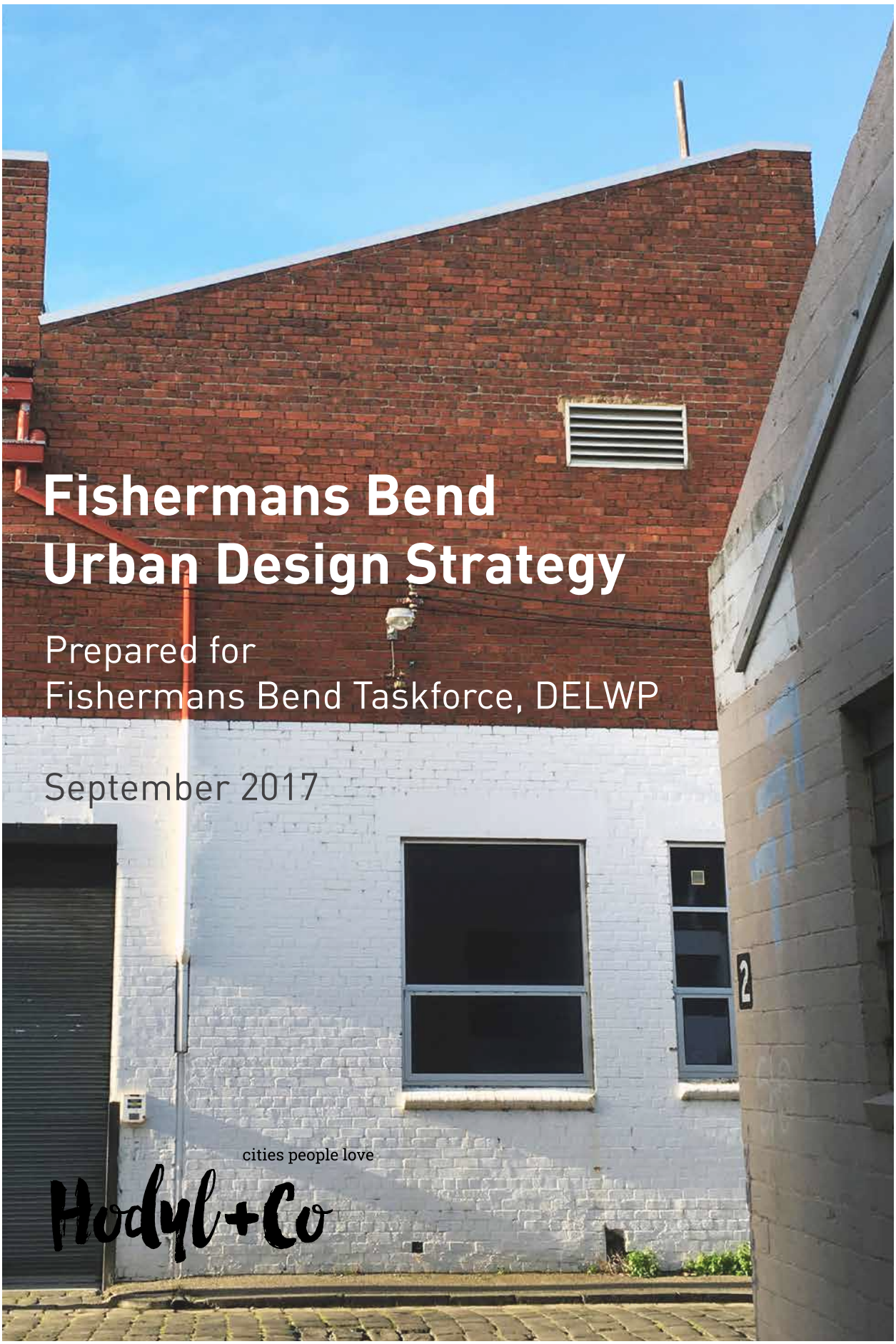

Fishermans Bend Urban Design Strategy

Prepared for
Fishermans Bend Taskforce, DELWP

September 2017

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Prepared by Hodyl + Co for the Fishermans Bend Taskforce, DELWP
www.hodylandco.com

27 September 2017

Executive Summary

The urban renewal of Fishermans Bend will fundamentally shape Melbourne's future.

The *Fishermans Bend Vision* (DELWP, 2016) establishes an aspiration to create a world-leading example of inner city renewal, transforming the existing industrial suburb into thriving mixed-use, high-density neighbourhoods by 2050.

To achieve this, a forward-looking urban design strategy is needed to guide all new development towards this aim. As most of the land in Fishermans Bend is in private ownership, planning tools will be key in providing clear direction on the type of development that is sought in the area.

This strategy outlines six urban design objectives and 26 recommendations for the preferred land use, built form and density outcomes in Fishermans Bend. It provides the rationale that supports the introduction of a revised planning framework that can deliver on the vision.

The Urban Design Strategy integrates with the planning work undertaken for Fishermans Bend by others, particularly transport and open space planning, that is critical to the overall urban design outcomes for the area.

The need for a new strategy

Existing development patterns demonstrate that the current planning framework is not delivering on the vision. If these trends continue, they could lead to significant difficulties and shortfalls in achieving the vision, including:

- The lost opportunity to grow the central city economy which is the foundation of Melbourne's position as a global, prosperous city
- The lost opportunity to create new jobs in immediate proximity to Melbourne's existing CBD
- A lack of infrastructure to support population growth, resulting in greater pressure on existing infrastructure, facilities and services
- Liveability will be compromised due to the creation of very high residential densities within parts of Fishermans Bend
- A lack of affordable housing to create an equitable, diverse and inclusive inner-city
- Minimal family-friendly housing and limited housing choice
- Melbourne's prized liveable city status could be tarnished
- Environmentally unsustainable development patterns, with increased carbon emissions

Urban design objectives

To address these challenges, the following six urban design objectives have been established as priorities for Fishermans Bend which will underpin a revised planning framework.

1. Integrated land use and transport planning
2. Liveable, mixed-use neighbourhoods
3. Distinctive, attractive and welcoming places
4. Housing we need and want
5. Inclusive, cohesive and resilient communities
6. Environmentally sustainable development

Key recommendations

This report outlines the specific recommended actions to deliver on these objectives. They result in a number of proposed changes to the planning framework for Fishermans Bend. The key recommendations are:

- Establishment of core and non-core activity areas to align land use mix and intensity with transport proposals
- Introduction of a Floor Area Ratio (FAR) scheme to provide some certainty on overall population growth and residential densities and to align this growth with infrastructure provision and locations
- Introduction of a minimum FAR for commercial uses in the core activity areas of each precinct to ensure job targets are met and located in proximity to public transport
- Utilisation of the FAR controls to deliver new streets and open spaces
- Introduction of a Floor Area Uplift (FAU) in Fishermans Bend to incentivise the provision of affordable housing, community infrastructure and additional new jobs above the 40,000 target
- Introduction of overshadowing controls that provide sunlight protection to a large park in each precinct in winter
- Retention of mandatory 4 storey height limits at the interface with existing low-scale residential suburbs to the south, however, the extent of this height limit has been revised
- Introduction of revised discretionary building heights across the remainder of Fishermans Bend that are aligned with the vision, the revised transport and open space proposals, and the need to deliver distinct and characterful neighbourhoods
- Introduction of revised development controls for building separation, setbacks and communal open space to support a greater range of housing typologies, including family-friendly housing and mid-rise developments courtyard and perimeter block designs. This will also assist in more sensitive redevelopment of smaller sites in fine-grain areas of Montague

This revised built form and density framework aims to realise the overall Fishermans Bend vision, address the shortcomings in existing development patterns and position Fishermans Bend to deliver world-class urban renewal.

1

Introduction

Purpose of this report

Hodyl + Co was engaged to develop an Urban Design Strategy that can deliver on the overarching *Fishermans Bend Vision 2016* (DELWP 2016).

Urban design is the process of shaping the form, function and character of an urban area. It should lead to the creation of an urban environment that meets people's needs enabling them to have a good quality of life. It should support economic prosperity, environmental stewardship, cultural expression and the social life of a place. This strategy focuses on putting in place clear design and planning objectives and recommendations for appropriate planning mechanisms to guide the renewal of Fishermans Bend over the next 35 years towards this aim.

This report focuses on the primary structuring elements needed to influence the urban design of Fishermans Bend, rather than detailed design of the public realm. In particular, it addresses land use, density and built form. Other key urban design considerations, such as transport and open space, have been addressed by separate strategies and are incorporated into this report.

This report considers the four capital city zoned precincts only: Lorimer, Montague, Sandridge and Wirraway (see figure 1).

Figure 1: Aerial image of Fishermans Bend and precinct boundaries

1.1 Delivering the vision

1.1.1 The Opportunity

Melbourne's central city contains a number of urban renewal precincts that are well-positioned to support the growth of the city (see figure 2). Of these, Fishermans Bend is by far the largest and the most significant. It is also the most ambitious with a vision to create a globally leading example of urban renewal.

> 'A thriving place that is a leading example for environmental sustainability, liveability, connectivity, diversity and innovation'
>
> Fishermans Bend Vision (DELWP 2016)

The aspiration is for Fishermans Bend to set a new benchmark for inner city living and working, to position Melbourne as a 21st century smart city and to enhance the highly valued natural and cultural attributes of the area.

Melbourne's central city is the economic engine of Victoria. Fishermans Bend represents a significant opportunity to expand this economic activity over the next 35 years to contribute to the city's prosperity. Fishermans Bend is also an established area that has played a key role in Melbourne's history. Its transformation from an industrial precinct into a series of flourishing, high-density, mixed-use neighbourhoods will fundamentally reshape central Melbourne. It will also take time; at 248 hectares in size, the capital city zoned areas are larger in size than the traditional Hoddle Grid which has developed incrementally over 180 years.

1.1.2 The Challenges

Fishermans Bend is also distinct in many other challenging aspects that make planning for this precinct highly complex, including:

Limited government ownership of land

- Most of the land is held by private owners which is unusual for urban renewal precincts of this scale. This makes it difficult to readily identify sites for critical public infrastructure such as transport and open space.

Unconventional planning process

- The re-zoning occurred prior to strategic planning for the area meaning that applications for new development have preceded critical long-term planning decisions such as public transport and open space provision.

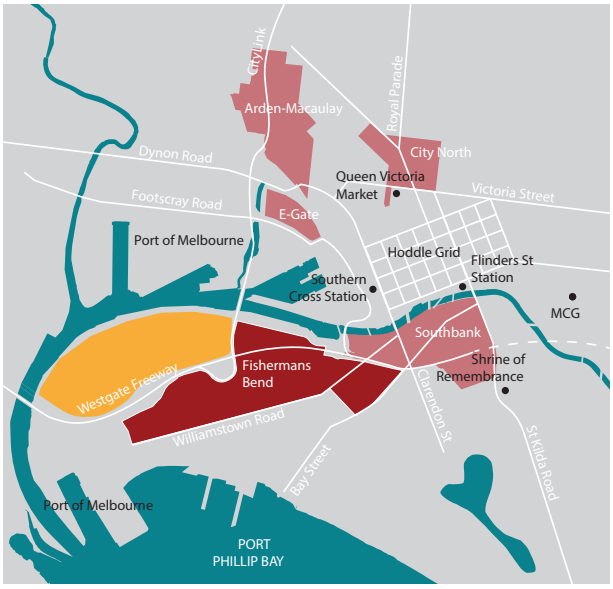


Figure 2: Urban renewal precincts in central Melbourne

- Fishermans Bend - Capital City Zoned areas
- Fishermans Bend - Employment Precinct
- Other identified urban renewal areas in central Melbourne

- Land values have increased significantly with none of this value captured to assist in funding this critical infrastructure.
- The current built form strategy is linked to a now superseded public transport strategy.
- A range of development control settings have been in place over the past 5 years. This has established expectations around potential yield on development sites which have then informed land purchases. It has also deterred some highly experienced, well-regarded developers from investing in the area.

Misalignment between the preferred vision and development patterns

- The current height limits and many of the approved development permits and current live permit applications are not aligned with the agreed vision for Fishermans Bend.
- Current development patterns are not delivering housing diversity with primarily townhouses or tower developments being proposed.

Development patterns exceeding population targets

- Approved development permits incorporate 7,800 dwellings which could accommodate over 15,000 residents. There is uncertainty on how many of these developments will proceed.
- Current live applications include another 9,700 dwellings, which could accommodate approximately 20,000 residents.
- Together approved and current permit applications could accommodate approximately 35,000 residents. This equates to over 40% of the projected population of 80,000 people on only 14 % of the land area.

Very high residential densities

- The current development trends in Lorimer and Montague (North) will lead to extremely high residential densities which are 3 to 4 times higher than what is required to meet the population targets.

Lack of commercial development

- Existing development trends are not delivering on job targets with very small amounts of commercial development, mostly retail, being incorporated into predominantly residential development applications. This is compromising the delivery of mixed-use, walkable and vibrant precincts and the longer-term economic prosperity of the city

Potential contamination and poor soil conditions

- Existing and historical industrial uses are likely to mean that contamination is an issue that will be translated as costs to new development.
- Generally poor soil conditions are likely to affect construction costs of new buildings.

Any one of these aspects on their own would represent a significant challenge to planning effectively for Fishermans Bend. Together they demonstrate the scale of intervention that is now required in order to put Fishermans Bend back on track to realising the vision and to deliver on this once in a generation, city-shaping opportunity.

1.2 Key planning proposals

1.2.1 Existing urban structure

The current urban structure reflects the existing and past uses of the area, with large blocks located in Lorimer, Sandridge and Wirraway serving the existing industrial uses (see figure 3). Montague has a finer grain street network, greater mix of uses and the largest number of heritage buildings. Open space is limited and dedicated to active recreational uses. Two bridge crossings provide limited access across the freeway.

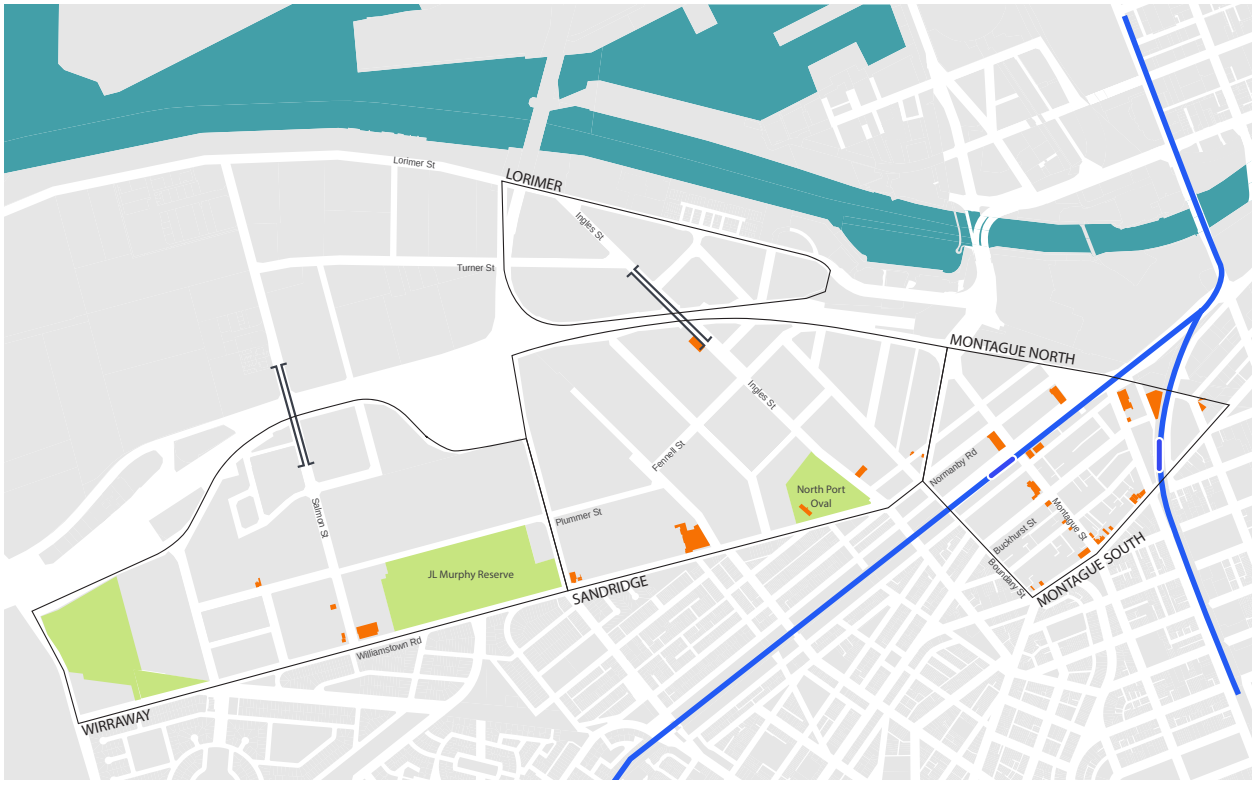


Figure 3: Existing urban structure, 2017

- Existing block structure
- Existing green open space
- Heritage buildings
- Existing tram lines
- Existing bridge (vehicle, cycling and pedestrian access)

1.2.2 Proposed urban structure

This strategy incorporates the recommendations from other reports prepared as part of the Fishermans Bend planning process. In particular, this includes the *Integrated Transport Strategy* (DEDJTR, 2017), *Public Space Strategy* (Planisphere, 2017) and the *Community Infrastructure Plan* (DELWP, 2017) which together establish key urban design moves that will have a significant influence on the land use, density and built form proposals considered as part of this report (summarised in figure 4).

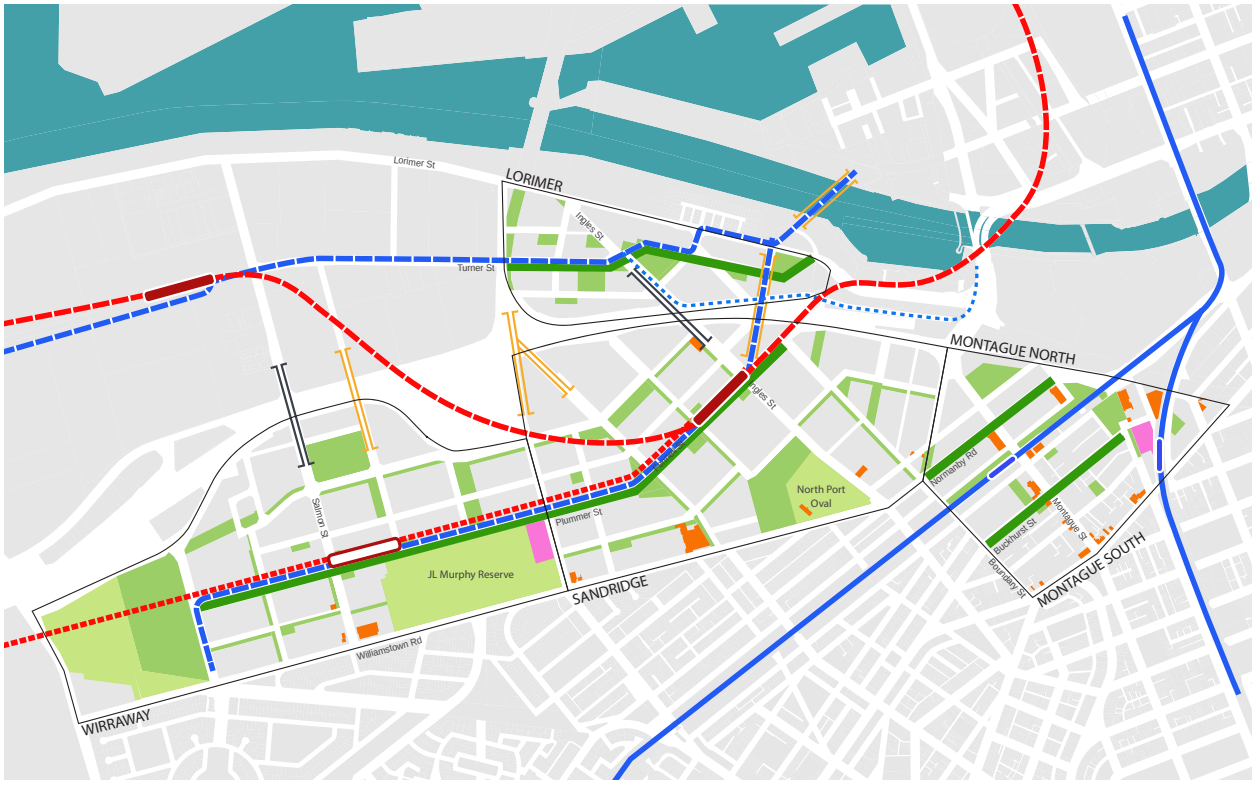


Figure 4: Proposed urban structure included in planning strategies for Fishermans Bend by 2050

- Proposed block structure
- Existing green open space
- Proposed open space (squares / parks)
- Heritage buildings
- Proposed school sites*
- Proposed metro line and stations (preferred location)**
- Alternate metro line and station**
- Existing tram lines
- Proposed tram lines
- Alternate tram route
- Existing bridge (vehicle, cycling and pedestrian access)
- Proposed bridge (no vehicular access)
- Boulevards / key civic spines

* The *Community Infrastructure Plan* identifies the need for six schools. Only those with confirmed locations are shown above

**The alternate proposal for a metro station at Wirraway is included in the *Integrated Transport Strategy* as noted above. This urban design strategy adopts the preferred train station location in the Employment Precinct.

1.3 Managing future growth

1.3.1 Development potential

The development potential of Fishermans Bend is significant. Wirraway, Sandridge, Montague and Lorimer together total 248 hectares of land. Sandridge and Wirraway are the largest precincts (86 and 94 hectares respectively), more than double the size of Montague (43 hectares) and more than three times the size of Lorimer (25 hectares) - see table 1.

Existing Gross Developable Area
The existing gross developable area in Fishermans Bend across these four precincts (excluding existing street and parks from the total land area) is 177 hectares.

Future Gross Developable Area
Additional open space is required to serve the growing population with a number of new parks proposed across Fishermans Bend. Some of these are located on large sites where the remainder of the site will still be available for development.

Others are located on sites where the whole site will be dedicated to open space. Removing these whole sites from the potential gross developable area reduces the available land to 155 hectares (see figure 5).

The potential future gross developable area must also take into account existing permit approvals as this land is effectively already 'taken up' by potential development. This results in a remaining gross developable area of 143 hectares. Within each precinct the following gross developable area is available to accommodate future growth (see figure 6):

- Wirraway - 47 hectares
- Sandridge - 56 hectares
- Montague - 22 hectares
- Lorimer - 18 hectares

Table 1: Available land for development in Fishermans Bend (all areas in hectares)

Precinct	**Precinct Area**	**Existing Gross Developable Area** Total area within each precinct excluding existing parks and streets	**Proposed Gross Developable Area** Total area within each precinct excluding existing parks, existing schools and proposed parks that occupy whole sites	**Area covered by existing permit approvals**	**Future Gross Developable Area** Total Proposed Gross Developable Area excluding area covered by existing permit approvals	**Future Gross Developable Area as % of Precinct Area**
Wirraway	94	66.0	49.7	3.1	**46.6**	50%
Sandridge	86	63.9	61.3	4.9	**56.4**	66%
Montague	43	25.5	24.7	2.8	**21.9**	51%
Lorimer	25	21.4	19.7	1.2	**18.5**	74%
TOTAL	**248.0**	**176.8**	**155.4**	**12.0**	**143.4**	58%
% of Precinct Area		71%	63%	8%	58%	

Note: There are a limited number of heritage sites identified in Fishermans Bend. They have not been excluded within these calculations however they will have varying limitations on their potential redevelopment.

1.3.2 Development constraints

The Fishermans Bend area is largely flat. Impediments to development include potential contamination and soil quality issues. Existing significant infrastructure and land uses, including the Port of Melbourne, WestGate Freeway, the overhead transmission lines and a range of existing industries, will require careful consideration to ensure high quality amenity outcomes can be achieved. Future infrastructure, such as the proposed elevated freight line will also have an impact on development potential.

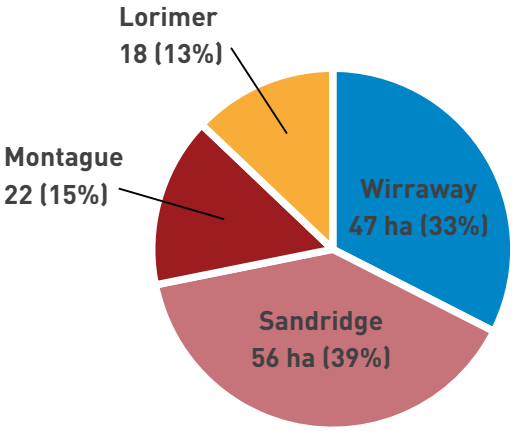


Figure 6: Split of total future Gross Developable Area (143 hectares) by precinct (total hectares and percentage of total Gross Developable Area)

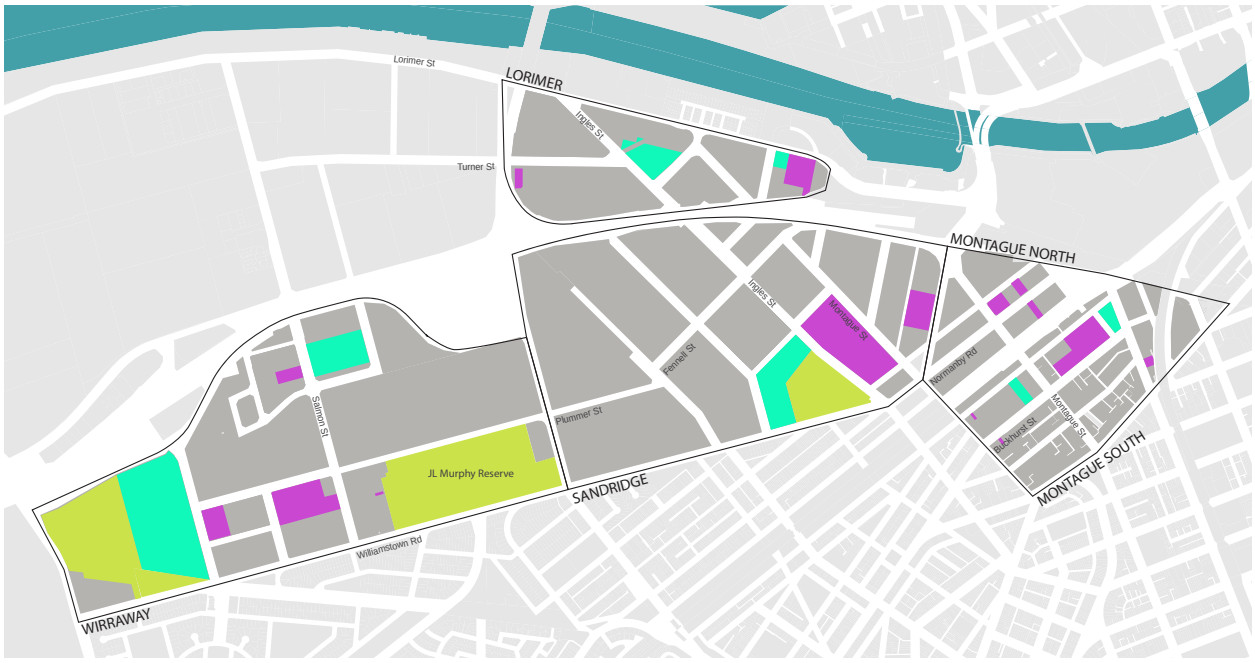


Figure 5: Location of gross developable area within Fishermans Bend, June 2017

- Remaining Gross Developable Area in Fishermans Bend
- Existing green open space
- Proposed open space that occupies a whole site (none of site is available for redevelopment)
- Sites with existing permit approvals

1.3.3 Population projections

Fishermans Bend is projected to accommodate 80,000 residents and 80,000 jobs. This equates to approximately 37,400 dwellings (at an average of 2.14 people per dwelling - see table A.3 in Appendix A for demographic projections). All residents will live within the existing capital city zoned precincts - Montague, Lorimer, Sandridge and Wirraway. Employment is split with 40,000 jobs in the Employment Precinct and another 40,000 jobs across the remaining four precincts.

Residents

The target residential population of 80,000 people results in a residential density in Fishermans Bend of 323 residents / gross hectare (80,000 divided by 248 hectares). This is generally aligned with other residential densities projected in the central city by 2034. This is an average across a large area and reflects the diverse built form across these suburbs from low to high-rise (see Appendix B for Southbank example).

Jobs

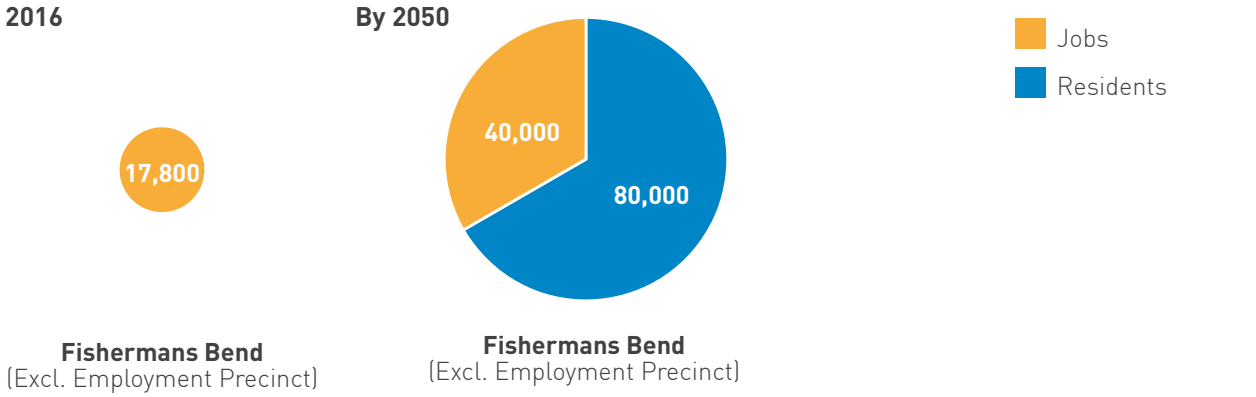
The proposed population targets are based on delivering approximately one job per household. For a capital city zoned area, the job targets for Fishermans Bend are low with a high ratio of residents to employees compared to other capital city zoned and central city areas (see figure 7). This emphasises the criticality in ensuring that these job targets are met.

