Review of Apartment Design Policy - Summary Report

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Contents

Executive Summary

With an ageing population, and high-demands on housing supply in Australia, apartment development continues to be looked to as a critical part of the housing mix going forward. The first part of this report (Section 1) provides a high-level summary of the nature of apartment design policies and guidelines across Australian and international jurisdictions. It identifies that there are a wide variety of approaches taken to the development of apartment design policies, with South Australia being one of the most efficient planning pathways through more prescriptive policy than in other jurisdictions. The second part of this report (Section 2) compares specific parts of South Australian apartment-style dwelling policy with that of other jurisdictions. This comparison also considers two future policy scenarios: (1) adjusting policy to remove the minimum dwelling size requirements, and (2) adjusting policy to provide further detail about the replacement of private open space with communal open space in apartment development. Under both scenarios, areas for policy strengthening to enable these scenarios are identified that would ensure an acceptable level of amenity is maintained. These areas are classified as either critical, baseline, or for future consideration. Key recommendations that are of critical- or baseline-importance to support these scenarios are:

Dwelling Size:

Where the minimum dwelling sizes are not met, it is recommended that:

- a minimum room dimension should be required at the rate of 3m for bedrooms and 3.6m for living rooms (excluding kitchen/dining space).
- minimum storage requirements should be increased to accommodate for the likelihood that smaller apartments will contain less space for movable storage furniture such as cupboards, cabinets and bookshelves.

Where private open space is not provided, it is recommended that:

- a minimum room dimension of 3.6m should be required for living rooms (excluding kitchen/dining space)

Dwelling Amenity:

Where the minimum dwelling sizes are not met, it is recommended that:

- policy is strengthened to enforce the provision of minimum solar access to habitable rooms through orientation and aspect of living rooms, orientation and size of windows and room depth to ceiling height ratios
- a maximum depth of open plan rooms should be stipulated
- natural ventilation is required to be provided through openable windows and cross-ventilation
- environmental and energy efficient design requirements are stipulated to ensure minimum thermal comfort standards are achieved

Where private open space is not provided, it is recommended that:

- policy is strengthened to enforce the provision of minimum solar access to habitable rooms through orientation and aspect of living rooms, orientation and size of windows and room depth to ceiling height ratios
- living rooms and primary windows are located and orientated to provide outlook to open space where possible
- natural ventilation is required to be provided through openable windows and cross-ventilation

Communal Open Space:

Where the minimum dwelling sizes are not met, it is recommended that:

- existing policy relating to configuration, landscape, amenity and security of communal open space should be maintained

Where private open space is not provided, it is recommended that:

- a minimum size of communal open space should be stipulated
- policy is strengthened to ensure minimum solar access is achieved through orientation and location of communal open space
- communal open space must be child friendly, accessible, well maintained and provide seating, fixed sun protection and adequate lighting
- minimum landscaping requirements should be stipulated including minimum tree canopy, minimum deep soil area, minimum planting, irrigation and soil consideration

The third section of this report (Section 3) reviews policies specific to co-living accommodation types from South Australia and other Australian jurisdictions. It identifies opportunities for future policy approaches for South Australia. Where possible, suggested policy outcome targets have been developed based on best practice from other jurisdictions, however, as co-housing is a relatively new area of policy there are limited precedents to inform these outcome targets. As such, in developing policy for co-living accommodation in South Australia, the following approaches are recommended:

1. Reviewing the classification of 'student accommodation' to develop a more broad classification that is inclusive of other co-living accommodation types with smaller sole-occupancy units and shared facilities may facilitate more diverse housing models to accommodate a broader spectrum of the population.
2. Linking co-living policy to the classifications established in the BCA, with a distinction between smaller developments accommodating up to 12 people, and large, high rise developments akin to student accommodation towers that have already been constructed in South Australia. This will help support the development of more diverse co-living accommodation types in suburban environments.
3. Undertaking further analysis of international policy to supplement the limited examples of co-living accommodation and related policies that exist in Australia before policy is produced

1 Introduction

1.1 Review Aim and Method

This review aims to provide observations on how South Australian policy might better support more diverse forms of apartments including both self-contained and co-living accommodation types. The review compares the elements in apartment design policies and guidelines across Australian and international jurisdictions. It includes State Government (statutory) policies from four Australian states, two Australian non-statutory design guidelines, and three international documents. The international documents have been included to provide a broader frame of reference for the national snapshot.

Table 1.1.1: Apartment Design Policies Reviewed

Australian State Government policies (statutory)	Australian guidelines (non-statutory)	International policies (statutory and non-statutory)
South Australia Planning and Design Code	A Design Guide for Older Women's Housing	London Housing Design Standards
Apartment Design Guidelines for Victoria	Future Homes Victoria	City of Vancouver Housing Design and Technical Guidelines
Western Australia Residential Design Codes Vol 2		New Zealand National Medium Density Design Guide
New South Wales SEPP 65 + Apartment Design Guide		

1.2 Report Structure

The report is presented in four sections. This section (Section 1) provides an overview of the research process, and a high-level summary of the polices that have been reviewed. Section 2 explores policies related to self-contained apartment style dwellings. Rather than a wholesale review of apartment design standards, the investigation focuses on comparisons between policies' stipulations of apartment size, apartment amenity, communal open (outdoor) space, common and circulation spaces and communal indoor space. Section 3 then presents policies related to co-living accommodation types, including student accommodation and 'dormitory' style accommodation such as boarding houses and rooming houses. These three sections provide comparative tables and/or charts, a discussion, and observations of possible future policy approaches for South Australia.

Following this, section 4 provides illustrative case studies to demonstrate how different policy approaches have translated into real-world outcomes in various jurisdictions. At the end of the report, the appendices include relevant excerpts from each of the reviewed policy documents for further reference.

1.3 High-level observations of policy approaches

Table 1.3.1 below outlines the documents that have been included in this review, and the nature of their content. The policy documents include various combinations of: mandatory,

quantifiable or numerical standards, descriptive or qualitative guidelines, explanatory diagrams, and "good practice" case study examples.

Table 1.3.1: Macro-analysis of content in the reviewed policies

		Numerical	Description	Diagrams	"Good practice" examples
South Australia Planning and Design Code	**SA**	*	*		
Apartment Design Guidelines for Victoria	**VIC**	*	*	*	*
Western Australia Residential Design Codes	**WA**	*	*	*	*
New South Wales SEPP 65 + Apartment Design Guide	**NSW**	*	*	*	*
A Design Guide for Older Women's Housing	**DGOW**		*	*	
Future Homes Victoria	**FH**	*	*	*	
London Housing Design Standards	**LON**	*	*	*	
City of Vancouver Housing Design and Technical Guidelines	**VAN**	*	*		
New Zealand National Medium Density Design Guide	**NZ**		*	*	

The reviewed policies vary in their approach, structure, level of detail and pathways assessment. The *South Australian Planning and Design Code* is highly efficient and has strong quantitative and prescriptive policy descriptors. South Australian policy provides a 2-pathway approach, utilising performance outcomes with corresponding deemed-to-satisfy criteria. A performance assessed pathway applies in development proposals where the deemed-to-satisfy criteria are not met. However, it is important to note in the context of this report that all apartment and current co-living or student accommodation projects are assessed via a performance assessment pathway. Of the Australian states reviewed, New South Wales has the greatest level of detail in performance-based discretionary and qualitative descriptors.

