Policy approach of other cities

### City of Adelaide

The *Adelaide Development Plan* includes provisions for medium to high scale residential/serviced apartments. *Development Control Principle 71 (under Objective 21)* states that medium to high scale residential development and serviced apartments should provide a high quality living environment by ensuring minimum floor areas:

- Studio (where there is no separate bedroom): 35m<sup>2</sup>
- 1 bedroom apartment: 50m<sup>2</sup>
- 2 bedroom apartment: 65m<sup>2</sup>
- 3+ bedroom apartment: 80m<sup>2</sup>, plus an additional 15m<sup>2</sup> for every additional bedroom over 3 bedrooms.

### City of Sydney

The *Residential Flat Design Code* (related to *SEPP65*) includes stated 'Objectives', 'Better Design Practice' and 'Rules of Thumb' to guide apartment sizes. Part 3, *Building Configuration, Apartment Layout* provides a *Rule of Thumb* for minimum apartment sizes as follows:

- 1 bedroom apartment: 50m<sup>2</sup>
- 2 bedroom apartment: 70m<sup>2</sup>
- 3 bedroom apartment: 95m<sup>2</sup>

Provisions are also provided in the *Central City DCP*. Clause 6.1.34 states that all units within residential and serviced apartment developments are to provide the following minimum unit sizes:

- Studio apartments: 40m<sup>2</sup>
- 1 bedroom apartments: 55m<sup>2</sup>
- 2 bedroom apartments: 80m<sup>2</sup>
- 3+ bedroom apartments: 100m<sup>2</sup>



## London

The *London Plan and Housing Supplementary Planning Guidance* (Greater London Authority) contains minimum size standards related to the declared level of occupancy, to ensure that all new homes are fit for purpose and offer the potential to be occupied over time by households of all tenures. The minimum size standards are:

- Studio/1 bedroom for 1 person: 37m<sup>2</sup>
- 1 bedroom apartment for 2 people: 50m<sup>2</sup>
- 2 bedroom apartment for 3 people: 61m<sup>2</sup>
- 2 bedroom apartment for 4 people: 70m<sup>2</sup>
- 3 bedroom apartment for 4 people: 74m<sup>2</sup>
- 3 bedroom apartment for 5 people: 86m<sup>2</sup>

The London Plan also incorporates baseline standards (which have to be achieved) and good practice standards with regard to circulation space, outdoor private space, bedroom sizes and storage. A double or two bedroom, for example, should be 12m<sup>2</sup> to enable either a double bed or two single beds along with other required furniture. Plans of apartments have to demonstrate that they will accommodate the furniture, access and activity space requirements relating to the declared level of occupancy.

## Singapore

In Singapore, 82 per cent of Singaporeans live in Housing Development Board (HDB) flats. The HDB has the following minimum space standards:

- Studio for 1-2 people, designed for elderly residents: 35-45m<sup>2</sup>
- 1 bedroom apartment: 45m<sup>2</sup>
- 2 bedroom apartment: 60-65m<sup>2</sup>
- 3 bedroom apartment: 90m<sup>2</sup> - The HDB states that the apartment is available in various layouts and ideal for a young couple or a couple of with young children, who are starting out and owning their first home

- 4 bedroom apartment: 110m<sup>2</sup>
- Executive flat: 130m<sup>2</sup>

## New York and Vancouver

New York and Vancouver have a minimum apartment size of 37m<sup>2</sup>. This is reflective of the high proportion of larger, family sized accommodation available in these cities and the zoning requirement for family sized apartments in particular areas in Vancouver.

### How could the City of Melbourne respond to the issue?

- Undertake user surveys - there is a lack of evidence as to whether size is a problem by residents. For example, is it a key reason that people move out of the City of Melbourne?
- Introduce minimum apartment sizes - either as a policy in the Melbourne Planning Scheme, a design guideline document incorporated within the Melbourne Planning Scheme or in a best practice design guidelines document.
- Introduce a Design Review Panel to provide expert peer review on development proposals (including at early pre-application stages).

### 3.3 Lack of apartment choice

Apartment diversity provides a choice to residents with respect to:

- the number of bedrooms – (studio, one bedroom, two bedroom, three bedroom, four bedroom, five bedroom).
- housing tenure – rental, owner-occupier, supported/social housing (owned and managed by housing associations), public housing (government owned and managed housing), serviced apartments.
- housing affordability.
- the level of accessibility and inclusion for people of all abilities.

A diversity of apartments provides the potential to foster a community which is inclusive of people of different lifestyles and housing needs. Facilitating housing choice enables the opportunity for people to live in their community even if their lifestyle or housing requirements change over time. People have different housing preferences (and options) according to their own circumstances, for example, their family size, household composition and size, income and health.

#### What is the evidence?

In the City of Melbourne, there has been a significant shift towards 1 and 2 bedroom apartments over the last six years (*Dwelling Stock and Diversity in the City*, City Research, 2012, p9). Half of all units delivered since 2006 have been one bedroom units, whereas only 7 per cent of new units had three bedrooms. It is anticipated that the City of Melbourne will experience demand for 180 family households per year, however, there is unlikely to be sufficient supply if current development trends continue (*Understanding the Property and Economic Drivers of Housing*, SGS Planning and Economics, 2013).

Apartment choice also refers to the type of tenure provided. Over the past six years, the proportion of housing held by the Department of Human Services has significantly declined and the housing owned by housing associations has increased slightly (*Dwelling Stock and Diversity in the City*, City Research 2012, p12). The extent of owner-occupier housing has decreased while rental housing has increased.

While reference is made to affordable housing within this issue a more detailed analysis on affordable housing issues, the policy approach of other cities and how the City of Melbourne could respond to the issue is contained within the *Understanding the Social Outcomes of Housing* supporting paper (SGS Planning and Economics, 2013).

#### Summary of case study findings

- Developments contained predominantly one and two bedroom apartments.
- Developments had a very limited number of three or four bedroom apartments, or none.
- Few case studies appeared to include affordable housing.
- Few apartments appeared to be specifically designed to promote accessibility for wheelchair users (for example with lower benches, wide corridors).

## What are the key considerations?

- The apartment choices available in the City of Melbourne influences who chooses to live here and therefore has a direct impact on the demographic profile of the community. A predominance of one and two bedroom apartments limits the diversity of potential people who will find a suitable home in the City of Melbourne.
- The provision of affordable and accessible housing is important to ensure that people of all abilities, income levels and backgrounds have the opportunity and choice to live in safe, high quality housing within neighbourhoods and communities which meet their needs.
- Household composition changes over time as resident's circumstances change. A diversity of apartment choices enables people to choose to stay within their community. This can have a significant impact on community social networks and community resilience.
- The limited apartment choice available may have an impact on the high turnover of residents in the City of Melbourne. It is possible that members of our community are moving elsewhere as they are unable to stay in their community when their circumstances and housing needs change, for example, their family size, household composition and size, income and health (City Research, 2012).
- Housing choices need to be responsive to community needs. For example, an appropriate amount of student housing may be important for supporting the universities within the City of Melbourne; an appropriate amount of aged care facilities may be important for enabling people to age in place; an appropriate amount of serviced apartments may be important for enabling short stays for business people or tourists.

## Why is this happening?

### Policy Drivers

The Guidelines for Higher Density Development do not provide prescriptive requirements for housing mix. Objective 5.1 refers to the need to provide a range of apartments sizes and types in higher density residential developments. Design suggestion 5.1.1 is to design for a mix of dwelling types, particularly in larger residential developments (for example, to suit single people, family groups of varying sizes, students, the elderly, people of limited mobility, and people on low to moderate incomes).

The Melbourne Planning Scheme does not have a policy requirement for apartment mix or affordable housing.

### Market Drivers

In the City of Melbourne, 85 per cent of apartments are purchased by investors. Investors are primarily interested in the rate of return on their investment. One and two bedroom apartments are more readily sold and tenanted than three bedroom apartments. One bedroom apartments can be offered at an acceptable price point for purchasers. In the City of Melbourne, there is high demand for properties for sale below \$450,000.

Developments that include larger apartments find it more difficult to obtain bank financing. Banks finance developments which have been proven to be successful and the current market proves the successful sales rate of one and two bedroom apartments. Banks are also unlikely to finance a new approach to apartment development as it poses greater risk. Furthermore, there are only a small number of developers who have sufficient finance to develop in the City of Melbourne and these developers are producing a similar apartment product with a dominance of one and two bedroom apartments due these market drivers.

Three bedroom apartments will sell but will take longer to do so (*Understanding the Social Outcomes of Housing* supporting paper, SGS Planning and Economics, 2013). This, therefore, creates a greater risk for the developer.

## What are the policy approaches of other cities?

Most of the Australian capital cities reviewed have high level policy objectives that aim for a diverse mix of housing. The City of Sydney's policies provide the most specific guidance on achieving apartment choice.

### City of Sydney

The *SEPP No. 65 - Residential Flat Design Code* includes 'Objectives' and 'Better Design Practice' to achieve a mix of apartment sizes. Specifically *Part 3, Building Configuration, Apartment Mix* seeks to provide a diversity of apartment types, which cater for different household requirements over time. The *Better Design Practice* requires a variety of studio, one, two, three and three plus bedroom apartments particularly in large developments.

Provisions are also provided in the *Central City Development Control Plan (DCP)*. Clause 6.1.27 states that all residential developments in excess of 20 apartments shall provide the following mix of units:

- Studio apartments - maximum of 15 per cent.
- 1 bed apartments - maximum of 30 per cent.
- 2 bed apartments - minimum of 40 per cent.
- 3+ bed apartments - minimum of 15 per cent.

Clause 6.1.28 of the *Central City DCP* states that the mix of units may be varied at the discretion of the consent authority where the applicant can demonstrate that the required mix of units is inappropriate for their development.

Clause 6.1.29 of the *Central City DCP* states the maximum percentage of 1 bedroom units may be increased above 30 per cent provided that the numbers of studio apartments and 1 bedroom units does not exceed 45 per cent of the total units proposed.

### Vancouver

The city of Vancouver has zoning requirements which require developments suited to families with children. Particular areas of the city are covered by this zone, which has been successful in attracting families to live in the inner city.

### London

The London Plan requires a good mix of housing within any development. Recently, the Mayor of London has stated a desire for 36 per cent of new affordable rented homes to be family sized.

## How could the City of Melbourne respond to the issue?

- Introduce the requirement for a mix of apartment types - either as a policy in the Melbourne Planning Scheme, a design guideline document incorporated within the Melbourne Planning Scheme or in a best practice design guidelines document.
- Introduce a requirement for greater flexibility in the design of residential floor plans to include the potential for 3 bedroom apartments if required when purchased off plan.
- Introduce a fast tracked process for approving changes to a planing permit (for example, changed floor layouts) if the changes relate to improving the housing mix (for example a floor layout proposes a greater number of 2 or 3 bedroom apartments),
- The City of Melbourne could act as a facilitator that matches potential buyers of three or four bedroom dwellings with developers. For example, the City of Melbourne could manage a database of people looking to move into three bedroom apartments or undertake research to assess demand.

### 3.4 Dominance of car parking

Choosing how to accommodate parking – on the dwelling plot, on-site, on the street, in a parking court, undercroft or underground car-park – is a key decision that can have a major impact on the appearance and amenity of a development.

Anecdotally, it is understood that many of the car parks in residential developments in the central city are underutilised by residents as car ownership of residents is low. This could suggest that car parking may not be required in all residential developments.

#### What is the evidence?

##### Summary of case study findings

- Predominance of above ground car parking at lower levels of buildings. This is exacerbated in high-rise developments which often incorporate a significant number of levels of car parking within the podium.
- Car parking entries sometimes dominate pedestrian entrance points, compromising safety and aesthetics.
- Generally, less than 1 space is provided for each apartment (this is within the car parking policy in the Melbourne Planning Scheme).
- Car parking levels incorporate low floor to ceiling heights which limits adaptability for other uses, such as offices or housing.
- Car parking integrated into podium levels is typically screened which fails to provide a successful interface to the public realm. In some instances, this can be overcome by sleeving car parking with other uses such as apartments or shopfronts.
- The majority of case studies included car parking, even though most case studies are in proximity to high quality public transport.