It also highlights an opportunity, and potential need, to consider increasing the job target within these four neighbourhoods to ensure that they do not just operate as dormitory residential suburbs that service the central city. Too much residential and insufficient commercial development could compromise the significant opportunity for economic growth so close to the CBD. This will rely, however, on high-quality public transport services being in place early to support this scale of growth and incentivise a greater number of businesses to locate in Fishermans Bend.

Population distribution

To date, population distribution is being solely influenced by the built form controls. This means that Lorimer and Montague are currently identified as taking a significant portion of the population targets as the height limits are set at 40 storeys (the highest in the Fishermans Bend area).

Fishermans Bend



Melbourne inner city precincts

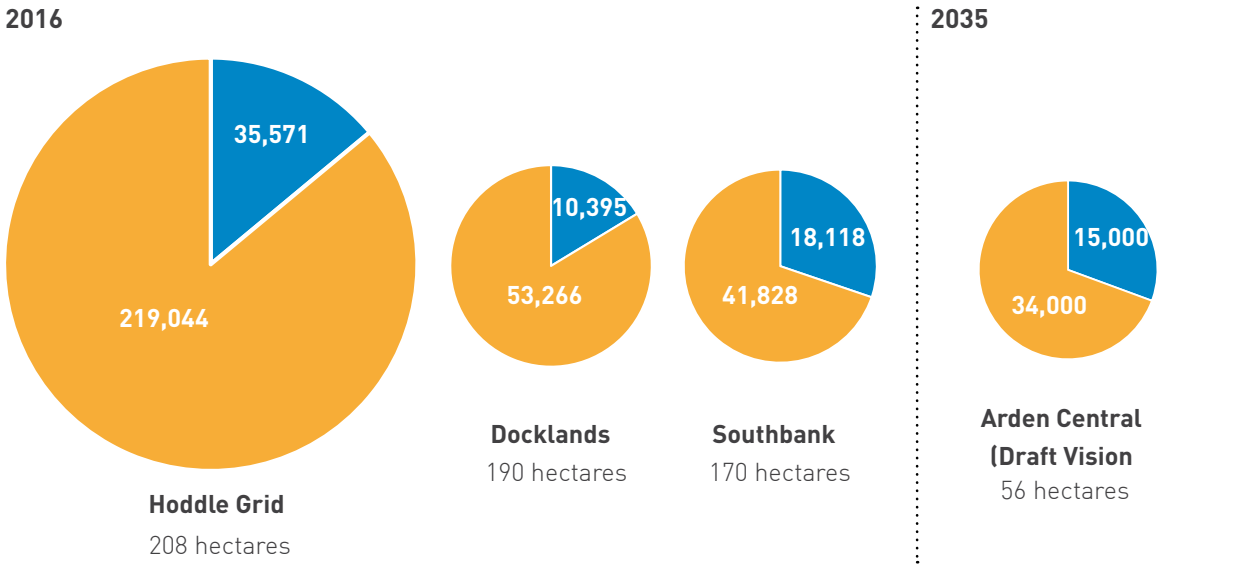


Figure 7: Split between existing residential and employment figures for the Hoddle Grid, Southbank and Docklands compared to planned projections for Fishermans Bend. Scale indicates proportionality between total number of people in each neighbourhood.

1.4 The need to shift development patterns

1.4.1 Permit activity to date

Fishermans Bend was rezoned from an industrial zoning to the capital city zone in 2012. Since this time 23 permits have been approved and another 20 are under consideration. Two sites are currently under construction - a townhouse development in Sandridge and a tower in Montague.

The development activity to date has been located primarily in the Montague and Lorimer precincts (see figure 8). Permit applications have been for predominantly residential uses with 7,890 dwellings approved to date and another 9,760 under consideration.

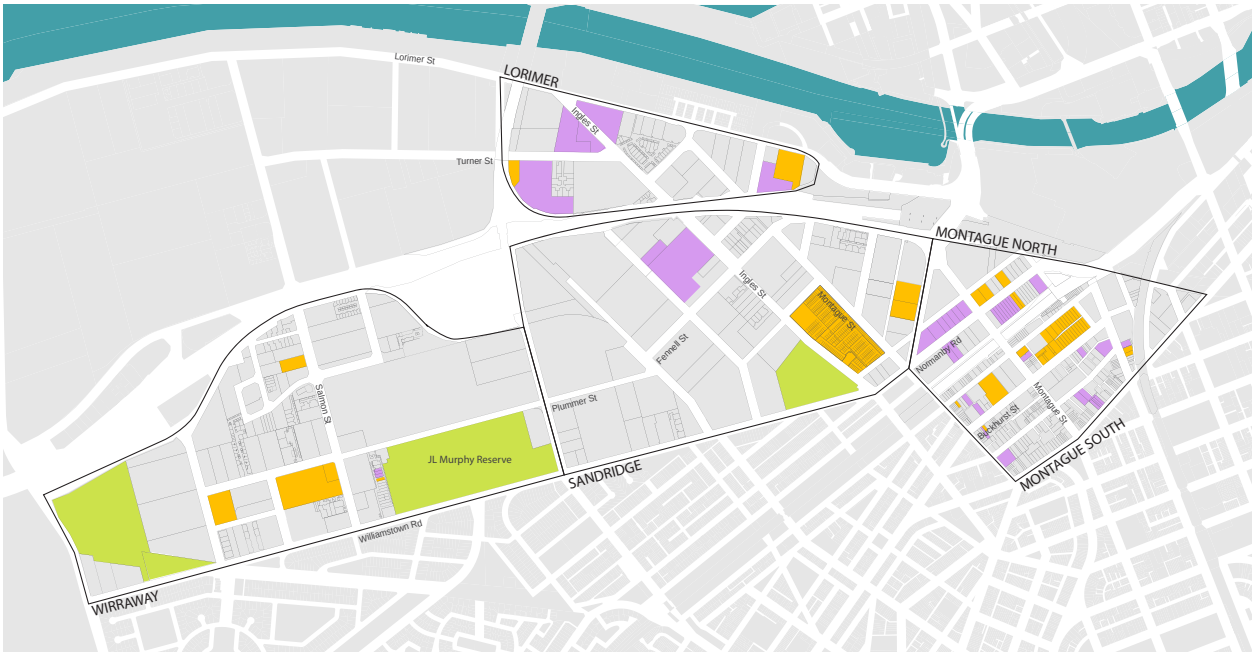


Figure 8: Existing permit activity (approved and current applications as at April 2017) which account for 14% of the overall developable area in Fishermans Bend

Current permit applications
Development approvals

1.4.2 Population and density trends

The current development trends in Montague (North) and Lorimer are delivering extremely high residential densities in the order of 1,300 and 950 residents / hectare respectively. These are very high on international standards and up to four times higher than the target average density of 323 residents / hectare (see figures 9 and 10).

Altogether the approved and current applications could accommodate in the order of 35,000 people. This is significant as it accounts for over 40% of the residential population target of 80,000 people while the overwhelming majority (86% of the developable area) of Fishermans Bend sites have not yet been subject to development applications.

Current development trends in Montague North are delivering extremely high residential densities of over 1,300 people per hectare. This is more than four times the average density needed to meet the population target of 80,000 people.

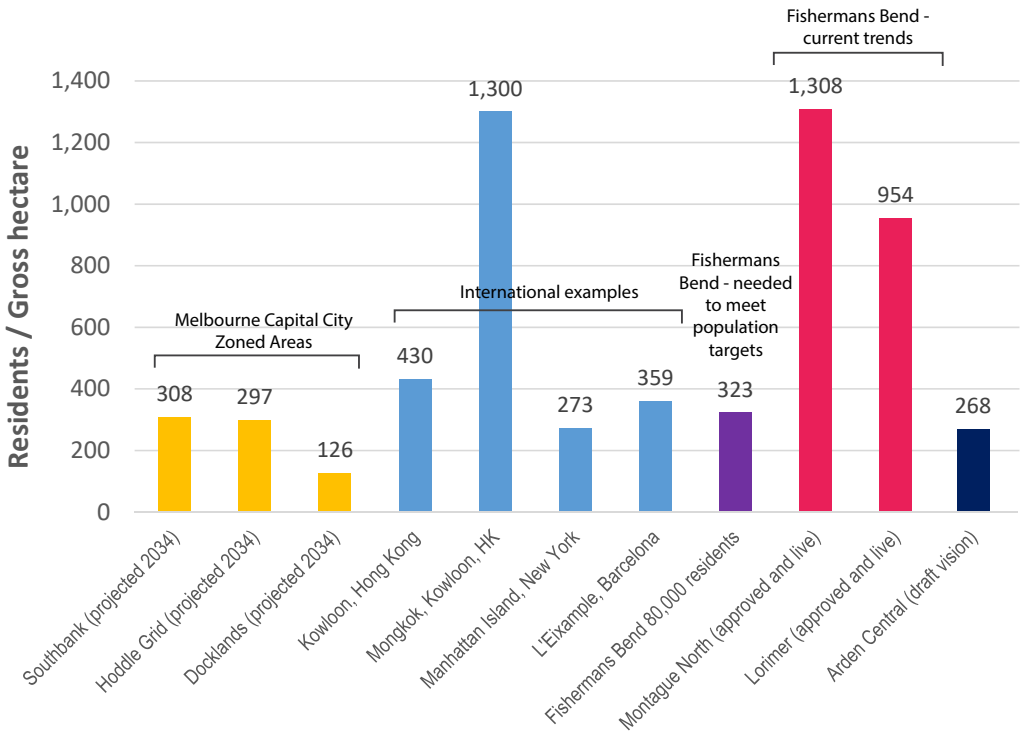


Figure 9: Residential densities for comparable inner city precincts and current development trends in Fishermans Bend

The current development settings in Lorimer, if built out to capacity, would result in a residential population in the order of 29,000 people and a residential density of 1,150 people / gross hectare (see figure 11).

If these current development patterns were to continue the 80,000 population target will be significantly exceeded. This would result in very high residential densities and is likely to lead to poor amenity, congestion and a lack of infrastructure to support this scale of growth, particularly in Lorimer and Montague. This infrastructure is expensive to fund. Increasing the number of residents far above the preferred population level is also likely to result in an increased funding deficit.

If the nominated residential population target is to be realised, and population distribution is to be aligned with infrastructure provision, then significant modifications in development patterns are required to reflect this preferred and sustainable level of growth.

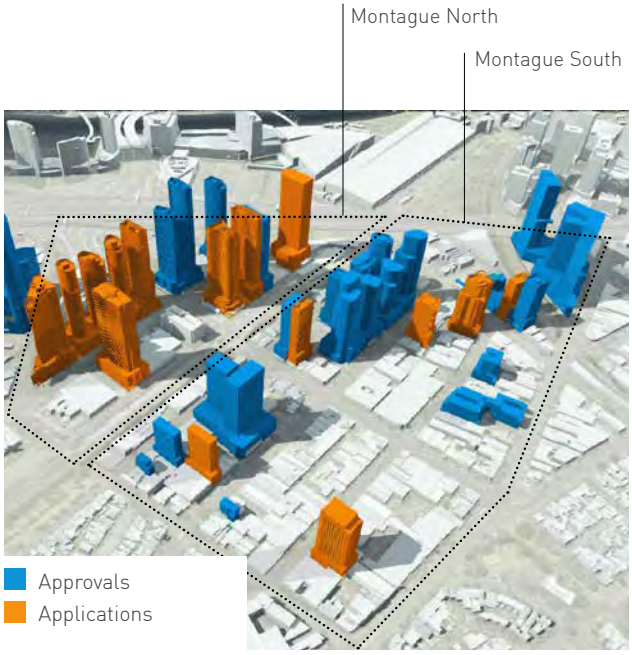


Figure 10: Current development trends in Montague which is predominantly residential development (Source: 3D Visualisation Studio, DAUD, DELWP, November 2016)

Figure 11: Indicative build-out of Lorimer precinct according to current built form controls would deliver a population in the order of 29,000 people with a population density of 1,150 per hectare.

1.5 Understanding density - key concepts

In order to consider appropriate density and built form strategies for Fishermans Bend, it is important to understand some key concepts, for example, how densities are measured and the relationship between density and other aspects of the built environment, such as building height. It is also important to understand how tools for managing density work.

1.5.1 Measuring Density

Fishermans Bend has been designated as an area suitable for high-density development. There are, however, no universally accepted definitions of what constitutes low, medium or high-density.

In its simplest terms, density is a relationship between the number of people or the amount of built form (dwellings or floor area) and a given physical area. It is typically expressed as a ratio of the number of people, dwellings or built floor area in relation to a given land area. Densities can be assessed at a city, neighbourhood, block or individual site scale.

Population density
Population densities are calculated by dividing the total number of people living in an area by the overall size of the area. They are typically calculated at a city or neighbourhood scale. Understanding population densities can assist with planning for a community more readily than measuring, for example, built form densities or the overall heights of buildings. This is because it is the number of people living in a particular area, using the streets, parks, schools, libraries and other services, that affect the overall experience of density and the degree to which it may feel congested or crowded or to which service provision may feel insufficient.

The number of people in each dwelling will affect the overall population densities. This is because the same sized dwelling could be housing a different number of people. In the City of Melbourne there is an average of 1.8 people /dwelling. Areas that accommodate a larger number of families typically have 2.5 - 3.5 people / dwelling.

Dwelling Density
Dwelling densities are calculated by dividing the number of all dwellings (e.g. houses, townhouses, apartments) in an area by the overall size of the area. They are typically calculated at a city, neighbourhood, block or site scale (see figure 12 for block example).

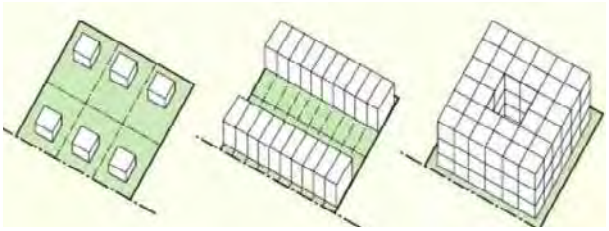


Figure 12: Dwelling density measured at a block scale (Source: Density Atlas)

Building density (Floor Area Ratio)
Building densities are calculated by dividing the total number of floor space in a building by the overall site area. It is typically expressed as a Floor Area Ratio (FAR). The same building density can deliver a range of different building typologies. Figures 13 and 14 illustrate a FAR of 1:1 which means that the total floor area within the building(s) is equal to the overall site area in each example.

FARs can establish both maximum and minimum ratios to control development on a site. A maximum FAR is typically aligned to the overall population target for an area and must also be aligned with the preferred types of built form and character sought in each neighbourhood.

A minimum FAR can assist in ensuring that an area is not underdeveloped. This is important to consider for Fishermans Bend where the underdevelopment of strategic development sites, for example, sites adjacent to proposed train stations, could undermine the capacity to deliver the densities needed to support public transport services. It can also be utilised to set minimum floor area requirements for commercial uses so that overall job targets can be met.

A FAR enables a developer to choose how they organise their building layout and form on their site within a preferred built form envelope. By managing the overall yield on a site, FARs can support the following benefits as the provision of these benefits will not reduce this potential yield:

- Introduction of new through block links
- Transport infrastructure reservations (if clearly defined)
- Greater diversity of housing, including a range of housing typologies
- Retention of heritage buildings
- Delivery of designated open space

This is different to the current controls where built form envelope controls (height and setbacks) only are used to manage development and which therefore set the expectation for development yield. With these current development settings, introducing any of the above benefits is typically perceived as a loss of yield and is likely to be resisted. This is discussed further in Chapter 4.

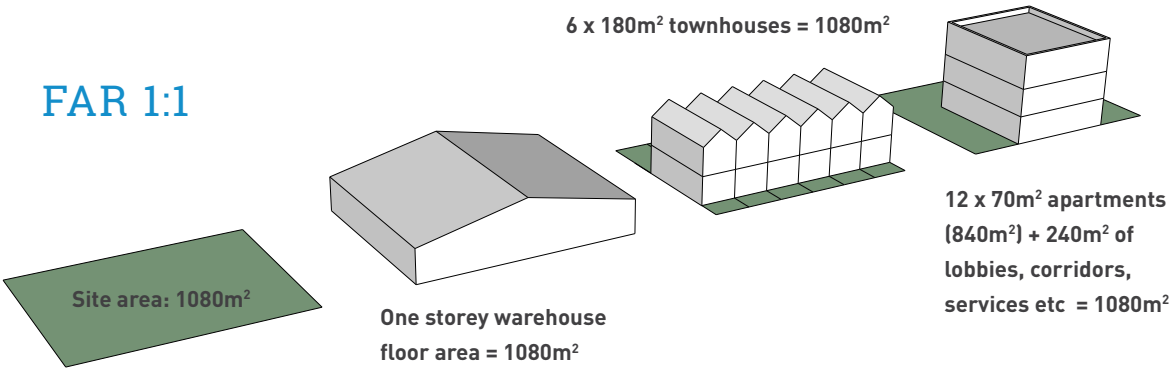


Figure 13: Example of varied application of a 1:1 FAR on a site

1.5.2 Relationship between height and density

There is no direct relationship between building height and building densities. Urban areas with 6-8 storey buildings can have similar densities to areas with 40 storey buildings. In practice, this is because as buildings become taller, they are often distanced further apart and include more space at ground level, moderating the impact of increased height on overall density outcomes. It is therefore the degree of site coverage, together with the number of storeys of a building that determines density (see figures 13 and 14 which illustrate a FAR of 1:1 delivering a range of 1 to 9 storey buildings).

1.5.3 Gross vs net densities

When measuring densities, the scale of the area that is being measured is critical. City and neighbourhood densities are typically measured as a gross calculation, that is, they include all of the area within a boundary, including streets, parks, railways etc. Population densities are typically calculated at this scale.

For example, the whole of metropolitan Melbourne has a population density of just 4.4 people / hectare as this includes significant forest and rural districts. The City of Melbourne municipality has an estimated average population density of 45 / hectare (2016) while the City of Port Phillip has an estimated population density of 53 people / hectare (2016) (ID Consulting 2017). In the Hoddle Grid this increases to 178 people / hectare (City of Melbourne and Geografia, 2016).

Block and site densities are typically calculated as a net calculation, that is, the boundary is drawn specifically around that block or site and therefore typically excludes streets and open spaces. Built form densities are typically calculated at this scale. Dwelling densities are interchangeably calculated at gross or net scales. In a suburb, the dwelling densities calculated for a gross site area will be lower than dwelling densities calculated for a net site area.

Relationship between density measurements
The relationship between population, dwelling and built form densities can vary significantly (see Appendix B for examples).

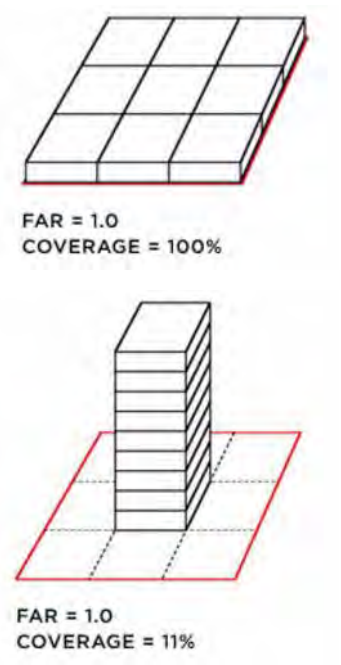


Figure 14: Example of a FAR of 1:1 delivering a 1 storey high building with high site coverage (100%) (above) and 9 storey building with low site coverage (11%) (below) - Source: Density Atlas

1.5.4 Combining density and built form controls

A FAR control typically exists with built form controls, such as height limits or building setback controls. This is a very common practice and will influence the extent to which the developer can choose how they incorporate the potential gross floor area onto their site. There are significant benefits in managing the built environment through both density and built form controls.

1.5.5 Floor Area Uplift

Planning policies that typically include FAR controls establish a potential development yield (overall gross floor area) on a site which is considered to be 'as-of-right'.

From this base allowance, it is common planning practice to include an opportunity for a developer to increase yield on their site in exchange for the provision of a defined community benefit. This is managed through a Floor Area Uplift (FAU) control.

This mechanism has recently been introduced into the Hoddle Grid and Southbank with the aim of delivering a broad range of community benefits. Examples of this working in practice is illustrated in figure 15 (see also Hodyl + Co, *Central City Built Form Review Synthesis Report*, 2017).

A summary of the way FARs and FAUs work is illustrated in figures 16 and 17.

Figure 15: Jean Nouvel designed tower at 383 La Trobe Street (Image source: Sterling Global and Ateliers Jean Nouvel, original Urban Melbourne).

This development was approved under the interim controls in place during the Central City Built Form Review. Development includes 488 apartments, 196 room hotel and four sky gardens. Community benefit delivered through a FAU includes 30% of site at ground level dedicated to public space, including generous laneway and the provision of a library.

How do Floor Area Ratios (FARs) work?

FARs are defined as the ratio of a new building's total floor area in relation to the size of the piece of land it is being built on. A FAR is calculated by dividing the total floor area built on a site by the total site area as follows:

$$\text{Floor Area Ratio (FAR)} = \frac{\text{Total floor area of a building}}{\text{Gross developable site area}}$$

For example, if a FAR of 3:1 applies to a site of 600m^2, the developer can build a total floor area of 1,800m^2 (3 x 600m^2). While this guides the total amount of floor area that can be developed, it does not directly dictate how a new development should be designed as it is possible to create a variety of building heights and layouts within a set ratio. For example, the diagram below illustrates two different ways that the 1,800m^2 of floor area could be delivered on this site. This demonstrates how a FAR control can help to support housing diversity within a given area.

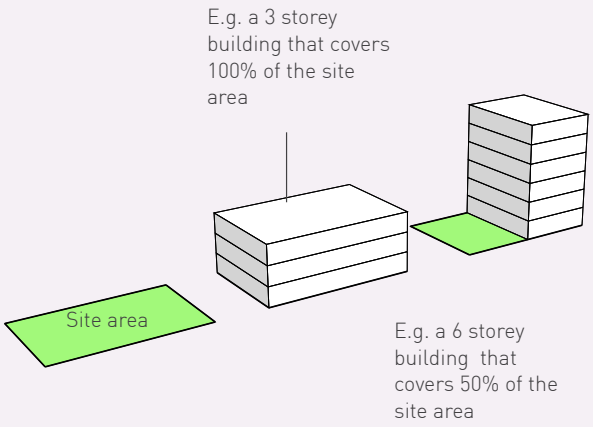


Figure 16: Explanation of how FARs work

How do Floor Area Uplifts (FAUs) work?

A FAU allows a developer to build more floor area on a site (above that allowed by the FAR) in exchange for making a contribution that is of a public benefit. It is calculated by dividing the additional floor area built on a site by the total site area as follows:

$$\text{Floor Area Uplift (FAU)} = \frac{\text{Potential additional floor area of a building (over the original floor area allowed through the FAR control)}}{\text{Gross developable site area}}$$

The public benefit should be aligned with the identified needs of the community. It commonly includes, for example, affordable housing, open space or community facilities. A FAR of 3:1 enabled a total floor area of 1,800m^2 to be built on a 600m^2 site. If a FAU control of 1:1 was in place then this would allow the developer to build an additional 600m^2 of floor area on their site.

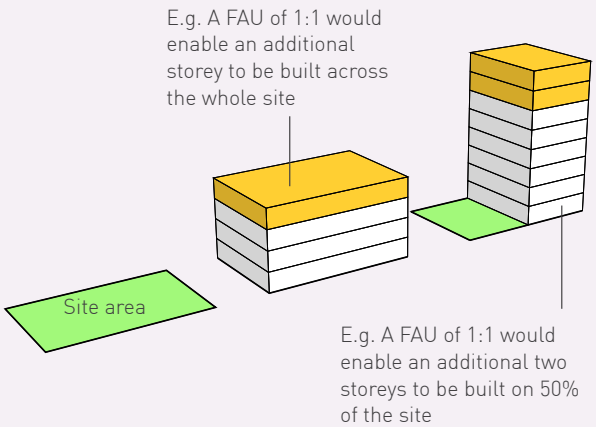


Figure 17: Explanation of how FAUs work

2

Priorities for a new urban design strategy

2.1 The vision for each precinct

Each precinct has a distinct role in realising the vision for Fishermans Bend and will have its own distinct character and identity. A defined aspiration and specific attributes have been articulated for each neighbourhood in the Fishermans Bend Vision.

Sandridge

One of Melbourne's premium office and commercial centres, balanced with diverse housing and retail

Sandridge will be established as a significant commercial centre accommodating the greatest number of jobs and extending the central city from the traditional CBD and Docklands via direct, high frequency public transport connections. The core of this activity centre will be located around the proposed Sandridge Station and light rail interchange. This centre will include housing, retail, recreation, dining, community, entertainment, health and education services. North Port Oval will be a key anchor for the community. Sandridge is the lynchpin for Fisherman's Bend's identity as a world class urban renewal area.

Lorimer

A vibrant, mixed-use precinct close to the Yarra River and connected to Melbourne's CBD, Docklands and emerging urban renewal areas

Lorimer is a relatively narrow precinct, only 400 metres wide at it's widest point. A new tram route is proposed down the centre of the precinct meaning that all of Lorimer will have good public transport access with a direct connection into the existing CBD. The Lorimer Parkway and a series of new north-south laneways will stitch the precinct across Lorimer Street through to the Yarra River.

Wirraway

A family-friendly inner city neighbourhood close to the Bay and Westgate Park

Wirraway is a similar sized precinct to Sandridge, however with a distinctly different vision for the long-term development of the area. The primary objective in Wirraway is to create a new neighbourhood that supports moderate job growth and a high degree of housing choice, in particular, family-friendly housing. The hub of this activity will be located at the intersection of the tram line on Plummer Street and Salmon Street, where bus services will connect to the Employment Precinct. Wirraway is known for its thriving arts scene.

Montague

A diverse and well-connected mixed-use precinct celebrating its significant cultural and built heritage and network of gritty streets and laneways

Montague precinct has two distinct halves. The southern half is characterised by a diverse range of small-medium sized businesses and an existing fine-grain character. A number of heritage buildings and bluestone laneways give the area a distinct, textured character. Buckhurst Street is envisioned to become a vibrant high street and the community heart of this precinct, connecting people from the new school and park to shops and services and through to Montague North. The vision is to transform Normanby Road into a green boulevard creating a centre of activity in northern Montague area and a key civic spine.

2.2 Key urban design objectives

Clear priorities need to be established to lead the development of a new urban design strategy. These have been articulated under six overarching objectives that have been drawn from the vision and accepted urban design principles.

1. Integrated land use and transport planning

Integrating land uses with transport provision is a central tenet of good urban planning. This enables people to move easily and sustainably between their homes, work and other key destinations, such as shops, schools and open space. Locating the highest intensity of uses with the highest provision of public transport services is key to achieving this aim.

2. Liveable, mixed-use neighbourhoods

Mixed-use precincts are the foundation of a sustainable city. They create walkable places by locating jobs, homes, shops, cafes and community services in close proximity to each other. They provide access to everyday needs and create active, social places that people choose to spend time in.

3. Distinct, characterful places

Good urban design supports the creation of attractive, safe and welcoming public spaces that have a distinct and memorable character. A clear city image is created at a range of scale - from the city skyline to the details of buildings, streets and parks. The streets and open spaces should be pleasurable places to be, walk and linger. They support a vibrant public life and reflect a neighbourhood's unique history.

5. Inclusive, cohesive and resilient communities

Cities are centres of economic, cultural and social activity with the greatest access to jobs, services and cultural facilities. It is important that people from all walks of life are able to live close to amenities and within good access to their jobs. To achieve this Fishermans Bend needs to be an inclusive place, accessible to everyone. The provision of affordable housing is critical to achieving this aim. Community cohesion is equally important and can enhance a community's resilience and promote a sense of belonging and tolerance.

4. Housing we need and want

Most of the housing in Fishermans Bend will be delivered by the private housing market. Clear policy guidance is required to deliver on the housing aspirations outlined in the vision, including the delivery of affordable, diverse and family-friendly housing. Development controls are needed that influence the market towards these aims, while ensuring that development is financially feasible so that new housing can be delivered.

6. Environmentally sustainable development

The urban form of Fishermans Bend should support the broader sustainability objectives for the area, including responsible water, energy and waste management as well as enhancing biodiversity. The built form controls need to support the delivery of sustainable buildings by promoting good solar and daylight access and cross-ventilation.

2.3 Approaches considered for Fishermans Bend

2.3.1 Scenario Testing

Five scenarios were considered for Fishermans Bend to test how the six objectives could best be delivered. These were:

1. Base Case: Continue with the current interim controls. This would mean that the current mandatory provisions as introduced in GC50 would remain permanently.
2. Extend Central City controls to Fishermans Bend. This would involve the introduction of the density and built form controls that currently apply to the Hoddle Grid and Southbank to Fishermans Bend (see also section 2.3.2).
3. Introduce capped FAR that aligns with 100% population targets (No FAU). This would mean introducing a fixed cap that applied across all of Fishermans Bend that equates with the overall population targets. Developers would not be allowed to exceed this cap.
4. Introduce uncapped FAR aligned with population targets. Incentivise community benefit through targeted FAU. This would incorporate the introduction of FAR that equates with the overall population targets (the same FAR as scenario 3), however developers could seek to increase yield on their site if they provide an appropriate provision of community benefit within their site.
5. Introduce revised mandatory height controls to ensure population targets are met. This would require a significant reduction in height limits from current controls to an overall average of approximately 8 storeys.

These are summarised in Table 2 which assesses these five scenarios against the six identified urban design objectives for Fishermans Bend.

In addition, the degree to which they meet the overarching objectives of good planning practice are indicated as well as the impact that each scenario would have on current applications and potential funding approaches.