The *South Australian Planning and Design Code* and the *City of Vancouver Housing Design and Technical Guidelines* both use terms such as "demonstrate compliance", "provide" and "ensure". By contrast, the more descriptive and discretionary policies use more open-ended language. For instance, the *NSW SEPP 65 + Apartment Design Guide* uses language such as "may include" and "should", and the *New Zealand National Medium Density Design Guide* uses language such as "rule of thumb".

Some jurisdictions use a combination of prescriptive and qualitative policy. In Victoria, the *Future Homes* program makes mandatory several of the policies that are discretionary in the *Apartment Design Guidelines for Victoria* and therefore becomes a more stringent version of the Victorian policy. London offers both a "minimum requirement" and a "best practice" standard. Like South Australia, Western Australia has a 2-pathway approach. However in contrast to the very efficient policy structure of South Australia, the Western Australian policy includes a significant amount of qualitative descriptive text, diagrams and good practice examples, adding

far greater complexity, but providing a larger breadth and diversity of merit based solutions for meeting the specified “design principles”.

Balancing between the complexity of providing extensive guidance, and the efficiency of clear and concise policy statements is a significant challenge. While a prescriptive minimum standards approach offers advantages in assessment efficiency, it may also inadvertently disincentivise high-quality design, limit diversity, and stifle creativity. The 2022 Inquiry into apartment design standards in Victoria found performance-based approaches may better support flexibility and industry innovation. Performance-based policy however, requires a more nuanced assessment than prescriptive policy, and therefore without appropriate resourcing, may result in a less efficient or slower assessment pathway. In supporting the application of performance based policy in development assessment, most reviewed jurisdictions include supporting diagrams (Vic, WA, NSW, LON, NZ) and some also included best practice case studies (Vic, NSW, WA). A two-pathway process, such as is in place in South Australia, can deliver the benefits associated with both prescriptive and performance-based policy.

Summary Observation:

There are multiple approaches for developing apartment design policies. The nature, structure, content and detail of policy is dependent on the priorities of the pathway. For example numerical, minimum standards aid a mandatory pathway that streamlines assessment, while a best practice approach that incentivises good design requires policy to be more descriptive and diagrammatic. For South Australia, it makes sense to continue to focus on maintaining an efficient and streamlined planning system, while also providing some additional detail for both apartment-style and co-living developments through descriptive text, diagrams and good practice examples in the 2-pathway approach.

2 Policy elements for apartment-style dwellings

This section of the report compares South Australia's apartment development policy with that of other states. The sections that follow present the results of this analysis, and identifies opportunities to strengthen South Australia's policy under two potential scenarios:

> *Scenario 1: Removing the minimum dwelling size stipulation*
>
> *Scenario 2: Providing greater clarity in assessing the substitution of private open space (balconies) for communal open space.*

Opportunity areas under each scenario are identified as:

> ***C** - Critical-importance: critical for the quality of life for apartment residents*
>
> ***B** - Baseline-importance: representing an appropriate baseline for apartment development*
>
> ***F -** Future-importance: representing areas that should be considered for inclusion in policy in future, but are not critical for the scenario to go ahead*
>
> **** -** Asterisk: maintain current policy (strengthening of policy is not necessitated by the scenario)*

The two scenarios have been added as columns to the summary tables in each of the sections that follow, identifying where the opportunity areas have been identified under both scenarios. The scenarios are considered independently as it is recommended that policy not allow both the removal of private open space and smaller apartment sizes in a single development (this is detailed in tables 2.1.1 and 2.1.3 below).

2.1 Apartment Size

The tables in this section compare the minimum size standards that are present across the reviewed policies. Table 2.1.1 presents minimum standards for overall dwelling size, Table 2.1.2 presents minimum standards for individual room sizes, Table 2.1.3 presents minimum standards for private open space, and Table 2.1.4 presents minimum standards for the volume or dimensions of storage.

Please note: A blank cell indicates that there is no minimum standard stipulated in the reviewed policy document.

Table 2.1.1: Minimum dwelling size (m^2)

	SA	VIC	WA	NSW	DGOW	FH	LON	VAN	NZ	*Sc1*	*Sc2*
Studio			36	35			37	29-37		*Requirement removed*	
1bed	50		47	50			50	46			*50*
2bed	65		67	70			61-70	66			*65*
3bed	80		90	90			74-95	84			*80*
Add. rooms	15/bed		3/wc 5/bath	12/bed 5/bath			17/bed	20/bed			*15/bed*

Table 2.1.2: Minimum room size (m^2) *(minimum dimension)*

	SA	VIC	WA	NSW	DGOW	FH	LON	VAN	NZ	*Sc1*	*Sc2*
Main bed		10 *(3m x3.4m)*	10 *(3m)*	10 *(3m)*						*C (3m)*	
Secondary bed		9 *(3mx3m)*	9 *(3m)*	9 *(3m)*						*C (3m)*	
Living room (exc. kit/din) - studio,1 bed		10 *(3m)*	- *(3.6m)*	- *(3.6m)*			21-25* *(3.5m)*			*C (3.6m)*	*F (3.6m)*
Living room (exc. kit/din) - 2+ bed		12 *(3.6m)*	- *(4m)*	- *(4m)*			27-31* *(3.5m)*			*C (3.6m)*	*F (3.6m)*

*including kitchen/dining

Table 2.1.3: Minimum private open space (m^2) *(min dimension)*

	SA	VIC	WA	NSW	DGOW	FH	LON	VAN	NZ	*Sc1*	*Sc2*
Ground level dwellings	15 *(3m)*		15 *(3m)*	15 *(3m)*						*15 (3m)*	*Requirement removed*
Studio	4 *(1.8m)*	8 *(1.2-1.8m)*	8 *(2m)*	4 -			5 *(1.5m)*	- *(1.8x2.5m)*		*4 (1.8m)*	
1 bed	8 *(2.1m)*	8 *(1.2-1.8m)*	8 *(2m)*	8 *(2m)*			5 *(1.5m)*	- *(1.8x2.5m)*		*8 (2.1m)*	
2bed	11 *(2m)*	8 *(2m)*	10 *(2.4m)*	10 *(2m)*			10 *(1.5m)*	- *(1.8x2.5m)*		*11 (2m)*	
3 bed	15 *(2.6m)*	12 *(2.4m)*	12 (3m)	12 *(2.4m)*			15 *(1.5m)*	- *(1.8x2.5m)*		*15 (2.6)*	

Table 2.1.4: Minimum storage (m^3) *(within dwelling)*

	SA	VIC	WA	NSW	DGOW	FH	LON	VAN	NZ	*Sc1*	*Sc2*
Studio	6 *(3)*	8 *(5)*	3 *(-)*					3.7 *(3.7)*		*B* *8* *(5)*	6 *(3)*
1bed	8 *(4)*	10 *(6)*	3 *(-)*	- 1.8m robe			1.5 *(1.5)*	3.7 *(3.7)*		*B* *10* *(6)*	8 *(4)*
2bed	10 *(5)*	14 *(9)*	4 *(-)*	- 1.5-1.8m robe			2 *(2)*	3.7 *(3.7)*		*B* *14* *(9)*	10 *(5)*
3br	12 *(6)*	18 *(12)*	5 *(-)*	- 1.5-1.8m robe			2.5 *(2.5)*	3.7 *(3.7)*		*B* *18* *(12)*	12 *(6)*

It is perhaps unsurprising that the more mandatory elements within a policy, the more detailed and prescriptive the minimum sizes for rooms. South Australia is an exception to this, with only the total dwelling size stipulated. The policies identified as focusing on discretionary, or "best practice" approaches do not stipulate minimum dwelling sizes but do have other requirements. For example, Victorian policy does not specify minimum apartment size, but does specify minimum room sizes.