#### What are the key considerations?

- Car parking above ground level has potential to impact on the quality and amenity of the streetscape by creating a poor interaction with the street or neighbourhood and limiting natural surveillance that will promote community safety.
- The design and location of car parking driveways or crossovers can impact on pedestrian safety.
- While the cost of providing car parking varies from site to site, undercover parking is a considerable cost. This impacts on delivering apartments at a particular price point to the consumer and has the potential to impact on affordability.
- The City of Melbourne has good quality provision of public transport. People who live in the municipality may not require a car.
- The design of car parks with ramps and low floor to ceiling heights can limit the potential adaptability for other uses.
- Large areas dedicated to car parking are an inefficient and expensive use of space.
- Car parks frequently require mechanical ventilation. This diminishes the environmental efficiency of the building and increases costs for operation and maintenance.
- A reduction in car parking can increase apartment yield on a site. This could potentially reduce the financial risk of the development and therefore enable funding of other housing objectives, for example, apartment diversity or affordable housing.
- A reduction in car parking can increase opportunities for other uses in the building, for example, communal facilities or open spaces.

## Why is this happening?

### Policy Drivers

In the Melbourne Planning Scheme, general policy guidance is provided in the scheme for car parking. This includes Clause 15.01 (Urban environment – which references the Design Guidelines for Higher Density Residential Development). The City of Melbourne's Urban Design policies (Clause 22.02, 22.17 and 22.18) do not support blank walls within developments (typically associated with car parking), the Fishermans Bend Urban Design Policy (Clause 22.25) includes the requirement to provide active frontages at ground and lower levels of buildings. Planning Scheme Amendments C171, C190 and C196 all include policies to minimise car parking located at street frontages. To minimise car parking use, Clause 52.06 stipulates car parking provisions that apply to the Capital City Zone, the Docklands Zone, the Fishermans Bend Urban Renewal Area and parts of Carlton, North Melbourne, East Melbourne and Southbank. In these locations a maximum of one car park per dwelling is in place.

The following guidance is provided in the Guidelines for Higher Density Development in regards to car parking:

- Objective 3.3: To ensure car parking does not dominate the street frontage.
- Design suggestion 3.3.1: screen or disguise above-ground parking areas in new development from the street.
- A variety of strategies ranging from innovative screening (potentially including artworks) to the mixing of screen panels with sections of residential occupation can be used to reduce the visibility of car parking areas from the street.
- Design suggestion 3.3.2: screen half basement car parking. Half basement car parking refers to car park areas that are set down half a level below the street. The use of half basement parking raises ground floor residential units above the street. While this can provide for more privacy in the residential units, and allow for casual surveillance of the street, half

basement car parks can present long blank walls to the street or unattractive views into the basement car park which are not desirable. More effective screening techniques include planting, semi-transparent fences or screens. Where solid walls enclose the car park, careful surface articulation and the use of high quality finishes are appropriate for a wall placed close to pedestrians' eye levels. The preferred outcome is that car parking does not interface with the street.

### Market Drivers

Developments without car parking allocated to each apartment are less likely to be financed by banks as there are concerns regarding the re-sale potential of apartments without a parking space.

Small development sites have limited site area which may generate a higher number of floor levels for car parking.

Furthermore, providing undercroft or underground car parking is a significant cost to developers which may mean a development is not viable, or the higher cost may be passed on to purchasers through higher apartment costs.

### Environmental drivers

In Southbank, soil conditions, including the prevalence of Coode Island silt enhances the cost of constructing underground car parking.

### Policy approach of other cities

All of the other Australia case study cities had general policies to limit the impact of car parking within a development.

#### City of Adelaide

The Adelaide Development Plan includes provisions for Medium to High Scale Residential / Serviced Apartments. Development Control Principle 78 under Objective 23 states 'Garages and parking structures associated with medium to high scale residential or serviced apartment development should be located so that they do not visually dominate the street frontage.'

#### City of Sydney

The Residential Flat Design Code provides 'Objectives' and 'Better Design Practice' to minimise car dependence and manage car parking provision. Specifically, Part 2, Site Access, Parking gives preference for underground parking, however, where above ground parking cannot be avoided guidance is provided to ensure the design of the development mitigates any negative impact on streetscape and street amenity.

#### City of Brisbane

The Brisbane City Plan includes the 'Residential Design - High Density Code'. Performance criteria P4 requires development to be orientated to the street. Acceptable solutions are provided. Section A4.4 states that development should ensure that 'Basement parking structures between a street frontage and the main front elevation are no more than 1m above ground level at any point.' Further performance criteria P22 requires vehicle access, parking design and location and screening treatment to minimise noise and visual impacts on neighbouring dwellings.

The acceptable solution provided at A22.2 states 'vehicle parking structures are designed and located behind the building setback, or; behind or below the building so they are not visually dominant from a public street.'

### How could the City of Melbourne respond to the issue?

- Undertake further research to determine user demand for car parking in residential developments and car ownership by residents.
- Promote zero car parking in schemes within close proximity to public transport.
- Continue to promote the use of car share schemes and the integration of car share spaces within new residential developments.

### 3.5 Internal amenity - (a) Poor light

Amenity can be defined as an element of a location or neighbourhood that helps to make it attractive or enjoyable for residents and visitors. In this case, internal amenity refers to the elements of an apartment which make it enjoyable for residents to live there. These elements include good levels of light (both sunlight and daylight), natural ventilation to enable the flow of fresh air, sufficient visual privacy between neighbouring buildings and sufficient acoustic privacy.

Internal amenity is affected by the quality of natural light entering living spaces. Daylight refers to the amount of diffuse natural light that enters a building to provide illumination between sunrise and sunset and comes from all directions. Sunlight refers to direct sunshine.

#### What is the evidence?

##### Summary of case study findings

- Access to natural light is generally not maximised within apartment design.
- Access to natural light has potential to be compromised by future development of adjacent sites.
- Many apartments are orientated to the south which does not ensure adequate access to sunlight.
- Nearly a quarter of apartments incorporated a bedroom with no windows which 'borrows' light from the adjacent living area.
- A small number of apartments incorporated a bedroom with long narrow hallway access to a window - sometimes called 'saddlebag' or 'battle axe' bedrooms - which is often used as an alternative to providing a bedroom with borrowed light. These can be an inefficient design layout.
- Several apartments provide light to a bedroom or living space via a window in a small light

well. Apartments at the 'bottom' of the well can have poor quality light. This can be exacerbated by future development adjacent to the light well.

- The majority of apartments are single aspect (that is, have an external wall on one façade only) and therefore only have windows and a view out from one side. This minimises opportunity for natural light and sunlight to penetrate into the apartment.

#### What are the key considerations?

- Daylight and sunlight illuminate internal spaces and are required to enable residents to enjoy activities inside the home.
- Daylight and sunlight have a positive effect on people's emotional wellbeing.
- Natural light minimises the need for artificial light sources which consume energy and add to the cost of living.
- Sunlight provides passive heating to buildings which can reduce energy consumption.
- Apartments with a bedroom with borrowed light can have limited flexibility of occupancy as the doors to these bedrooms are often glass or have a level of transparency which influences internal privacy.
- Some Australian banks are no longer financing apartments with borrowed light as they have concerns regarding resale value due to the poorer quality of internal amenity.
- The rationale for having bedrooms without any windows is that some residents don't spend significant time in their bedrooms. This could, however, only represent a narrow user group at a particular time who may have a lifestyle where this is not an issue.
- Rooms without adequate natural light may not cater for the resident during a temporary or ongoing change in their circumstances (for example becoming ill and more housebound).



## Why is this happening?

### Policy Drivers

The current practice is to review planning applications against the Guidelines for Higher Density Development which is general and non prescriptive. They include the following high level objectives:

- Objective 2.5: To ensure building separation supports private amenity and reinforces neighbourhood character.
- Objective 2.6: To ensure areas can develop with an equitable access to outlook and sunlight.
- Objective 4.3: To create shared internal spaces that contribute positively to the experience of living in higher density development.
- Objective 5.2: To optimise the layout of buildings in response to occupants' needs as well as identified external influences and characteristics of a site.
- Objective 5.4: To ensure that a good standard of natural lighting and ventilation is provided to internal building spaces.

Internal light levels must meet Building Code of Australia requirements, however these guidelines and minimum target lighting levels are potentially insufficient to address high density, high-rise and compact apartment development typologies.

Within the Melbourne Planning Scheme, general policy guidance is provided in the Scheme, including Clause 15.01 (Urban environment – which references the Design Guidelines for Higher Density Residential Development), within Clause 21.07-1 of the proposed MSS and within Clauses 22.01 / 22.17 / 22.18 / 22.25 which outline the City of Melbourne's Urban Design policy. In particular, Clause 22.01 includes the following guidance for the Capital City Zone:

- Towers should be well spaced to equitably distribute access to an outlook and sunlight between towers and ensure adequate sun penetration at street level as follows:

- Development above 45 metres be set back 24 metres from any surrounding podium-tower development.

VCAT determinations have established a precedent that small sites can be too small to strictly apply the standards of Clause 22.01 (see *Brady Group v City of Melbourne 2003 – 108 Little Lonsdale Street* and *Brady Group v City of Melbourne 2007 – 380 Little Lonsdale Street*). There have also been ministerial approvals which have allowed significant concessions to Clause 22.01 due to the small size of the site (*Brady Group – 280 and 290 Little Lonsdale Street, 2008*). In addition, protection of the fine grain subdivision pattern was justification for variation from the standards of Clause 22.01.

### Market Drivers

- Small development sites have limited developable floor space. Apartments are often designed to have a narrow frontage or a bedroom with borrowed light to generate a higher yield.
- Including bedrooms with borrowed light into a development may enable a higher yield which may assist in meeting the preferred price point and therefore the affordability of apartments.
- Developments often try to maximise yield by having a 100 per cent site coverage which can limit access to natural light within the development site and to adjacent existing and future developments.
- In the City of Melbourne, 85 per cent of people currently purchasing apartments are investors. As such they are likely to be more concerned with the rate of return on their investment rather than the quality of the internal amenity. Good levels of light is likely to be of more concern to an owner-occupier who values the quality of the living space more than an investor.
- Increased construction costs and land values impact on the number of apartments required to ensure a viable development. This is putting pressure on increasing yields within a development site.

- A shortage of rental housing supply creates high demand and competition which limits renter's capacity to influence housing design through consumer preferences. In a tight rental market tenants have to accept what is available.

### Design Drivers

Maximising the development capacity of a site limits flexibility of design resulting in:

- Orientation of buildings that don't seek to minimise the extent of south facing apartments.
- Apartments with a narrow frontage have significantly less space for windows
- Apartments which are single aspect can only integrate windows to one side. Coupled with narrow apartment frontages to this façade the result is limited access to natural light.

### Policy approach of other cities

#### City of Adelaide

The Adelaide Development Plan includes provisions for Medium to High Scale Residential / Serviced Apartments. Development Control Principles 52 - 58 under Objective 21 encourage design that maximises opportunities to facilitate natural ventilation and capitalise on natural daylight including aspect and ceiling heights.

- a. Design techniques are provided for corner apartments, double aspect apartments, split level apartments and shallow and single aspect apartments, limited in depth to 8 metres from a window.

Other relevant Principles include:

- Principle 53 - Medium to high scale residential or serviced apartment development should be designed and located to maximise solar access to dwellings and communal open space on the northern façade.
- Principle 54 - Ceiling heights that promote the use of taller windows, highlight windows, fan lights and light shelves should be utilised to

facilitate access to natural light, improve daylight distribution and enhance air circulation, particularly in dwellings with limited light access and deep interiors.