Preferred scenarios

This analysis demonstrates that the introduction of a FAR control, with or without a FAU, in conjunction with generally discretionary height controls would be the most beneficial approach for Fishermans Bend and the most direct way to achieve the vision and the urban design objectives. This could have a significant impact on development applications, however, as noted above, this is necessary to put Fishermans Bend back on track to delivering the vision and moderating overall population growth to levels that are supported by infrastructure provision.

Table 2: Scenarios considered for Fishermans Bend (continues)

Scenarios	1. Base case: Continue with current interim controls	2. Extend Central City controls to Fishermans Bend	3. Introduce capped FAR to align with 100% population targets. No FAU	4. Introduce FAR aligned with 100% population targets. Incentivise community benefit through targeted FAU	5. Introduce revised mandatory height limits that align with population targets. No FAR/ FAU
FAR	No FAR	18:1	Introduce FAR controls that match population targets	As per option 3	No FAR
FAU	No FAU	Uncapped FAU, broad range of community benefits can be incentivised through FAU	No FAU	Targeted list of community benefits that is delivered through a FAU	No FAU
Height controls	Lock in interim mandatory height controls	No height limits except in sensitive interface areas to adjacent suburbs	Discretionary height controls that are aligned with vision and transport proposal	As per option 3	Revised to align with population targets - this is likely to result in an average height limit of 8 storeys across Fishermans Bend
Could the urban design objectives be delivered?	**■ = no ◡ = partially ● = yes, generally aligned**				
1. Integrated land use and transport planning	■ Highest intensities of development not aligned with public transport proposal	■ Densities would be very high and likely exceed transport capacity	● Population growth and distribution could be aligned with transport provision	● Population growth and distribution could be aligned with transport provision	■ Significant commercial development would generally not be supported
2. Liveable, mixed use neighbourhoods	■ As above + only discretionary requirement for commercial development	● Commercial development incentivised through FAU provision	● As above, mix would be supported	● As above, mix would be supported	■ No requirement/ incentive for commercial development
3. Distinct, characterful places	■ Could result in poor city image with unvaried skyline and poor amenity	◡ Distinct places could be delivered, however unlikely to align with the vision for Fishermans Bend	● Design flexibility and variety would be supported by FAR and discretionary height controls	● Design flexibility and variety would be supported by FAR and discretionary height controls	◡ Creation of mid-rise neighbourhoods would result in high degree of amenity. Uniform height limits would diminish variety. Mandatory heights reduce flexibility in design response

Table 2: Scenarios considered for Fishermans Bend (continues)

Scenarios	1. Base case: Continue with current interim controls	2. Extend Central City controls to Fishermans Bend	3. Introduce capped FAR to align with 100% population targets. No FAU	4. Introduce FAR aligned with 100% population targets. Incentivise community benefit through targeted FAU	5. Introduce revised mandatory height limits that align with population targets. No FAR/ FAU
4. Housing we want and need	No diversity of housing, minimal family-friendly housing	No diversity of housing or family-friendly housing - significant FARs would result in mostly tower development.	FARs and discretionary controls would support a diversity of housing.	FARs and discretionary controls would support a diversity of housing, including greater open space on site	Housing diversity would be reduced - no tower housing. Provision of open space on site would be reduced as developers maximised yield within mandatory height limit.
5. Inclusive, cohesive and resilient neighbourhoods	No affordable housing.	Potential for affordable housing, however it is easier to deliver other community benefits	No affordable housing	Incentivise for delivery of affordable housing if this is targeted.	No affordable housing.
6. Environmentally sustainable buildings	Mandatory controls lead to a more rigid built form which may minimise opportunity for passive environmental design	Very high densities could compromise opportunities for design flexibility and passive design responses	FARs provide greater flexibility	FARs provide greater flexibility	Developers seeking to maximise yield within height limit are likely to reduce design flexibility to support passive design responses

Table 2: Scenarios considered for Fishermans Bend (continues)

Scenarios	1. Base case: Continue with current interim controls	2. Extend Central City controls to Fishermans Bend	3. Introduce capped FAR to align with 100% population targets. No FAU	4. Introduce FAR aligned with 100% population targets. Incentivise community benefit through targeted FAU	5. Introduce revised mandatory height limits that align with population targets. No FAR/ FAU
Review against good planning practice and impact on existing development applications					
Infrastructure aligned with population growth	■	■	●	●	●
Maximise redevelopment opportunities (within character / amenity constraints)	■ Areas subject to overdevelopment compromising amenity	■ Development would compromise amenity due to very high densities	● FAR will be too low if build out doesn't reach 100% by 2050	●	● Yield could be too low if build out doesn't reach 100% by 2050
Implementation Pathway	Very easy - no changes required	Easy - development controls already developed through C270	Difficult	Moderate	Difficult
Impact on existing planning permits	Low Existing permits that are already being altered to meet interim controls can proceed	Low - likely that many permits could proceed	High All permits	High All permits	High All permits
Impact on infrastructure funding strategy compared to current base case scenario	**Increases deficit** Significantly more people will require more infrastructure with no additional funding opportunities	**Increases deficit** Significantly more people will require more infrastructure with no additional funding opportunities - FAU unlikely to cover infrastructure needs of additional people	**Reduces deficit** Population is aligned with targets.	**Reduces deficit** Population is aligned with targets. Also opportunities to incentivise delivery of infrastructure through FAU	**Reduces deficit** Population is aligned with targets.
Impact on overall development capacity compared to base case scenario	N/A	Significant increase in capacity	Major impact - significant decrease	Moderate impact - with FAU likely to be moderate	Major impact - significant decrease

2.3.2 Impact of extending existing central city controls

The FAR control of 18:1 recently introduced into the Hoddle Grid and Southbank is not suitable for Fishermans Bend. This scale of density is appropriate for the central city, where the following attributes exist:

- High provision of existing infrastructure, including public transport, jobs, shops, community services and facilities
- Fine grain subdivision patterns and smaller sites means that the required building setback provisions effectively constrain the number of sites that can develop at 18:1
- Significant development has already occurred, including heritage buildings and apartment buildings which are unlikely to redevelop
- The predominant use is commercial, with 81% of floor area in the Hoddle Grid and 62% in Southbank dedicated to employment uses

This is not the case in most of Fishermans Bend where it can be assumed that almost all sites will be redeveloped over time. The greatest pressure will be for these to be developed for apartment buildings until significant scale of public transport is provided. Introducing a control of 18:1 into Fishermans Bend would result in extremely high residential densities creating a significant deficit of public transport, open space and community infrastructure to support this many people.

A FAR of 18:1 is higher than most development applications to date. It would therefore exacerbate the current trends for very high residential densities and the potential negative impacts that this might bring. This is demonstrated in figure 18, which illustrates current development applications in the Normanby Road precinct and the impacts of introducting a FAR of 18:1 which exceeds the current FAR of these applications.

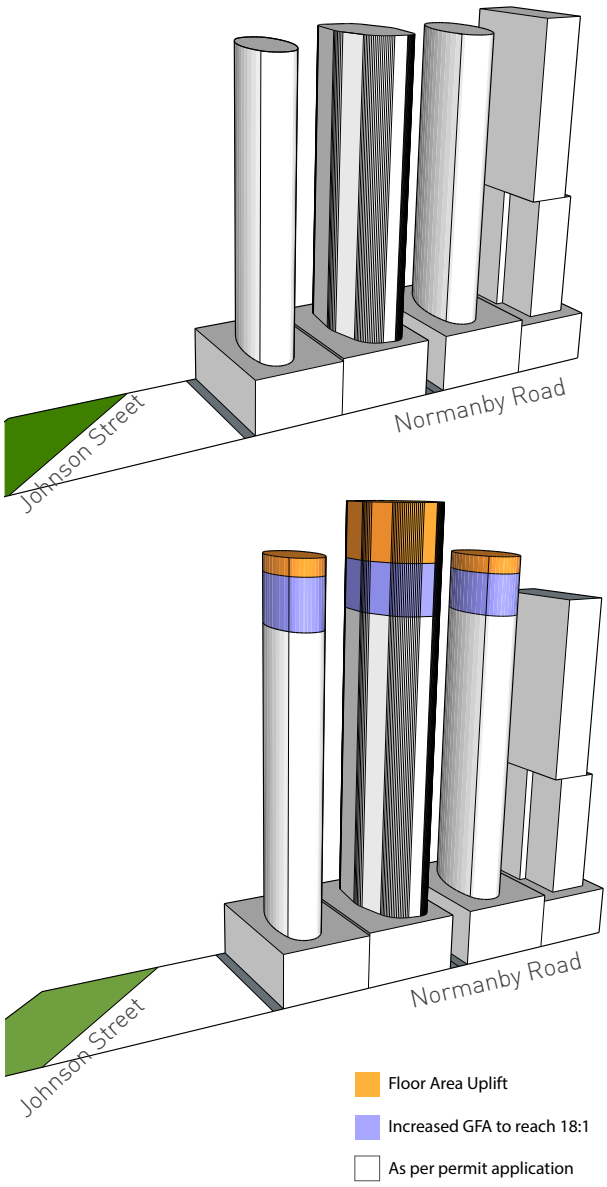


Figure 18: Montague: Normanby Road (existing permit applications as of June 2016) massing diagram (above) and the application of C270 controls on these same sites (below). The blue indicates the extra yield that would be possible to increase the FAR to 18:1. The orange indicates additional yield available through a FAU. This would be limited by the current setbacks which effectively limit the overall building height (as setbacks must be a minimum of 6% of building height). This would result in an increase in development yield on each site exacerbating the impact of already very high residential densities. See also Section 6.

2.3.3 Review of international approaches

Combining density controls and height controls is common practice and ensures that overall population densities are managed as well as ensuring that the overall character desired and high levels of public amenity can be achieved.

The above scenario testing considers the introduction of a FAR and FAU in general terms. There are a number of different ways that FAR controls can be operationalised in planning schemes.

Table 3 summarises different approaches and provides examples from local and international case studies. It will be important in considering FAR controls for Fishermans Bend that the method of implementation is tailored to deliver the desired outcomes and reflects the priorities within each neighbourhood. A benefit or strategic outcome that is needed in one neighbourhood may not be needed in another. The varying approaches can to some degree be used in combination. Similarly, a FAU can deliver multiple, mixed benefits. Generally approved benefits have to be located on the site or in proximity to the development site.

Table 3: Examples of varying methods internationally of applying FAR and suitability for Fishermans Bend (continues)

	Approach	Examples of cities that use this approach	Example	Suitability for Fishermans Bend
Base Floor Area Ratio controls (no Floor Area Uplift)				
1	Base FAR delivering new open space or through block links	Implicit in all schemes as a FAR allows a variety of design responses on a given site.	FAR controls provide the flexibility to locate yield in different building forms on a single site. This means that if a new open space or through block link is designated on a site, the allowed development yield can be provided in a taller building and leave room on the site for the park or new laneway.	Highly suitable. This would result in the delivery of required open spaces, streets or new links through their site without the loss of any development yield.
2	Base FAR with increased base as-of-right FAR for affordable housing	Vancouver, New York	Vancouver: In Downtown South a base FAR of 3:1 applies. If greater than 60% of the development is social housing this automatically increases to a revised base FAR of 5:1.	Partially suitable. Default increases in FAR for the delivery of affordable housing could be pursued, however increased yield via a FAU for the delivery of affordable housing is more common and is the current practice in the central city.
3	In designated affordable housing areas, allowable base FAR is lowered if affordable housing isn't provided and raised if it is.	New York	New York: For example, in Zoning District R7A, the standard base FAR is 4:1. For designated affordable housing areas, the base is lowered to 3.45:1 if no affordable housing is to be provided, and raised to 4.6:1 if it is provided.	Not required as the aspiration is for all neighbourhoods to include affordable housing in order to create inclusive communities.

Table 3: Examples of varying methods internationally of applying FAR and suitability for Fishermans Bend (continues)

Approach		Examples of cities that use this approach	Example	Suitability for Fishermans Bend
4	Varying FARs in relation to specific site attributes	Hong Kong	Hong Kong: FARs are varied on a single site according to the number of street frontages. For example, the highest allowed FAR for residential development for a site with one street frontage is 8:1. For two site frontages it is 9:1 and for three site frontages it is 10:1. FAR can also be modified in relation to a site size or street frontage to ensure that smaller sites are not overdeveloped.	Not suitable. While there is clear logic in varying the FAR to relate to site size (therefore potential site yield), this method is most applicable in established urban areas where site access is highly confined and where built form amenity outcomes are the highest concern. This is not the case in Fishermans Bend where the key over-riding driver of utilising a FAR is to manage overall population densities.
5	Varying maximum FARs in relation to land use, to incentivise or contain specific land uses	New York	New York: Commercial zones have corresponding residential zones with different base FARs. In Commercial Zone C5-3, for example, a FAR of 15:1 is allowed. If the developer chooses to deliver a residential project on this site instead, Residential Zone R10 and a FAR of 10:1 applies. FAUs are applied as a percentage increase above these base FARs.	Not required. This is necessary to cap residential development in areas where commercial development is highly desired, and where residential densities could become too high. Setting the overall densities for Fishermans Bend to be aligned with population growth therefore will set densities that are appropriate.
6	Utilising minimum FARs for specific land uses, in particular commercial use	Sydney	North Sydney: Minimum commercial FARs apply to ensure that the economic role of the North Sydney commercial centre is not undermined by residential development	Suitable. This will directly link development to meeting the job targets for Fishermans Bend and address one of the most signficant challenges in delivering on the economic potential of Fishermans Bend.
Transfer of base FAR development rights between sites				
7	Transferable Development Rights to protect heritage buildings	New York	New York: Transferable Development Rights to protect heritage buildings. Where a site contains a heritage building which means that it cannot reach the maximum FAR nominated for that site, landowners can sell this unrealisable yield to another site/landowner. This transfer of rights is tied to the title and is permanent.	Suitable. This should only be utilised for heritage sites, of which there are only a limited number in Fishermans Bend. The priority to introduce this planning tool is therefore not high.

Base Floor Area Ratio controls with Floor Area Uplift				
8	Capped, defined maximum % or ratio increases on base FAR	New York, Hong Kong, Perth, Auckland, Chicago, Sydney, Singapore	This is the most common approach. New York: A FAU of 20% is applied for the provision of affordable housing or a plaza on site, taking the highest allowable base FAR for residential development from 10:1 to 12:1. Hong Kong: A FAU of 10% applies for defined environmental benefits to a development site.	Suitable. This control would provide certainty on the overall residential densities that could be accommodated in Fishermans Bend. It would tie increases in population to the provision of additional infrastructure.
9	Uncapped, negotiated FAU increase above base FAR for defined range of community benefits	Vancouver, Tokyo, Seoul	Vancouver: 75-80% of the additional value created through the additional yield enabled through a FAU is provided as a community facility on-site, or as a financial contribution for delivery of off-site facilities which are defined in government policy or in neighbourhood plans.	Suitable. Linking the FAU directly to identified community needs ensures that the public benefit that is delivered is targeted to what is of the highest priority.
10	Uncapped, negotiated FAU increase above base FAR for open, unlimited range of community benefits	Melbourne C270	Melbourne - Hoddle Grid / Southbank: A public contribution that is equivalent to 10% of the Gross Realisable Value for yield delivered above the FAR is required. The public contribution must be agreed by the receiving authority.	Not suitable. See section 2.3.2 for further explanation.
11	Capped or uncapped FAU allows a financial contribution which is added to pooled funding for delivery of public benefits off-site but generally in proximity to the development	Vancouver, Singapore, Chicago	Chicago: City of Chicago's Affordable Housing Opportunity Fund and Public School Capital Improvements Fund which pool funds based on a 'cash-in-lieu' policy.	Suitable. This would provide flexibility in delivering key public benefits such as community infrastructure.
12	FAU only applied to retrofitted buildings	Singapore	Singapore: Prior to 2014, the Outdoor Refreshment Area benefit item was only available to retrofitted buildings. This approach could be used to target the adaptation of existing buildings.	Not suitable. There will be very few retrofitted buildings in Fishermans Bend and those that are sought for adaptive re-use are unlikely to support a substantial increase in yield.

3

Delivering the urban design objectives

3.1 Integrated land use and transport planning

3.1.1 Why is this important?

Integrating land use patterns (the mix and intensity of different uses) with transport provision is good planning practice. It supports the creation of '20 minute neighbourhoods', as sought by *Plan Melbourne* (DELWP, 2017), and a productive economy, connecting people directly between their places of home, work and key destinations such as shops, entertainment and services.

The transport proposal for Fishermans Bend has been significantly revised since the release of the Strategic Framework Plan in 2014. A new land use and built form strategy is required to align with these transport proposals, including the provision of a metro station in Sandridge and new tram lines through Lorimer and Sandridge/Wirraway.

While all of Fishermans Bend will be mixed-use, the highest levels of commercial, retail, community, leisure and entertainment activity should be located in the areas immediately around these proposed public transport services.

3.1.2 What's happening now?

Mix of uses
The Capital City Zoning supports a wide range of land uses. All major development applications to date are, however, for residential uses with some incorporating a minimal amount of commercial floor area.

This reflects the overall high demand for residential development in Fishermans Bend and across the central city generally. While this is a positive to some extent as it contributes to housing supply, it has the potential to undermine the need to create significant employment in Fishermans Bend and is likely to result in the job targets not being delivered. This could also compromise the effectiveness of public transport delivery as demand to travel to Fishermans Bend during the day would be limited with most people leaving in the morning and returning in the evening.

There is currently no distinction within the zoning for particular types of uses to be located in particular locations. Rather, the mix is tied to a scale of development with Objective 2.4 in the current Fishermans Bend Strategic Framework Plan 2014 (amended September 2016) nominating that 'all development over 40 metres in height within the Montague and Lorimer neighbourhoods must provide a minimum amount of non-residential floor space equivalent to at least 15% of total habitable gross floor area'. This would require that in a development that has a 10:1 FAR, a minimum non-residential gross floor area of a FAR of 1.5:1 is provided.

Intensity of use (density)

Site layout guidelines in the current Fishermans Bend Strategic Framework Plan 2014 (Amended September 2016) specify that 'Development gross floor area to site area ratios (FAR) must not exceed 10:1 beyond 200 metres of existing or proposed 'high street' with potential public transport routes' with eight specific streets nominated that meet this criteria (Objective 2.3). These streets are evenly distributed across the Fishermans Bend area which means that almost all of the area would allow developments to exceed a 10:1 FAR. As noted in Chapter 1, the overall average FAR required to deliver the population targets for Fishermans Bend is 3.4:1. If Fishermans Bend developed at an average FAR above 10:1, the population targets would be significantly exceeded and there would be insufficient infrastructure to support this growth.

The intensity of land use is therefore primarily managed through height limit controls. The current height limits do reflect the principle of locating higher intensities of development, however, are aligned with a now superseded transport proposal (see figure 19). The tallest built forms are located in Montague North, Lorimer and parts of Montague South. A train is no longer proposed in Montague North and Montague South and Lorimer are serviced by a tram. The current development trends have responded to these existing height controls and could result in the introduction of significant densities of people and activity being located away from public transport provision.

Some sites in immediate proximity to proposed public transport routes are currently being underdeveloped which, if this continues, may compromise the effectiveness of the proposed transport strategy.

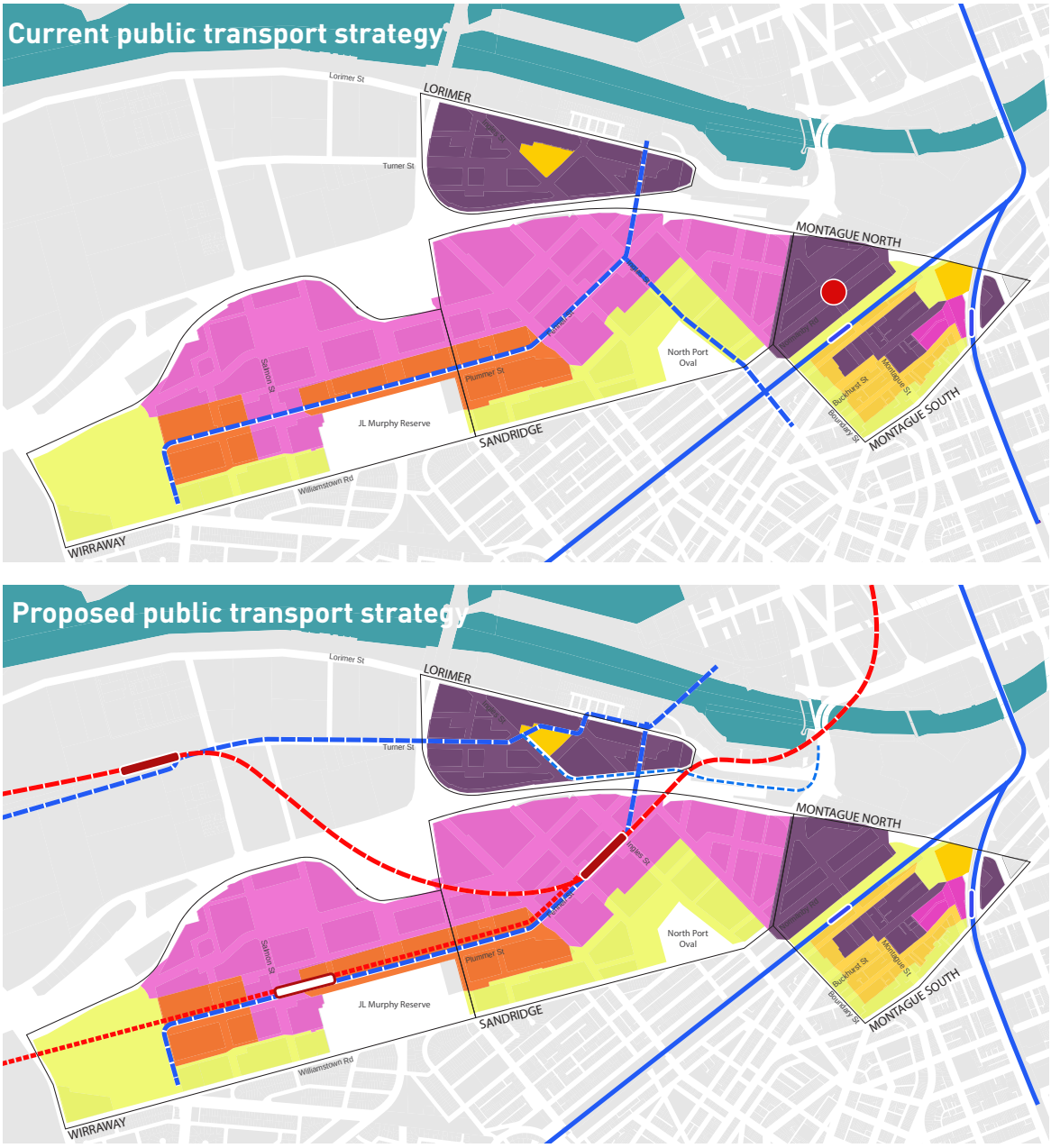


Figure 19: Current mandatory maximum heights and former public transport proposal (above) and proposed public transport strategy (below) illustrating the misalignment between the current height controls and future proposals for public transport provision.

- Low rise - 4 storeys
- Mid-rise 6 / 8 storeys
- Mid-rise 12 storeys
- Tower development - 18 storeys
- Tower development - 30/40 storeys

- Proposed metro line and stations (preferred location)
- Alternate metro line and station*
- Existing tram lines
- Proposed tram lines
- Alternate tram line
- Boulevards / key civic spines

*This urban design strategy adopts the preferred train location in the Employment Precinct.

3.1.3 What's needed to deliver the objective?

RECOMMENDATION 1.

Set targets for population growth and distribution that are linked to transport and infrastructure provision

Residents

To address the need to have a balanced distribution of residents and to keep densities at appropriate levels, the residential population has been distributed to align with the established vision and to keep densities below 500 people per hectare within each precinct (approximately 250 dwellings per hectare). This has been allocated as per table 4. The lowest densities are proposed in Wirraway to support the vision for a family-friendly neighbourhood. The highest densities are proposed in the other three precincts.

Jobs

This 40,000 job target has been distributed across the four precincts to align with the vision. This has been allocated as per table 4. The primary area for job growth, as defined by the vision, is Sandridge which is intended to grow into a significant commercial centre. The job target here is 26,000 (65% of the overall job target). This aims to create a land use mix in this precinct as close as possible to typical mixed-use central city precincts like the Docklands or Southbank (see figures 7 and 20). The remaining job target is distributed amongst the other three precincts (4,000 in Wirraway and Montague and 6,000 in Lorimer as it will have the most direct connection to the Docklands and existing central city economic activity).

Table 4: Population targets and residential densities for Fishermans Bend (excluding employment precinct)

Precinct	Jobs	Residents	Residents/Ha
Wirraway	4,000	17,600	187
Sandridge	26,000	29,600	344
Montague	4,000	20,800	484
Lorimer	6,000	12,000	480
Total	40,000	80,000	323

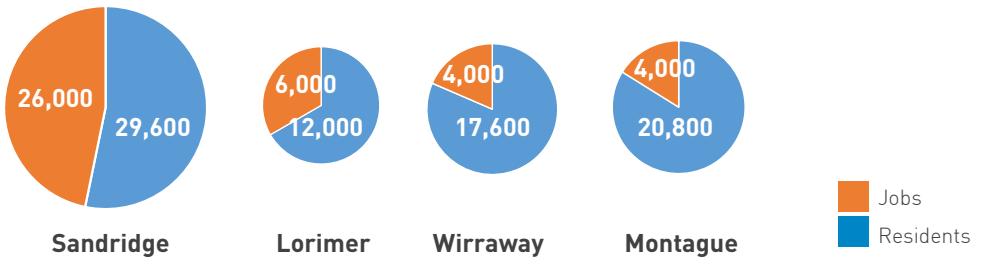


Figure 20: Proposed split between employment and residential uses for each precinct (size indicates relative numbers of people)

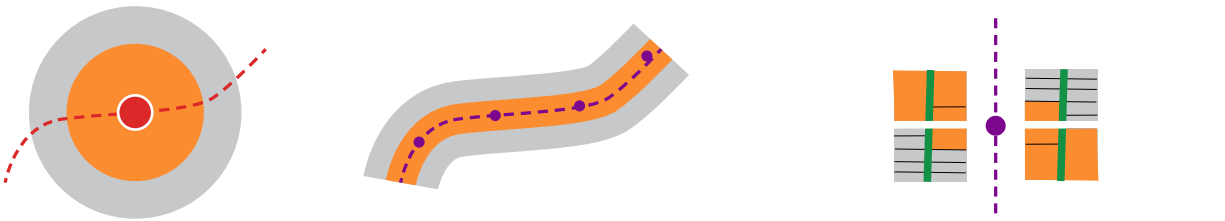
RECOMMENDATION 2.

Define activity cores linked to public transport proposals, creating a hub of activity to support job growth and social interaction

Create vibrant, active centres that meet people's everyday needs in each precinct based on walkable access and the scale of public transport provision. These core areas will provide the majority of employment opportunities ensuring easy access to these jobs from within and outside Fishermans Bend. The size of these core activity areas should be directly related to the degree of public transport service provision proposed, with the metro station in Sandridge supporting the largest capacity and catchment area.

The extent of each core activity area has been informed by:

- The vision for each precinct, e.g. Buckhurst Street in Montague is clearly identified as an activity street creating a new community heart and local centre
- Walkable catchments in each precinct from public transport nodes - the extent and shape of the catchment will vary depending on the level of service provision proposed (see figures 21 and 22)
- Existing context, to exclude developments that do not support high levels of activity, for example, existing townhouse developments in Sandridge, and the need to provide a degree of buffer to existing, adjacent low-scale, residential precincts to the south.



Sandridge: 5 minute walk from train node

Wirraway and Lorimer: Generally blocks fronting tram corridors. As Lorimer is only 400m metres wide at the widest point, this includes the whole precinct

Montague: Generally large sites within blocks fronting proposed civic spines/local centres (supported by adjacent tram services)

Figures 21: Core activity area strategy defining the highest intensity of uses within an overall mixed use area

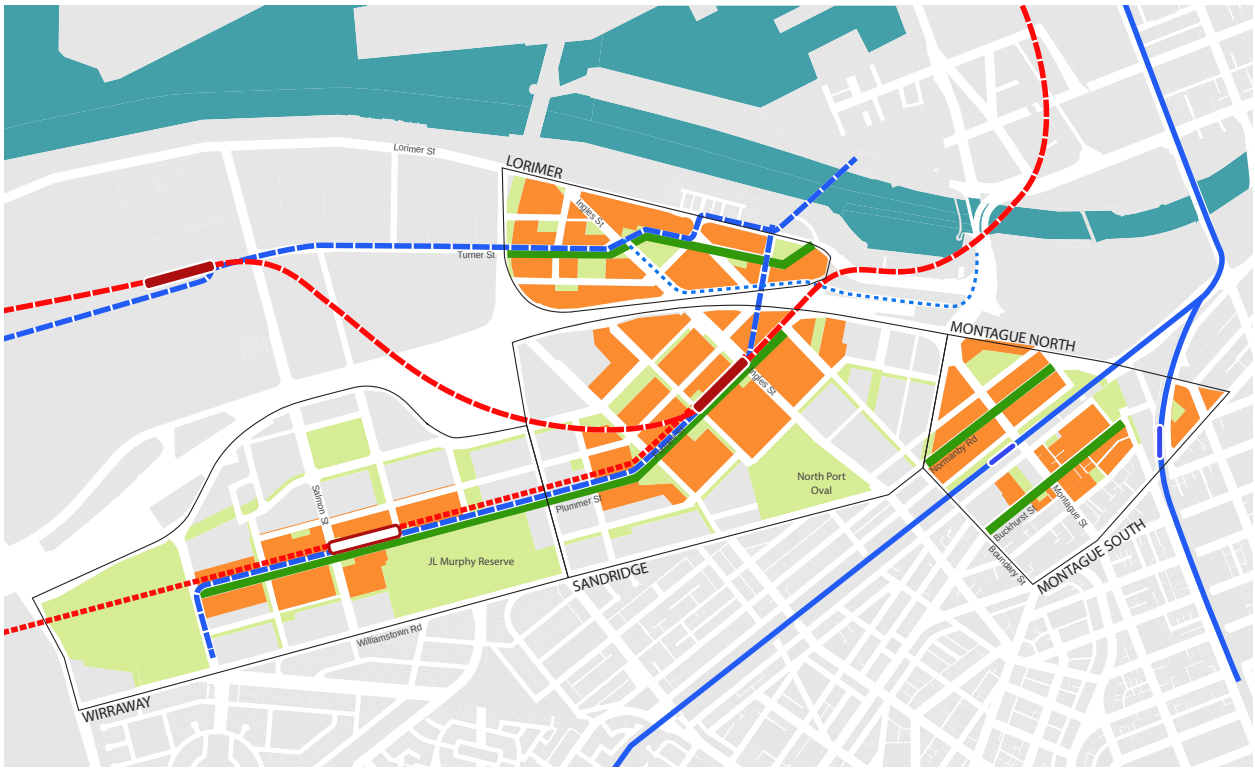


Figure 22: Proposed location of activity centres on public transport nodes in Fishermans Bend

- Core activity area
- Non-core activity area
- Existing and proposed green open space
- Proposed school sites*
- Proposed metro line and stations (preferred location)
- Alternate metro line and station**
- Existing tram lines
- Proposed tram lines
- Alternate tram line
- Boulevards / key civic spines

* The *Community Infrastructure Plan* identifies the need for six schools. Only those with confirmed locations are shown above

**The alternate proposal for a metro station at Wirraway is included in the *Integrated Transport Strategy* as noted above. This urban design strategy adopts the preferred train station location in the Employment Precinct.