The performance-based policies reviewed describe either the ability to place standard furniture items, or to undertake particular activities. London's policy, for example, does not prescribe minimum room sizes for bedroom or bathrooms, but does employ "minimum space standards" with prescriptive furniture capacity requirements and minimum storage requirements. This approach requires detailed furniture plans to be submitted as part of assessment. More discretionary and qualitative documents, such as *A Design Guide for Older Women's Housing*, don't specify room sizes but stipulate that rooms must be big enough to accommodate certain activities, for example:

> "Provide a dedicated area in the kitchen that stores general rubbish, compost and recycling bins, preferably concealed within a cupboard or under-bench and close to the sink area"
>
> and
>
> "Ensure living and dining spaces are child-friendly, with space for games and indoor activities and access for highchairs and removable gates where needed" (*A Design Guide for Older Women's Housing*, p. 33. Refer to Appendix E for further detail).

Observation:

Stipulation of minimum sizes is efficient for prescriptive policy, but this approach may limit flexibility and restrict diversity. A two pathway approach may enable greater flexibility and diversity without compromising efficiency. For instance, where a proposed development does not meet minimum size requirements it must demonstrate that the design of the dwelling accommodates certain furnishings or activities (for example, “room for a dining table that accommodates the number of bedspaces in that apartment”).

In scenario 1 the minimum apartment size would be replaced with a minimum dimension approach that matches that of other jurisdictions. The suggested policy options in table 2.1.2 follow NSW and WA for the kitchen / living space in a 2 bedroom or larger apartment where Victoria’s policy has been suggested. This is designed to strike a balance between spatial quality and the desire for smaller footprints. The open space requirement has been maintained as the status quo for apartments with smaller footprints, again to maintain quality of these smaller apartments. The minimum storage requirements have been suggested as following Victoria as this is the only jurisdiction without a minimum apartment size. The increase in mandatory storage reflects the likelihood that smaller apartments will have less space for moveable storage cabinets, bookshelves, cupboards etc. in circulation spaces.

In scenario 2 a minimum dimension for the primary living space has been identified as of future importance to ensure apartment quality with the removal of private open space. This would occur anyway if the minimum apartment size is replaced with a minimum dimension approach (scenario 1). This minimum dimension is to ensure design quality and useability (e.g. for socialisation) where a private outdoor space is not available. The storage requirement under this scenario is based on a status quo approach as apartments would continue to have opportunities for resident-supplied moveable storage furniture.

Example policy text:

The following figures present excerpts of some of the policy relating to apartment size from other Australian jurisdictions. Figure 2.1.1 illustrates the two pathway approach of the *Western Australian Residential Design Codes*, stipulating minimum standards under *Acceptable Outcomes*, and some of the suggested alternative solutions at the bottom of the page. Similarly, Figure 2.1.2 presents the minimum standards of the *New South Wales SEPP 65 + Apartment Design Guide* under *Design Criteria,* and best practice and alternative solutions under *Design Guidance*. For further detail on Western Australian and New South Wales responses to apartment size, see Appendix C pp.103-150 and Appendix D pp151-191.

Figure 2.1.1 Excerpt from Western Australia Residential Design Codes Vol 2

ELEMENT OBJECTIVES

Development is to achieve the following Element Objectives:

O 4.3.1 The internal size and layout of **dwellings** is functional with the ability to flexibly accommodate furniture settings and personal goods, appropriate to the expected household size.

O 4.3.2 Ceiling heights and room dimensions provide for well-proportioned spaces that facilitate good **natural ventilation** and **daylight** access.

ACCEPTABLE OUTCOMES

Acceptable Outcomes are likely to assist in satisfying the objectives but are not a comprehensive 'deemed-to-comply' list. In order to achieve the Element Objectives, proposals may require additional and/or alternative design solutions in response to the site conditions, streetscape and design approach.

A 4.3.1 **Dwellings** have a minimum internal **floor area** in accordance with Table 4.3a.

A 4.3.2 **Habitable rooms** have minimum **internal floor areas** and dimensions in accordance with Table 4.3b.

A 4.3.3 Measured from the finished floor level to finished ceiling level, minimum ceiling heights are:

- **Habitable rooms** – 2.7m
- **Non-habitable rooms** – 2.4m

All other ceilings meet or exceed the requirements of the **NCC**.

A 4.3.4 The length of a **single aspect open plan** living area is equal to or less than 3 x the ceiling height. An additional 1.8m length may be provided for a kitchen, where the kitchen is the furthest point from the window in an open plan living area provided that the maximum length does not exceed 9m.

Table 4.3a Minimum internal floor areas for dwelling types

Dwelling type	Minimum internal floor area
Studio	36m²
1 bed	47m²
2 bed × 1 bath[1]	67m²
3 bed × 1 bath[1]	90m²

[1] An additional 3m² shall be provided for designs that include a second or separate toilet, and 5m² for designs that include a second bathroom.

Table 4.3b Minimum internal floor areas and dimensions for habitable rooms

Habitable room type	Minimum internal floor area	Minimum internal dimension
Master bedroom	10m²	[1]3m
Other bedrooms	9m²	[1]3m
Living room – studio and 1 bed apartments	N/A	3.6m
Living room – other dwelling types	N/A	4m

[1] Excluding robes

Potential alternative solutions to satisfy the Element Objectives will be considered on a performance basis.

DG 4.3.1 People living in **apartments** need spaces that support their lifestyles, with rooms to spend time with family and friends, rooms to seek time alone, and a range of functional spaces for cooking, cleaning, washing and **storage**. Consider layouts that are flexible to accommodate the diverse and changing needs of occupants, including:

- room sizes and dimensions that can accommodate a variety of furniture arrangements, for example, rectangular spaces are often more easily furnished than square spaces
- prepare design drawings that illustrate potential furniture layouts using realistically sized furniture, including living and dining settings in the living space

DG 4.3.3 Consider the size and proportions of rooms to create a sense of spaciousness and maximise daylight penetration. For instance, long, narrow rooms in **cross-over** or **cross-through apartments** require a width of at least 4m.