- Principle 55 - All new medium to high scale residential or serviced apartment development should have direct ventilation and natural light.
- Principle 58 - Medium to high scale residential or serviced apartment development should be designed to ensure living areas, private open space or communal open space, where such communal open space provides the primary area of private open space, are the main recipients of sunlight.

Provision 56 specifies that the maximum distance of a habitable room to a window providing natural light is 8 meters. Further, Provision 57 and 76 advises light wells should not be used as a primary source of daylight for living rooms. Development Control Principle 76, for example, states 'Light wells may be used as a source of daylight, ventilation, outlook and sunlight for medium to high scale residential or serviced apartment development provided that:

- (a) living rooms do not have lightwells as their only source of outlook;
- (b) lightwells up to 18 metres in height have a minimum horizontal dimension of three metres or six metres if overlooked by bedrooms; and
- (c) lightwells higher than 18 metres in height have a minimum horizontal dimension of six metres or nine metres if overlooked by bedrooms.'

#### City of Sydney

The Residential Flat Design Code provides 'Objectives' and 'Better Design Practice' to ensure that daylight access is provided to all habitable rooms and encouraged in all other areas. Specifically in Part 3, Building Amenity, Daylight Access, the Rules of Thumb suggest:

- Living rooms and private open spaces for at least 70 percent of apartments in a development should receive a minimum of three hours direct sunlight between 9am and

3pm in mid winter. In dense urban areas a minimum of two hours may be acceptable.

- Limit the number of single-aspect apartments with a southerly aspect to a maximum of 10 percent of the total units proposed. Developments which seek to vary from the minimum standards must demonstrate how site constraints and orientation prohibit the achievement of these standards and how energy efficiency is addressed.

This issue is also addressed in Part 3, Building Configuration, Apartment Layout where it is recognised that apartment layout directly impacts on the quality of residential amenity such as access to daylight and natural ventilation, and assurance of acoustic and visual privacy. The 'Rules of Thumb' suggest:

- Single-aspect apartments should be limited in depth to eight metres from a window.
- The back of a kitchen should be no more than eight metres from a window.
- The width of cross-over or cross-through apartments over 15 metres deep should be four metres or greater to avoid deep narrow apartment layouts.
- Buildings not meeting the minimum standards listed above, must demonstrate how satisfactory daylighting and natural ventilation can be achieved, particularly in relation to habitable rooms.

Clause 6.1.20 requires a minimum of floor to ceiling height of 2.7 metres in living rooms and bedrooms.

### City of Brisbane

The Brisbane City Plan includes the Residential Design - High Density Code.

Relevant performance criteria include:

- Development must maintain adequate levels of natural ventilation and light penetration to neighbouring habitable rooms, balconies and private open space.

- Development must achieve a pleasant, attractive and manageable living environment. Dwellings must receive adequate daylight and allow passage of cooling breezes through habitable rooms.

Acceptable solutions include;

- The optimal number of units is orientated to within 20 degrees either side of north.
- Orientation of main living area windows to within 20 degrees either side of north is maximised.
- The majority of private open space has good access to sunlight.
- Window placement and internal layout allows cross-ventilation.

### Vancouver

The City of Vancouver states that habitable rooms should have at least one window on an exterior wall which complies with detailed angle and distance requirements for sunlight and daylight.

## 3.6 Internal amenity (b) poor natural ventilation

Natural ventilation enables the flow and circulation of fresh air in internal living spaces. Cross ventilation is preferable and allows the flow and circulation of fresh air from one side of an apartment to another. This minimises the need to mechanically cool the home.

### What is the evidence?

#### Summary of case study findings

- Most apartments are single aspect with windows to only one frontage. As such they do not incorporate cross-ventilation by having windows on two sides. Mechanical ventilation is therefore often provided within apartments and in communal areas such as corridors.
- Bedrooms without windows have limited access to natural ventilation.
- Most apartments have narrow frontages and deep interior layout limiting capacity for windows and therefore natural ventilation.
- Although many north and west facing apartments have access to natural ventilation, they are often single aspect and as such are likely to require mechanical ventilation in hot weather.

### What are the key considerations?

- Ventilation facilitates air circulation and prevents the stagnation of air. It enables improved indoor air quality by replenishing oxygen and removing moisture, dust, airborne bacteria and pollutants and carbon dioxide which is important for health.
- It helps to control and maintain internal room temperature.
- It helps to remove odours from cooking and cleaning and smoke from cooking spaces.
- Natural cross ventilation enables passive cooling, minimising the need for artificial ventilation which consumes energy and generates greenhouse gas.
- Bedrooms with borrowed and therefore limited natural ventilation are not suitable for long periods of occupation.

### Why is this happening?

#### Policy Drivers

There is limited planning policy guidance for ventilation. This could in part be due to an understanding that the Building Code of Australia responds sufficiently to this issue.

In the Melbourne Planning Scheme general policy guidance is provided, including Clause 15.01 (Urban environment – which references the Design Guidelines for Higher Density Residential Development), within Clause 21.07-1 of the proposed MSS and within Clauses 22.01 / 22.17 / 22.18 / 22.25 which outline the City of Melbourne's Urban Design policy.

The Guidelines for Higher Density Development include a high level objective to ensure that a good standard of natural lighting and ventilation is provided to internal building spaces.

#### Market Drivers

Double loaded corridors with single aspect apartments are often incorporated in order to provide the most cost effective design. This minimises the number of lifts required to provide

access to an apartment buildings and maximises the number of apartments on a site. It also minimises the extent of building facade which is a significant cost of the building.

See above discussion for poor internal light and therefore a lack of natural ventilation.

### Policy approach of other cities

#### City of Adelaide

The Adelaide Development Plan includes provisions for Medium to High Scale Residential / Serviced Apartment. Development Control Principles under Objective 21 encourage design that maximise opportunities to facilitate natural ventilation and capitalise on natural daylight including aspect and ceiling heights.

Relevant Development Control Principles include:

- Principle 52 - Medium to high scale residential or serviced apartment development should be designed to maximise opportunities to facilitate natural ventilation and capitalise on natural daylight and minimise the need for artificial lighting during daylight hours.
- Principle 54 - Ceiling heights that promote the use of taller windows, highlight windows, fan lights and light shelves should be utilised to facilitate access to natural light, improve daylight distribution and enhance air circulation, particularly in dwellings with limited light access and deep interiors.
- Principle 55 - All new medium to high scale residential or serviced apartment development should have direct ventilation and natural light.
- Principle 56 - The maximum distance of a habitable room such as a living, dining, bedroom or kitchen from a window providing natural light and ventilation to that room is eight metres.
- Principle 60 - provides detailed methods and design techniques to achieve natural cross ventilation of habitable rooms.

#### City of Sydney

The Residential Flat Design Code provides 'Objectives' and 'Better Design Practice' to ensure that apartments are designed to provide all habitable rooms with direct access to fresh air and provide natural ventilation to non-habitable rooms where possible. Specifically Part 3, Building Amenity, Natural Ventilation, Rules of Thumb suggests:

- Building depths, which support natural ventilation typically range from 10 to 18 metres.
- 60 per cent of residential units should be naturally cross ventilated.
- 25 per cent of kitchens within a development should have access to natural ventilation.
- Developments which seek to vary from the minimum standards must demonstrate how natural ventilation can be satisfactorily achieved, particularly in relation to habitable rooms.

#### City of Brisbane

The Brisbane City Plan includes the Residential Design - High Density Code.

Relevant performance criteria includes:

- Performance criteria P16 - Development must maintain adequate levels of natural ventilation and light penetration to neighbouring habitable rooms, balconies and private open space.
- Performance criteria P17 - Development must achieve a pleasant, attractive and manageable living environment. Dwellings must receive adequate daylight and allow passage of cooling breezes through habitable rooms.

Acceptable solutions include A17.4 Window placement and internal layout allows cross-ventilation.

## 3.7 Internal amenity

### (c) Visual privacy

Visual privacy protects the resident's ability to undertake private activities in all rooms and private open spaces in a manner which does not impact on views, outlook, ventilation, solar access, or the function of internal and external spaces.

#### What is the evidence?

##### Summary of case study findings

- Due to the majority of developments incorporate 100 per cent site coverage, visual privacy has the potential to be compromised by future development of adjacent sites and insufficient privacy distances between developments. Anecdotal evidence suggests this is currently being experienced in some areas.
- Most apartments are designed to minimise overlooking and promote privacy between apartments.
- Apartments with bedrooms with no windows generally appear to have sliding frosted glass doors or walls which may impact on internal visual privacy.

#### What are the key considerations?

- Residents should have the comfort to relax, entertain and interact in a private setting where they are not unreasonably watched or overheard by neighbours.
- Visual privacy promotes the ability for the resident to undertake private activities without interference from other householders.
- A lack of visual privacy could place stress on the resident and have mental health impacts.

#### Why is this happening?

##### Policy Drivers

In the Melbourne Planning Scheme, general policy guidance is provided, including Clause 15.01 (Urban environment - which references the Design Guidelines for Higher Density Residential Development), within the proposed MSS (Clause 21.07-1) and within Clauses 22.01 / 22.17 / 22.18 / 22.25 which outline the City of Melbourne's Urban Design policy. In particular, Clause 22.01 includes the following guidance for the Capital City Zone:

- Towers should be well spaced to equitably distribute access to an outlook and sunlight between towers and ensure adequate sun penetration at street level as follows:
- Development above 45 metres be set back 24 metres from any surrounding podium-tower development.

In this instance distance is the measure being used to achieve visual privacy. This preferred distance of 24 metres between towers is generally not delivered in the Hoddle grid and Southbank. Planning Scheme Amendment C171 proposed tower separation of 20 metres preferred and a minimum of 10 metres.

The Guidelines for Higher Density Development include the following objectives:

- Objective 2.7: To ensure visual impacts to apartments at the rear are appropriate to the context.
- Objective 2.9: To maximise residential amenity through the provision of views and protection of privacy within the subject site and on neighbouring properties.

##### Market Drivers

Visual privacy between new and existing development can be compromised due to 100 per cent site coverage on small lots or minimum separation between development sites in order to try and achieve the most development on a site.

## Policy approach of other cities

### City of Adelaide

The Adelaide Development Plan includes provisions for Medium to High Scale Residential / Serviced Apartment. Development Control Principles under Objective 21 encourage development to minimise potential overlooking.

Other relevant Development Control Principles include:

- Principle 62 - Medium to high scale residential (other than student accommodation) or serviced apartment development in the Capital City Zone should ensure direct access from living areas to private open space areas, which may take the form of balconies, terraces, decks or other elevated outdoor areas provided the amenity and visual privacy of adjacent properties is protected.
- Principle 68 - Medium to high scale residential or serviced apartment development should be designed and sited to minimise the potential overlooking of habitable rooms such as bedrooms and living areas of adjacent development.
- Principle 69 - A habitable room window, balcony, roof garden, terrace or deck should be set-back from boundaries with adjacent sites at least three metres to provide an adequate level of amenity and privacy and to not restrict the reasonable development of adjacent sites.

### City of Sydney

The Residential Flat Design Code provides 'Objectives' and 'Better Design Practice' to ensure that apartments are designed to provide reasonable levels of visual privacy externally and internally, during the day and at night. Further, apartments should be designed to maximise outlook and views from principal rooms and private open space without compromising visual privacy.

Specifically Part 1, Building Separation states;

For buildings over three storeys, it is recommended that building separation increase

in proportion to building height to ensure appropriate urban form, adequate amenity and privacy for building occupants. Suggested dimensions within a development, for internal courtyards and between adjoining sites are:

- Up to four storeys/12 metres.
- 12 metres between habitable rooms/balconies.
- 9 metres between habitable/balconies and non-habitable rooms.
- 6 metres between non-habitable rooms.
- Five to eight storeys/up to 25 metres.
- 18 metres between habitable rooms/balconies.
- 13 metres between habitable rooms/balconies and non-habitable rooms.
- 9 metres between non-habitable rooms.
- Nine storeys and above/ over 25 metres.
- 24 metres between habitable rooms/balconies.
- 18 metres between habitable rooms/balconies and non-habitable rooms.
- 12 metres between non-habitable rooms.