3.2 Liveable, mixed use neighbourhoods

3.2.1 Why is this important?

A liveable, mixed use neighbourhood has certain physical features and elements that contribute to this liveability. These include:

- High quality walking, cycling and public transport networks and a low reliance on the private car
- Convenient access to schools, places of work or study, shops and open space
- Residential densities at levels that can support the viability of local businesses but which are not too high to cause congestion or overcrowding
- Employment densities that provide local employment within easy travel distance from new homes

The combination of well-designed high-density development with mixed land uses leads to higher numbers of people walking as a means of transport (Giles-Corti B, Ryan K, Foster S, 2012). Living in close proximity to shops and everyday services makes walking an easy choice. The activity centres will incorporate the most diverse mix of land uses and be a focus for the social and cultural life of Fishermans Bend. Each needs to play an important role in creating a strong sense of place for the local community, close to schools, health and community services. They need to be well connected to their surrounding precinct via walking and cycling connections – enabling easy access to shops, services and employment from surrounding suburbs.

3.2.2 What's happening now?

The residential densities within approved and proposed developmentsin the Lorimer and Montague (North) precincts are very high and are likely to compromise liveability. The vision for Fishermans Bend is to create liveable and vibrant neighbourhoods while providing for a growing population, both residential and commercial. To achieve this, the overall population densities will need to be carefully managed to ensure that there is not an overdevelopment of the area, resulting in the loss of amenity, congestion and a poor quality public realm (see Section 1).

With the exception of Montague, the existing urban structure of Fishermans Bend reflects its current industrial use with very large blocks - some up to 675 metres long. This is far larger than a typical block in the historical Hoddle Grid which is 200 x 100 metres long. Additional laneways within a typical block reduce these block sizes even further. This has created a highly walkable street network that supports a high density scale of development and activity.

In order to transition Fishermans Bend to a central city environment a new street network is needed to reduce block sizes to a similar degree of connectivity.

There is a low amount of commercial development being provided within developments, compromising the establishment of mixed-use areas.

3.2.3 What's needed to deliver this objective?

The following recommendations are proposed to support the delivery of mixed-use neighbourhoods.

RECOMMENDATION 3.

Introduce density controls within each neighbourhood that align with the residential and employment population targets and the defined activity core and non-core areas

RECOMMENDATION 4.

Introduce minimum FAR control for commercial floor area to ensure mixed-use precincts are created and job targets are met

RECOMMENDATION 5.

Apply FAR controls to whole site areas to support the delivery of new streets and parks via the density control

The development of appropriate density controls for Fishermans Bend is detailed in Chapter 4.

RECOMMENDATION 6.

Ensure buildings can be adapted for different uses over time

Ensure building adaptability by:

- Require minimum ground floor to floor height of 4 metres within the activity cores.
- Require minimum floor to floor heights of 3.8 metres for all podiums in activity core areas and for car parking

3.3 Distinctive, characterful places

3.3.1 Why is this important?

Fishermans Bend has the ambition to be an internationally renowned precinct for liveability and design, building on Melbourne's existing reputation. Melbourne's public realm quality is one of its most celebrated attributes and plays a key role in establishing the look and feel of an area. Addressing the relationship of private development to public spaces is just as important as the design of the public spaces themselves. Key attributes that need to be considered to extend the successful delivery of well-designed places into Fishermans Bend include the following.

Responding to context and history
Fishermans Bend is adjacent to existing low-scale neighbourhoods, including Garden City, South Melbourne and Port Melbourne. New development will need to balance the strategic imperative to accommodate growth in Fishermans Bend, while considering the impacts on these surrounding neighbourhoods in regards to density, character and scale of development.

There is a rich local history within the Fishermans Bend area that should be respected and interpreted where possible. This high level strategy cannot consider the fine grain detail that needs to be understood at the local scale to inform site specific responses.

Figure 23: Key public spaces should have active edges and support high levels of pedestrian comfort

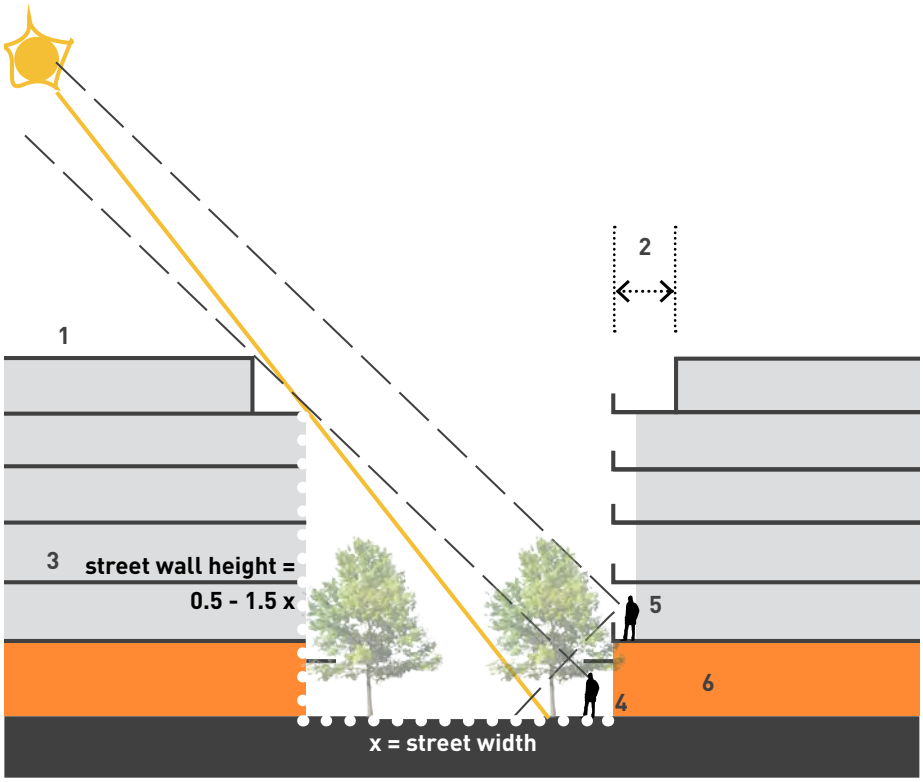
Creating a strong city identity
A clearly identifiable city image is well-formed and remarkable. Complexity and variation in the design of buildings and spaces within a precinct can give an area its own unique character at a neighbourhood scale, and create an interesting city skyline. This can also assist with way-finding as variety creates points of interest that are memorable and which help people orientate themselves in a neighbourhood.

Figure 24: Active edges along street frontages create interesting, safe and welcoming streets. In high-density urban environments this is critical during both the day and night.

Creating well-designed, active public spaces

Significant improvements to the public realm are proposed through the Public Space Strategy (2017). This includes the creation of new squares, parks and streets. This will provide spaces for people to meet, gather, socialise, exercise and relax. The built form framework proposed for Fishermans Bend needs to complement these proposals by guiding development towards the creation of high-quality spaces that support public life. This means ensuring that new buildings front parks, streets and laneways where shops, businesses, restaurants, doors and windows help to activate the street, creating vibrant, welcoming and safe environments, both day and night (see figures 23 and 24).

The scale of development that fronts the public realm should also be designed to create a balance between openness (with views to the sky and buildings that don't visually dominate the pedestrian experience) and enclosure (providing well-defined edges to public spaces). A rule of thumb is that this is achieved through a street wall to street width ratio of 0.5 - 1.5:1 (see figure 25).



1. Overall building height
enables sunlight and daylight to reach into the streets and lower levels of buildings

2. Upper level street setbacks
ensure that building does not overly dominate the street and allows sunlight in and sky views out

3. Street wall height
typically between 0.5 to 1.5 times the street width (this example shows a 1:1 ratio) provides a good balance between enclosure and openness

4. Views to sky (from street)
above the street wall height ensure that buildings do not overly dominate the street and allow sky views

5. Views to sky and street (from habitable rooms/balconies)
provide a visual connection for people to activity in the street and to the sky (viewed above the street wall)

6. Active streets
provide interest, vibrancy and safety within the street

Figure 25: Experience of the public realm and internal amenity as determined by built form elements

Figure 26: Vibrant laneways activated on both sides create welcoming spaces. Reduced street wall heights allow good levels of daylight and sunlight and create intimate, inviting spaces.

Figure 27: Service lanes support active frontages by providing rear access for deliveries away from pedestrian areas

Creating a laneway network

Melbourne's streets and laneways are celebrated and much-loved spaces that are central to the city's identity and that provide much of the city's character in safe, comfortable areas which prioritise pedestrians (see figure 26). The creation of a new laneway network in Fishermans Bend can provide these same benefits and create intimate spaces that are cherished by locals and visitors. Laneways also play a key role in servicing properties (see figure 27), keeping vehicular movements off key pedestrian streets.

Protecting sunlight to public spaces

Sunlight plays an important role in creating welcoming and delightful spaces, particularly in Melbourne's winter months. Access to sunlight is also essential for our health and wellbeing to ensure that we receive sufficient levels of vitamin D.

Ensuring pedestrian comfort

The scale of development has a direct impact on the pedestrian experience within the public realm. Ensuring a comfortable pedestrian environment with enough daylight and sunlight is critical. Similarly, wind impacts should be managed to support sitting environments within the core activity centres.

3.3.2 What's happening now?

While the mandatory built form controls consider amenity issues through height and setback provisions, they don't sufficiently support the creation of a varied, interesting urban environment that has a strong identity and clear legibility. Instead, uniform and repetitive design responses are the result of building designs that seek to maximise yield within the potential prescribed building envelope (see figure 28).

Generally developments are responding to the need to provide activated building edges, however this is occuring uniformly across the area and not responding to a heirarchy of streets and spaces.

There is no relationship between street width and street wall height in the current controls. They specify a maximum street wall height of 20 metres (5 storeys) which generally contributes an appropriate level of enclosure within streets and assists in enabling sunlight and daylight within existing 20m and 30m wide streets. Twenty metre storey street wall heights are too high, however, for smaller streets and new laneways (e.g. 6 - 9m wide streets) creating overly enclosed spaces with poor access to daylight and sunlight.

Existing sunlight provisions protect parks only at the equinox and do not provide sufficient access to sunlight in the winter months when people are most in need of accessing sunlight for their personal enjoyment and health.

In Montague North and Lorimer, proposals for rows of towers are creating uninteresting and repetitive built form outcomes. They are also reducing sunlight access to the street, in particular, to the southern side of the proposed Normanby Road boulevard and the Lorimer parkway.

Precinct planning should identify specific opportunities to enhance the public realm further and locate key landmark sites to contribute to overall identity and legibility.

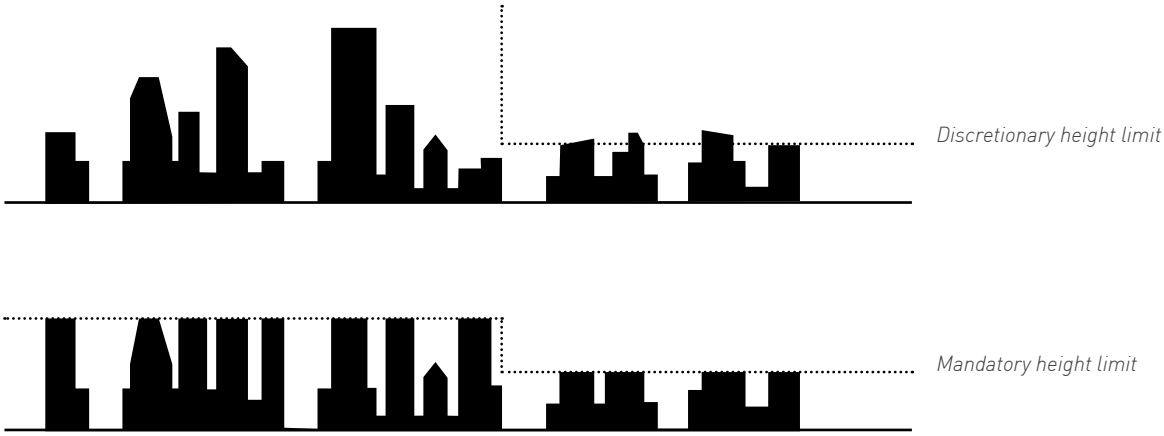


Figure 28: Impact of discretionary (above) vs mandatory controls (below) on the city image - skyline and legibility

3.3.3 What's needed to deliver this objective?

The following recommendations are proposed to support the delivery of distinct, attractive and welcoming places in Fishermans Bend.

RECOMMENDATION 7.

Undertake detailed precinct planning to identify important local history, landmarks and place-markers

Detailed precinct and site considerations should be considered to a far greater degree than is possible in this high level strategy to ensure that local history, site constraints and place-markers are identified and respected. This should be investigated through further neighbourhood-scale planning.

RECOMMENDATION 8.

Establish a diversity of character areas and a varied skyline through a range of proposed densities and height limits within each neighbourhood. These should be driven by the established vision for each area.

See chapters 4 and 5 for detailed recommendations in regards to density controls and building envelopes.

RECOMMENDATION 9.

Define active streets to create vibrant, safe and welcoming core areas

Ensure large buildings are carefully designed to create a fine grain, pedestrian-scaled environment, including small-scale tenancies at ground level.

On primary active streets, provide retail uses on ground level with small tenancy frontages including a minimum of 80% activation with retail uses. No vehicular crossovers to be allowed on these streets to ensure pedestrian comfort and safety is maximised.

On secondary active frontages, a diverse range of retail and commercial frontage should be supported, with a minimum of 60% activation. Vehicular crossovers should be minimised.

On primary and secondary active streets, residential uses should be limited to building entrances only.

See figure 29 for locations.

RECOMMENDATION 10.

Ensure all streets are designed to be safe, welcoming places

Streets not identified as primary or secondary active streets are anticipated to include residential uses to the ground floor. On these streets ensure that there are multiple doors and entranceways provided directly from the street and windows overlooking the street to create active, safe and social streets.

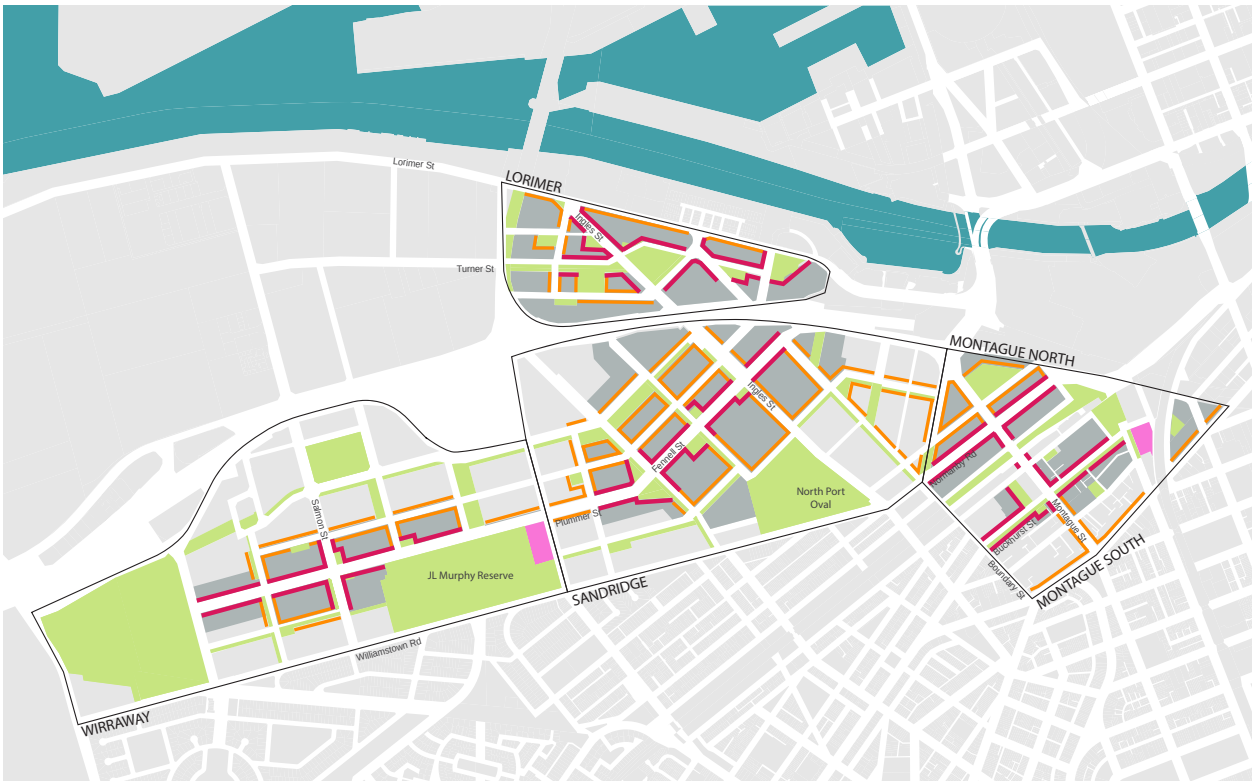


Figure 29: Primary and secondary activity streets in each precinct

RECOMMENDATION 11.

Establish a new laneway network

Create a network of new laneways to provide intimate and welcoming pedestrian spaces, to maximise pedestrian permeability throughout Fishermans Bend and build on Melbourne's celebrated legacy of laneway culture. The location of new laneways should also assist in carefully managing vehicular and loading access through the provision of rear lane access in activity centres for all new developments.

In addition to increasing pedestrian permeability, the following principles should guide the location of new laneways in each precinct:

- Lorimer - creation of a fine-grain network of connections that lead directly through to the Yarra River to maximise connectivity to Yarra's Edge and the water frontage
- Wirraway - provide rear lane access to shops and buildings along Plummer Street to protect the pedestrian priority of this important spine. Create new north-south lanes to maximise direct and frequent connections to this primary street and to public transport services
- Sandridge - rear lane access to shops and buildings within the activity core to maximise the comfort and safety of pedestrians within primary and secondary streets and creation of lanes to maximise access to public transport services, particularly Sandridge Station
- Montague - complete existing laneways as through-block links (Montague South) and creation of new north-south links (Montague North) to improve connectivity to Normanby Road boulevard

This approach leads to the proposed locations for laneways as illustrated in figure 30.

RECOMMENDATION 12.

Ensure new buildings are designed to respond to existing heritage buildings and adjacent neighbourhood character

New buildings adjacent to existing heritage buildings should consider the height, scale and proportions of existing heritage buildings to ensure a sympathetic design response.

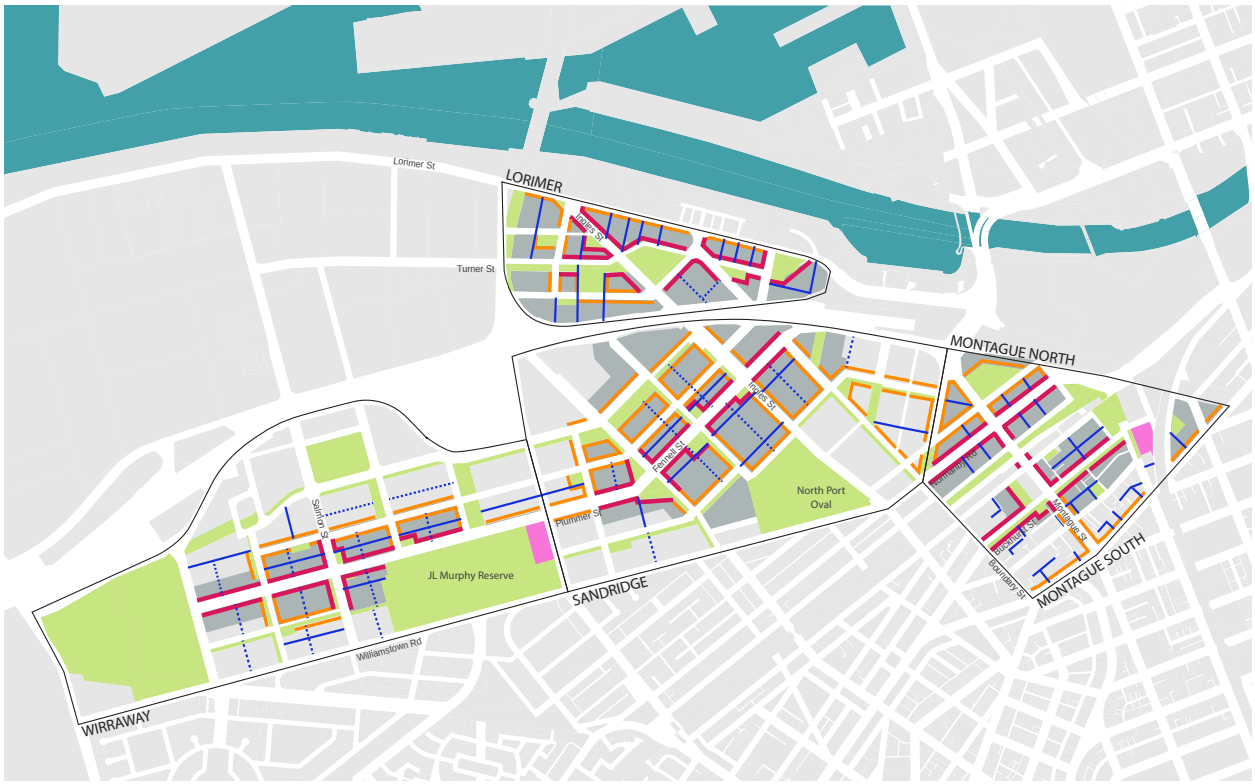
Ensure new development is responsibe to its context, including the need to protect the character and amenity of adjacent, existing neighbourhoods. To achieve this, maintain a mandatory 4 storey height control along Williamstown Road, Boundary Street and City Road.

RECOMMENDATION 13.

Introduce street wall height limits that relate to street width

Ensure that the scale, height and setbacks of new development creates a high quality public realm, with good access to daylight and sunlight and appropriate levels of street enclosure. To achieve this, define street wall heights that can provide a good sense of street definition while balancing a sense of enclosure and openness. A maximum street wall height of 23 metres provides this (6 storeys accommodating for adaptable uses - see recommendation 6) on streets 18 metres and wider. This height limit should be reduced on laneways to 12-15 metres (approximately 3-4 storeys) for streets that are less than 18 metres wide.

Taller buildings on street corners that exceed these ratios are supported, however, should generally not exceed a ratio of 1.5:1.



Proposed block structure
Existing and proposed green open space
Primary active street
Secondary active street
New laneway - required location
New laneway - connection required - preferred location shown

Figures 30: Proposed laneway network

RECOMMENDATION 14.

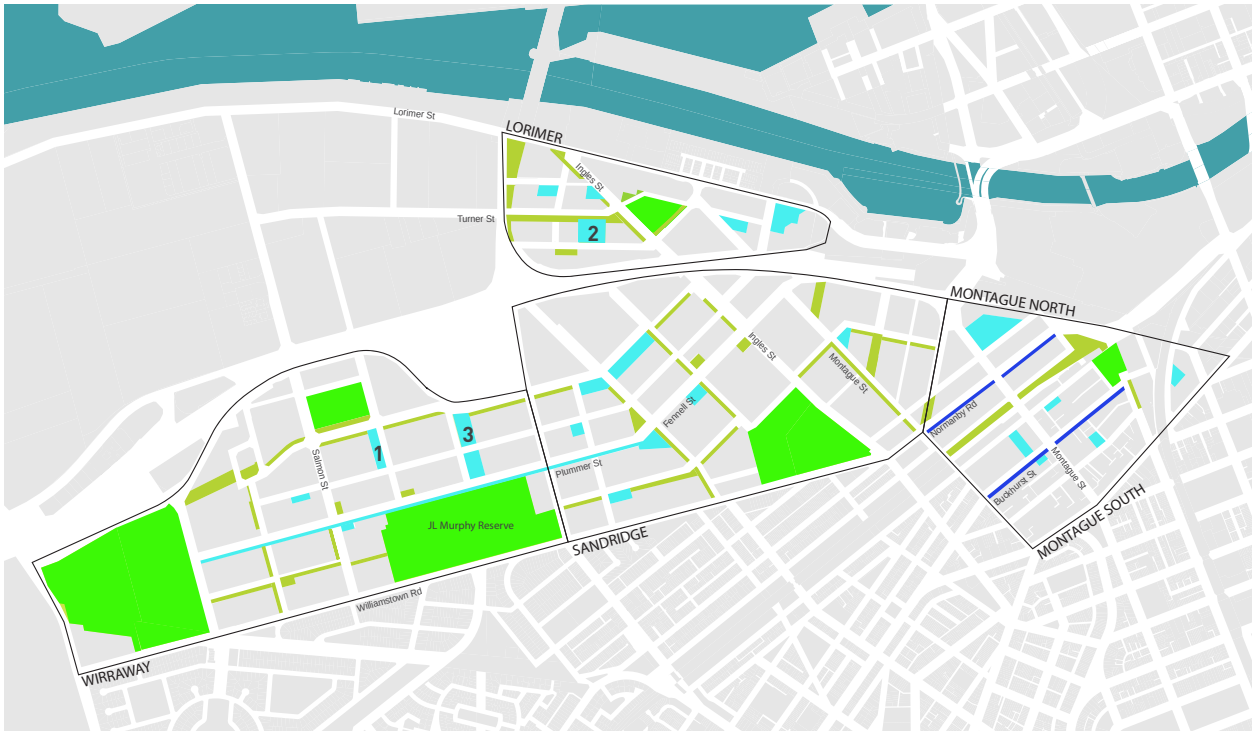
Increase sunlight access to parks by providing at least one park in each precinct with winter sunlight access

Overshadowing controls that deliver this level of protection are illustrated in figure 31. These controls have been tested through built form testing and acknowledge that the varying street orientations influence the amount of sunlight received by parks during the day.

RECOMMENDATION 15.

Protect sunlight access to the southern side of proposed primary streets and boulevards

Normanby Road and Buckhurst Street in Montague, and Plummer Street in Wirraway and Sandridge, are all nominated as key active, civic streets where a high quality pedestrian environment is sought. Ensuring that sunlight reaches the southern footpath at the equinox will contribute to the creation of attractive and welcoming streets. For Normanby Road and Buckhurst Street, protection should be provided for a significant portion of the footpath throughout the day. To achieve this, taller buildings on the northern sides of these streets should incorporate lower podiums (generally 4 storeys) and towers should be spaced further apart to maximise solar access.



Sunlight access protected:

- Winter solstice - 11-2pm (no additional shadow above proposed building envelope controls - heights and setbacks)
- Spring equinox - 11-2pm (no overshadowing)
- 1 Spring equinox - 10 - 1pm (no overshadowing)
- 2 Spring equinox - 10:30 - 1:30pm (no overshadowing)
- 3 Spring equinox - 12:30 - 3:30pm (no overshadowing)
- Spring equinox - maximise solar access through lower podium heights (generally 4 storeys) and generous spacing between towers

Figures 31: Proposed overshadowing controls to existing and new open spaces

3.4 Housing we need and want

3.4.1 Why is this important?

Fishermans Bend will have a high number of new residential developments. The recently introduced *Better Apartment Design Standards* (BADS) highlight the need to deliver high quality places for people to live. The BADS are broad Standards that apply to all new apartment developments and will significantly improve the quality of residential developments.

The BADS focus on the internal amenity of new apartment developments. The external built form conditions that influence internal amenity, such as building separation, are identified as critical to delivering good design outcomes. The BADS do not nominate specific building separation distances, however, acknowledge that different design responses for building setbacks and separation are suitable in different urban environments and that locally specific controls are better placed to provide suitable guidance on appropriate context-specific outcomes. This strategy for Fishermans Bend should therefore provide guidance on suitable building setback and separation distances.

There are also two key aspirations for Fishermans Bend that are not considered in the BADS - housing diversity and the specific requirements of family-friendly housing.

3.4.2 What's happening now?

The Fishermans Bend Vision outlines the desire for each neighbourhood to have a range of housing choices. While some precincts are clearly envisioned to include apartment towers, for example Sandridge and Lorimer, the desire for other areas, such as Wirraway, is to create a mid-rise neighbourhood that is focused on family-friendly housing which in the Australian context has not been found in tower developments. The current trends, however are delivering a limited range of housing choice, with most developments one of two typologies - townhouses or towers (see figures 32 and 33).

The current built form controls are focused on tower developments, with clear direction of podium (street wall) heights and tower heights and separation. There is no guidance provided on suitable building separation to achieve sufficient levels of amenity for mid-rise buildings.

In order to consider development controls that may be appropriate for Fishermans Bend, an assessment of industry best practice and a review of current research into family-friendly housing has been undertaken.