DG 4.3.4 Additional ceiling height adds significantly to the sense of space in a **dwelling**. Higher ceilings may also assist with **natural ventilation** and to accommodate ceiling fans for cooling and heat distribution. Given that the overall **building** height is constrained once constructed, provision for additional ceiling height needs to be considered at the planning stage. When choosing ceiling heights, consider:

- introducing changes in ceiling height to give greater definition to spaces within the dwelling

Figure 2.1.2 Excerpt from New South Wales SEPP 65 + Apartment Design Guide

Objective 4D-1

The layout of rooms within an apartment is functional, well organised and provides a high standard of amenity

Design criteria

1. Apartments are required to have the following minimum internal areas:

Apartment type	Minimum internal area
Studio	35m²
1 bedroom	50m²
2 bedroom	70m²
3 bedroom	90m²

The minimum internal areas include only one bathroom. Additional bathrooms increase the minimum internal area by 5m² each

A fourth bedroom and further additional bedrooms increase the minimum internal area by 12m² each

2. Every habitable room must have a window in an external wall with a total minimum glass area of not less than 10% of the floor area of the room. Daylight and air may not be borrowed from other rooms

Design guidance

Kitchens should not be located as part of the main circulation space in larger apartments (such as hallway or entry space)

A window should be visible from any point in a habitable room

Where minimum areas or room dimensions are not met apartments need to demonstrate that they are well designed and demonstrate the usability and functionality of the space with realistically scaled furniture layouts and circulation areas. These circumstances would be assessed on their merits

Objective 4D-2

Environmental performance of the apartment is maximised

Design criteria

1. Habitable room depths are limited to a maximum of 2.5 x the ceiling height

2. In open plan layouts (where the living, dining and kitchen are combined) the maximum habitable room depth is 8m from a window

Design guidance

Greater than minimum ceiling heights can allow for proportional increases in room depth up to the permitted maximum depths

All living areas and bedrooms should be located on the external face of the building

Objective 4E-1

Apartments provide appropriately sized private open space and balconies to enhance residential amenity

Design criteria

1. All apartments are required to have primary balconies as follows:

Dwelling type	Minimum area	Minimum depth
Studio apartments	4m²	-
1 bedroom apartments	8m²	2m
2 bedroom apartments	10m²	2m
3+ bedroom apartments	12m²	2.4m

The minimum balcony depth to be counted as contributing to the balcony area is 1m

2. For apartments at ground level or on a podium or similar structure, a private open space is provided instead of a balcony. It must have a minimum area of 15m² and a minimum depth of 3m

Design guidance

Increased communal open space should be provided where the number or size of balconies are reduced

Storage areas on balconies is additional to the minimum balcony size

Balcony use may be limited in some proposals by:

- consistently high wind speeds at 10 storeys and above
- close proximity to road, rail or other noise sources
- exposure to significant levels of aircraft noise
- heritage and adaptive reuse of existing buildings

In these situations, juliet balconies, operable walls, enclosed wintergardens or bay windows may be appropriate, and other amenity benefits for occupants should also be provided in the apartments or in the development or both. Natural ventilation also needs to be demonstrated

2.2 Apartment amenity

The tables in this section compare the policies from each reviewed jurisdiction that relate to individual apartment amenity. Table 2.2.1 summarises the high-level categories of criteria relating to apartment amenity, while Table 2.2.2 presents an exhaustive list of specific objectives / performance outcomes in the reviewed policies.

Please note: In tables 2.2.1 and 2.2.2, an asterisk signifies the objective/ performance outcome is present in the policy but this does not mean it is mandatory.

Table 2.2.1 Apartment amenities defined in policies by high-level category

	SA	VIC	WA	NSW	DGOW	FH	LON	VAN	NZ	*Sc1*	*Sc2*
Dwelling Configuration	*	*	*	*	*	*	*	*	*	*C*	*C*
Privacy	*	*	*	*	*	*	*		*	*	*
Utility				*	*	*	*	*	*		
Solar access	*	*	*	*	*	*	*		*	*C*	*C*
Ventilation		*	*	*	*	*	*		*	*B*	*C*
Flexibility				*	*	*	*		*		
Accessibility		*	*	*	*	*	*	*	*	*F*	
Sustainability				*	*	*	*			*B*	*F*

Table 2.2.2 Objectives / performance outcomes for apartment amenities described in policies

	SA	VIC	WA	NSW	DGOW	FH	LON	VAN	NZ	*Sc1*	*Sc2*
Dwelling Configuration											
orientation of living spaces	*	*	*	*		*	*		*	*C*	*B*
room depth ratio		*	*	*		*				*B*	*F*
open plan requirements		*	*	*		*	*	*		*C*	
outlook to open space	*	*		*		*	*	*	*	*	*C*
ceiling height	*	*	*	*		*	*	*	*	*	*
minimum furniture requirements			*		*		*	*			
Privacy											
acoustic privacy	*	*	*	*	*	*	*		*	*	*
visual privacy	*	*	*	*	*	*	*		*	*	*
Utility											
private laundry					*	*	*				
private clothes drying				*	*				*		
communal laundry								*	*	*F*	*F*
communal clothes drying area										*F*	*B*

	SA	VIC	WA	NSW	DGOW	FH	LON	VAN	NZ	*Sc1*	*Sc2*
Solar Access											
Aspect/size of windows to habitable rooms		*	*	*	*	*	*			*C*	*C*
minimum solar access			*	*			*			*B*	*B*
lightwells	*		*	*					*	*	*
Shading and glare control	*			*			*		*	*	*
Ventilation											
openable windows		*	*	*	*	*	*		*	*B*	*C*
cross ventilation		*	*	*	*	*	*		*	*B*	*C*
Flexibility											
internal room reconfiguration				*	*	*	*		*		
“third space” or study/office					*	*	*		*		
personalization					*	*			*		
Accessibility											
proportion of dwellings			*	*		*	*	*	50%		
accessible adaptable		*	*	*	*	*	*	*	*	*F*	*F*
cultural diversity				*	*		*		*		
Sustainability											
thermal comfort				*	*	*	*			*B*	*F*
minimum energy rating						*	*				
maximum cooling loads		*				*					

Many of the objectives/performance outcomes that relate to dwelling amenity are difficult to quantify because they are qualitative and descriptive in nature. Dwelling amenity may therefore benefit from more qualitative and descriptive policy text that provides more direction on the criteria for assessing performance based solutions. . Across the nine policies reviewed, London has the most comprehensive policy relating to amenity of individual dwellings.

Flexibility is under-represented in statutory Australian State Government policies, but has been incorporated into recent best-practice Australian guidelines, such as *Future Homes* and *A Design Guide for Older Women’s Housing*. Policies relating to flexibility incorporate objectives from the Australian *Liveable Housing Design (LHD) Guidelines* (not included in this review) and promote housing that can be adapted to suit changing needs of the resident(s), supporting ageing-in-place.

Observation:
The current *South Australian Planning and Design Code* does not contain policy relating to utility, ventilation, flexibility, accessibility and sustainability of individual dwellings. Strengthening policy in these areas, through for instance, reference to LHD guidelines beyond

the requirement of the NCC, may increase the level of amenity that is delivered in new apartment developments.

In scenario 1, enforcing the provision of windows to habitable rooms, the orientation of living spaces, access to daylight, and open plan requirements (room proportion description) becomes critical as overall apartment size decreases. Daylight and spatial volume have increased importance in small spaces and can help to mitigate the negative mental health impacts of living in more confined spaces. Therefore, it is critical to strengthen policy to ensure living spaces are oriented to receive direct sunlight and/or very high levels of daylight under this scenario.

In scenario 2, the orientation of living spaces, outlook to open space, the provision of windows to habitable rooms, and both openable windows and cross ventilation become critical where a private outdoor space (balcony) is not provided. The addition of cross ventilation should be carefully managed on higher floors as wind speeds increase, however, this is considered critical in ensuring occupant comfort.