Zero building separation is allowed in appropriate contexts, such as in urban areas between street wall building types (party walls).

Objectives in Part 1, Side and Rear Setbacks seek to minimise the impact of development on light, air, sun, privacy, views and outlook for neighbouring properties, including future buildings.

### City of Brisbane

The Brisbane City Plan includes the Residential Design - High Density Code.

Performance Criteria P15 states habitable spaces must not directly overlook dwellings on adjacent land.

Acceptable solution A15 requires privacy measures to be installed where habitable room windows

look directly at habitable room windows in an adjacent dwelling within 2m at ground floor level or 9m at levels above ground floor.

### **How could the City of Melbourne respond to the issues relating to internal amenity?**

- Undertake user surveys – there is a lack of evidence as to whether the issues relating to internal amenity are a problem experienced by residents.
- Introduce standards for required levels of sunlight and daylight in habitable rooms - either as a policy in the Melbourne Planning Scheme, a design guideline document incorporated within the Melbourne Planning Scheme or in a best practice design guidelines document.
- Introduce standards which require all bedrooms to have a window - either as a policy in the Melbourne Planning Scheme, a design guideline document incorporated within the Melbourne Planning Scheme or in a best practice design guidelines document.
- Introduce standards for required levels of ventilation and cross ventilation (such including requirement for dual aspect apartments) - either as a policy in the Melbourne Planning Scheme, a design guideline document incorporated within the Melbourne Planning Scheme or in a best practice design guidelines document.
- Introduce standards for minimum separation distances between buildings related to the height of development and the presence of habitable windows - either as a policy in the Melbourne Planning Scheme, a design guideline document incorporated within the Melbourne Planning Scheme or in a best practice design guidelines document.
- Introduce a Design Review Panel to provide expert peer review on development proposals (including at early pre-application stages), particularly for tall buildings.



### 3.8 Poor building layout

Building layout is concerned with arrangement of a building on a site. This includes the location of the building within the site, the interface between the building and the street (and the public realm generally), the uses at ground floor and above (including provision of ground floor active uses), the location of entrances for pedestrians and vehicles, the internal layout of a building (in terms of corridors and the type of apartments), such as the use of single or dual aspect apartments. A good building layout should also maximise passive design outcomes and establish a good relationship to existing and possible future buildings.

#### What is the evidence?

##### Summary of case study findings

- Many buildings are not well orientated to maximise north facing apartments and minimise south facing apartments. This can be, however, in some circumstances due to the need to provide good orientation to the street.
- Many buildings incorporate the lift and stairwell core in an inappropriate location which minimises the number of north facing apartments.
- The treatment of the western façade of many buildings would contribute to overheating on warm days due to extensive glazing and limited balconies to provide shade.
- Too much space is dedicated for foyers, entrances, lifts, stairwells and corridors and could be better utilised.
- As buildings often incorporate 100 per cent site coverage, there is potential for amenity to be compromised by future development of adjacent sites. This could include an impact on overshadowing and overlooking.

- Many apartment buildings appear to have made limited attempts to address environmental efficiency through orientation.
- The majority of buildings have adequate natural light to the façade, which is good for internal heating.
- The majority of buildings comprise double loaded corridors which create long internal corridors and single aspect apartments which are narrow and deep.

#### What are the key considerations?

- Housing based on double-loaded corridors has particular limitations both in the single-aspect dwellings they demand and in the circulation spaces, which are often poorly lit and ventilated.
- Both the number of people and the number of dwellings sharing each access core will affect how intensively the space will be used. In smaller groups, residents tend to enjoy a greater sense of privacy, security and ownership and may be more likely to take an active interest in the upkeep of shared spaces. External circulation spaces shared by a limited number of people can also become places where residents can sit outside and socialise with neighbours. Management and maintenance is also easier with fewer users.
- An apartment with opening windows on at least two sides (rather than having only a single aspect) has many benefits, including better daylight, a greater chance of direct sunlight for longer periods, cross ventilation, a choice of views, access to a quiet side of the building, and a greater flexibility in the use of rooms.
- Limited separation between existing and new buildings, often due to 100 per cent site coverage, has the potential to compromise the internal amenity of existing and new apartments.

- The design of façades is important to enable a positive impact on the streetscene and neighbourhood and provide good levels of natural surveillance.
- Building orientation and design can impact wind tunnelling on the street and is important for optimising a response to climatic conditions.

### Why is this happening?

#### Policy Drivers

In the Melbourne Planning Scheme, there are many relevant Scheme provisions which affect building layout. This includes Clause 15.01 (Urban environment – which references the Design Guidelines for Higher Density Residential Development), the proposed MSS (Clause 21.07-1), Clauses 22.01 / 22.17 / 22.18 / 22.25 (UD policies including active frontages, wind protection and tower separation), Clause 22.02 (sunlight to public spaces), Clauses 22.04 / 22.05 (heritage policies), heritage overlays, Design and Development Overlay 1 (active frontages applies to only selected streets in CCZ) and similar provisions in C171, C190 and C196 which articulate active street frontages. There are also numerous other DDOs which related to building height / setbacks. Planning Scheme Amendment C187 will affect building orientation.

Some VCAT determinations, however, have stated that small sites are too small to strictly apply the standards of Clause 22.01 (Brady Group v City of Melbourne 2003 – 108 Little Lonsdale Street) (Brady Group v City of Melbourne 2007 – 380 Little Lonsdale Street). Some ministerial approvals have allowed significant concessions to Clause 22.01 due to the small size of the site (Brady Group – 280 and 290 Little Lonsdale Street, 2008). Protection of the fine grain subdivision pattern has been a justification for variation from the standards of Clause 22.01.

The Building Code of Australia guides the provision of light and ventilation into buildings (see above discussion).

The Guidelines for Higher Density Development include the following guidance:

- Objective 2.8: To maximise informal or passive surveillance of streets and other public open spaces.
- Objective 2.10: To ensure new tall buildings do not create adverse wind effects.
- Objective 5.2: To optimise the layout of buildings in response to occupants' needs as well as identified external influences and characteristics of a site.
- Objective 5.3: To create functional, flexible, efficient and comfortable residential apartments.
- Objective 5.4: To ensure that a good standard of natural lighting and ventilation is provided to internal building spaces.

### Policy approach of other cities

#### City of Adelaide

The Adelaide Development Plan includes provisions for Medium to High Scale Residential / Serviced Apartment. Relevant Development Control Principles include:

- Principle 50 - Entrances to medium to high scale residential or serviced apartment development should be oriented towards the street, be visible and easily identifiable from the street and provide shelter, a sense of personal address and transitional space around the entry.
- Principle 51 - Entrances to individual dwellings or apartments within medium to high scale residential or serviced apartment development should:
  - (a) be located as close as practical to the lift and/or lobby access and minimise the need for long access corridors;
  - (b) be clearly identifiable; and
  - (c) avoid the creation of potential areas for entrapment

## City of Sydney

The Residential Flat Design Code provides Objectives and Better Design Practice to ensure that apartments are designed to create entrances which provide a desirable residential identity for the development and to contribute positively to the streetscape and building facade design.

Part 2 Site Access, Building entry details a number of provisions within better design practice to improve the presentation of the development to the street including utilising multiple entries-main entry plus private ground floor apartment entries-where it is desirable to activate the street edge or reinforce a rhythm of entries along a street.

Part 2 Site Configuration, Orientation provides Objectives and Better Design Practice to optimise solar access to residential apartments within the development and adjacent development ; to contribute positively to desired streetscape character ; to support landscape design of consolidated open space areas ; to protect the amenity of existing development and ; to improve the thermal efficiency of new buildings.

Part 3 Building Configuration, Internal Circulation provides Objectives and Better Design Practice to create safe and pleasant spaces for the circulation of people and their personal possessions; to facilitate quality apartment layouts, such as dual aspect apartments; to contribute positively to the form and articulation of the building facade and its relationship to the urban environment; and to encourage interaction and recognition between residents to contribute to a sense of community and improve perceptions of safety.

Part 3 Building Configuration, Internal Circulation 'Rules of Thumb' states;

In general, where units are arranged off a double-loaded corridor, the number of units accessible from a single core/corridor should be limited to eight. Exceptions may be allowed:

- For adaptive reuse buildings
- Where developments can demonstrate the achievement of the desired streetscape character and entry response

- Where developments can demonstrate a high level of amenity for common lobbies, corridors and units, (cross over, dual aspect apartments).

## New York

New York City have a policy for a maximum of 8-11 (depending on zone) dwellings units to be served by a corridor.

## London

Best practice guidance in the London Plan and London Housing Design Guide stress the importance of dual aspect dwellings for better daylight, cross ventilation, views, sunlight and greater flexibility in use of rooms. In addition, through the 'Lifetime Homes Standard', there is a requirement for 10 per cent of new dwellings to be wheelchair accessible.

### How could the City of Melbourne respond to the issue?

- Introduce or improve standards relating to building layout and orientation - either as a policy in the Melbourne Planning Scheme, a design guideline document incorporated within the Melbourne Planning Scheme or in a best practice design guidelines document.
- Introduce a Design Review Panel to provide expert peer review on development proposals (including at early pre-application stages), particularly for tall buildings.

## 3.9 Poor apartment layout

Apartment layout refers to the internal configuration of bedrooms, living spaces, kitchens and bathrooms to provide well designed spaces, maximise efficiency and provide a high level of access and movement. It includes consideration of the level of separation of different spaces for residents to sleep, work, study, relax, socialise, play, cook and wash.

### What is the evidence?

#### Summary of case study findings

- Many of the apartment layouts were poorly designed and included long, narrow corridors failing to make the most efficient use of space, and bedrooms located to the rear of narrow and deep single aspect apartments (thereby incorporating no window, insufficient light wells or a long narrow access to a window). In some instances, the space used for circulation had to also be used for other functions, such as the kitchen.
- Many apartments incorporated poorly designed private balconies which are often too narrow or too strangely shaped to be used.
- Some apartments with narrow and small corridors, kitchens and bathrooms offer limited accessibility, particularly for wheelchair users.
- There were many examples of where standard generic layouts were used that were not designed for particular sites or for different individual and household preferences.

### What are the key considerations?

- Apartments should be designed to maximise usable space.
- Apartments should enable different users to enjoy different activities at the same time without interference such as sleep, work, study, relax, socialise, cook and play.
- Narrow spaces can limit the level of accessibility, particularly for people using a wheelchair or pram.
- Poor configuration can lead to lack of sunlight, daylight, privacy and ventilation in habitable rooms.
- Rooms with similar service features or requirements, such as water and gas pipes, lighting, heating and cooling are more efficient when grouped together.

### Why is this happening?

#### Policy drivers

In the Melbourne Planning Scheme general policy guidance provided includes Clause 15.01 Urban environment – which references the Guidelines for Higher Density Residential Development and Clause 22.24, Student Housing.

The Guidelines for Higher Density Residential Development include Objective 5.2 which is to create functional, flexible, efficient and comfortable residential apartments.

Design suggestion 5.3.1 states that the usefulness of apartments can be reduced by room sizes and shapes that are too small in relation to their intended uses; by too many doors into rooms may make them difficult to use; by poor connections between related rooms or a lack of separation between others. These problems may significantly reduce the flexibility of their use and detrimentally affect their long term value.

#### Market drivers

- Apartments are designed for the investment market rather for the end user.

- There is an assumption that people living in inner city entertain outside of the home.
- Cost effectiveness of using a standard apartment layout rather than designing for each specific development.
- Drive for highest yield on development sites which is constraining the possibility for effective apartment layouts.