Figure 32: Example of low-rise development far below the preferred height limit of 12 and 18 storeys (Image Source: Urban Melbourne, courtesy of Bruce Henderson)

Figure 33: Cluster of current 40 storey development applications along Normanby Road (Image Source: Urban Melbourne, courtesy of Hayball Architects) - Examples of clustering of high density residential developments that, if delivered, would create very high population densities, repetitive buildings and an uninteresting skyline.

3.4.3 What is industry best practice?

In order to assess what is considered best practice examples of high-density housing in Australia, recent award-winning developments were reviewed (see figure 34). This included developments awarded by the Urban Development Institute of Australia (UDIA), the Australia Institute of Architects (Victorian division) and the Property Council.

Victorian Context
Recent awards given in Victoria for exemplary urban renewal, high density housing and multiple housing reviewed were:

UDIA Awards - Victoria Awards for Excellence - Urban Renewal
2015 - Mosaic Apartments by Burbank
2015 - Judge's Award - QV Eight by Grocon *
2014 - Tip Top, Brunswick East - Little Projects

UDIA Awards - Victoria Awards for Excellence - High Density Housing
2016 - Upper House
2015 - Eden, Haven and Sanctuary, Richmond, Victoria (also received President's Award) - Note received National Housing Award
2014 - (Joint winners) - The Quays, Docklands, MAB Corporation / ILK, South Yarra , Little Projects

AIA Victorian Awards - Best Overend Award for Multiple Housing
2016 - Monash University Logan Hall **
2015 - Upper House
2014 - The Commons

Australian context
The following two recent national examples have been included as representing best practice for precinct scale, mixed-use development:

- East Village, Victoria Park - 2016 Property Council of Australia National Award for Mixed Use Development
- One Central Park, which has received numerous awards, including the High Density Development, UDIA National Award, 2015 and Best Tall Building worldwide by the Council for Tall Buildings and Urban Habitat

These case studies illustrate the following key outcomes (see figure 34 and table 5 for detail):

* The retrofit of a car park within the QV development for residential uses demonstrates the importance of creating adaptable buildings. Ensuring floor to floor heights and buildings depths can support a change of use is critical.

** Note, student housing has not been included in this list as it is designed for a very specific, short-term residential use and therefore not considered useful in determining appropriate built form and density controls for general market housing.

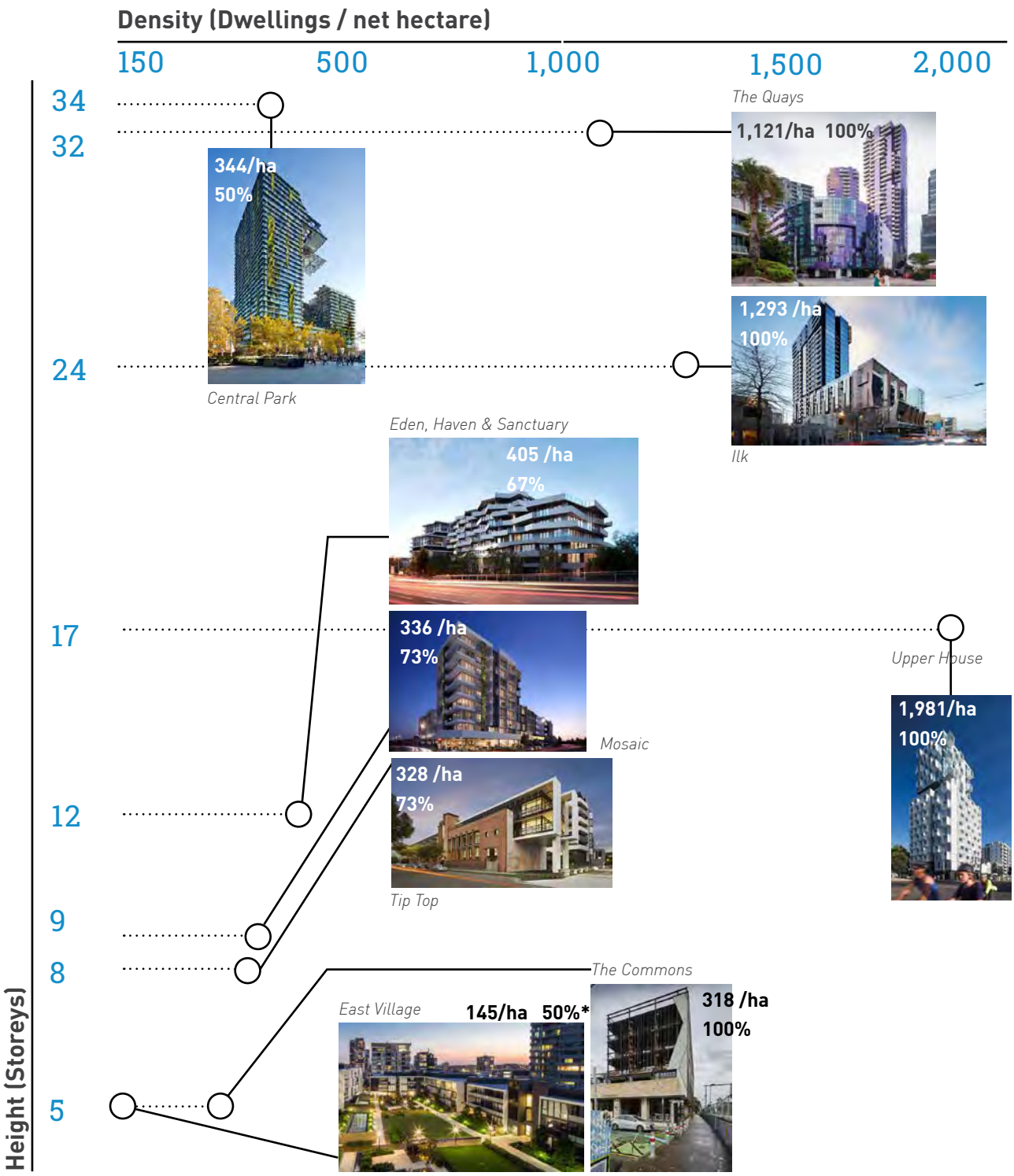


Figure 34: Dwelling density, height and site coverage (shown as a percentage) of recent award winning high-density developments

Table 5: Summary of recent award winning high-density developments

	Mosaic	Tip Top	Eden, Haven & Sanctuary	Upper House	The Quays	Ilk	The Commons	East Village	Central Park
Location	Dandenong	Brunswick	Abbotsford	Carlton	Docklands	South Yarra	Brunswick	Zetland, Green Square Sydney	Broadway, Sydney
Net site area	6,500m^2 *	12,500m^2 *	14,200m^2	555m^2 *	5500m^2 *	3,000m^2 *	760m^2 *	14,200m^2 *	58,000m^2
Housing Typology	Hybrid: Tower / courtyard	Row	Courtyard	Tower	Multiple towers	Hybrid: Tower / Infill	Infill	Courtyard	Multiple towers
No. of dwellings	219	411	567	110	617	388	24	206	2,000
Other uses	Ground floor retail	Retail and office spaces, rooftop childcare centre	Ground floor retail	Ground floor retail	Serviced apt's, retail	Retail	Retail	Retail	Office retail, restaurants, cultural facilities
Dwelling density / Ha (Net site area)	336	328	405	1,981	1,121	1,293	318	145	344
Height (storeys)	4-9	4-8	12 (Sanctuary)	17	32 and 27	24	5	4-6	34
Communal open space (approx.)	1,800m^2 *	3450m^2 *	4,700m^2	0	1,500m^2 *	600m^2 *	500m^2 *	7,125m^2 *	36,000m^2 (including main park of 6,400m^2)
Site coverage (approx.)	73%	73%	67%	100%	100%	100%	100%	100%	60%
Communal open space % of site	27%	27%	33%	0%	27%	20%	66%	50%	40%

** Estimated from aerial photography*

Findings

Residential densities
These exemplar projects demonstrate that residential densities associated with mixed-use, mid-rise developments with sufficient open space are typically in the order of 150 - 400 dwellings per hectare. Tower forms were associated with much higher residential densities (1,100 - 2,000 dwellings per hectare).

Range of Heights
Quality design is not associated with any particular height or typology.

Mix of uses
All developments contained a mix of uses, including commercial and residential. This was most typically retail uses found at ground level.

Site coverage (open space)
For mid-rise developments that generally align with the residential densities sought in Fishermans Bend, the amount of open space provision (on ground) was in the order of 30% (site coverage of 70%). In the tower developments, the provision of significant open space on site is provided on roof terrace areas. The size of these ranged from 40 - 60% of the site area. They demonstrate the importance of private open space on site within high-density residential developments.

3.4.4 What is family-friendly housing?

Family-friendly housing relates to the provision of housing that has been designed and constructed to meet the physical, social and cognitive needs of families and children. In particular, it prioritises flexible design to enable the way spaces are used to be modified to suit the changing needs of families over the life-course.

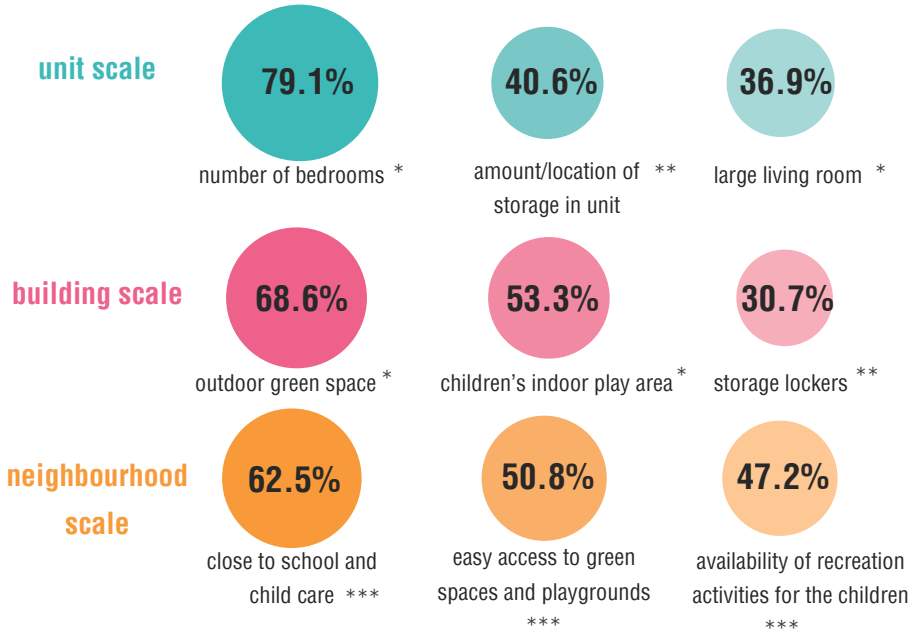
Challenges in meeting the specific needs of families in medium - high-density apartment living are varied. The existing research provides insight into some of these challenges which include:

- dwelling size, crowding and lack of privacy, building and apartment design that makes supervision of children incompatible with household activities and limitations on activities imposed by spatial arrangements (Appold, S. and Yuan, B, 2007).
- noise between flats, access to outdoor spaces, safety of elevators, family-oriented amenities, corridors that accommodate strollers and the use of building materials that are robust to withstand children's play (Yates, 2011 cited in Easthope, H. and Tice, A. 2011).
- Ensuring play spaces are big enough for children to interact in pairs or groups and which enable parental supervision is important (Easthope, H. and Tice, A 2011).
- Direct surveillance of play spaces is noted by many researchers as critical (Easthope, H. and Tice, A. 2011; Whitzman, C. and Mizrachi, D. 2012) and is linked with the need to locate families on lower floors with direct visual connections to private communal open spaces.
- Insufficient storage and poor acoustic properties, lack of natural light, lack of privacy and lack of communal child-specific facilities are seen as specific design flaws of high-density housing (Carroll, P. Witten, K. and Kearns, T. 2011).

Importantly, family-friendly housing needs to consider the parents and children's needs at apartment, building and neighbourhood scale. Children of different ages have different needs, which influences the design of both indoor and outdoor spaces. The degree of supervision, the required spatial range of play, issues in regards to noise, accessibility, visibility, sharing spaces and the separation of private and public spaces all vary for children of different ages (Whitzman, 2015, Sarkissian, W., Walton, S. Kerr, H. and Hazelbroek, A. 2004).

International examples of policies that have sought to influence the delivery of family-friendly housing have taken approaches such as requiring a minimum percentage of family units (typically 3 bedroom) in single developments. This provides a critical mass of families within developments to support the provision of other family-friendly amenities, such as play spaces. Policies that require apartments to be constructed so that they can readily be converted into three + bedrooms through minor changes to wall configurations have also been proposed (City of Toronto, 2009). The City of Vancouver specifically reference family units as those that have 'two or more bedrooms, and are contained within the first eight floors of a building or podium which provides adequate common outdoor space' (referenced in City of Toronto, 2008).

While the BADS provide an overarching guidance for good apartment design in Victoria, recent research into vertical family living (City of Toronto, 2016) illustrates that on four key design attributes (the number of bedrooms, living room size, access to outdoor green space and indoor play space) complementary design guidance is needed to further support family-friendly housing design (see figure 35).



* Not currently addressed by BADS

** Addressed by BADS

*** Not addressed by BADS, but generally addressed by other planning strategies proposed for Fishermans Bend, including open transport, open space and community infrastructure strategies

Figure 35: The 3 most important design features of the unit, the building and the neighbourhood scale indicated by the survey respondents (Source: City of Toronto, 2016 - Growing Up Summary Report)

Dwelling (Unit) Scale

The following attributes are important within the apartment unit:

- Number of bedrooms - An analysis of housing choices in the inner areas of Melbourne illustrates that the household type (e.g. lone person, family etc.) does not align as expected with the number of bedrooms in that household (see Appendix A). Rather, families live in a range of one, two, three and four bedroom apartments. The majority, however live in two and three bedroom dwellings - 40% and 54% respectively.
- Living Room size - Larger living rooms are needed to support families, providing more space for a range of everyday activities. The current BADS require a minimum of 12m^2 within a 2 or 3 bedroom dwelling. While this is generally sufficient, it may be considered too small to support a flexible range of activities and numbers of people within many family households. For example, accommodating play spaces, spaces for doing homework, additional furniture etc.

Building Scale

The following attributes are important within the building development:

- Communal open space - The review of recent award-winning developments illustrate that locating communal green open space on site is considered best practice. These examples demonstrate this space is typically a minimum of 30% of the site area to enable sufficient space for landscape and social activities. If located on roof structures the range of communal open space increases to 40-60% of the site area. Providing a visual connection to this communal open space from within apartments to faciliate supervision of children is important.

Many sites in Fishermans Bend are of a significant size and will enable significant scale of redevelopment with a substantial number of dwellings built per site. The BADS require a capped amount of 250m^2 of communal open space for all development with 40 or more dwellings. On sites that can accommodate a significantly greater number of dwellings this is likely to be insufficient for the number of residents, particularly if the focus is on family-friendly living where access to this green open space is critical.

Families include not just parents and dependent school age children, but people from multiple generations. The physical and mental health benefits of accessing nature within urban environments for people across their life course is well-documented (for a comprehensive summary, see Green Cities: Green Health - http://depts.washington.edu/hhwb/).

- Indoor play space - recent high-density housing proposals typically include a range of communal indoor spaces within the development, such as gyms and pools. This could incorporate indoor play spaces for children. This is likely to be far more critical in a climate like Toronto. To incentivise a greater range of indoor communal spaces, however, these types of areas should be excluded from the FAR calculations.

3.4.3 What's needed to deliver this objective?

The following recommendations are proposed to support the delivery of housing that delivers on the aspirations and needs identified for Fishermans Bend.

RECOMMENDATION 16.

Deliver housing diversity through a range of FAR and dwelling density controls and height limits within each precinct in Fishermans Bend.

Housing diversity is a key aim of the Fishermans Bend vision. In order to achieve a diversity of housing, the development controls should support a range of housing typologies. This means a range of height limits and FAR controls that support a diversity of building heights (low and mid-rise apartments through to taller buildings), and a variety of living environments including townhouses, infill developments, shop-top housing, courtyard apartments or perimeter block developments which provide significant communal, private open space as well as well-designed towers. This diversity provides choice for different lifestyles and life stages, including family-friendly housing.

The range of high density developments illustrated in figure 36 demonstrates that most typologies are supported by a range of FAR controls in the order of 2:1 through to 5:1. The exception is tower buildings which typically require a larger FAR although this varies depending on the size of the site and the degree of site coverage. On small sites where the tower will occupy the whole site with no ground level open space (including new private road connections), this is in the order of 7-8:1. On large sites, towers can be easily achieved with FAR controls as low as 3:1. Importantly, to achieve a diversity of housing across precincts and within large sites, the FAR controls should not be set too high or predominantly tower developments will be delivered.

Delivering housing mix can also be achieved through maximum density dwelling controls that align with the preferred FAR controls. This will ensure that the yield that can be realised through a FAR is not delivered as predominantly smaller apartments.

RECOMMENDATION 17.

Ensure that there is sufficient supply of mid-rise housing, with adequate access to private outdoor green spaces to support family-friendly neighbourhoods, particularly in Wirraway and Sandridge.

This can be achieved by designating areas within Wirraway and Sandridge that are suitable for a 6-8 storey height limit. This should be paired with a requirement for a minimum amount of communal green open space, preferably on ground (30% is supported by industry best practice) to support the delivery of a family-friendly housing typology such a courtyard or perimeter block housing.

RECOMMENDATION 18.

Encourage the provision of well-designed green roof space in developments.

Green roof spaces can provide additional private amenity for residents. They should be designed to incorporate significant landscaping, including deep soil planting, where possible to create healthy, cool living environments. Industry best practice indicates that this is typically achieved with 50% of the total site area dedicated to green roof space.

RECOMMENDATION 19.

Encourage the delivery of family-friendly apartments with large living rooms

Encourage the delivery of 3 bedroom apartments with large living rooms in all developments. Within large developments - sites greater than 3,000m2 or proposing more than 100 dwellings or proposing more than 1 building - the following targets for 3 bedroom apartments should be met:

- Wirraway: 30%
- Sandridge: 20%
- Montague: 25%
- Lorimer: 20%

These should be located within the lowest 8 floors of the building with direct visual connections to communal open space.

(See table A.3 in Appendix A for more detail on projected demographic demand for different apartment sizes).

RECOMMENDATION 20.

Incorporate opportunities for flexible design of apartment floor layouts, enabling 1 or 2 bedroom apartments to be combined into larger 3 or 4 bedroom apartments

Flexibility through the planning approvals process will support the capacity of the market to adapt to different demands for housing size and mix. Developers are encouraged to demonstrate how proposed floor plan layouts can be adapted to include a greater number of 3 and 4 bedroom apartments.

High-density housing typologies

	Narrow infill	Row	Shoptop
FAR Range (indicative)	2 - 4:1	2 - 4:1	3 - 5:1
Suitability for each precinct (informed by vision)	Core - all precincts except Sandridge Non-core - all precinct	Core - all precincts except Sandridge Non-core - all precincts	Core - all precincts Non-core - all precincts

Figure 36: Range of high-density housing (apartment) developments (Image source: NSW Apartment Design Guide (NSW Government, 2015) and indicative FARs to support these typologies and the suitability for each Fishermans Bend precinct

Courtyard	Perimeter block	Tower	Hybrid
2 - 5:1	2 - 5:1	3 -18+:1 (depending on site size)	2-10:1 (if including tower)
Core - all precincts	Core - all precincts	Core - all precincts (preferred heights vary)	Core - all precincts
Non-core - all precincts	Non-core - all precincts	Non-core - not supported in Montague and Wirraway	Non-core - all precincts

RECOMMENDATION 21.

Introduce minimum building separation (setbacks from side and rear boundaries) to deliver high levels of residential amenity

The Better Apartment Design Standards identify the importance of building separation in delivering good internal amenity. This is to achieve adequate daylight into new dwellings, to limit views into habitable room windows and private open space of new and existing dwellings, to provide a reasonable outlook from new dwellings and to generally ensure that building setbacks provide appropriate internal amenity to meet the needs of residents. Appropriate separation distances to achieve this aim are intended to be established at a local level. This enables the preferred character and context to be considered in more detail.

Fishermans Bend will be developed to high-densities, with a predominance of residential uses. While this means that development will occur in a highly urbanised setting, it does not mean that internal amenity provided by building separation should be considered less important. The reverse is true. With people living in denser, more crowded environments, ensuring a minimum amount of amenity becomes even more critical to provide liveable living and working environments.

3.5 Inclusive, cohesive and resilient communities

3.5.1 Why is this important?

The provision of affordable housing is critical to creating inclusive communities where people from all walks of life can afford to live. As this report is primarily focused on issues of land use, density and built form, it does not go into detail on the highly complex issues of providing secure, affordable housing for low-moderate income earners. The key principles that have been adopted are:

- Current accepted best practice is to distribute the affordable housing units throughout a development. This approach seeks to avoid the stigmatisation of affordable housing tenants by identifying them as separate from other members of the community

- There are numerous, well-documented successful examples of incentivising the delivery of affordable (subsidised) housing through varied Floor Area Ratio and Floor Area Uplift controls. This occurs in cities such as New York, Vancouver, Toronto and Chicago. This has recently been introduced as an option that developers can pursue in Melbourne's central city through Amendment C270

Developments that provide a range of opportunities for socialising, relaxing, sharing and community participation can support social interaction amongst residents and the broader community. This can help to build community networks which are critical in enhancing a community's resilience to long-term stresses (such as social inequality and climate change) as well as acute shocks (such as heatwaves or floods) - (see Resilient Melbourne Strategy, 2016).

3.5.2 What's happening now?

No affordable housing has been proposed in any approved development. This impacts low-moderate income earners, including key workers who are employed in the central city. It will compromise the capacity for Fishermans Bend to support a diverse and inclusive community and connect people to their inner-city jobs.

New development is providing some communal facilities within buildings, e.g. gyms, pools, however the provision of communal open spaces is limited (see also Section 3.4 - Housing We Need and Want).

3.5.3 What's needed to deliver this objective?

RECOMMENDATION 22.

Utilise a FAU to deliver affordable housing.

The FAU scheme should be targeted to achieve the delivery of 2,500 affordable housing units across the Fishermans Bend area. This will contribute to the creation of an inclusive and diverse community. The method (ratio of delivery of housing to development benefit) will need to be confirmed through feasibility testing, and should be set at a ratio that incentivises affordable housing delivery while managing overall population growth.

RECOMMENDATION 23.

Design development to encourage social interaction through the inclusion of green open space and communal facilities

See recommendation 17 and 18 for provision of minimal communal green open space.
The provision of communal facilities from the calculation of the gross floor area should be considered to encourage their inclusion in new developments.

3.6 Environmentally sustainable development

3.6.1 Why is this important?

Sustainable buildings play a key role in reducing carbon footprints, reducing demand for raw materials and minimising the use of resources such as energy and water.

The overall layout and massing of a development is linked to the opportunity for buildings to be sustainable, including allowing sunlight and daylight to reach internal spaces, opportunities for natural ventilation and providing open space for landscape opportunities to support biodiversity and cool buildings. Opportunities to promote a more sustainable range of building typologies, including courtyard and perimeter block housing that encompass green open space and passive building design such as natural ventilation and good daylight and sunlight access are important and should be incorporated into urban design proposals for Fishermans Bend.

Building designs that contribute to the creation of a positive public realm also encourage people to walk and cycle, minimising car use and reducing carbon emissions.

3.6.2 What's happening now?

Tower buildings are typically less sustainable than other building typologies. They require significant energy to ventilate, heat and cool, however they are the predominant building typology proposed in the current applications and are encouraged by the existing built form controls.

New buildings in the City of Melbourne are required to demonstrate that they can meet minimum sustainable ratings at planning permit stage only. There are no equivalent requirements at present in the City of Port Phillip planning scheme. Generally development applications in Fishermans Bend are only meeting minimum requirements with no leading sustainable building developments proposed.

3.6.3 What's needed to deliver this objective?

RECOMMENDATION 24.

Design development to encourage the inclusion of green open space to support biodiversity and create opportunities for Water Sensitive Urban Design on site.

See recommendation 17 and 18 for provision of minimal communal green open space.

RECOMMENDATION 25.

Promote building typologies that support passive sustainability, such as natural ventilation and good solar access.

Critical to achieving this will be setting the FAR controls and building envelope controls at a level that enables enough space between buildings to achieve these outcomes. Establishing minimum building separation distances will also be critical.

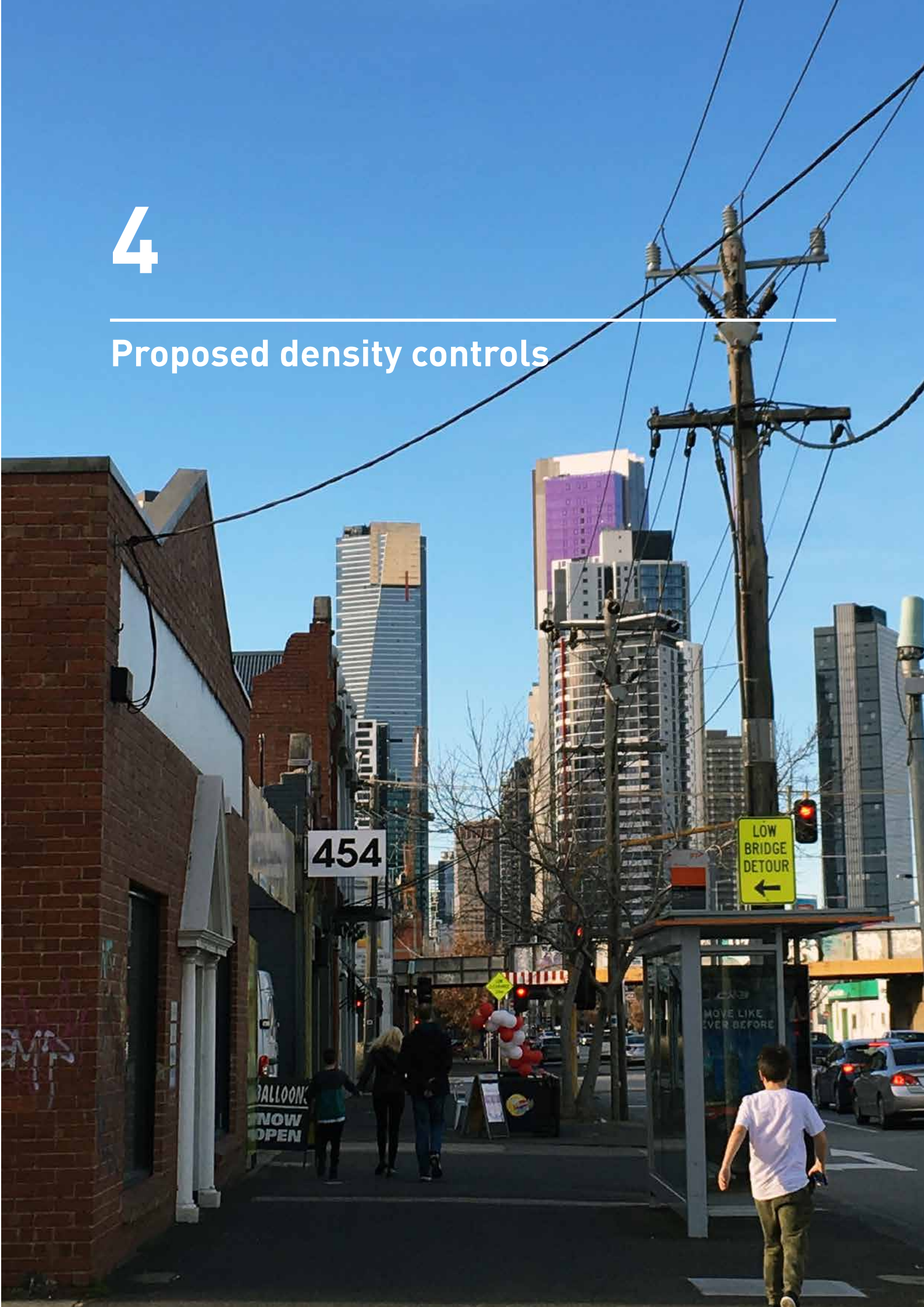
Excluding the provision of site or precinct scale sustainable utilities infrastructure, such as recycled water facilities or local energy plants, from the calculation of gross floor area should be considered to encourage their inclusion in new developments.

RECOMMENDATION 26.

Revise planning scheme requirements to improve the sustainability of new buildings, including increased building performance targets

4

Proposed density controls



4.1 Establishing preferred Floor Area Ratio (FAR) controls

Appropriate Floor Area Ratio (FAR) controls for Fishermans Bend will be influenced by five key drivers:

1. **Alignment with residential and employment population targets for 2050** to ensure sufficient floor area is provided to support the preferred scale of growth and to ensure that residential densities aren't too high which could cause significant congestion and diminish private and public amenity.
2. **Alignment with the transport strategy** to ensure the highest densities are located in the defined core areas in immediate proximity to public transport provision supporting sustainable and walkable neighbourhoods.
3. **Delivering the minimum amount of commercial development** needed to realise the job target - this is critical to strengthening the central city economy and to creating mixed use neighbourhoods.
4. **Moderating FARs for development delivery trends** to ensure that underdevelopment of the area doesn't occur and that population targets are met by 2050.
5. **Aligning FAR controls with preferred built form outcomes** to ensure that the desired neighbourhood character and housing diversity are achievable and that overshadowing controls can be met.

The proposed FAR controls have been developed through an iterative process of testing the impacts of each of the above drivers and how they come together to deliver the overall urban design objectives.

4.1.1 Alignment with population targets

A FAR that is aligned with population targets needs to consider the overall floor area that is needed to meet the defined targets and the available developable land on which this floor area can be built.

Determining the floor area required for residential targets

The total number of dwellings needed to house 80,000 people is 36,900 (at 2.17 people per dwelling - see Appendix A). There are already a significant number of developments approved for Fishermans Bend that, if built, will assist in meeting this target. Existing permit approvals account for 7,865 dwellings (April 2017).