Example policy text:

The following figures present excerpts of some of the policy relating to apartment amenity from Australian and international jurisdictions. Figure 2.2.1 presents policy from the *Apartment Design Guidelines for Victoria* relating to natural ventilation and illustrates how some policy issues relating to apartment amenity can be measured and regulated through prescriptive policy. Figure 2.2.2 presents the policies relating to flexibility and solar access from the London Housing Design Standards and illustrates how apartment amenity may be regulated through text based policy similar to the current *South Australian Planning and Design Code*. For further detail on Victorian and London responses to apartment amenity, see Appendix B pp.72-102 and Appendix G pp.248-269.

Figure 2.2.1 Excerpt from Apartment Design Guidelines for Victoria

Natural ventilation objectives (Clause 58.07-4 or Clause 55.07-15)

To encourage natural ventilation of dwellings.

To allow occupants to effectively manage natural ventilation of dwellings.

Standard (D27 or B49)

The design and layout of dwellings should maximise openable windows, doors or other ventilation devices in external walls of the building, where appropriate.

At least 40 per cent of dwellings should provide effective cross ventilation that has:

- A maximum breeze path through the dwelling of 18 metres.
- A minimum breeze path through the dwelling of 5 metres.
- Ventilation openings with approximately the same area.

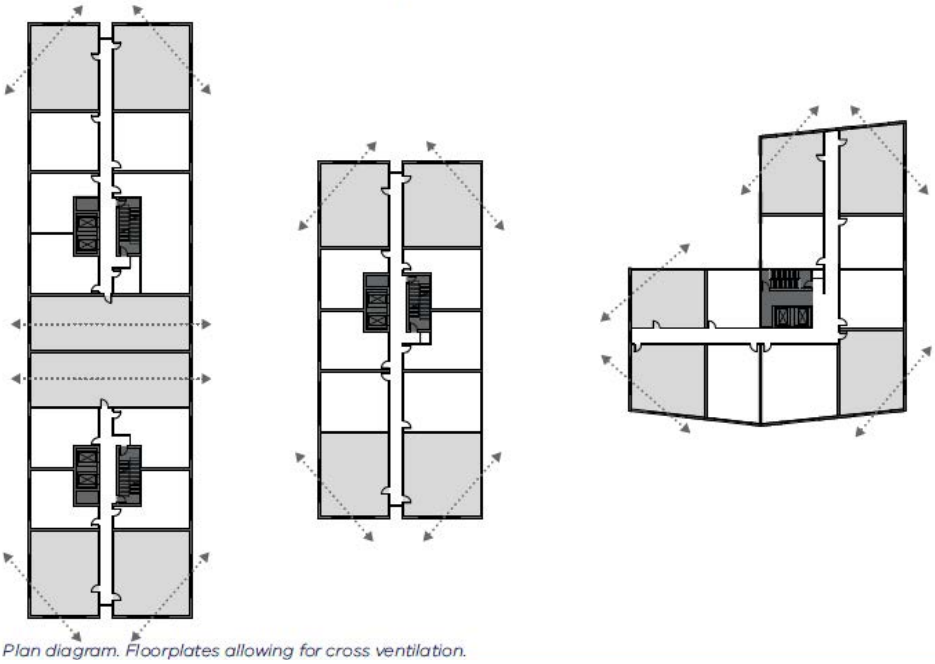
The breeze path is measured between the ventilation openings on different orientations of the dwelling.

Decision guidelines

Before deciding on an application, the responsible authority must consider:

- The design response.
- The size, orientation, slope and wind exposure of the site.
- The extent to which the orientation of the building and the layout of dwellings maximises opportunities for cross ventilation.
- Whether an alternative design meets the relevant objectives having regard to the amenity of the dwelling and the site context.

1 **Configure floorplates with corner or through apartments to achieve effective cross ventilation.**



Plan diagram. Floorplates allowing for cross ventilation.

Figure 2.2.2 Excerpt from London Housing Design Standards

C3	Choice and flexibility	
C3.1	Best practice: Where open-plan living arrangements are proposed, ensure adequate separation between the kitchen and sitting space. In homes with three or more bedrooms, proposals should demonstrate how the space could be easily modified to provide two separate living spaces (preferably a living room and a kitchen/dining room), each with an openable window. A direct connection between the rooms is useful but not required. Conversely, where two spaces are provided from the start, it should be possible to remove the dividing wall without significant structural implications. **[All]** *Note: This approach is strongly encouraged in smaller homes.*	D3 D6
C3.2	Best practice: Avoid load-bearing walls within the home to allow for future flexibility of the internal layout. Locate structural columns on external or party walls where possible. **[NB]**	D3
C3.3	Best practice: Avoid layouts in which the living space and other habitable rooms are only accessible via the kitchen. **[All]**	D6
C3.4	Best practice: Provide a dedicated study room in dwellings with three or more bedrooms. **[All]** *Note: To avoid being counted as a bedroom under the NDSS, the floor area should be less than 7.5m².*	D3 D6

C4	Aspect, orientation, daylight and sunlight	
C4.1	New homes should be dual aspect unless exceptional circumstances make this impractical or undesirable; for example, when one side of the dwelling would be subjected to excessive noise or outside air pollution. Where single aspect dwellings are proposed, by exception, they should be restricted to homes with one or two bedspaces; should not face north; and must demonstrate that the units will: have adequate passive ventilation, daylight and privacy; and not overheat (particularly relevant for south or west-facing single aspect units). **[All]** *Note: See Appendix 3 for definition of dual aspect.*	D3 D6 SI4
C4.2	The location of the main living and eating spaces, and the main private outside space, should be optimised to make the most of the best views and the orientation. These spaces should receive direct sunlight (south-facing is preferable, provided that appropriate shading devices are incorporated) and enjoy reasonable privacy through the careful placement of windows, balcony design or other measures. **[NB]**	D6
C4.3	All homes should allow for direct sunlight in conjunction with solar shading. As a minimum, at least one habitable room should receive direct sunlight – preferably the living area and/or the kitchen and dining space. **[NB, CoU]**	D6
C4.4	Avoid placing bedrooms and bathrooms on street-facing facades at ground level or where they face onto a busy courtyard or podium. **[All]**	D3 D6
C4.5	The primary window of a habitable room should not be located on an access deck. Where possible, avoid locating windows close to the internal corners of courtyards or L-shaped blocks. **[NB]**	D3 D6
C4.6	Avoid large wide full-height windows to habitable rooms (particularly in bedrooms) where the risk of being overlooked and/or overheating is high. **[NB, CoU]**	D6 SI4
C4.7	All habitable rooms (including a kitchen/dining room) should receive natural light and have at least one openable window that provides a view out when seated. **[All]**	D6
C4.8	Best practice: Bathrooms should receive natural light through openable window/s. **[All]**	D6

2.3 Communal open space

The tables in this section compare the policies from each reviewed jurisdiction that relate to communal open space. Table 2.3.1 summarises the high-level categories of criteria relating to communal open space, while Table 2.3.2 presents an exhaustive list of specific objectives / performance outcomes in the reviewed policies

Please note: In tables 2.3.1 and 2.3.2, an asterisk signifies the objective/ performance outcome is present in the policy but this does not mean it is mandatory.