### Policy approach of other cities

#### City of Adelaide

The Adelaide Development Plan includes provisions for Medium to High Scale Residential / Serviced Apartment.

Development Control Principle 74 - within medium to high scale residential or serviced apartment development, dwelling/apartment layouts should be adaptable to accommodate:

- (a) a range of activities and privacy levels between different spaces;
- (b) flexible room sizes and proportions;
- (c) efficient circulation to optimise the functionality of floor space within rooms; and
- (d) the future reuse of student accommodation as residential apartments through a design and layout that allows individual apartments to be reconfigured into a larger dwelling and/or more substantial space for storage.

#### City of Sydney

The Residential Flat Design Code provides Objectives and Better Design Practice to ensure that apartments are designed to ensure the spatial arrangement of apartments is functional and well organised, provide high standards of residential amenity, maximise the environmental performance of apartments and accommodate a variety of household activities and occupants' needs.

Part 3 Building Configuration Apartment Layout details a number of provisions within better design practice to ensure apartment layouts are resilient over time. There are a number

of example apartment layouts provided and practical guidance for example consideration of furniture removal and placement.

Part 3 Building Configuration, Flexibility Objectives ensure that apartments are designed to encourage housing designs which meet the broadest range of the occupants' needs possible; to promote 'long life loose fit' buildings, which can accommodate whole or partial changes of use; to encourage adaptive re-use and to save the embodied energy expended in building demolition. Provide apartment layouts, which accommodate the Better Design Practice includes the ability to change the use of rooms and promote the Promote accessibility and adaptability by ensuring - the number of accessible and visitable apartments is optimised.

#### How could the City of Melbourne respond to the issue?

- Introduce planning standards relating to improved apartment layout (for example, minimum bedroom sizes) - either as a policy in the Melbourne Planning Scheme, a design guideline document incorporated within the Melbourne Planning Scheme or in a best practice design guidelines document.
- Introduce a Design Review Panel to provide expert peer review on development proposals (including at early pre-application stages), particularly for tall buildings.

## 3.10 Limited flexibility and adaptability

Flexibility enables minor changes to the internal configuration of a building – every home should be flexible enough to accommodate a range of possible changes in circumstances. Adaptability goes one step further and is the capacity for internal spaces within a building to change and be modified over time.

This can include the ability to change the configuration of a floor in an apartment block, or to change the floor plan of an apartment. If car parking isn't required in the future, levels of car parking should be able to be adapted for new uses. The adaptability and flexibility of a building and apartment promotes the use of buildings to reflect the changing social, economic, and environmental conditions and preferences of occupants over time.

### What is the evidence?

#### Case study observations

- Levels of car parking are not adaptable for future uses due to their floor to ceiling heights and the design incorporating ramps and half levels.
- There is limited ability to change the configuration of a floor in many buildings.
- There is limited adaptability of specific residential types, such as student housing and serviced apartments, for other residential uses, such as market housing.
- Many apartments are not flexible for changes in the future, such as the ability of using rooms for different purposes or the potential for spaces to be linked or separated without moving walls or changing the position of openings.

### What are the key considerations?

- Flexibility enables the potential for owner-occupiers to modify or renovate the interior apartment over time to suit their changing needs. It is possible that if people aren't able to alter the internal layout in response to their changing needs, they may need to seek an alternative apartment.
- Adaptability enables the potential for apartments to be updated in response to changing consumer expectations and demands. For example, the ability for a car park to be reconfigured into apartments if there is no longer the need for parking in the future.
- A high level of flexibility and adaptability enables the re-use of existing buildings over time.

### Why is this happening?

#### Policy influences

There is a potential lack of detailed policy guidance relating to flexibility or adaptability. The Melbourne Planning Scheme includes general policy guidance in Clause 15.01, Urban Environment, which references the Design Guidelines for Higher Density Residential Development. The guidelines include Objective 4.3 to create shared internal spaces that contribute positively to the experience of living in higher density development and Objective 5.3 to create functional, flexible, efficient and comfortable residential apartments.

#### Market drivers

Developers are more likely to be concerned with the short term financial viability of a development which is aimed at the needs of households now, rather than considering long term flexibility and adaptability of both apartments and buildings.

## Policy approach of other cities

Details regarding the flexibility and adaptability of apartment layouts for the City of Adelaide and the City of Sydney are referred to within the apartment layout section above.

### Singapore

Through the Housing Development Board, a 'Flexi-Layout scheme' for family-friendly units is offered, with the opportunity to enable an apartment to be flexible and for spaces to be used for different purposes. A 'Multi-Generation Living Scheme' is also offered, which encompasses the pairing of flats, for example a three bedroom apartment and a studio, designed as separate units with interconnecting doors.

Singapore Urban Renewal Authority has specific floor to floor requirements of 3.6m and 5m for the top and bottom floors to ensure future adaptability.

### London

Planning policies and guidance in the London Plan and the London Housing Design Guide are intended to encourage the provision of enough space in dwellings to ensure homes can be flexibly used by a range of residents. They also aim to ensure that space can be sensibly allocated to different functions, with adequate room sizes and storage integrated into the planning.

## How could the City of Melbourne respond to the issue?

- Introduce standards relating the need for buildings to be flexible and adaptable, for example a requirement for minimum floor to ceiling heights - either as a policy in the Melbourne Planning Scheme, a design guideline document incorporated within the Melbourne Planning Scheme or in a best practice design guidelines document.
- Introduce good practice guidance relating to the flexibility and adaptability of buildings and apartments.
- Introduce a Design Review Panel to provide expert peer review on development proposals (including at early pre-application stages), particularly for tall buildings.
- Require plans that demonstrate that apartments provide flexibility by allowing for alternative furniture arrangements in different rooms.

### 3.11 Poor environmental performance

Apartments should be designed and constructed to ensure that resources are used as efficiently as possible to maximise a healthy and comfortable living environment for both now and the future.

Good building and landscape design can significantly improve the environmental performance of a development with respect to:

- Reduced carbon emissions.
- Water conservation.
- Protection of biodiversity.
- Minimising flood risk.
- Managing stormwater quality and quantity.
- Minimising the urban heat island effect.
- Minimising embodied energy.
- Energy, water and waste efficiency.
- Efficient maintenance requirements.
- Responsiveness to climatic conditions including temperature, precipitation and flooding.

#### What is the evidence?

##### Case study observations

- The majority of case studies are constructed with concrete and glass which are materials with high embodied energies.
- Few case studies make use of sustainable technologies such as solar panels, water tanks and recycled water.
- Few case studies capitalise on passive design principles due to orientation which limits environmental efficiency. As a result of orientation there are a high proportion of south facing apartments which have limited solar

access, increasing the reliance on artificial lighting which consumes energy.

- The majority of buildings have adequate sunlight to the façade which is good for internal heating.
- Most case studies include extensive glazing and limited shading by balconies on the western and northern façade which impacts overheating inside the apartment and is likely to influence the need for air-conditioning.
- Many apartments incorporate air conditioning units which are often located on small balconies.
- Many apartments are narrow and deep and therefore require more artificial light, particularly those which incorporate bedrooms with no windows or insufficient light.
- Predominance of above ground car parking at lower levels of the building which consumes a significant amount of space and requires mechanical cooling.
- Many case studies have a poor relationship to adjacent developments resulting in overshadowing.



## What are the key considerations?

- As the city grows, demand for water and energy will increase. It is important that apartments are designed to respond to these demands as efficiently as possible.
- Apartments which support passive design principles, maximise natural light, ventilation and thermal regulation minimise the need for artificial heating, cooling and lighting which reduces energy consumption and costs.
- Some materials have a high embodied energy which has a negative environmental impact.
- Integrated water and waste management will deliver better environmental outcomes.
- Building design impacts on the cost of living. Energy and water inefficient buildings are more expensive to operate.
- A lack of natural ventilation to communal spaces and corridors requires mechanical ventilation systems which use energy and cost more.

## Why is this happening?

### Policy drivers

In the Melbourne Planning Scheme, general policy guidance provided includes Clause 15.01 (Urban environment – which references the Design Guidelines for Higher Density Residential Development), 15.02 (Sustainable development), the proposed MSS (21.06-3) and the current planning scheme amendment C187.

The City of Melbourne also has the following policies and strategies which aim to improve the environmental performance of development in the city:

- Goal for the City of Melbourne to be carbon neutral by 2020
- Sustainable Living in the City
- Hi-RES program
- Total Watermark – City as a Catchment

commits the City to reduce potable water consumption by 25 per cent by 2020.

- Zero net emissions is the City's strategy for reducing emissions in the municipality, with a target of 20 per cent fewer emissions by 2020.
- Water sensitive urban design guidelines.

The Guidelines for Higher Density Development incorporate the following relevant objectives:

- Objective 4.4: To minimise running and maintenance costs.
- Objective 4.5: To minimise water use.

### Market drivers

The market drivers could include the lack of demand from purchasers for higher levels of environmental performance. There could also be concerns that sustainable design adds an extra cost or is an 'add on' to developments which is passed on to the user. This could be perceived to be a luxury rather than a requirement which increases the end cost to the purchaser.

## Policy approach of other cities

### City of Adelaide

The Adelaide Development Plan includes provisions for Medium to High Scale Residential / Serviced Apartment.

Objective 30: Development which is compatible with the long term sustainability of the environment minimises consumption of non-renewable resources and utilises alternative energy generation systems.

Development Control Principles 108 – 114 provide a range of provision to optimise energy efficiency and to require buildings to provide adequate thermal comfort for occupants and minimise the need for energy use for heating, cooling and lighting including a range of detailed provisions and design techniques.

### City of Sydney

The Residential Flat Design Code provides Objectives and Better Design Practice to ensure that apartments are designed to reduce the

necessity for mechanical heating and cooling; to reduce reliance on fossil fuels; to minimise greenhouse gas emissions and to support and promote renewable energy initiatives.

### London

All residential developments in London must adhere to the Code for Sustainable Homes, the national standard for sustainable design and construction of new homes. The Code measures the sustainability of a new home against categories of sustainable design, rating the 'whole home' as a complete package. The Code uses a 1 to 6 star rating system to communicate the overall sustainability performance of a new home. Different Councils in London require different stars for housing development depending on local planning policies.

### How could the City of Melbourne respond to the issue?

- Develop high quality sustainable housing in Council related projects such as the redevelopment of the Boyd school site to create and show off exemplar projects.
- Strengthen the Melbourne Planning Scheme and advocate for broader Building Code improvements; new housing needs to help respond to the goal for a carbon neutral city by 2020.
- Support the further development of ratings and tools to guide the industry (for example, the NABERS Multi-Tool).
- Incentivise & support retrofitting of existing residential buildings.
- Improve pre-application meetings and agree on the sustainable design principles for the site prior to the detailed design process.
- Continue to promote a reduction of car parking with residential developments (or no car parking) to help support one planet living principles.
- Promote the engagement of environmental engineers at an early stage in the concept design, ideally before or at the same time as engaging an architect.

## 3.12 Limited communal space and facilities

It is important that residents have access to appropriate and sufficient recreational and community spaces. Recreational spaces and community facilities can be provided in local neighbourhoods or within residential buildings.

### What is the evidence?

#### Case study observations

- Few case studies incorporate communal open space.
- Some case studies incorporate communal recreational and social facilities such as gymnasiums, pools and cinema rooms.
- Many case studies incorporate a ground floor café or active retail uses.
- There is limited attempt to create strong visual and pedestrian connections to existing or adjacent open spaces.
- Majority of case studies were located within walking distance to open spaces, public transport, local shops and services.
- Few case studies are located within walking distance to a primary school.
- The majority of case studies incorporate 100 per cent site coverage and therefore provide no open space at ground level.

### What are the key considerations?

- Recreational and community spaces provide opportunities for social interaction, activity and community development, including play and informal recreation for children.
- Green communal space can help adapt to the effects of climate change by soaking up rainwater, attenuating flooding, and providing cooler environments.
- Access to private open space, communal and public open space is important for the health and well being of residents.