It is impossible to know with any certainty how many of these permits will be acted on and therefore how many of these approved dwellings will be constructed. Indicative research within the City of Melbourne, however, demonstrates that 91% of the total number of dwellings given planning approval within the municipality were progressed to completion (based on a preliminary review of permit activity 2002-1015). This aligns with the long-term trend in Sydney, where over an 18 year period, on average 90% of the total number of approved dwellings were delivered (NSW Government Planning & Environment 2017). Adopting an assumption that 90% of the total number of dwellings that currently have planning approval in Fishermans Bend will be built results in the delivery of 7,080 dwellings being constructed (90% of 7,865 approved dwellings). This reduces the number of new dwellings needed to meet the population targets from 36,900 to 29,820 (see table 6).

To deliver 29,820 dwellings a total Gross Floor Area of 3,280,240m^2 is needed (see table A.1 in Appendix A). This takes into account all floor area within a residential building, including the internal area for

Table 6: Determining the number of new dwellings (above those already approved) required to meet the residential population target

	Dwelling numbers
Number of dwellings needed to meet residential population target of 80,000 (at average of 2.17 people per dwelling)	36,900
Number of dwellings approved (as at April 2017)	7,865
Number of approved dwellings predicted to be built (90% of total number of dwellings approved)	7,080
Remaining number of dwellings needed to be delivered by future approved development applications to meet the 80,000 target	29,820

dwellings, as well as external spaces (e.g. circulation spaces, service areas & lifts) and car parking spaces (assuming 0.5 spaces per dwelling as per the current car parking policy).

Determining the floor area required for commercial targets

The average floor area per employee in the capital city zoned areas of the City of Melbourne (the Hoddle Grid, Southbank and the Docklands) is 31m^2. Taking into account car parking rates of 1 space per 100 employees, the total amount of floor area needed to deliver the 40,000 jobs is 1,612,000m^2 (see table A.2 in Appendix A).

3.4:1

Average FAR required across the Fishermans Bend capital city zoned precincts to deliver population targets

Table 7: Total amount of Gross Floor Area needed to deliver residential population targets for Fishermans Bend

	Gross Floor Area (m^2)
Residential Gross Floor Area needed to deliver 29,820 dwellings	3,280,240
Commercial Gross Floor Area needed to deliver 40,000 job target	1,612,000
Total Gross Floor Area needed to deliver residential and employment population targets	4,892,240

Determining the floor area required to deliver residential and commercial targets

The total amount of GFA needed to deliver the residential and employee population target is therefore sum of the total floor area for residential uses together with the total floor area required to meet the job target. This adds to approximately 4,900,000m^2 (see table 7).

Total available developable area

The Total Gross Developable Area within the four precincts is 144 hectares (see Section 1).

The average FAR needed to deliver the population targets is therefore 3.4:1 (4,892,240m^2 of needed GFA divided by available Gross Developable Area of 144 hectares). If all of the remaining sites were developed by 2050 at this average FAR then the floor area needed to meet the population targets would be delivered.

4.1.2 Aligning densities with the transport strategy

Applying a uniform FAR across the whole of Fishermans Bend is not appropriate as it does not relate to the different population targets for each precinct, to the proposed public transport strategy nor to the preferred character outcomes sought for each neighbourhood.

The required floor area has therefore been distributed within each precinct according to the population targets for each precinct. Within each precinct, this floor area is then split between the core and non-core activity areas (see figure 37 and tables 8 and 9). The distribution of the residential and employment population targets between core and non-core varies across each precinct.

4.1.3 Delivering job targets

Current market trends are delivering predominantly residential developments, compromising the likelihood that the job targets will be met. To ensure the target number of jobs in Fishermans Bend are delivered, and to create mixed-use areas of development intensity aligned with the public transport provision, a minimum FAR to deliver commercial development is recommended. These would align with the commercial GFA needed to deliver the job target (see table 11).

It is acknowledged that this may be difficult for some developments to achieve, however without a minimum FAR requirement it is likely that current development trends will continue and the opportunity to create a truly mixed-used extension of the capital city centre (as intended by the capital city zoning) that will support the economic growth of Melbourne will be lost. This is particularly critical in Sandridge where the highest number of jobs and the creation of a significant commercial centre located on a new metro station are sought.
There is significant development potential in the

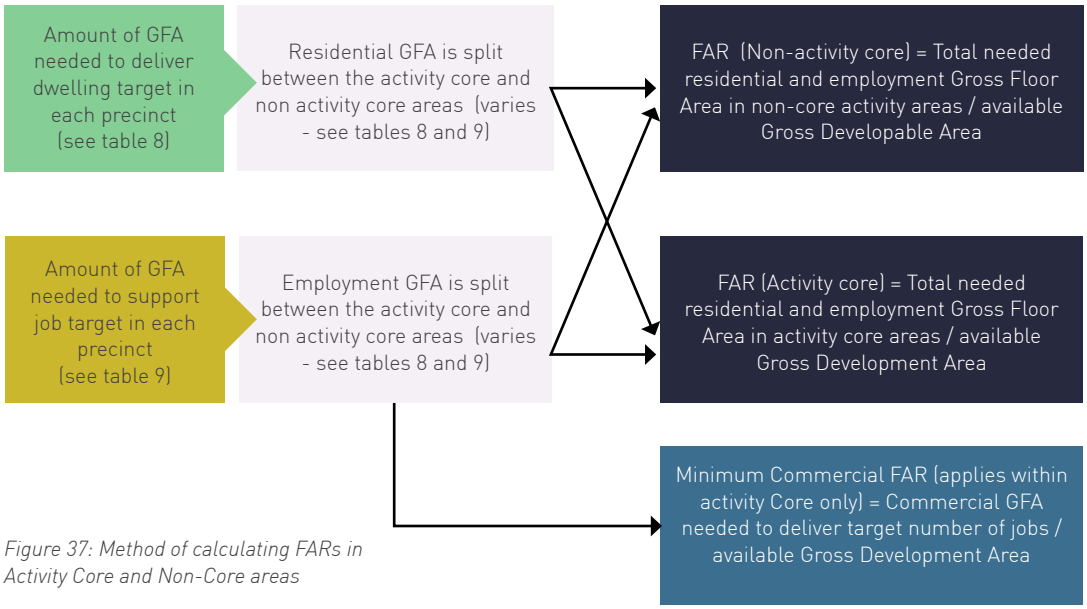


Figure 37: Method of calculating FARs in Activity Core and Non-Core areas

non-core areas to support a pipeline of development projects for Fishermans Bend if this mechanism has the impact of slowing development activity in these core areas. Increasing residential population generally around these proposed activity core areas can help to create a critical mass of local residents to support new businesses within these centres.

It would be more pragmatic for this minimum FAR requirement to be transferred between sites. Changes to existing legislation, as required, should be pursued to achieve this aim.

The job targets for the non-core areas are generally quite low and should be easily achieved if developments provide some minimum commercial development, e.g. ground floor retail or offices, without introducing a minimum commercial FAR requirement.

Recent development applications on strategic development sites (for example, sites beside proposed public transport nodes), have also been considered an underdevelopment of these sites. A minimum FAR for commercial uses would address this issue. Commercial developments are also far easier to redevelop allowing an increase in development intensity in the future if this was desired.

4.1.4 Moderating FARs for development delivery trends

The FARs are determined by delivering the projected population of 80,000 residents and 40,000 jobs by 2050. It is highly unlikely that all sites will be redeveloped by 2050, therefore the FARs need to be moderated to take this into account.

It is difficult, however, to make any assumption around the percentage of sites that are likely to redevelop. For example, there are many sites within the Hoddle Grid or Southbank which have been suitable for redevelopment for decades, however this has not occurred. There is no available local data on this trend. Opinions within the industry vary, with some suggesting that 50% of sites redeveloping in this period is likely, while others are confident that by 2050 Fishermans Bend will be complete with 100% of sites redeveloped.

Taking a midpoint between these divergent positions suggests that approximately 75% of sites will redevelop by 2050. When taking into account this assumption, the specific FARs calculating for each precinct would need to be increased by 133%. This is demonstrated in tables 10 and 11.

4.1.5 Aligning FAR with preferred built form controls

The FAR controls must be aligned with the overall urban design character outcomes desired for each of the precincts. This has been tested through iterative 3D modelling - see Section 5.

Table 8: GFA needed to meet residential targets by precinct (core and non-core areas)

RESIDENTIAL				
Precinct	**Total GFA needed (whole precinct)**		**% split between Core and Non-core**	**Resultant GFA**
Wirraway	718,530	**Core**	20%	**143,706**
		Non-core	80%	**574,824**
Sandridge	1,445,208	**Core**	70%	**1,011,646**
		Non-core	30%	**433,562**
Montague	609,922	**Core**	65%	**396,449**
		Non-core	35%	**213,473**
Lorimer	506,578	**Core**	100%	**506,578**

Table 9: GFA needed to meet employment targets by precinct (core and non-core areas)

EMPLOYMENT				
Precinct	**Total GFA needed (whole precinct)**		**% split between Core and Non-core**	**Resultant GFA**
Wirraway	161,200	**Core**	80%	**128,960**
		Non-core	20%	**32,240**
Sandridge	1,047,800	**Core**	80%	**838,240**
		Non-core	20%	**209,560**
Montague	161,200	**Core**	90%	**145,080**
		Non-core	10%	**16,120**
Lorimer	241,800	**Core**	100%	**241,800**

Table 10: Total GFA needed to meet population targets and resultant FARs proposed (moderated for development trends)

Precinct		**Total Residential GFA**	**Employment GFA**	**Total GFA in Core & Non-core**	**Gross Developable Area (GDA) in Core & Non-core**	**Base FAR (Total GFA / GDA)**	**FAR moderated for development trends (x 133%)**
Wirraway	**Core**	143,706	128,960	**272,666**	**8.92**	3.1	**4.1**
	Non-core	574,824	32,240	**607,064**	**37.69**	1.6	**2.1**
Sandridge	**Core**	1,011,646	838,240	**1,849,886**	**30.26**	6.1	**8.1**
	Non-core	433,562	209,560	**643,122**	**26.15**	2.5	**3.3**
Montague	**Core**	396,449	145,080	**541,529**	**11.85**	4.6	**6.1**
	Non-core	213,473	16,120	**229,593**	**10.04**	2.3	**3.0**
Lorimer	**Core**	506,578	241,800	**748,378**	**18.72**	4.0	**5.4**

Table 11: GFA needed to meet employment targets by precinct (core and non-core areas)

EMPLOYMENT				
Precinct	**Employment GFA in Core areas**	**Gross Developable Area in Core & Non-core**	**Minimum FAR to deliver employment GFA**	**Minimum FAR moderated for development trends (x133%)**
Wirraway	128,960	**8.92**	1.4	**1.9**
Sandridge	838,240	**30.26**	2.8	**3.7**
Montague	145,080	**11.85**	1.2	**1.6**
Lorimer	241,800	**18.72**	1.3	**1.7**

4.1.6 Incentivising community infrastructure

In order to incentivise the delivery of community infrastructure hubs, any floor area within these hubs should be counted towards the minimum commercial FAR.

In order to incentivise a range of other, distributed community infrastructure, such as creative spaces, subsidised office space for Not For Profits or other community providers, then a reduced minimum commercial FAR could apply. This would need to be tested through an open book feasibility assessment.

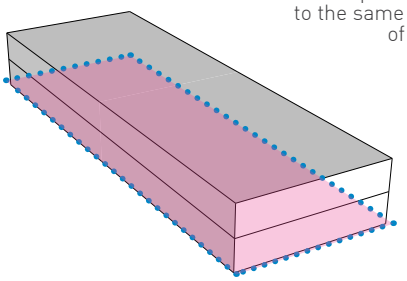
4.2 Method of applying the FAR

The FARs have been calculated based on the Gross Developable Area available within Fishermans Bend. This means that the FAR would apply to the whole site area within the current property boundaries. This provides development equity as each land owner receives the yield from their whole site, regardless of whether the site includes proposed parks, streets or laneways as designated within the Fishermans Bend Framework. This is demonstrated here where Site A has no designated parks, streets or laneways - the development yield is 2,000m^2. Site B includes a designated new public park. If the FAR were applied to the Net Developable Area, the development yield would reduce to 1,000m^2. The government would therefore need to be prepared and able to purchase the land dedicated for park at the time that the developer chose to develop their site.

Site A: No new parks, streets or laneways located on the 1,000m^2 development site

2:1

FAR applied to Gross Developable Area (GDA) or Net Developable Area (NDA) leads to the same development yield of 2,000m^2

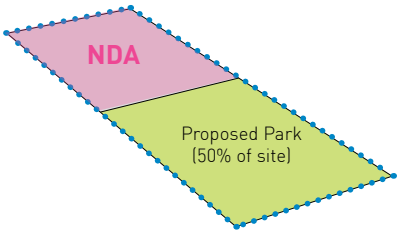


Site area = Gross Developable Area (GDA) = 1000m^2

Net Developable Area (NDA) = 1000m^2

In this example, the NDA = GDA as there are no proposed streets or parks

Site B: New park located on 1,000m^2 development site



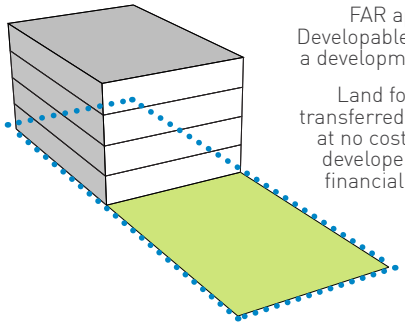
Site area = Gross Developable Area (GDA) = 1000m^2

Net Developable Area (NDA) = GDA minus proposed parks, streets or laneways = 500m^2

2:1

FAR applied to Gross Developable Area (GDA) leads to a development yield of 2,000m2

Land for proposed park transferred to public ownership at no cost to government as developer retains potential financial returns from site



2:1

FAR applied to Net Developable Area (NDA) leads to a reduced development yield of 1,000m^2

Land for proposed park would need to be purchased by government as developer has foregone potential financial returns from their site

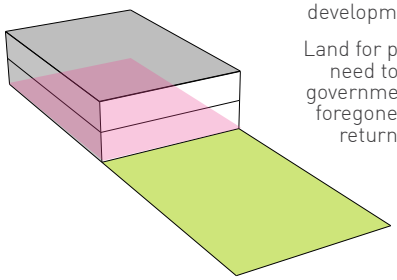


Figure 38: Method of applying FAR

Example: Development example with and without a new street and park

In this example (see figure 39 and table 12), Scenario 1 demonstrates a potential development outcome for a FAR of 3.3:1 on a 5,000m² site where the Fishermans Bend Framework does not include requirements for a new open space. Scenario 2 illustrates an alternate outcome if a new park and street were designated on this site. In both scenarios the developer has retained the potential yield that could be developed on this land as the FAR applies to the whole site area (GDA). In both scenarios the yield has to fit within the potential built form envelope - indicatively shown here at 12 storeys with 5 metre setbacks above a 20m high street wall.

The FARs are applied to the a site's Gross Developable Area to facilitate the efficient and affordable delivery of land for new parks, streets and laneways with no loss of yield to the developer.

Table 12: Base FAR with designated open space provisions

Scenario	Site area (m²)	Public open space (m²)	Private open space (m²)	New Street (m²)	Development yield GFA (m²)	FAR	Building height (storeys)
1	5,000	-	1760	-	16,500	3.3	4 - 10 storeys
2	5,000	1410	570	360	16,500	3.3	3 - 12 storeys

Scenario 1: No requirement for new public park

Scenario 2: New public park and street designated on site

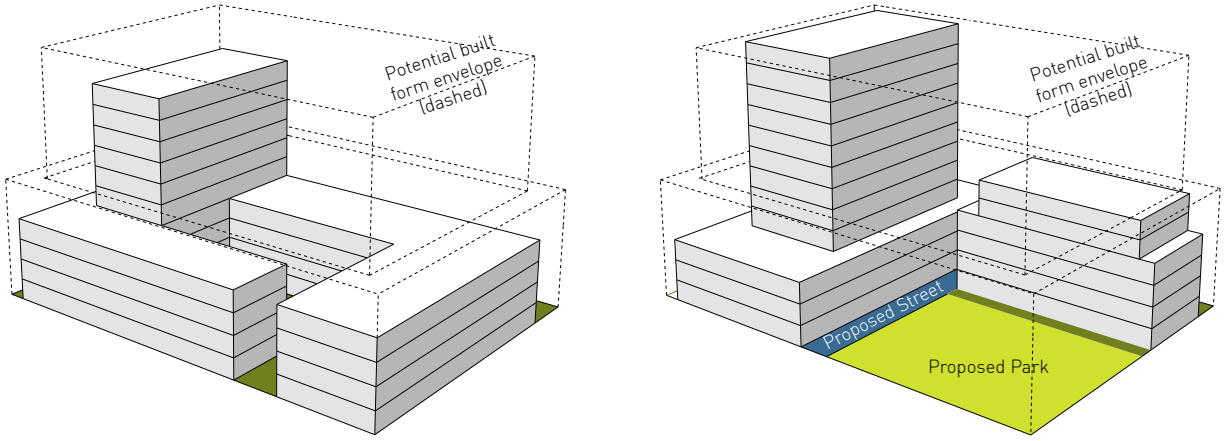


Figure 39: Scenario 1 (left) if no park or street is required in the Framework Plan; Scenario 2 (right) with a modified built form to deliver designated open space and street as required by the Framework Plan (no FAU is applied). It will be important that the built form controls are set to create building envelope controls that enable this level of flexibility.

4.3 Proposed FAR controls

4.3.1 Proposed FAR controls for Fishermans Bend

The recommended FAR scheme for Fishermans Bend is illustrated in figure 40. The GFA and FAR required to deliver the residential targets can be expressed as average dwelling densities for Fishermans Bend (see table 13).

	Core	Min. Commercial FAR	Non-core
Wirraway	4.1:1	1.9:1	2.1:1
Sandridge	8.1:1	3.7:1	3.3:1
Montague	6.1:1	1.6:1	3.0:1
Lorimer	5.4:1	1.7:1	

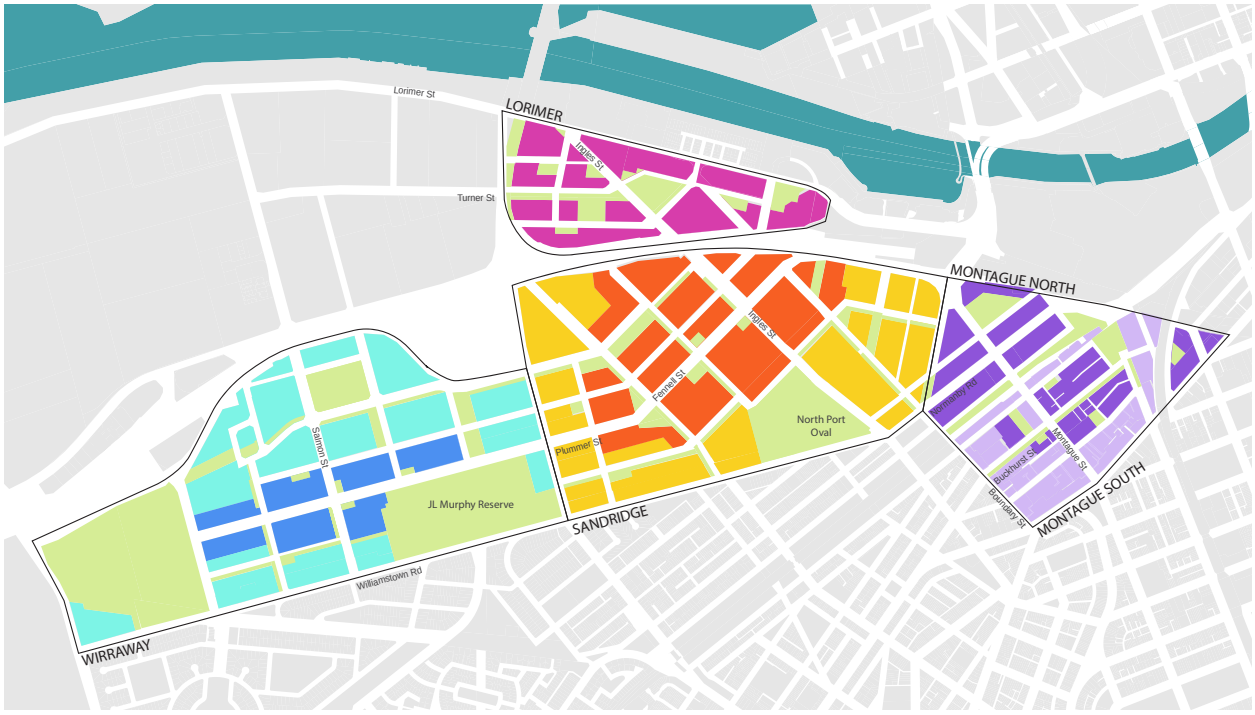


Figure 40: FAR controls proposed for Fishermans Bend

Table 13: Relationship between recommended FARs and population and dwelling densities

	Wirraway		Sandridge		Montague		Lorimer
	Core	Non-core	Core	Non-core	Core	Non-core	Core
Maximum residential FAR (difference between maximum FAR and minimum commercial FAR)	2.1	2.1	4.4	3.3	4.5	3.0	3.6
Dwelling densities by precinct (based on future Gross Developable Areas)	139	131	311	154	301	198	255

4.3.2 How do these proposed FARs compare with similar city precincts?

The proposed FAR controls are comparable to other central city areas in Australia such as Green Square and Central Sydney (see figure 41). In most of these contexts the existing street network and open space provision are well established and therefore there is no difference in these other jurisdictions between Gross Developable Areas and Net Developable Areas. To enable a comparison between precincts the FARs calculated on Net Developable Areas are included below. This method is not recommended for Fishermans Bend (see section 4.2 for explanation). The unsuitability of extending the Melbourne CBD controls to Fishermans Bend is discussed in Section 2.3.2.

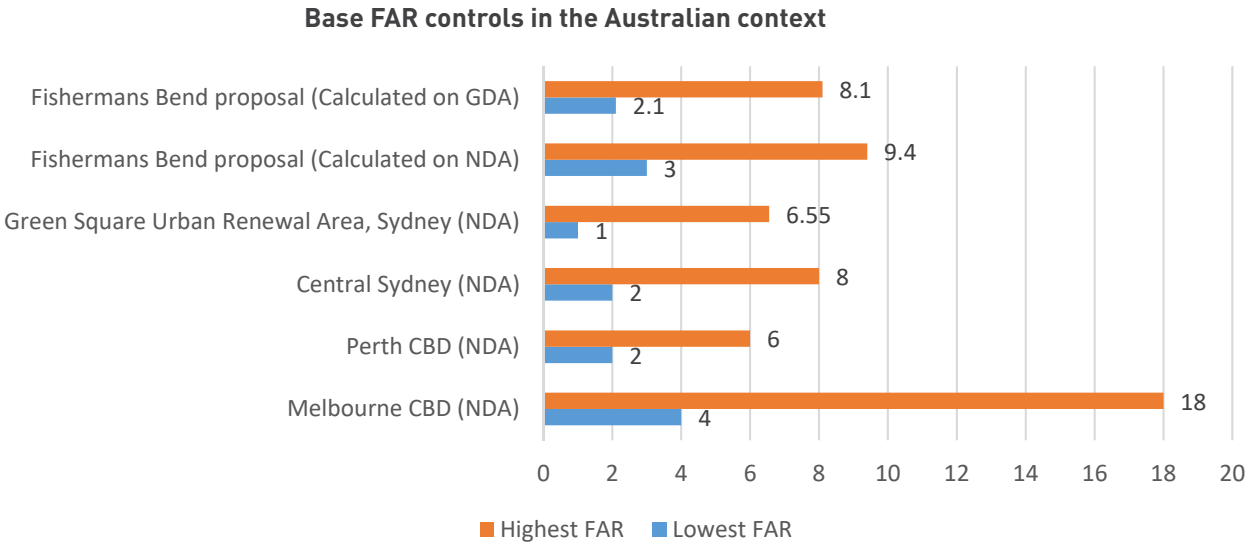


Figure 41: Range of base FAR controls in place in comparable central city precincts in Australia.

4.4 Proposed Floor Area Uplift (FAU) controls

The use of FAR controls is common in many cities comparable to Melbourne. Equally common is the pairing of a FAR with a FAU provided to enable the delivery of a public benefit. A FAR control in conjunction with a FAU scheme can deliver significant community benefits. As the FAR can be utilised effectively to deliver public and private open space, the highest priority, and most difficult to achieve in Fishermans Bend are:

- affordable housing
- commercial development
- community infrastructure

The FAU scheme should therefore be tailored to focus on delivering these priorities.

The potential amount of FAU that could be delivered on any particular site is determined by two factors:

- how much more floor area the developer could build within the preferred height and setback controls above the floor area allowed within the FAR control
- the defined list of potential community benefits that can be delivered through the FAU

Providing a specific list of target outcomes that the FAU can deliver will provide the greatest level of clarity to developers and the community in the implementation of the scheme. It will also provide an opportunity to manage potential population growth and ensure that it does not significantly exceed the population targets.

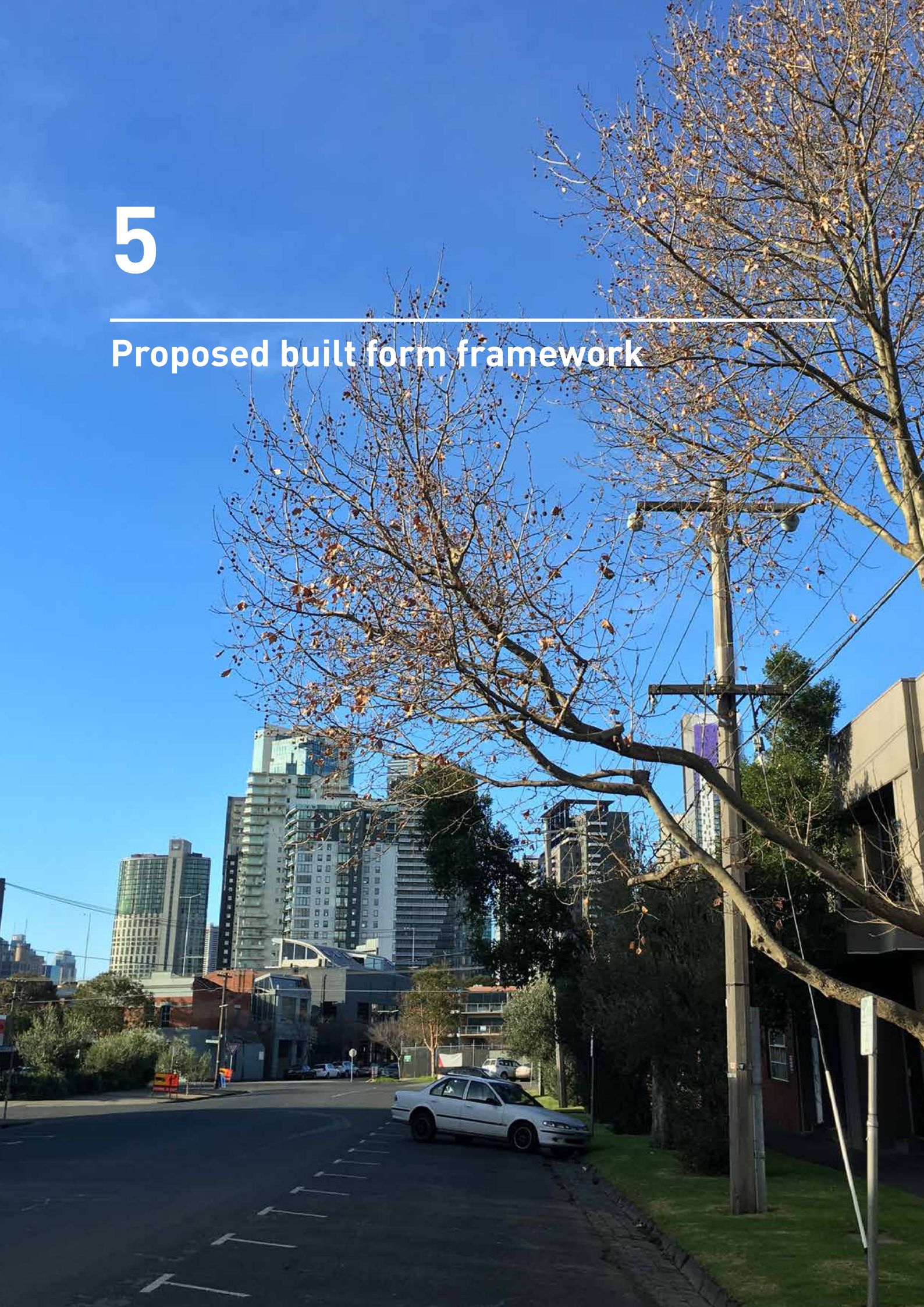
The following targets have been proposed through other established strategies and are adopted here:

- 6% affordable housing, equating to 2,500 affordable housing units
- unlimited commercial development, with the aim to maximise job growth
- community infrastructure hubs (8 in total across the four precincts)

This varies to the recently introduced FAU scheme in the central city in that it identifies specific targeted outcomes, however, the mechanism by which the FAU operates should be similar - these were recently tested during the central city built form review and early indications are that this approach has been accepted and is now being practiced by industry. The relationship between the potential FAU and the benefit that is provided may vary to reflect the scale of incentive required to encourage its delivery. The opportunity to provide the proposed public benefit on alternate sites should be also considered.

5

Proposed built form framework



5.1 Strategic drivers for built form outcomes

The current built form controls are designated in the Melbourne and Port Phillip planning schemes through Design Development Overlays. These specify mandatory maximum heights. Mandatory tower setbacks of 10 metres apply above a street wall of 20 metres (5 storeys) and from all boundaries. Towers must be spaced a minimum of 20 metres apart.

The current controls are focused on tower developments and do not specifically address the range of built form typologies that are encouraged across Fishermans Bend to deliver housing diversity.

At present, this means that any storey above 5 storeys is treated as a tower with a minimum setback of 10 metres required from all boundaries. This is likely to make mid-rise developments less feasible on many sites. It is also uncommon to require upper levels of 6-12 storey buildings to be set back to such a degree.