Table 2.3.1: Communal open space features defined in policies by high-level category

	SA	VIC	WA	NSW	DGOW	FH	LON	VAN	NZ	*Sc1*	*Sc2*
Configuration	*	*	*	*	*	*	*	*	*	*	C
Solar access		*	*	*		*		*			C
Landscape	*	*	*	*		*	*	*	*	*	B
Amenity	*	*	*	*	*	*	*	*	*	*	C
Sustainability			*	*	*		*	*	*		
Accessibility		*	*	*	*	*	*	*			C
Security	*	*	*	*	*	*	*	*	*	*	C

Table 2.3.2: Objectives / performance outcomes for communal open space described in policies

	SA	VIC	WA	NSW	DGOW	FH	LON	VAN	NZ	*Sc1*	*Sc2*
Configuration											
minimum size		2.5m^2/du	6m^2/du	25%		2.5m^2/du			*		C
orientation		*	*			*	*	*	*		C
privacy into individual dwellings	*	*	*	*	*	*		*		*	*
visual connection from individual dwellings	*	*		*		*	*	*	*	*	*
access and distance from individual dwellings	*			*	*		*		*	*	*
surrounding context				*			*				
Solar Access											
minimum sunlight		2hrs/day	*	2 hrs		2hrs/day		*			C
maximum roof space			25%								
Landscape											
tree canopy	*	*	*			*	*			*	B
minimum deep soil area	*	*	*	*		*				*	B
minimum planting		*	*			*	*	*			B
irrigation		*	*	*		*	*	*			B
soil consideration		*	*	*		*	*	*			B
garden plots								*			F
existing tree protection/retention		*	*	*		*	*	*	*		F

	SA	VIC	WA	NSW	DGOW	FH	LON	VAN	NZ	*Sc1*	*Sc2*
Amenity											
seating				*	*		*	*	*		B
minimize noise pollution	*	*	*		*	*				*	*
child friendly				*	*		*	*	*		C
fixed shade/sun protection		*		*	*	*					B
covered gathering space				*	*		*	*			
wind protection	*	*	*	*		*		*	*	*	*
Sustainability											
rainwater retention				*					*		
stormwater management				*				*	*		
durability			*	*	*		*				
Accessibility											
accessible/ step free		*	*		*	*	*	*			C
min. hard surface area			*								
maintenance/ management		*	*	*	*	*	*				C
Security											
pedestrian access				*			*	*			
lighting		*	*	*	*	*	*	*	*		C
passive surveillance	*	*	*	*	*	*	*	*		*	*

Policy relating to communal open space is under-represented in the current *South Australian Planning and Design Code* compared to all other reviewed statutory Australian State Government policies. Objectives relating to configuration, solar access, landscape and sustainability can be incorporated into prescriptive policy with quantifiable standards such as minimum deep soil areas, planting areas, and hard surface areas, or maximum roof space. Objectives relating to amenity are more qualitative and descriptive and in the reviewed policies are reliant on performance-based policy using diagrams and best practice case studies.

Observation:

South Australia is the only jurisdiction not to mandate a minimum size or minimum solar access for communal open space. Incorporating these standards into new policy may strengthen the amenity of apartment developments. Introducing policy relating to landscaping, minimum planting requirements and water management may enhance the sustainability outcomes of new apartment developments.

For scenario 1 communal spaces (open and indoor) are likely to host an increased range of activities as individual apartment sizes decrease. However, given it is recommended that the private open space requirement remain for these smaller apartments, open space requirements are suggested as retaining the status quo under this scenario.

For scenario 2 communal open space would become the only semi-private open space building occupants and their visitors have access to. Requirements for a minimum size, optimised orientation, minimum sunlight, being child friendly, accessible, well maintained and provided with adequate lighting are identified as critical enablers of this scenario. Further requirements are identified as baseline requirements to help ensure these spaces are attractive and desirable

spaces despite reduced resident agency and control. The provision of garden plots is identified as an interesting area for future policy, but is not currently represented in other Australian jurisdictions.

Example policy text:

The following figures present excerpts of some of the policy relating to communal open space from the *New South Wales SEPP 65 + Apartment Design Guide*. The figures illustrate how both measurable standards and qualitative objectives can be incorporated into the same policy document. For further detail on New South Wales policy related to communal open space, see Appendix D pp151-191.

Figure 2.3.1 Excerpt from New South Wales SEPP 65 + Apartment Design Guide

Objective 3D-1

An adequate area of communal open space is provided to enhance residential amenity and to provide opportunities for landscaping

Design criteria

1. Communal open space has a minimum area equal to 25% of the site (see figure 3D.3)
2. Developments achieve a minimum of 50% direct sunlight to the principal usable part of the communal open space for a minimum of 2 hours between 9 am and 3 pm on 21 June (mid winter)

Design guidance

Communal open space should be consolidated into a well designed, easily identified and usable area

Communal open space should have a minimum dimension of 3m, and larger developments should consider greater dimensions

Communal open space should be co-located with deep soil areas

Direct, equitable access should be provided to communal open space areas from common circulation areas, entries and lobbies

Where communal open space cannot be provided at ground level, it should be provided on a podium or roof

Where developments are unable to achieve the design criteria, such as on small lots, sites within business zones, or in a dense urban area, they should:

- provide communal spaces elsewhere such as a landscaped roof top terrace or a common room
- provide larger balconies or increased private open space for apartments
- demonstrate good proximity to public open space and facilities and/or provide contributions to public open space

Objective 3E-1

Deep soil zones provide areas on the site that allow for and support healthy plant and tree growth. They improve residential amenity and promote management of water and air quality

Design criteria

1. Deep soil zones are to meet the following minimum requirements:

Site area	Minimum dimensions	Deep soil zone (% of site area)
less than 650m²	-	7%
650m² - 1,500m²	3m	
greater than 1,500m²	6m	
greater than 1,500m² with significant existing tree cover	6m	

Design guidance

On some sites it may be possible to provide larger deep soil zones, depending on the site area and context:

- 10% of the site as deep soil on sites with an area of 650m² - 1,500m²
- 15% of the site as deep soil on sites greater than 1,500m²

Deep soil zones should be located to retain existing significant trees and to allow for the development of healthy root systems, providing anchorage and stability for mature trees. Design solutions may include:

- basement and sub basement car park design that is consolidated beneath building footprints
- use of increased front and side setbacks
- adequate clearance around trees to ensure long term health
- co-location with other deep soil areas on adjacent sites to create larger contiguous areas of deep soil

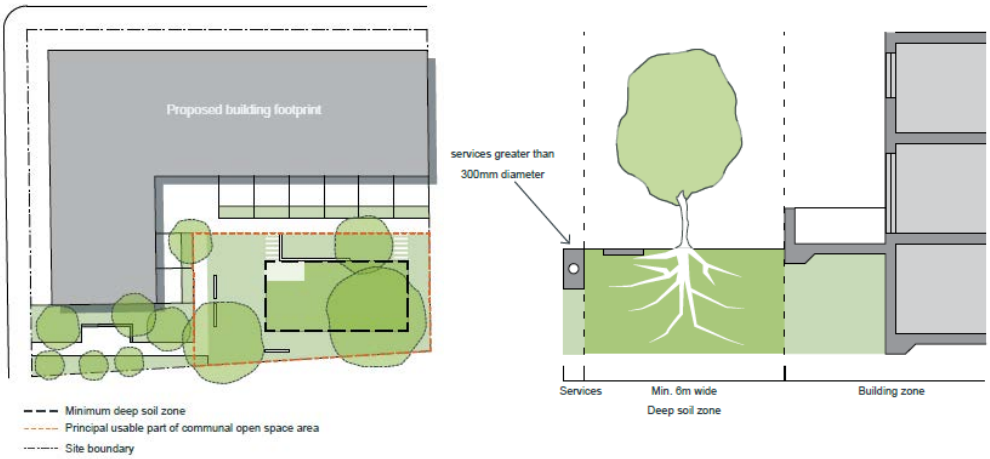


Figure 2.3.2 Excerpt from New South Wales SEPP 65 + Apartment Design Guide

Objective 3D-2

Communal open space is designed to allow for a range of activities, respond to site conditions and be attractive and inviting