### Why is this happening?

#### Policy drivers

The Melbourne Planning Scheme includes Clause 15.01 (Urban environment – which references the Design Guidelines for Higher Density Residential Development), 22.01 / 22.18 / 22.25 (UD policies including public space) and 22.24 (Student housing).

The Guidelines for Higher Density Development incorporate the following objectives:

- Objective 6.1: To ensure access to adequate open space for all residents.
- Objective 6.2: To ensure common or shared spaces are functional and attractive for their intended users.
- Objective 6.3: To allow solar access to the private and shared open spaces of new high density residential units.
- Objective 6.4: To integrate the design of shared and private open space into the overall building design and façade composition.

#### Market drivers

It may be considered that some sites are unsuitable or too small to deliver communal open space. Open space could be perceived as an added cost if it reduces the total amount of development possible on a site and therefore render a development unviable.

Furthermore, communal spaces require systems and agreements for ownership, management and maintenance. This may be associated with complexities and costs for the end users.

### Policy approach of other cities

#### City of Sydney

The Residential Flat Design Code provides Objectives and Better Design Practice to ensure that apartments are designed to provide residents with passive and active recreational opportunities to provide an area on site that enables soft landscaping and deep soil planting ; to ensure that communal open space is consolidated, configured and designed to be useable and attractive and to provide a pleasant outlook.

Part 2 Site Configuration, Open Space provides a 'Rules of Thumb' as follows:

The area of communal open space required should generally be at least between 25 and 30 percent of the site area. Larger sites and brownfield sites may have potential for more than 30 percent.

Where developments are unable to achieve the recommended communal open space, such as those in dense urban areas, they must demonstrate that residential amenity is provided in the form of increased private open space and/ or in a contribution to public open space.

#### City of Brisbane

The Brisbane City Plan includes the Residential Design - High Density Code.

Relevant Performance criteria include:

- Criteria 11 - Development must provide sufficient communal and private open space for residents' needs.
- Criteria 12 - Communal open space for clothes drying and common recreation facilities must be provided where a significant proportion of dwellings do not have access to ground floor private open space.

Acceptable solutions include:

- A minimum 25 per cent of the site is provided as open space each with a minimum dimension of 5m
- Where more than 25 per cent of dwellings do not have access to ground floor private open space, communal open space for clothes drying and common recreation facilities is provided with at least one continuous area a minimum of 50m<sup>2</sup> with a minimum dimension of 4m.

#### Singapore

In Singapore, there are incentives to offer communal open space in the form of sky terrace floors by relaxing height control. In addition, there are requirements to provide 4.04m<sup>2</sup> of open space per 56m<sup>2</sup> of gross floor area. Furthermore, the maximum site coverage for a residential development is 40 per cent to allow for enough open space.

#### New York

New York City has a requirement for minimum recreation space of 2.8 - 3.3 per cent of residential floor area.

#### Vancouver

The City of Vancouver have a policy for maximum site coverage of 40-65 per cent to enable sufficient open space to be provided.

#### How could the City of Melbourne respond to the issue?

- Introduce more prescriptive policy requirements for communal facilities and open space within residential developments.

### 3.13 Lack of storage and utility spaces

Storage and utility spaces refers to the need to have space for everyday household equipment, such as vacuum cleaners and ironing boards in an easily accessible location without taking space from other habitable spaces. There is also the need to store seasonal belongings or those used infrequently, such as suitcases and sports equipment. This is even more important considering the trend of increasingly smaller apartment sizes. Some residential developments provide external storage for larger equipment or outdoor equipment in the basements of developments.

#### What is the evidence?

##### Summary of case study findings

- Few apartments included any external storage space, for example storage cages.
- Few developments seemed to provide sufficient storage space within apartments.

#### What are the key considerations?

Without sufficient storage, the quality of the internal living environment can be compromised as space could be taken up from habitable spaces such as bedrooms and living areas.

#### Why is this happening?

##### Policy drivers

The Melbourne Planning Scheme includes general policy guidance in Clause 15.01, Urban environment (which references the Design Guidelines for Higher Density Residential Development), 22.24 (Student housing) and 52.34 (bicycle facilities).

The Guidelines for Higher Density Development include Objective 5.5 which is to provide adequate storage space for household items.

### Policy approach of other cities

#### City of Adelaide

Development Control Principle 83 states that development should provide adequate and accessible storage facilities for the occupants at the following minimum rates:

- Studio: 6m<sup>3</sup>
- 1 bedroom apartment: 8m<sup>3</sup>
- 2 bedroom apartment: 10m<sup>3</sup>
- 3+ bedroom apartment: 12m<sup>3</sup>

50 percent of the storage space should be provided within the apartment with the remainder provided in the basement or other communal areas.

#### City of Sydney

The Residential Flat Design Code provides Objectives and Better Design Practice to ensure that apartments are designed to provide adequate storage for everyday household items within easy access of the apartment and to provide storage for sporting, leisure, fitness and hobby equipment.

Part 3 Building Design, Storage provides “Rules of Thumb” as follows:

In addition to kitchen cupboards and bedroom wardrobes, provide accessible storage facilities at the following rates:

- Studio apartments: 6m<sup>3</sup>
- 1 bedroom apartments: 6m<sup>3</sup>
- 2 bedroom apartments: 8m<sup>3</sup>
- 3+ bedroom apartments: 10m<sup>3</sup>

Provisions are also provided in the Central City DCP which require the following storage:

- Studio apartments 6m<sup>3</sup>
- 1 bed apartments 8m<sup>3</sup>
- 2 bed apartments 10m<sup>3</sup>
- 3+bed apartments 12m<sup>3</sup>

At least 50 per cent of this storage area is to be provided within the apartment (as part of the required unit area) and accessible from either the hall or living areas. Where the remaining 50 per cent of the storage is located in the basement of the building it will be excluded from the calculation and linked to each dwelling unit through the provisions of the relevant Strata Plan.

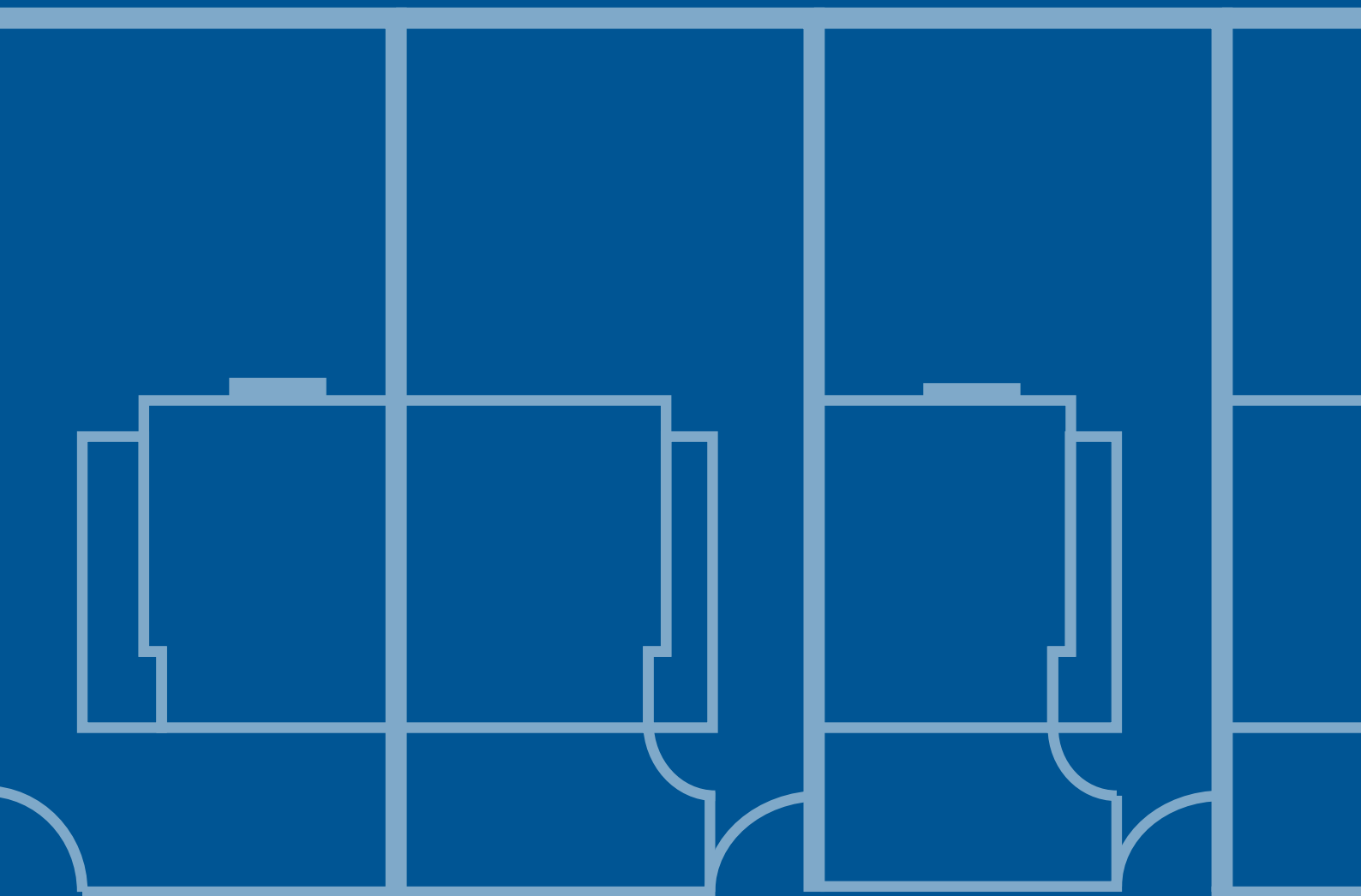
#### Greater London Authority

The Greater London Authority, through the London Plan and Supplementary Planning Guidance on Housing, have specific requirements for storage space based on the size and occupancy of the apartment. The policy on storage states built-in general internal storage space free of hot water cylinders and other obstructions, with a minimum internal height of 2m and a minimum area of 1.5m<sup>2</sup> should be provided for two person dwellings, in addition to storage provided by furniture in habitable rooms. For each additional occupant an additional 0.5m<sup>2</sup> of storage space is required.

#### How the City of Melbourne could respond to the issue?

- Introduce planning standards for storage requirements - either as a policy in the Melbourne Planning Scheme, a design guideline document incorporated within the Melbourne Planning Scheme or in a best practice design guidelines document.

## 4 Best and next practice







## 4 Best and next practice

### 4.1 Best Practice

This section identifies best practice examples from around the world of medium and high rise residential developments. This helps to demonstrate high quality housing design and what can be achieved when good design is a shared value by all those involved in the development process. The examples have been chosen to respond, in part, to the design issues identified and explored in Sections 2 and 3 of this paper.

#### **K2 Apartments, Melbourne**

K2 Apartments, a 96 unit housing development for the Victorian Government's Office of Housing, is designed to minimise its ecological impact. Four buildings are orientated and separated to allow for maximum northern sun access to all units all year. A 'green spine' of public and private courtyards, links these four buildings. This provides a space for community connection and support the sustainable functions of the building. The roof and façade are angled to maximise efficiency of solar panels and to also facilitate shading to the levels below. The buildings are designed to stabilise internal thermal comfort. This has included insulation, double glazing, shading, façade treatment to minimise direct sunlight and cross ventilation. The use of exposed concrete ceilings and heavy masonry walls assists to stabilise temperatures in winter and summer. Cool air is retained during the day due to minimal ventilation and warm air can be released at night time through open windows and exhaust fans.

K2 has won many accolades including the 2009 UN World Environment Day Awards, Building Commission Award for Best Sustainable Residential Development, the 2007 Australian Institute of Building Awards (Victoria), Professional Excellence Award, and the Best Contribution to Sustainable Design, Large Scale and Mayor's Award in the 2007 City of Port Philip Design Development Awards.