5.1.1 Strategic rationale for existing height limits

In addition to aligning with the previous transport proposal, the following are understood to be the key drivers of the current height limit controls:

- Aligning taller buildings with previous public transport proposals (40 storeys in Montague North and 18 storeys at the intersection of Salmon and Plummer Streets)
- Aligning taller buildings where they are unlikely to have a significant amenity impact (40 storeys north of the Freeway in Lorimer and 18 storeys south of the Freeway in Sandridge and Wirraway)
- Locating taller buildings on larger industrial sites in Montague (30 storeys - determined by potential capacity of these sites due to their size)
- Locating low-rise (4 storey) development adjacent to existing low-scale neighbourhoods to the south
- Transition from these low-rise buildings to taller forms (8 storeys in Montague and 12 storeys in Sandridge and Wirraway) further north away from these sensitive interfaces
- Low-rise buildings (6 storeys) in the centre of Lorimer to create a more intimate, civic central space

The existing controls are therefore driven by:
- Aligning land use intensity with public transport
- Responding to existing sensitive and non-sensitive interfaces

The existing controls do not respond to:
- Place-making principles
- Existing fine-grain subdivision pattern in Montague South
- Solar access to parks and key civic streets and spaces such as Normanby Road boulevard
- Housing diversity within each precinct
- Family-friendly housing

5.1.2 Preferred building typologies by precinct

This strategy has been refined to respond further to the above gaps in the current built form framework that have been identified above and to achieve the urban design objectives for Fishermans Bend.

Sandridge
Tower developments are supported within the activity cores to create a high-density mixed-use precinct with significant job growth. These heights are reduced on specific sites to protect existing and proposed open spaces from being overshadowed. Outside of the core area a range of 6 - 24 storey development is supported to encourage a diversity of housing and create variety of character areas throughout this large precinct. A 4 storey mandatory height limit is retained along Williamstown Road, although the depth of this transition zone has been reduced.

Montague
Tower developments are still supported in Montague North, however the overall heights have been reduced to align with revised density targets and to increase the amount of sunlight reaching the southern side of streets, particularly Normanby Road, to support the creation of a high-quality civic spine. In Montague South, height limits are set to maximise the amenity of the Buckhurst St local centres and to transition overall height limits towards the lower scale precincts of South Melbourne. Generally 8 storey height limit in the non-core areas is proposed, reducing to 4 storeys at the interface.

Lorimer
Tower developments are supported in Lorimer. South of the Lorimer Parkway these have an unlimited height as amenity impacts on the freeway to the south will be minimal. North of the parkway, these are limited in height to align with the revised population targets and to maximise the amenity of the Lorimer Parkway space and the new fine grain network of laneways.

Wirraway
The primary focus of Wirraway is to support family-friendly housing. The residential density targets here are lower than the other three precincts. Within the new activity core taller buildings are supported to define this centre, however these should ensure that the southern side of Plummer Street is not overshadowed. Generally 6 storey height limit in the non-core areas is proposed, reducing to 4 storeys at the interface to low-scale neighbourhoods to the south.

See figure 42 which illustrates this strategy. This takes into account preferred typologies only and needs to be implemented in conjunction with overshadowing requirements.

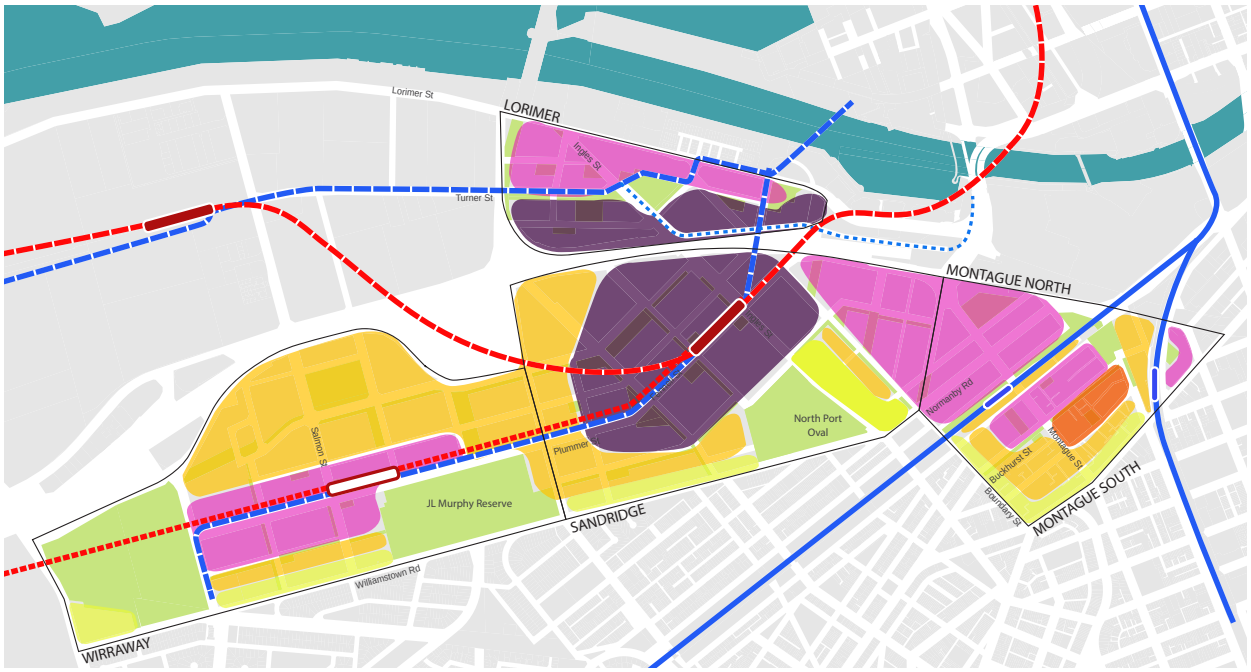


Figure 42: Proposed built form strategy

- Low rise - 4 storey mandatory height limit to Williamstown Road, Boundary Road and City Road to provide a transition to low-scale neighbourhood to the south
- Low-mid-rise to support a diverse range of family-friendly housing, including infill, courtyard and perimeter block developments
- Mid-rise (Montague) to provide a greater intensity of development in the core area, while enabling an appropriate transition from the interface areas of Montague South
- Hybrid developments - Towers with mid-rise infill development - to encourage smaller scale tower developments that support family-friendly living and higher levels of amenity within the public realm
- Tower development - Unlimited heights to promote commercial development and the highest densities of activity. Unlimited heights along the northern edge of the freeway where amenity impacts are not as likely.
- Proposed metro line and stations (preferred location)
- Alternate metro line and station**
- Existing tram lines
- Proposed tram lines
- Alternate tram line

The above takes into account preferred typologies only and needs to be implemented in conjunction with overshadowing requirements.

This urban design strategy adopts the preferred train location in the Employment Precinct.

5.2 Proposed building envelope controls

To support this range of typologies, the current built form envelopes need to be revised, in particular, to support the provision of mid-rise development and provide some flexibility for improved design of tower forms. Importantly, the proposed building envelope controls must work together with the proposed FAR controls. The following building heights, street setbacks and building separation (side and rear setbacks) are recommended.

5.2.1 Building heights

Figure 43 illustrates the proposed detailed building heights. These are determined by the preferred character and desired mix of building typologies in each precinct, site context (in particular adjacent low-rise areas) and overshadowing controls as outlined in recommendation 15.

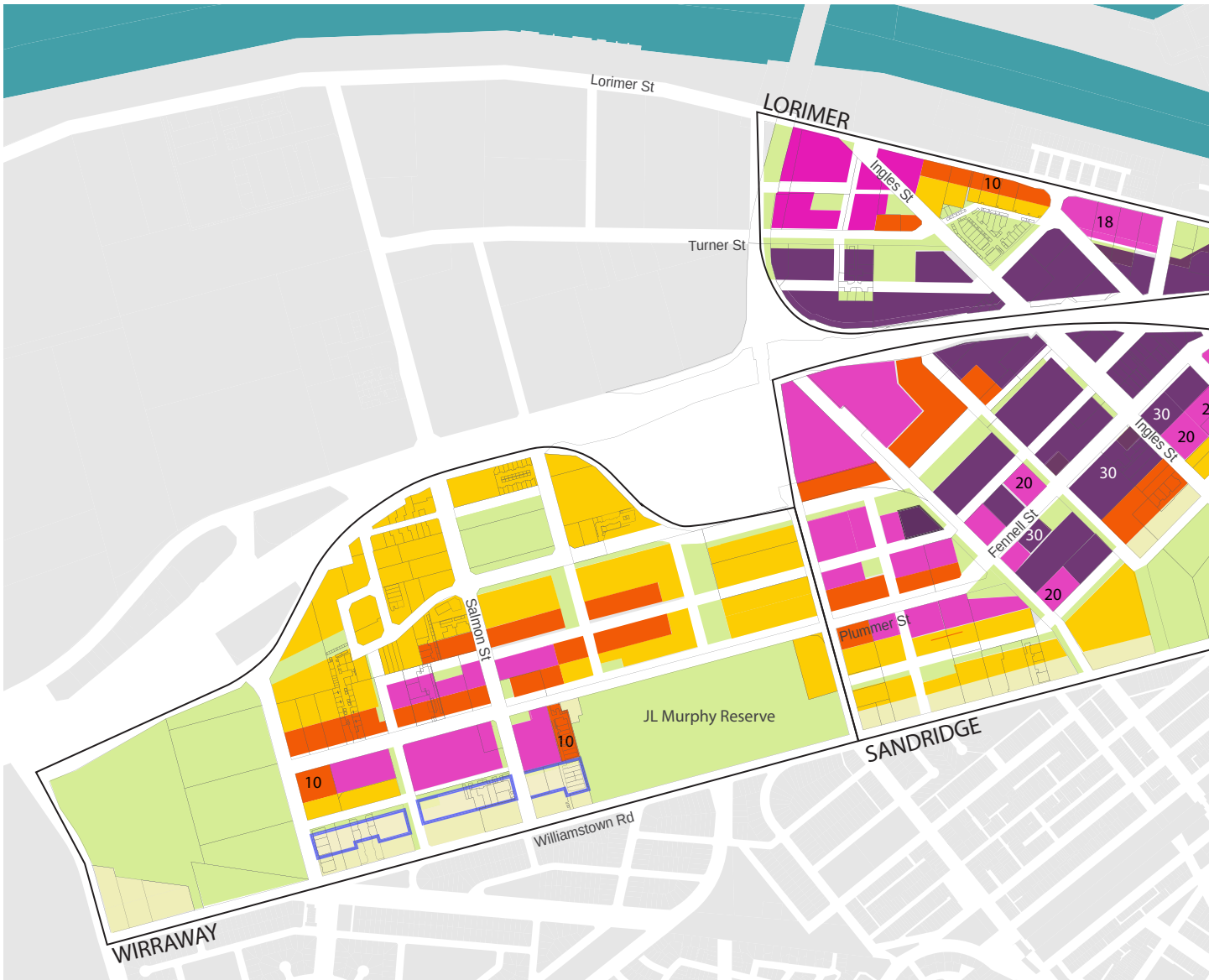
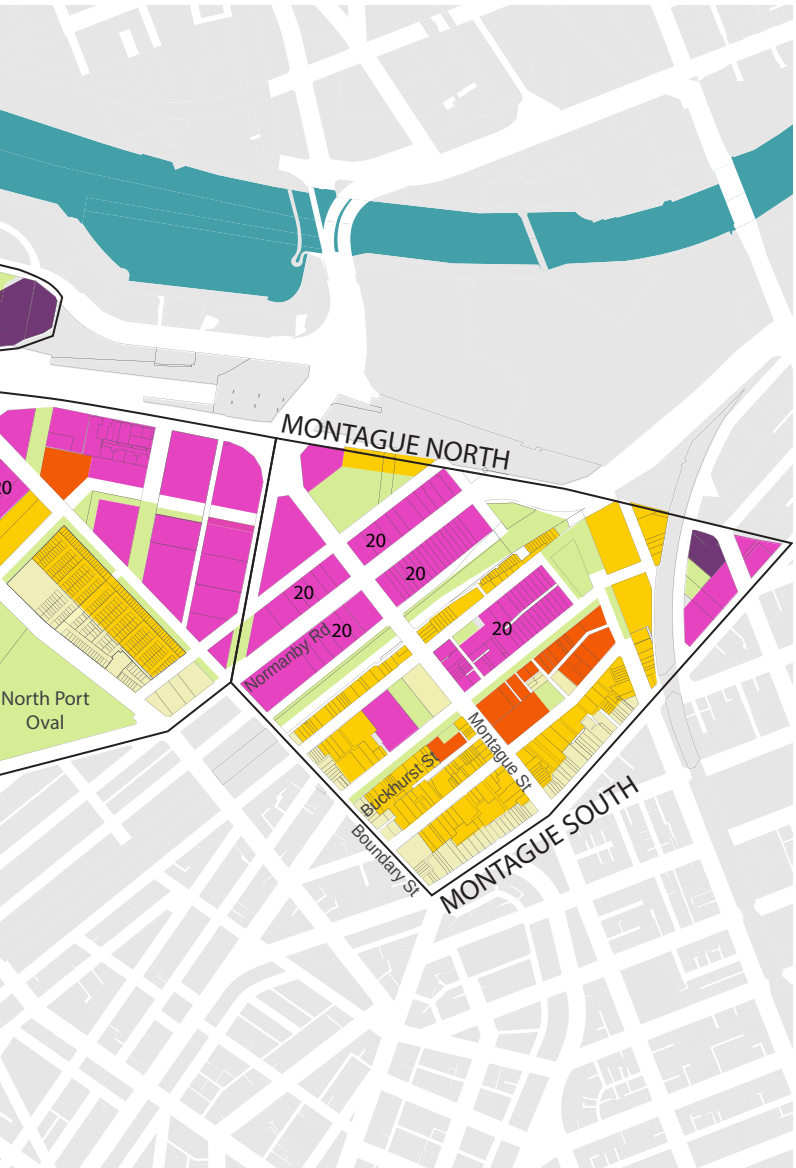


Figure 43: Proposed height limits for Fishermans Bend

- Low rise - 4 storeys mandatory
- Low-rise - 4 storeys preferred
- Mid-rise - 6 (Wirraway) / 8 storeys (all other precincts) preferred
- Mid-rise - 12 storeys (except where noted as 10) preferred
- Tower / hybrid development - 24 storeys (except 18 or 20 where noted) preferred
- Tower / hybrid development - No height limit (except where noted)



5.2.2 Street wall heights

The following controls are proposed to deliver well-designed streets that prioritise the pedestrian experience:

- Mandatory maximum street wall height of 6 storeys (23m) for buildings above 10 storeys in height and on streets that are wider than 12 metres
- Mandatory maximum street wall height of 12-15 metres (approximately 3-4 storeys) for all buildings on streets that are 12 metres wide or less

The only exceptions to these two controls are:

- Street wall height can increase to 8 storeys on streets at least 22 metres wide for buildings 10 storeys or less in height. This is to support courtyard and perimeter block typologies.

These are illustrated in figure 44.

5.2.3 Upper level street setbacks

The following upper level street setbacks are proposed to ensure the benefit of the street wall height provision is realised (see figure 44).

Towers - greater than 20 storeys

- Above the street wall, a mandatory minimum 10 metre upper level setback for the tower element from streets should apply
- To provide some flexibility, the 10 metre minimum setback can be reduced:
  - on a site boundary that interfaces with the WestGate freeway
  - on rear boundaries that interface with dedicated tram corridors in Montague and the CityLink overpass, when a mandatory minimum of 5 metres applies

Towers - up to 20 storeys

- Above the street wall, a mandatory minimum 5 metre upper level setback for the tower element from all streets applies
- To provide some flexibility, the 5 metre upper level setback for the tower element can be reduced only in the following circumstances:
  - on a site boundary that interfaces with the WestGate freeway
  - on boundaries that interface with dedicated tram corridors in Montague and the CityLink overpass
- If the building exceeds 20 storeys the setbacks for the whole tower element must adhere to the controls specified for towers greater than 20 storeys

Mid-rise building - 8

- Above the street wall, discretionary upper street level setbacks of 5 metres apply from street boundaries, with 3 metres mandatory minimum

Laneways

The above controls apply to all streets, including laneways.

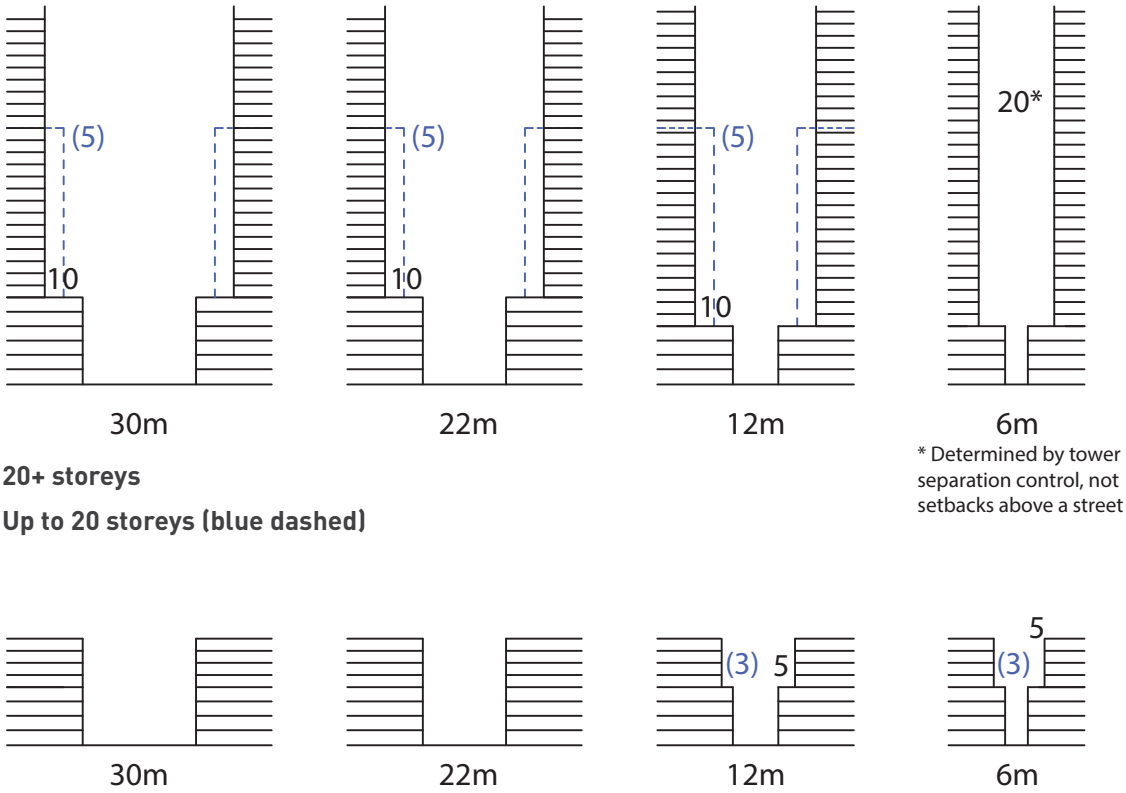


Figure 44: Proposed street wall heights and upper level street setbacks

5.2.4 Building separation

Building separation must be considered in regards to building height. It is generally accepted in urban design practice that as buildings get taller they should provide more space from their neighbour. This principle has been introduced in the recently updated tower controls for the central city, and is included in the state planning scheme for buildings four storeys and below.

The use of the building should be taken into account when considering appropriate separation distances. Greater degrees of privacy are required in residential environments than commercial (non-habitable). Within residential settings, greater separation is required when habitable room (living rooms, balconies, bedrooms) face each other.

Building setbacks should also provide for equitable development regardless of the sequence in which sites develop.

For all buildings above 4 storeys, the following separation distances are proposed for Fishermans Bend. These would apply both between buildings within one site, and at boundary interfaces.

Up to 6 storeys
No separation or setbacks on side or rear boundaries are required for the first six floors where building types incorporate blank party walls.

Where tower podiums (which have a maximum height of 6 storeys) include habitable rooms/ balconies a minimum separation of 12 metres must be provided. For non-habitable rooms this can be reduced to a mandatory minimum of 6 metres. This means a minimum setback of 6 metres on side or rear boundaries is required for habitable rooms/balconies which can be reduced to 3 metres for non-habitable rooms.

Where the total building height is 4 - 6 storeys the same separation and setback rules as above for podium towers apply.

Up to 8 storeys
Where the total building height is 7 - 8 Storeys and includes habitable rooms/balconies a minimum separation distance of 18 metres must be met. For non-habitable rooms this can be reduced to a mandatory minimum of 6 metres. This means a minimum setback of 9 metres on side or rear boundaries is required for habitable rooms/ balconies which can be reduced to 3 metres for non-habitable rooms.

Up to 20 storeys
Where the total building height is 9-20 Storeys and includes habitable rooms/balconies a minimum separation distance of 20 metres must be met. For non-habitable rooms this can be reduced to a mandatory minimum of 5 metres. This means a minimum setback of 10 metres on side or rear boundaries is required for habitable rooms/ balconies which can be reduced to 5 metres for non-habitable rooms.

Above 20 storeys
Where the total building height is above 20 storeys, a minimum separation distance of 20 metres must be met. This cannot be reduced regardless of building use as the key driver is ensuring that sufficient daylight and sunlight reach street level and lower building levels between towers.

The implementation of these varied separation controls are illustrated in figure 45. This illustrates the potential equitable development of any site, regardless of development sequencing.

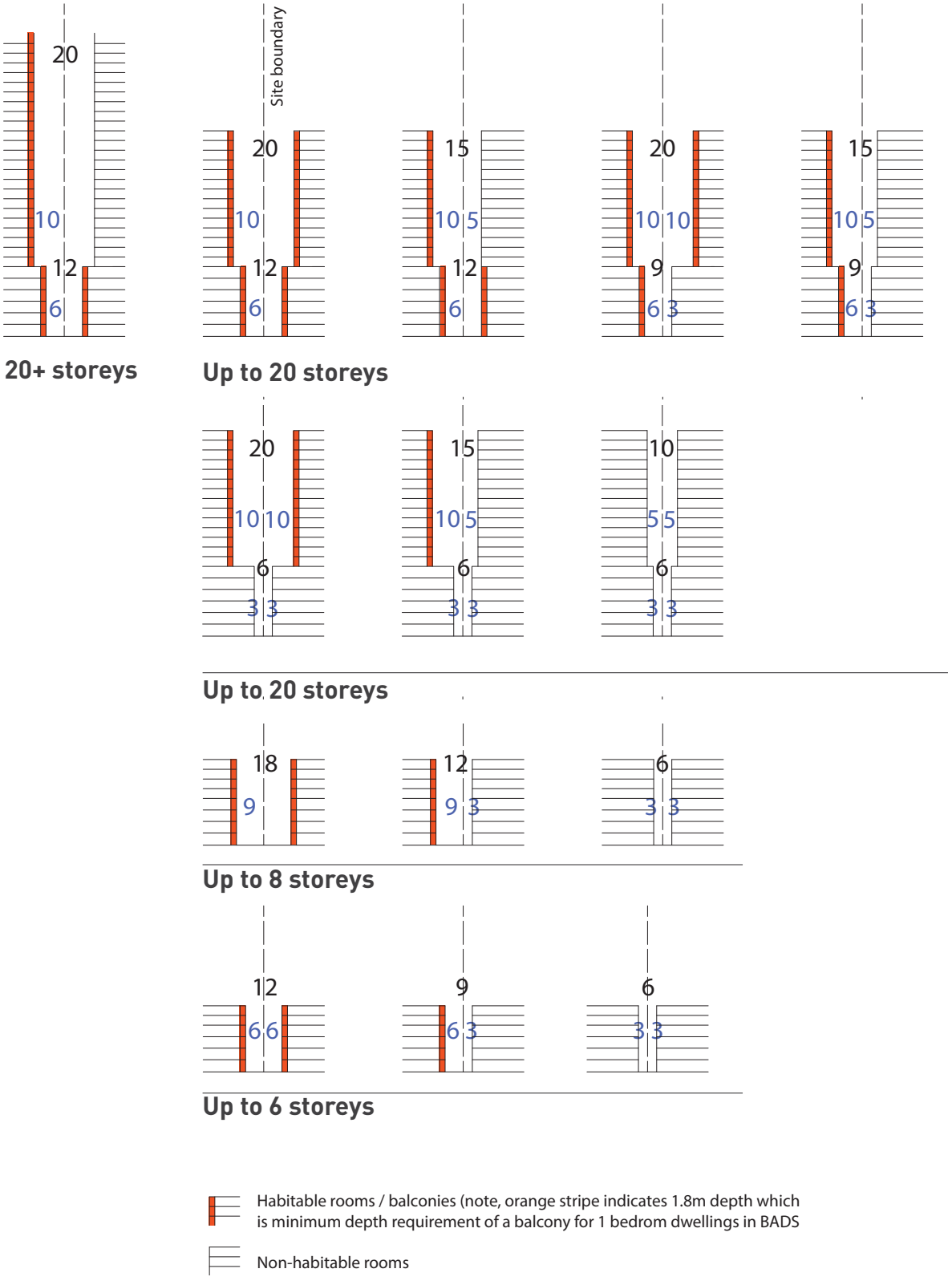
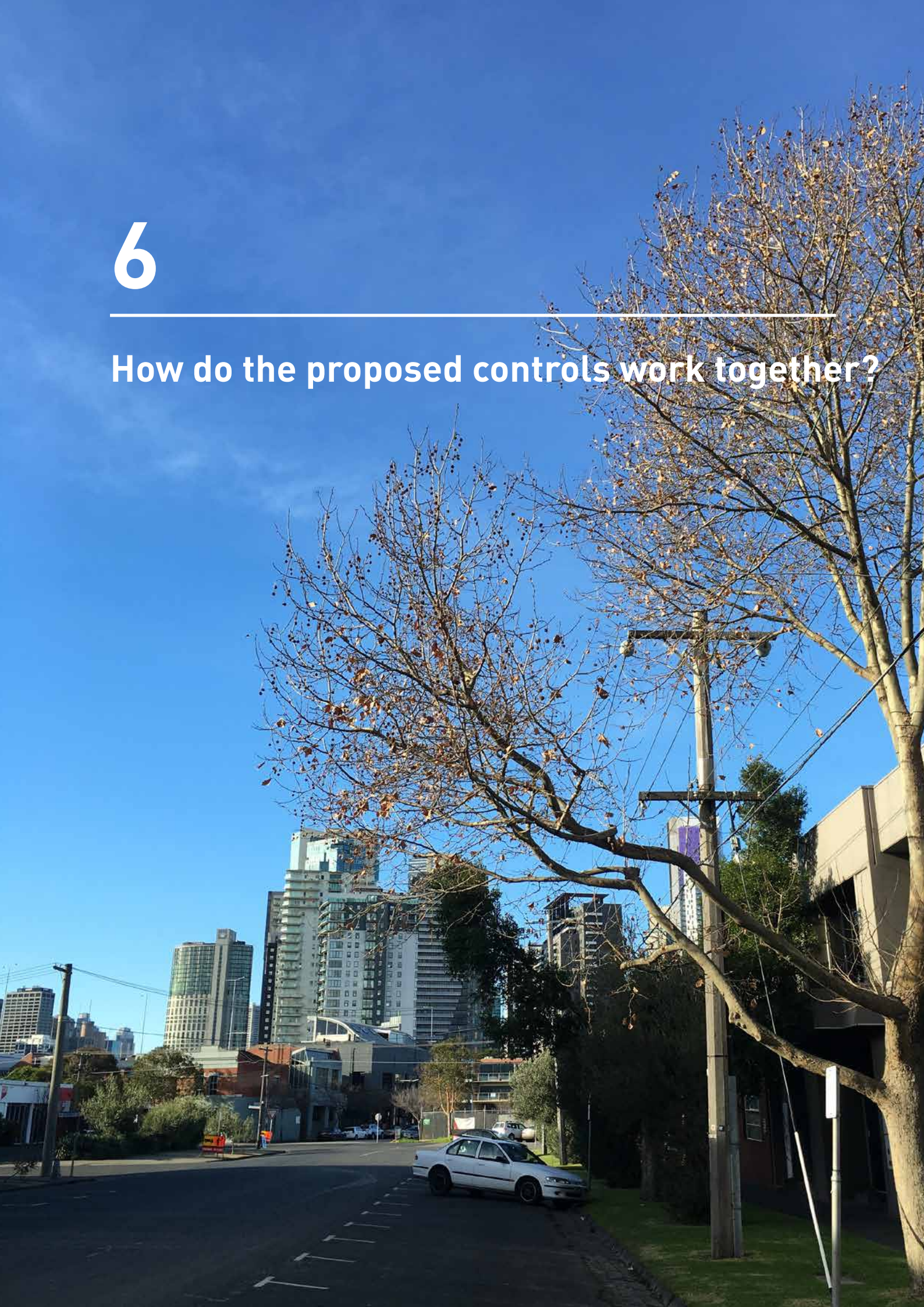


Figure 45: Proposed building separations for different building heights and interfaces (with setbacks from rear and side boundaries demonstrated)

6

How do the proposed controls work together?