Design guidance

Facilities are provided within communal open spaces and common spaces for a range of age groups (see also 4F Common circulation and spaces), incorporating some of the following elements:

- seating for individuals or groups
- barbecue areas
- play equipment or play areas
- swimming pools, gyms, tennis courts or common rooms

The location of facilities responds to microclimate and site conditions with access to sun in winter, shade in summer and shelter from strong winds and down drafts

Visual impacts of services should be minimised, including location of ventilation duct outlets from basement car parks, electrical substations and detention tanks

Objective 3D-3

Communal open space is designed to maximise safety

Design guidance

Communal open space and the public domain should be readily visible from habitable rooms and private open space areas while maintaining visual privacy. Design solutions may include:

- bay windows
- corner windows
- balconies

Communal open space should be well lit

Where communal open space/facilities are provided for children and young people they are safe and contained

2.4 Common and circulation spaces

The tables in this section compare the policies from each reviewed jurisdiction that relate to common and circulation spaces including entry lobbies, corridors and access to individual dwellings, and utility areas such as parking and storage space. They also identify jurisdictions that incorporate policy relating to communal indoor space such as a common room or shared utility room. Table 2.4.1 summarises the high-level categories of criteria relating to common and circulation spaces, while Table 2.4.2 presents an exhaustive list of specific objectives / performance outcomes in the reviewed policies.

Please note: In tables 2.4.1 and 2.4.2, an asterisk signifies the objective/ performance outcome is present in the policy but this does not mean it is mandatory.

Table 2.4.1: Common and circulation spaces defined in policies by high-level category

	SA	VIC	WA	NSW	DGOW	FH	LON	VAN	NZ	*Sc1*	*Sc2*
Entry	*	*	*	*	*	*	*	*	*	*	*
Corridor/lobbies	*	*	*	*	*	*	*	*	*	*	*
Utility	*	*	*	*	*	*	*	*	*	*F*	*F*
Amenity			*	*	*		*	*		*F*	*B*

Table 2.4.2: Objectives / performance outcomes for common and circulation spaces described in policies

	SA	VIC	WA	NSW	DGOW	FH	LON	VAN	NZ	*Sc1*	*Sc2*
Entry											
visible and identifiable	*	*		*	*	*	*		*	*	*
sheltered from weather	*	*				*	*		*	*	*
distinction between residential and non-residential	*	*		*	*	*			*	*	*
seating								*			
multiple entries				*			*				
safe, attractive	*	*		*		*	*	*	*	*	*
sightlines	*	*	*	*	*	*	*		*	*	*
Corridor/lobbies											
minimum size/width			*			*	*	*	*		
natural light		*	*	*		*	*	*			
max apartments per corridor	*			*			*			*	*
promote social interaction				*	*		*		*		
ventilation		*	*	*		*	*				
Utility											
carparking	*	*	*	*		*		*	*	*	*
bicycle parking		*	*	*		*	*	*	*	*F*	*F*
additional storage		*	*	*	*	*	*		*	*F*	

Amenity	SA	VIC	WA	NSW	DGOW	FH	LON	VAN	NZ	Sc1	Sc2
communal garden					*		*	*			B
Communal indoor space			*	*	*			*		F	

Of the reviewed policies, South Australia's *Planning and Design Code* has the least reference to common and circulation spaces. Policies describing common and circulation spaces typically incorporate objectives that facilitate social interaction between residents, consider and respond to the surrounding context, and seek to integrate the development into adjacent public areas and open space. Many of these objectives utilise descriptive, performance-based objectives, diagrams and best practice case studies.

Western Australia and New South Wales are the only Australian State Government jurisdictions to incorporate any policy relating to communal indoor space *in general apartment developments*. Both jurisdictions stipulate that where indoor communal facilities are provided, they should connect with communal open space areas.

Observation:

South Australian policy may be strengthened by incorporating objectives related to entry lobbies, access corridors and the interface between the development and the public realm.

However, including standards for communal indoor space into policy for *general apartment development* may not be a high priority, and may be better contained in policy specific to co-living accommodation, as outlined further in section 2.5

Under both scenarios, there are no critical changes to policy identified. However, a recommendation for inclusion of a communal garden space is identified as a baseline where private open space requirements are removed.

Example policy text:

The following figures present excerpts of some of the policy relating to common and circulation spaces from other Australian jurisdictions. Figure 2.4.1 presents the policy relating to circulation and common spaces from the *Western Australian Residential Design Codes Volume 2*. At the bottom of the figure, *DG4.5.7* presents the design guidance relating to communal indoor space. Figure 2.4.2 presents some of the policy related to common and circulation spaces from the *New South Wales SEPP 65 + Apartment Design Guide.* It demonstrates the broad range of detail regulated through policy. Under objective *4F-2*, design guidance is provided for community rooms within larger developments. For further detail on Western Australian and New South Wales responses to common and circulation spaces, see Appendix C pp.103-150 and Appendix D pp 151-191.

Figure 2.4.1 Excerpt from Western Australian Residential Design Codes Vol 2

ELEMENT OBJECTIVES

Development is to achieve the following Element Objectives:

O 4.5.1 Circulation spaces have adequate size and capacity to provide safe and convenient access for all residents and visitors.

O 4.5.2 Circulation and common spaces are attractive, have good **amenity** and support opportunities for social interaction between residents.

ACCEPTABLE OUTCOMES

Acceptable Outcomes are likely to assist in satisfying the objectives but are not a comprehensive 'deemed-to-comply' list. In order to achieve the Element Objectives, proposals may require additional and/or alternative design solutions in response to the site conditions, streetscape and design approach.

A 4.5.1 Circulation corridors are a minimum 1.5m in width.

A 4.5.2 Circulation and common spaces are designed for **universal access**.

A 4.5.3 Circulation and common spaces are capable of **passive surveillance**, include good **sightlines** and avoid opportunities for concealment.

A 4.5.4 Circulation and common spaces can be illuminated at night without creating light spill into the **habitable rooms** of adjacent **dwellings**.

A 4.5.5 Bedroom windows and major openings to living rooms do not open directly onto circulation or common spaces and are designed to ensure visual privacy and manage noise intrusion.

Potential alternative solutions to satisfy the Element Objectives will be considered on a performance basis.

DG 4.5.1 The configuration of circulation and common spaces is an important consideration in the early planning phase, as these areas are used by all residents on a daily basis and inform the first impression of visitors. The design of circulation spaces is therefore critical in defining the character, style and **amenity** of the **development**.

DG 4.5.2 **Universal access** is a mandatory requirement of contemporary **building** design for all publicly accessible places. In the context of an **apartment development** this means circulation areas and common spaces must be **universally accessible** via a **continuous path of travel** from the primary entry.