#### **The Nicholson, Melbourne**

The Nicholson is development of three to nine storeys incorporating 199 apartments with a mix of privately owned, affordable rental and social housing dwellings. It was built using modular construction, has grey water recycling, an electric car share scheme, an average 6 star rating across the apartments and a 60 per cent take up of owner occupiers in the 110 private sale apartments.

The massing and orientation of the building is composed to encourage natural ventilation and multiple aspects. The apartments have an appropriate depth to width ration and size so that each dwelling accommodates good quality useable and sufficient space. The layout and balconies relate well to the internal courtyard which provides communal open space and natural ventilation to all dwellings.

The development facilitates connection to cheaper and sustainable energy through an embedded electricity network that provides a 20 per cent reduction of electricity costs to tenants by opting for renewable energy supplies as a coalition of tenants. It received the Judges Award in the Urban Development Institute of Australia (Victoria) 2011 Awards for Excellence.

#### **The Commons, Brunswick**

The Commons housing project has partnered with the Moreland Energy Foundation Limited (MEFL) to help deliver a sustainable project that exemplifies the MEFL's Sustainable Urban Development Framework. The principles are zero carbon, zero waste, sustainable transport, sustainable products and materials and sustainable water.

The Commons will be a four storey residential building that represents a well configured building design with respect to its orientation. Most of the units are configured to have multiple aspects, all have cross ventilation and maximise natural sunlight, whilst incorporating shading to the West and Northern Facades. It is a mixed use developing that will incorporate a café on the ground floor, artist's studios, and communal gardens.



*St Andrews, Bromley-by-Bow, London*

The development holds an 8 star energy rating and incorporates solar power, solar hot water & Hydronic Heating. It is designed to be a car-free development, where bike storage is allocated to the ground floor.

### **The Mariner, Docklands, Melbourne**

The Mariner is an example of 'Community housing' with a balanced mix of tenants – students, people with full time jobs, people on low incomes, and people with disability; 28 apartments were sold to the private sector to fund the development of 85 affordable units. The apartment building has an 8.5 energy efficiency rating to make living costs more affordable to residents.

### **Common Ground, Sydney**

Common Ground, developed by Grocon and managed by Mission Australia Housing, is a six storey building which includes 104 units to provide a home for low income workers and people who have experienced homelessness in inner-city Sydney. The development also includes on site support services and incorporates Green Star features.

### **Australia Towers, Sydney Olympic Park**

Australia Towers comprised development of approximately 600 apartments in the Olympic Park town centre, Sydney. The development incorporates retail, live/work units and community facilities including a childcare centre. The design maximises views, amenity, cross ventilation, and privacy. It was one of the first apartment developments to incorporate co-generation technology in New South Wales.

### **St Andrews, Bromley-by-Bow, London**

The first part of a larger scheme, this development on a site of 0.76ha consists of a courtyard block of six buildings, around a shared garden. Attention to detail, inventive use of brick, and a creative approach to massing result in a scheme that integrates well into the local area and offers an engaging and distinctive character. The development incorporates 964 homes in five phases, as well as parks, play areas, shops, community facilities and improved links to the nearby station and local area. Almost half of the properties are affordable housing, and over half of those are for social rent. Most of the socially rented homes have at least three bedrooms in order to meet local need for family housing. The shared internal courtyard has generous lawns, interesting planting, informal play areas, and locally crafted furniture.

While some units, due to the financial viability, are tightly planned and single aspect, on the whole there has been investment in good levels of circulation space with no long corridors and plenty of natural light. The development won a UK Housing Design Award in 2011, awarded by the Department for Health and the Government's national regeneration agency in the UK and supported by the Royal Institute of British Architects, the Royal Town Planning Institute and the Royal Institute of Chartered Surveyors.



*The Nicholson in East Coburg, Melbourne*

## 4.2 Next Practice

In an increasingly competitive global market, cities all over the world are all trying to respond to significant social, economic, environmental and technological changes. This will require innovation and new thinking from the development industry in relation to housing design. The topics and examples in this section relate to thinking about housing for future needs, responding to changing demographics, climate change and construction techniques in order to help deliver high quality new housing which is both economically and environmentally sustainable.

### Construction

The industry is currently responding to the high level of construction costs through concepts such as modular housing. The Little Hero development in Russell Place, Melbourne, is notable for being the world's first full-scale commercial application of a particular type of modular construction which reduced construction time when compared with a conventional build. Similarly, the Nicholson project in east Coburg used a modular construction, while emerging proposals for new residential developments in cities around the world are earmarked for similar modular construction.

The Forte development in the Docklands is currently being constructed and will be the world's tallest timber apartment building. It uses Cross Laminated Timber, sourced from certified sustainably managed forests, to perform better compared to a conventional building by offering excellent thermal qualities and ambient air quality. The development incorporates dual aspect apartments of 80m<sup>2</sup> for a two bedroom unit and 60m<sup>2</sup> for a one bedroom unit, spacious balconies of 11m<sup>2</sup> and vegetable gardens.

### Innovative apartment model for small households, New York

In July 2012, the Mayor of New York announced a pilot program to develop a new housing model for the City's growing small-household population on a city owned site in Manhattan. The design competition involves proposals for a rental building composed primarily, or completely, of micro-unit apartments, smaller than what is allowed under current regulations. These units are expected to be around 25- 28 square metres and provide space for a growing number of young and creative individuals in the city. Responses will be judged on affordability and competitive land purchase price; innovative micro-unit layout and building design; and experience developing housing in New York City. Proposals were received from 33 teams across the world (nearly three times the responses the city receives) in order to build the units by September 2013. If the scheme is successful, there could be the possibility that the city may reduce the minimum apartment size from 37 square metres, a requirement in New York since 1987.

### Building regulations and housing standards in the UK

The UK government, through the Department for Communities and Local Government (DCLG), has recently launched a new independent group of building industry experts tasked with simplifying the mass of rules imposed on developers and housebuilders to make them easier to understand and follow. The current, complex system of building regulations and housing standards will be targeted by a new Independent Challenge Panel, which will consider how these requirements work together and what potential there is to free up the system and make it work more efficiently.

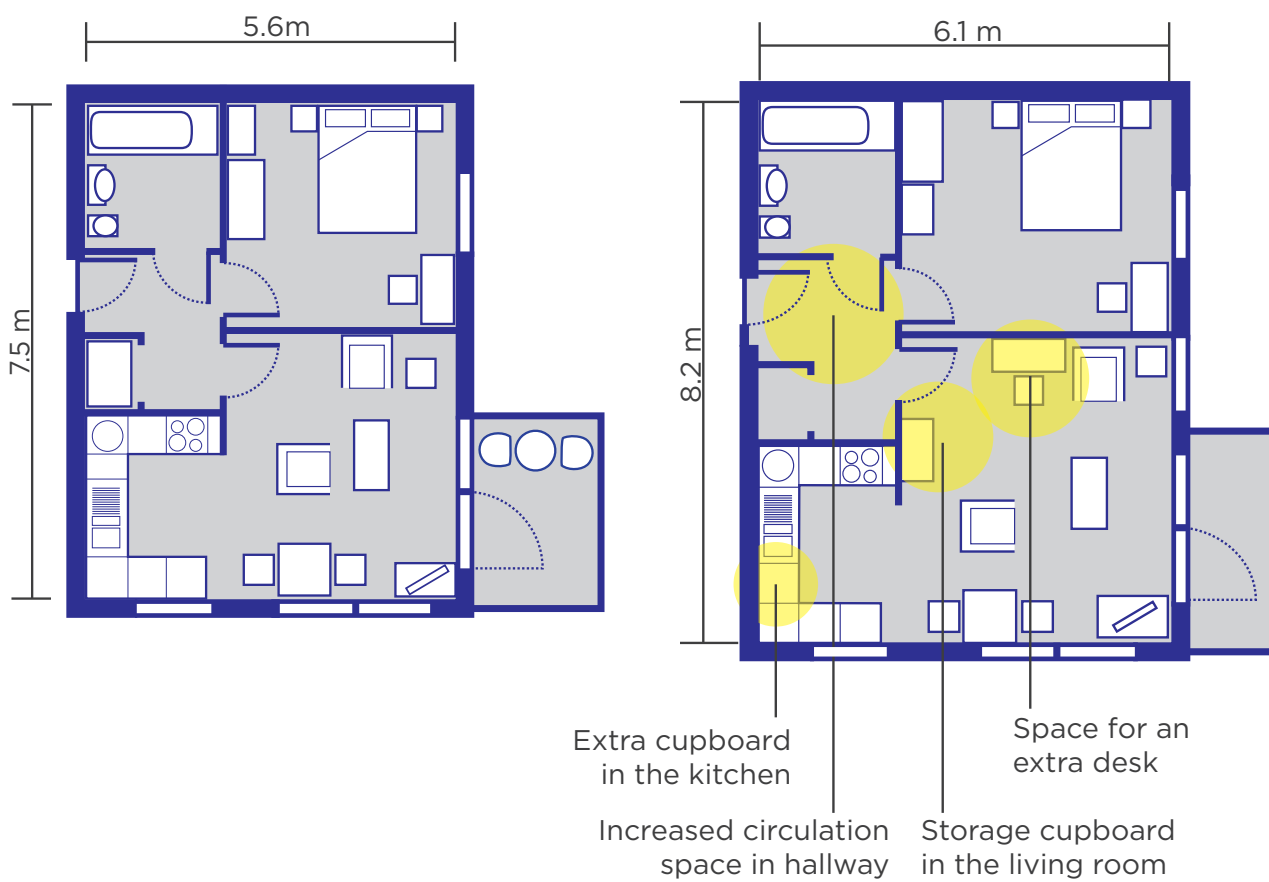


Figure 4.1: Plans showing the difference between a 42m<sup>2</sup> one bedroom apartment (left) and a 50m<sup>2</sup> one bedroom apartment (right)

Source: Adapted from *Homewise Consumer Guide*, Royal Institute of British Architects (RIBA), 2011.

## **Review of SEPP 65 and the Residential Flat Design Code**

The State Environmental Planning Policy 65 – Design Quality of Residential Flat Development (SEPP 65) was introduced 10 years ago in 2002. It aims to improve the design quality of residential flat buildings in New South Wales and contains principles for good design and provides guidance for evaluating the merit of design solutions. The Residential Flat Design Code provides tools for improving the design of residential flat buildings and gives guidance on how the design quality principles provided under SEPP 65 can be applied to new developments.

According to the Department of Planning and Infrastructure it is widely accepted that the design quality of residential flat buildings in NSW has improved since the introduction of SEPP 65 and the Residential Flat Design Code in 2002.

The department is currently undertaking a review of SEPP 65 and the Residential Flat Design Code to ensure they remain relevant and useful resources for industry and local government.