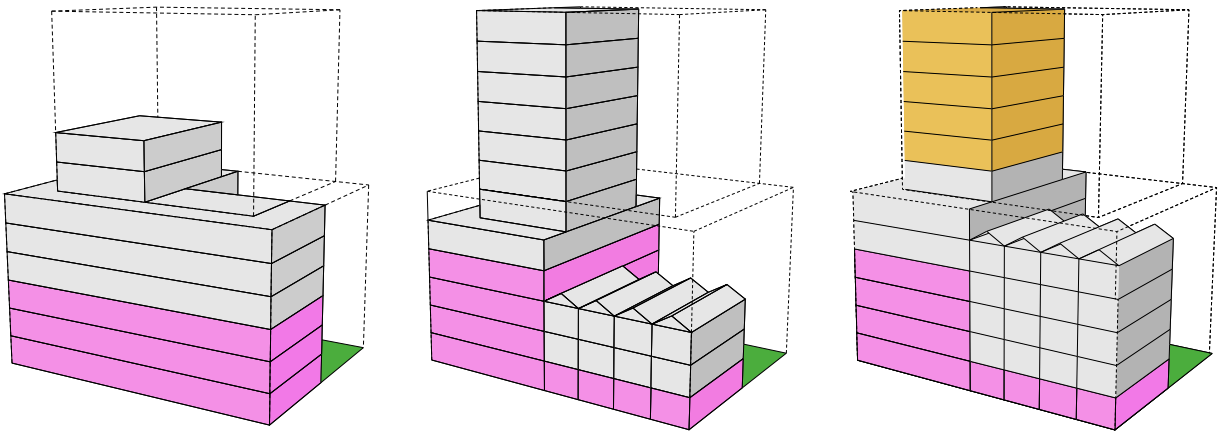
In all instances, the built form envelope that is possible through the combination of proposed built form controls is the over-riding control over the development outcomes before the FAR is considered.

The potential for flexibility in the design is determined by the degree to which the potential floor area is a 'tight fit' within the defined building envelope. In general, the proposed FAR controls easily fit within the designated built form control. Within the defined built form envelope, the potential gross floor area as allowed by the FAR control can therefore be designed to deliver a variety of built form outcomes. This is demonstrated in Figure 46 where both scenarios illustrate a development scheme with a FAR of 4.1:1. This example demonstrates just two possible design outcomes.
Examples of the proposed FAR and built form controls working together on sites within Fishermans Bend are also illustrated on the following pages. In each case the FAU is shown as the difference in yield between the base FAR allowance and the potential height limits (see figures 47 - 48).

Testing all of Fishermans Bend
The assumptions have been adopted in regards to testing appropriate built form outcomes for Fishermans Bend (see table 14). These have been adopted and applied across the whole of the Fishermans Bend area as illustrated in figures 49-52.

Table 14: Built form assumptions in 3D testing

Building typology	Minimum building width (metres)	Maximum building depth (metres)	Minimum floorplate (unless site size is smaller)	Maximum floorplate
Residential apartments (Low-mid-rise)	10 m	20 m	450m^2	900m^2
Residential apartments (high-rise)	15 m	30 m	600m^2	900m^2
Commercial buildings (mid-high rise)	15 m	50 m	600m^2	2,000m^2
	A slenderness ration of maximum 10:1 has generally been adopted for towers.			



Scenario 1: Base FAR **Scenario 2: Base FAR** **Scenario 3: FAU**

Figure 46: Wirraway core case study: Degree of design flexibility within defined built form envelope (shown dashed). Scenarios 1, 2 and 3 have the same base FAR of 4.1:1 and same built form controls demonstrating alternate outcomes for a site in Wirraway Core

Built form controls (all scenarios):
- Streetwall maximum of 23 metres
- Setback of 5 metres above 23m street wall from all boundaries
- Height limit of 12 storeys (immediate north of Plummer Street)

Scenario 3 demonstrates increased yield being delivered through a FAU, still within the same potential built form envelope.

Built form envelope as defined by built form controls
Private open space (no minimum required in Wirraway Core, approximately 25% has been possible in these scenarios)

Floor area possible through Maximum Floor Area Ratio 4.1:1
Minimum commercial requirement 1.9:1
Floor area delivered through a FAU - scenario 3 only (a FAU of 1.0:1 has been illustrated)

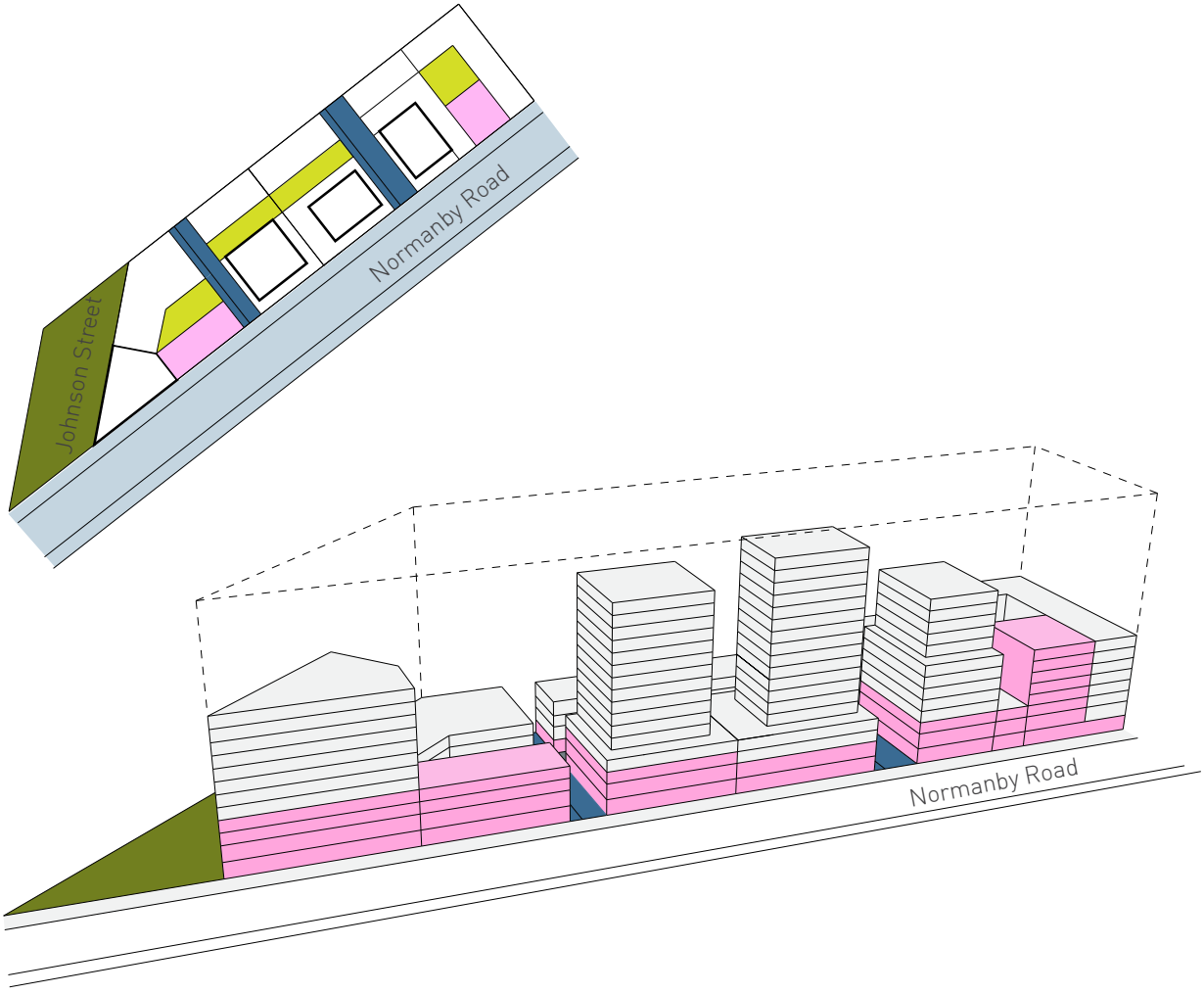


Figure 47: Normanby Road case study demonstrating the scale and types of development that could be delivered by the proposed FAR and built form controls (no FAU is included)

Built form controls:
- Streetwall maximum of 23 metres
- Upper level street setbacks of 5 metres
- Building separation varies according to habitable or non-habitable use
- Height limit of 20 storeys

Private open space (note, no minimum required in Montague)

New public laneways

Residential floor area possible within maximum FAR of 6.1:1 (maximum residential is 4.5:1)

Commercial floor area required within maximum FAR of 6.1:1 (minimum commercial requirement of 1.6:1) - assumes 60% of all ground floor and upper levels as shown in illustration

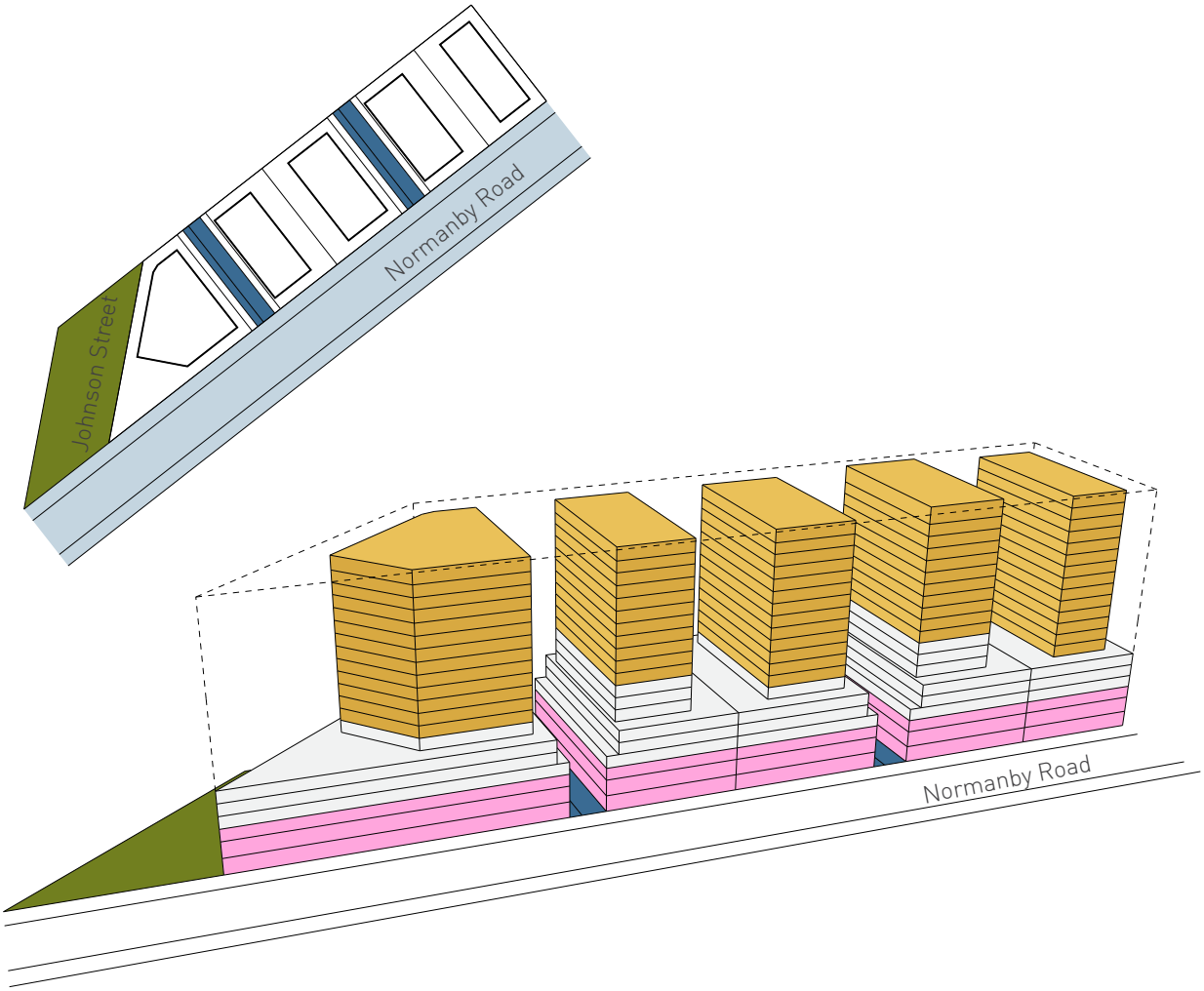


Figure 48: Normanby Road case study demonstrating the scale and types of development that could be delivered by the proposed FAR and built form controls with an FAU applied

Built form controls:
- Streetwall maximum of 23 metres
- Upper level street setbacks of 5 metres
- Building separation varies according to habitable or non-habitable use
- Height limit of 20 storeys

Private open space (note, no minimum required in Montague)

New public laneways

Residential floor area possible within maximum FAR of 6.1:1 (maximum residential is 4.5:1)

Commercial floor area required within maximum FAR of 6.1:1 (minimum commercial requirement of 1.6:1) - assumes 60% of all ground floor and upper levels as shown in illustration

Floor area delivered through a FAU

Figure 49: Illustrative model of how Montague may look by 2050 when 75% of Montague is expected to have developed according to the proposed development controls. It is not possible to know the sequencing of development and the image has been prepared to depict the overall scale of development in Montague only. The above image does not illustrate the impact of additional yield that may be approved via a Floor Area Uplift.

- Existing approvals (assessed and approved against previous height and setback controls)
- Development within core activity area
- Development within non-core activity area
- Proposed park locations (showing those that are visible from this view)
- Extent of retained buildings (not yet redeveloped by 2050)
- Heritage buildings

Figure 50: Illustrative model of how Sandridge may look by 2050 when 75% of Sandridge is expected to have developed according to the proposed development controls. It is not possible to know the sequencing of development and the image has been prepared to depict the overall scale of development in Sandridge only. The above image does not illustrate the impact of additional yield that may be approved via a Floor Area Uplift.

- Existing approvals (assessed and approved against previous height and setback controls)
- Development within core activity area
- Development within non-core activity area
- Proposed park locations (showing those that are visible from this view)
- Extent of retained buildings (not yet redeveloped by 2050)
- Heritage buildings

Figure 51: Illustrative model of how Wirraway may look by 2050 when 75% of Wirraway is expected to have developed according to the proposed development controls. It is not possible to know the sequencing of development and the image has been prepared to depict the overall scale of development in Wirraway only. The above image does not illustrate the impact of additional yield that may be approved via a Floor Area Uplift.

- Existing approvals (assessed and approved against previous height and setback controls)
- Development within core activity area
- Development within non-core activity area
- Proposed park locations (showing those that are visible from this view)
- Extent of retained buildings (not yet redeveloped by 2050)
- Heritage buildings

Figure 52: Illustrative model of how Lorimer may look by 2050 when 75% of Lorimer is expected to have developed according to the proposed development controls. It is not possible to know the sequencing of development and the image has been prepared to depict the overall scale of development in Lorimer only. The above image does not illustrate the impact of additional yield that may be approved via a Floor Area Uplift.

- Existing approvals (assessed and approved against previous height and setback controls)
- Development within core activity area
- Development within non-core activity area
- Proposed park locations (showing those that are visible from this view)
- Extent of retained buildings (not yet redeveloped by 2050)
- Heritage buildings

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Appendix A: Schedules

Table A.1: Demand for residential floor area

	No. of residents per precinct	Average household size (people per dwelling)	No. of dwellings needed	Existing approved no. of dwellings per precinct	No. of dwellings constructed if 90% proceed	Remaining no. of dwellings to be delivered	Average dwelling size**	Remaining GFA needed to deliver dwelling target *	No. cars (resi)	Car Park'g GFA Resid'l (30m2 / car park)	Total Resid'l GFA
WIRRAWAY	17,600	2.58	6,822	712	641	6,181	81	**625,817**	3,090	**92,714**	**718,530**
SANDRIDGE	29,600	1.98	14,949	1,673	1,506	13,444	74	**1,243,551**	6,722	**201,657**	**1,445,208**
MONTAGUE	20,800	2.25	9,244	4,180	3,762	5,482	77	**527,685**	2,741	**82,237**	**609,922**
LORIMER	12,000	2.04	5,882	1,300	1,170	4,712	74	**435,893**	2,356	**70,685**	**506,578**
TOTAL	**80,000**		**36,898**	**7,865**	**7,079**	**29,819**		**2,832,946**	**14,910**	**447,292**	**3,280,238**

* Assumes additional 25% floor area for circulation / services etc.
** See Table A.3

Table A.2: Demand for commercial and community floor area

	Job target	Comm'l GFA needed to deliver jobs (average of 31m^2 per job) *	No. cars Comm'l - 1/100m2	Car Park'g GFA Comm'l	Total Commercial GFA
WIRRAWAY	4,000	**124,000**	1,240	**37,200**	**161,200**
SANDRIDGE	26,000	**806,000**	8,060	**241,800**	**1,047,800**
MONTAGUE	4,000	**124,000**	1,240	**37,200**	**161,200**
LORIMER	6,000	**186,000**	1,860	**55,800**	**241,800**
TOTAL	**40,000**	**1,240,000**	**12,400**	**372,000**	**1,612,000**

* See Table A.4

The following tables have been sourced from the Fishermans Bend Demographic Projects report, prepared by the Department of Environment, Land, Water and Planning in 2016 (updated 2017). They draw on an analysis of census 2011 data and recent review of apartment standards.

Table A.3: Preferred housing mix (all precincts) source: DELWP demographics

	Population	Persons / HH	No. Households
Sandridge	34,405	1.98	17,420

Scenario 2

Households type	Household %	No of HHs	Persons/hh	Population
Couple Household	35%	6,097	2.00	12,194
Families	20%	3,484	3.50	12,194
Lone Household	35%	6,097	1.00	6,097
Group Household	10%	1,742	2.25	3,920
Total	*100%*	*17,420*	*1.98*	*34,405*

	1 bedroom	2 bedroom	3 bedroom	4+ bedroom	Total
Couple Household	20%	60%	19%	1%	*100%*
Families	5%	40%	54%	1%	*100%*
Lone Household	50%	45%	5%	0%	*100%*
Group Household	5%	74%	20%	1%	*100%*

Average dwelling size
74

Square meters	
1 bedroom	50
2 bedroom	70
3 bedroom	110
4+ bedroom	130

Households by Dwelling Type (bedroom number)

	1 bedroom	2 bedroom	3 bedroom	4+ bedroom	Total
Couple Household	1,219	3,658	1,158	61	6,097
Families	174	1,394	1,881	35	3,484
Lone Household	3,049	2,744	305	0	6,097
Group Household	87	1,289	348	17	1,742
Total	*4,529*	*9,085*	*3,693*	*113*	*17,420*
Share of total	*26%*	*52%*	*21%*	*1%*	*100%*

Lorimer	**Population**	**Persons / HH**	**No. Households**
Scenario 2	12,002	2.04	5,891

Households type	**Household %**	**No of HHs**	**Persons/hh**	**Population**
Couple Household	35%	2,062	2.00	4,123
Families	25%	1,473	3.50	5,154
Lone Household	35%	2,062	1.00	2,062
Group Household	5%	295	2.25	663
Total	*100%*	*5,891*	*2.04*	*12,002*

	1 bedroom	**2 bedroom**	**3 bedroom**	**4+ bedroom**	**Total**
Couple Household	20%	60%	19%	1%	*100%*
Families	5%	40%	54%	1%	*100%*
Lone Household	50%	45%	5%	0%	*100%*
Group Household	5%	74%	20%	1%	*100%*

Average dwelling size
74

Square meters	
1 bedroom	50
2 bedroom	70
3 bedroom	110
4+ bedroom	130

Households by Dwelling Type (bedroom number)

	1 bedroom	2 bedroom	3 bedroom	4+ bedroom	Total
Couple Household	412	1,237	392	21	2,062
Families	74	589	795	15	1,473
Lone Household	1,031	928	103	0	2,062
Group Household	15	218	59	3	295
Total	*1,532*	*2,972*	*1,349*	*38*	*5,891*
Share of total	*26%*	*50%*	*23%*	*1%*	*100%*

Montague		**Population**	**Persons / HH**	**No. Households**
Scenario 2		19,197	2.25	8,532

Households type	**Household %**	**No of HHs**	**Persons/hh**	**Population**
Couple Household	25%	2,133	2.00	4,266
Families	35%	2,986	3.50	10,452
Lone Household	30%	2,560	1.00	2,560
Group Household	10%	853	2.25	1,920
Total	*100%*	*8,532*	*2.25*	*19,197*

	1 bedroom	**2 bedroom**	**3 bedroom**	**4+ bedroom**	**Total**
Couple Household	20%	60%	19%	1%	*100%*
Families	5%	40%	54%	1%	*100%*
Lone Household	50%	45%	5%	0%	*100%*
Group Household	5%	74%	20%	1%	*100%*

Average dwelling size

77

Square meters

1 bedroom	50
2 bedroom	70
3 bedroom	110
4+ bedroom	130

Households by Dwelling Type (bedroom number)

	1 bedroom	2 bedroom	3 bedroom	4+ bedroom	Total
Couple Household	427	1,280	405	21	2,133
Families	149	1,194	1,613	30	2,986
Lone Household	1,280	1,152	128	0	2,560
Group Household	43	631	171	9	853
Total	*1,898*	*4,257*	*2,316*	*60*	*8,532*
Share of total	*22%*	*50%*	*27%*	*1%*	*100%*

START - New Dwelling Total	Pop. - Initial	HHS - Initial	Households Initial
5,950	14,400	2.40	6,000
START - Vacancy Rate	Pop. - NEW	HHS - NEW	Households - NEW

		Population	**Persons / HH**	**No. Households**
Wirraway	6%	14,402	2.58	5,593
Scenario 2				

Households type	**Household %**	**No of HHs**	**Persons/hh**	**Population**
Couple Household	20%	1,119	2.00	2,237
Families	50%	2,797	3.50	9,788
Lone Household	20%	1,119	1.00	1,119
Group Household	10%	559	2.25	1,258
Total	*100%*	*5,593*	*2.58*	*14,402*

	1 bedroom	**2 bedroom**	**3 bedroom**	**4+ bedroom**	**Total**
Couple Household	20%	60%	19%	1%	*100%*
Families	5%	40%	54%	1%	*100%*
Lone Household	50%	45%	5%	0%	*100%*
Group Household	5%	74%	20%	1%	*100%*

Average dwelling size

Average dwelling size

81

Square meters

1 bedroom	50
2 bedroom	70
3 bedroom	110
4+ bedroom	130

Households by Dwelling Type (bedroom number)

	1 bedroom	2 bedroom	3 bedroom	4+ bedroom	Total
Couple Household	224	671	213	11	1,119
Families	140	1,119	1,510	28	2,797
Lone Household	559	503	56	0	1,119
Group Household	28	414	112	6	559
Total	*951*	*2,707*	*1,890*	*45*	*5,593*
Share of total	*17%*	*48%*	*34%*	*1%*	*100%*

Table A.3 (continued): Preferred housing mix (all precincts) source: DELWP demographics

Table A.4: Average floor area per worker by suburb in the City of Melbourne capital city zoned areas only

Suburb	Employment	Floor space	Work space ratios (sqm/ employee)
Hoddle Grid	216,262	6,269,000	29
Southbank	41,827	1,659,000	40
Docklands	53,252	1,684,000	32
TOTAL	**311,341**	**9,612,000**	**31 (Average)**

Appendix B:
Comparative density examples

Examples of precinct scale population, dwelling and built form densities (existing or as controls)

Southbank, Melbourne, Australia

Figure B.1: Southbank Urban Renewal Area (Source: Google Earth)

Current population densities (gross)	105 residents / hectare
Projected 2034 (gross)	308 / hectare
FAR controls (Net)	18:1
FAU controls	Uncapped

Mongkok, Kowloon, Hong Kong

Figure B.2: Mongkok, Kowloon, Hong Kong (Source: Google Earth)

Current population densities (gross)	*1300 residents / hectare*
Projected (gross)	Not known
FAR controls (Net)	*Current maximum of 7:1, however many of these buildings would have been built prior to the introduction of these controls*
FAU controls	*10% for environmental benefits (e.g. water saving measures)*

Eixample, Barcelona, Spain

Figure B.3: Eixample, Barcelona, Spain (Source: Google Earth)

Current population densities (gross)	359 / hectare
Projected	Not known
Dwelling densities (Gross)	230 / hectare
Current FAR (Gross) - as built	2.65:1

Manhattan Island, New York, United States

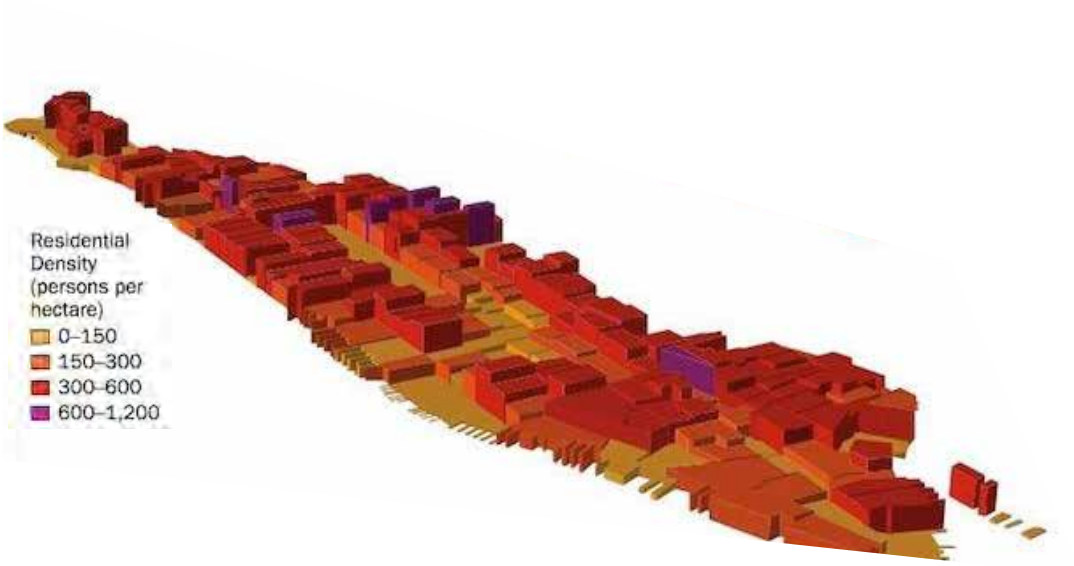

Figure B.4: Residential densities in Manhattan, 2010
(Source: http://www.citymetric.com/horizons/manhattan-s-population-density-changing-and-not-way-you-d-expect-468)

Figure B.5: Manhattan Island, New York

Current population densities (gross)	273 residents / hectare
Projected	Not known
FAR controls (Net)	10:1 (residential)
FAU controls	20% on base FAR

Green Square, Sydney

Figure B.6: Green Square Town Centre (Source: http://www.sydneymedia.com.au/green-light-for-sydneys-newest-town-centre/)

Projected residential densities (gross)	*264 residents / hectare*
Projected employment densities (gross)	*607 employees / hectare*
FAR controls	*2.16 - 6.55 (Town Centre - see figure 51)*

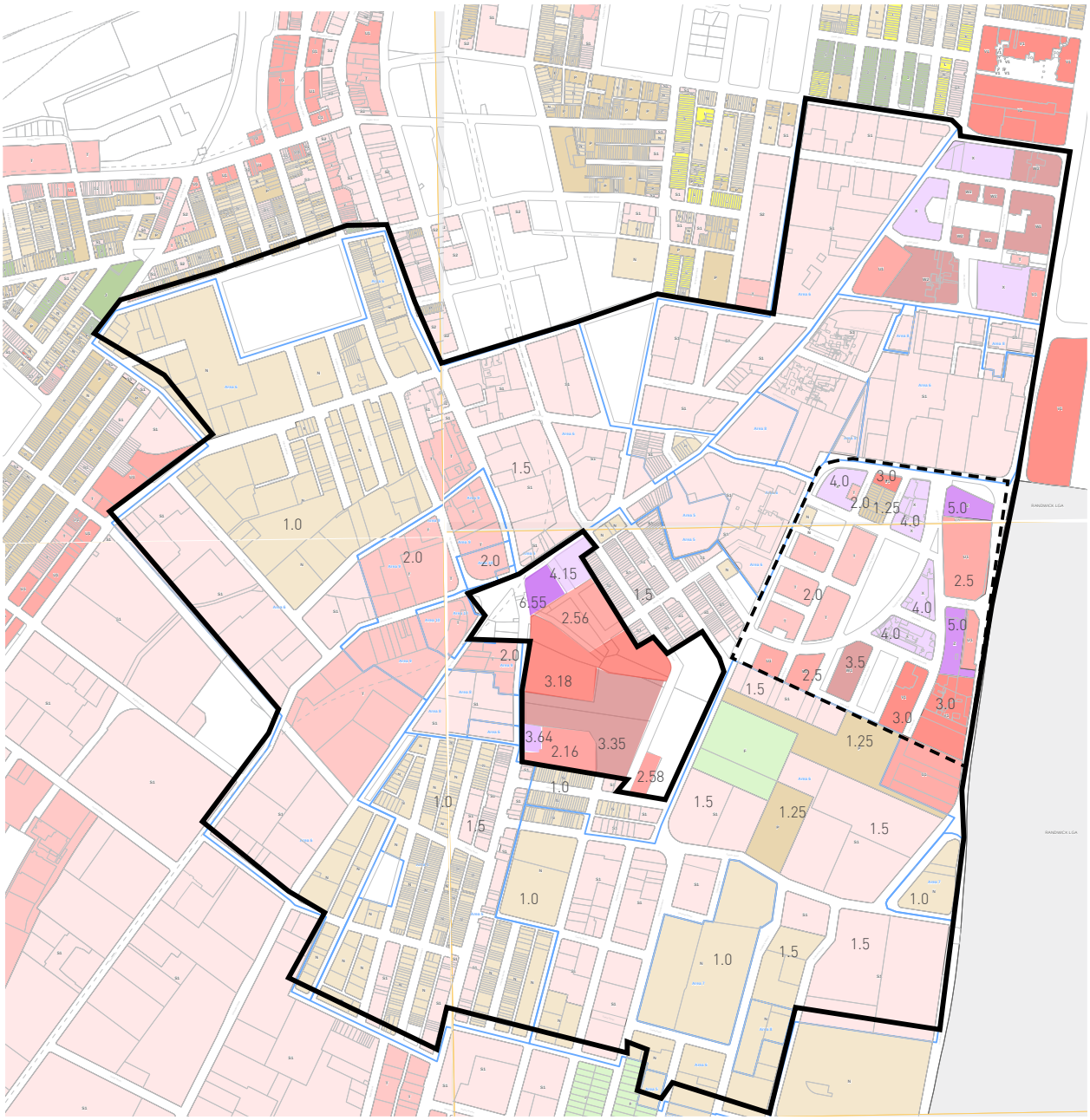

Figure B.7: Green Square FARs for whole redevelopment area (outside black line) and town square (inside black line)

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