The objectives of the review are to:

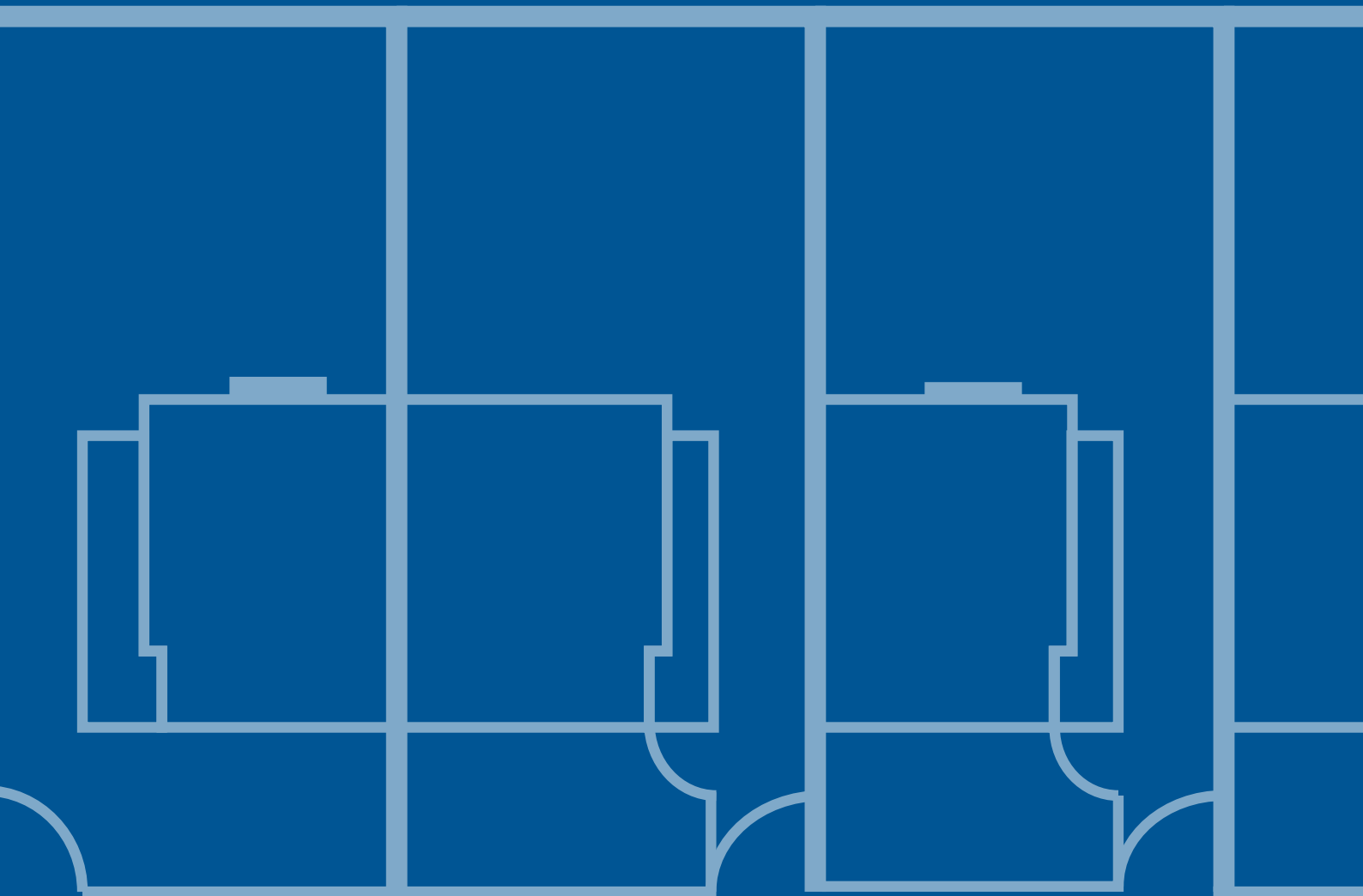
- Provide opportunities for input into the review process from a wide range of stakeholders
- Identify and discuss key issues
- Update SEPP 65 and the Residential Flat Design Code to promote best practice in the planning and design of residential flat buildings in NSW.

It will be important to understand the key lessons emerging from the review process and the recommended amendments in order to help inform thinking regarding the need for similar design policy and guidance, either at the state or local level, and its effectiveness.





## 5 Summary





# 5 Summary

## 5.1 Conclusion

This paper has highlighted the importance of good housing design and how it is not defined by how a development looks; it can add social, economic and environmental value and help create neighbourhoods and communities which are robust enough for future challenges and change. Securing high quality housing is essential to successfully transform our urban renewal areas and provide 45,000 new homes which meet the daily needs of residents, are fit for purpose in the long term and designed to accommodate the changing needs of occupants throughout their lifetimes.

The research in this paper on case studies, although not exhaustive at this point, has identified and explored a number of design issues. The cumulative impact of these issues has resulted in a significant proportion of medium and high rise apartment developments within the City of Melbourne scoring relatively poorly when compared against set design criteria (as explained in Section 2). The research acts as a starting point to focus attention and enable discussions on the quality of housing design.

The design issues identified do not just relate to the City of Melbourne. They are evident in neighbouring inner city areas of Melbourne, in other Australian capital cities and in cities around the world. This is highlighted by the policies and guidance which currently exist in many of these places to help influence and improve the quality of housing, to ensure that housing is flexible and adaptable over the life of a building and accessible to the widest possible range of people at all stages of life.

Melbourne has the narrowest and least rigorous policy guidance on housing quality. This is in contrast to other Australian capital cities and in the international comparator cities where specific and measurable outcomes are often required, including minimum apartment sizes, apartment mix and internal amenity.

In response to this, Moreland City Council has produced a Higher Density Design Code (in consultation with the Coburg Urban Design Review Panel and the Victorian State Architect), which recently won a Planning Institute of Australia award, supported by the Victorian Coalition Government.

New South Wales introduced SEPP 65 and the Residential Flat Design Code in 2002 (following Sydney's Central City DCP in 1996) which is widely accepted to have improved residential flat building and is currently being reviewed to remain relevant and useful.

Further afield, London has recently introduced minimum space standards as part of their goal to optimise rather than maximise sites to ensure that homes have long term adaptability to suit growing families or new owners and tenants. Early indications suggest that these standards are supported by the development industry and incorporated in recent residential developments. A study assessing the viability of the minimum space standards in London concluded that they will not have a significant impact on build costs or the number of apartments possible on a site, except for very small schemes with significant site constraints. For these schemes, it is considered justifiable to make a judgement about compliance with the standards against wider policy issues such as housing delivery and viability.

For the purpose of this paper, the design issues have been explored as separate issues in order to help gain a good understanding of each one. In reality, however, they are closely connected. For example, a poorly designed scheme is likely to contain apartments which are too small to be adaptable and flexible, which has insufficient storage and poor levels of internal amenity. Alternatively, a well designed scheme is likely to contain apartments of a good size, layout and mix and good levels of amenity within a well designed building layout.

The paper has highlighted a selection of good practice well designed residential developments. These schemes demonstrate what can be achieved when design is a shared value by all those involved in the development process.

The paper has also tried to raise thinking about housing for future needs, responding to projected trends in the age profile and composition of the population, climate change and construction techniques by moving from best practice to explore emerging next practice thinking and examples.

To achieve consistently good quality housing in the City of Melbourne, it needs to be a core value shared by all those involved in delivering housing - architects, developers, investors, government and communities. While this is, therefore, a shared agenda and partnership which should be built up and developed over time, the leadership of government at all levels has an essential role to play in setting market expectations to help achieve good quality housing design. The next section explores some possible ways of how the City of Melbourne could help set such expectations.

## 5.2 Facilitating good design

### Develop Design Standards

The City of Melbourne could develop design standards and guidance, similar to those used in Sydney, Adelaide and London to help promote and ensure higher quality housing design in the municipality.

Such standards, sometimes called design codes, should be simple, effective and typically avoid prescription or detail. It is also important they do not attempt to impose architectural styles or particular tastes and do not stifle innovation. These standards can help deliver high quality outcomes, help improve the consistency and predictability of the requirements placed on developers and also potentially lower costs by reducing any risk premium in the planning process. Introducing design standards that can be used independently of the Melbourne Planning Scheme provides a negotiation tool throughout the planning process. There is a risk, however, that development will not deliver better quality as the standards would be a guiding document only and not enforceable.

### Amend the Melbourne Planning Scheme

To ensure any housing design standards, policies or guidance developed by the City of Melbourne is incorporated in the planning process, integration into the Melbourne Planning Scheme through an amendment is required.

There is potential for the Melbourne Planning Scheme to be amended to strengthen design standards. This would require consideration of the appropriateness of different provisions, but could include introducing design policies and guidance in the Local Planning Policy Framework, updating any relevant Design and Development Overlays, or introducing design guidelines as an Incorporated Document or Reference Document.

## Design review panel

The City of Melbourne has a significant amount of in-house design expertise to carry out pre-application negotiations with developers and help make more informed decisions. Urban designers regularly attend pre-application meetings alongside planning officers.

Some larger, more prominent or complex projects, however, can benefit from external independent and cross-professional advice. This leads to the possibility of the City of Melbourne utilising a design review panel. One option could be to use such a mechanism in the form of an inner city design review panel with other municipalities, such as those involved in the Inner Melbourne Action Plan (IMAP).

Design review offers a simple, robust and tested method to assess and improve design quality. It's essentially about making a scheme better than it otherwise would have been, by challenging, advising and offering recommendations on developments. It is important to note that a design review panel can't redesign a scheme or make a bad scheme good. When carried out at the right stage, such as during early pre-application development, it can allow all parties to reflect on a scheme and broaden the debate as to how a range of factors, such as the design issues identified, might best be considered. Panels are often comprised of a range of experts from different disciplines, such as architecture, planning, urban design, landscape architecture, housing, and engineering.

The Victorian Design Review Panel (VDRP) has recently been established to provide independent and authoritative advice to government and statutory decision makers across Victoria about the design of significant government projects. The VDRP is overseen and managed by the Office of the Victorian Government Architect (OVGA).

The VDRP, however, will only be able to look at a relatively small number of larger schemes of state significance. There is, therefore, scope to have a more local panel which could look at more schemes and offer a more locally informed perspective.

The focus for panels can vary. For example, the City of Manningham's Sustainable Design Taskforce is a form of review panel which emphasises sustainability issues and provides a forum for proponents to present their projects to councillors prior to the application being considered. The City of Frankston's Design Review Panel acts upon both automatic referral under the panel's terms of reference and discretionary referral by council officers. The Mornington Peninsula Shire's panel also offers design workshops for project proponents.

The Design Review process can positively influence the quality of design outcomes and help speed up the planning process for developers by assisting and supporting Council decision making. It could also help reduce the uncertainty and cost of the planning process, thereby helping deliver housing at more acceptable price points.

## Housing Toolkit

This option is similar to Design Council CABE's *Building for Life* in the United Kingdom and could help set a benchmark for housing design quality in the City of Melbourne (or even the inner city area). The toolkit would differ from design standards or guidance by being a short, handy, easy to use guide which is less prescriptive and instead focuses on overarching goals or questions. The toolkit, as well as being used in the early stages of the development process, could be a useful guide during design review panels and also act as a tool for rating the design quality of new developments.

## Housing Design Awards

The acknowledgement of good design by local government plays a significant role in helping others, particularly the community, to recognise good design and its benefits. One way of achieving this for residential development in the City of Melbourne could be to have a City of Melbourne Housing Design Awards.

The selection of judges can vary, but should contain a mix of professionals and councillors to gain a good range of expertise and understanding of local issues, while helping create a sense of ownership and pride. Entries for the awards would be invited for different categories (such as those at the design stage and those built) before being shortlisted and visited by the judging panel.

This could help raise the profile of housing design and help build the shared agenda and partnership to help deliver good quality housing design in the City of Melbourne. Prominent external judges or presenters can also be introduced to affirm local decision making and promote projects beyond the municipality.

A number of Design award programs are already being run in Victoria to encourage design excellence by celebrating good examples, including in the City of Port Philip and the City of Whitehorse.

## 5.3 Further evidence and research

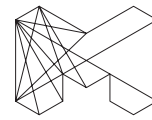
Additional research could be carried out to explore further the design issues identified in Sections 2 and 3. This could include:

- Research regarding the user experience in newly built apartments to understand if they are facing similar issues to those identified in this paper.
- Further research regarding good levels of internal amenity for residential developments (for example. sunlight, daylight, ventilation, visual privacy and noise).

## 5.4 Next steps

This paper, along with two other supporting papers on *Understanding the Social Outcomes of Housing* and *Understanding the Property and Economic Drivers of Housing* will inform the development of a Housing Discussion Paper. The Housing Discussion Paper will be subject to community engagement with a wide range of stakeholders in 2013.





**CITY OF  
MELBOURNE**

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