DG 4.5.3 Design considerations to ensure safe and convenient access for all users of these spaces are listed below:

- provide secure access to circulation areas, including intercoms for residents to admit visitors
- consider limiting the number of **dwellings** served by a single **circulation core** to no more than 12 on a floor
- consider providing an additional lift when the number of dwellings serviced by a single lift exceeds 40, or when the travel distance between a single dwelling and a lift exceeds 50m
- provide short, straight **sightlines** by minimising corridors lengths and avoiding tight corners between the circulation core and individual dwellings

DG 4.5.4 The design of circulation spaces should contribute to making **dwelling** entries distinct and private. This can be achieved by offsetting entry doors, creating an entry vestibule or varying ceiling height, width and materials in the corridor to create a 'porch'. In external galleries consider offsetting the dwelling entries from the gallery with an entry court, while avoiding creating spaces for concealment.

DG 4.5.5 Windows of **dwellings** should not open directly onto circulation and common spaces. Use physical separation, **screening**, acoustic glazing, **landscaping**, lighting design and other devices to minimise impacts and to maintain privacy in the dwelling.

DG 4.5.6 Good design can greatly enhance the **amenity** of circulation and common spaces. Consider design solutions such as:

- maximising **daylight** and **natural ventilation** to circulation and common spaces to improve amenity and thermal performance, and reduce operational costs
- incorporating additional width or height in corridors and at entry lobbies, lifts and **dwelling** entries to create a sense of spaciousness and enable the movement of furnishings and bulky goods, for instance, the width of lift landings should exceed the depth of the lift car
- providing seating in foyers and other breakout spaces within circulation and common spaces
- where external galleries are provided, making these more open than closed above the balustrade

DG 4.5.7 Communal facilities: In larger **developments**, consider providing common spaces and rooms for a variety of activities and uses, such as facilities for the shared preparation of food, gardening and craft groups, mother's groups and children's play groups, as well as strata or resident meetings. Ideally these spaces will be co-located with **communal open space**. In some cases it might be appropriate to provide public access to promote connection with the wider community, but the safety and **amenity** of residents must be maintained.

Figure 2.4.2 Excerpt from New South Wales SEPP 65 + Apartment Design Guide

Objective 3G-1

Building entries and pedestrian access connects to and addresses the public domain

Design guidance

Multiple entries (including communal building entries and individual ground floor entries) should be provided to activate the street edge

Entry locations relate to the street and subdivision pattern and the existing pedestrian network

Building entries should be clearly identifiable and communal entries should be clearly distinguishable from private entries

Where street frontage is limited and multiple buildings are located on the site, a primary street address should be provided with clear sight lines and pathways to secondary building entries

Objective 3G-2

Access, entries and pathways are accessible and easy to identify

Design guidance

Building access areas including lift lobbies, stairwells and hallways should be clearly visible from the public domain and communal spaces

The design of ground floors and underground car parks minimise level changes along pathways and entries

Steps and ramps should be integrated into the overall building and landscape design

For large developments 'way finding' maps should be provided to assist visitors and residents (see figure 4T.3)

For large developments electronic access and audio/video intercom should be provided to manage access

Objective 4F-1

Common circulation spaces achieve good amenity and properly service the number of apartments

Design criteria

1. The maximum number of apartments off a circulation core on a single level is eight
2. For buildings of 10 storeys and over, the maximum number of apartments sharing a single lift is 40

Design guidance

Greater than minimum requirements for corridor widths and/or ceiling heights allow comfortable movement and access particularly in entry lobbies, outside lifts and at apartment entry doors

Daylight and natural ventilation should be provided to all common circulation spaces that are above ground

Windows should be provided in common circulation spaces and should be adjacent to the stair or lift core or at the ends of corridors

Longer corridors greater than 12m in length from the lift core should be articulated. Design solutions may include:

- a series of foyer areas with windows and spaces for seating
- wider areas at apartment entry doors and varied ceiling heights

Design common circulation spaces to maximise opportunities for dual aspect apartments, including multiple core apartment buildings and cross over apartments

Objective 4F-2

Common circulation spaces promote safety and provide for social interaction between residents

Design guidance

Direct and legible access should be provided between vertical circulation points and apartment entries by minimising corridor or gallery length to give short, straight, clear sight lines

Tight corners and spaces are avoided

Circulation spaces should be well lit at night

Legible signage should be provided for apartment numbers, common areas and general wayfinding

Incidental spaces, for example space for seating in a corridor, at a stair landing, or near a window are provided

In larger developments, community rooms for activities such as owners corporation meetings or resident use should be provided and are ideally co-located with communal open space

Where external galleries are provided, they are more open than closed above the balustrade along their length

2.5 Communal indoor space

The tables in this section compare the policies from each reviewed jurisdiction that relate to communal indoor space. Table 2.5.1 summarises the high-level categories of criteria relating to communal indoor space, while Table 2.5.2 presents an exhaustive list of objectives / performance outcomes across the reviewed policies.

Please note: In tables 2.5.1 and 2.5.2, an asterisk signifies the objective/ performance outcome is present in the policy but this does not mean it is mandatory.

Table 2.5.1: Communal indoor space features defined in policies by high-level category

	SA	VIC	WA	NSW	DGOW	FH	LON	VAN	NZ	*Sc1*	*Sc2*
Configuration			*	*	*			*		*F*	
Comfort					*			*			
Amenity					*		*	*			
Accessibility					*						
Security			*								

Table 2.5.2: Objectives / performance outcomes for communal indoor space described in policies

	SA	VIC	WA	NSW	DGOW	FH	LON	VAN	NZ	*Sc1*	*Sc2*
Configuration											
minimum size								*			
flexibility			*		*			*			
cultural diversity					*						
acoustic privacy from individual dwellings					*						
connection to communal open space			*	*	*			*		*F*	
distinction between private and communal space					*						
Comfort											
natural lighting					*			*			
natural ventilation					*						
thermal comfort					*						
Amenity											
kitchenette/cooking					*			*	*		
furniture					*			*	*		
storage					*			*			
child-friendly								*			
Accessibility											
booking system								*			
accessibility					*		*	*			
maintenance/management					*		*	*			
Security											
lockable			*		*						
night access								*			

There is very little policy relating to communal indoor space across statutory Australian policy and the reviewed international polices that regulate *general apartment development*. Communal indoor space is not incorporated into SA or Victorian policy, and therefore these jurisdictions have no relevant performance outcomes or objectives. Western Australia and New South Wales policy has limited reference to communal indoor space, with some crossover with internal facility requirements.

A Design Guide for Older Women's Housing and the *City of* Vancouver *Housing Design and Technical Guidelines* incorporate comprehensive performance outcomes for communal indoor space. The former has been produced as discretionary guidelines for best practice, purpose-built-for-cohort housing, while the latter may be driven by local climactic or Canadian cultural norms.

Observation:

Policy relating to communal indoor space is more relevant to co-living (discussed in Section 3 of this report) and purpose-built-for-cohort accommodation (such as care facilities) than to general apartment developments.

Performance objectives that relate to communal indoor space may be better regulated under policy specific to co-living accommodation. This suggests it may be important to consider developing two distinct policy documents, one for general apartment-style development, and one for co-living accommodation.

For scenario 1 residents may have greater reliance on communal spaces within developments due to reduced individual apartment size. However, it is recommended for both scenario 1 and scenario 2 that policy changes in this area focus on directing toward a co-living policy. There are significant examples of communal amenity being provided by the market in apartment development, suggesting that policy may not be appropriate. However, a consideration of connecting communal indoor space with communal outdoor space may be appropriate in the future.

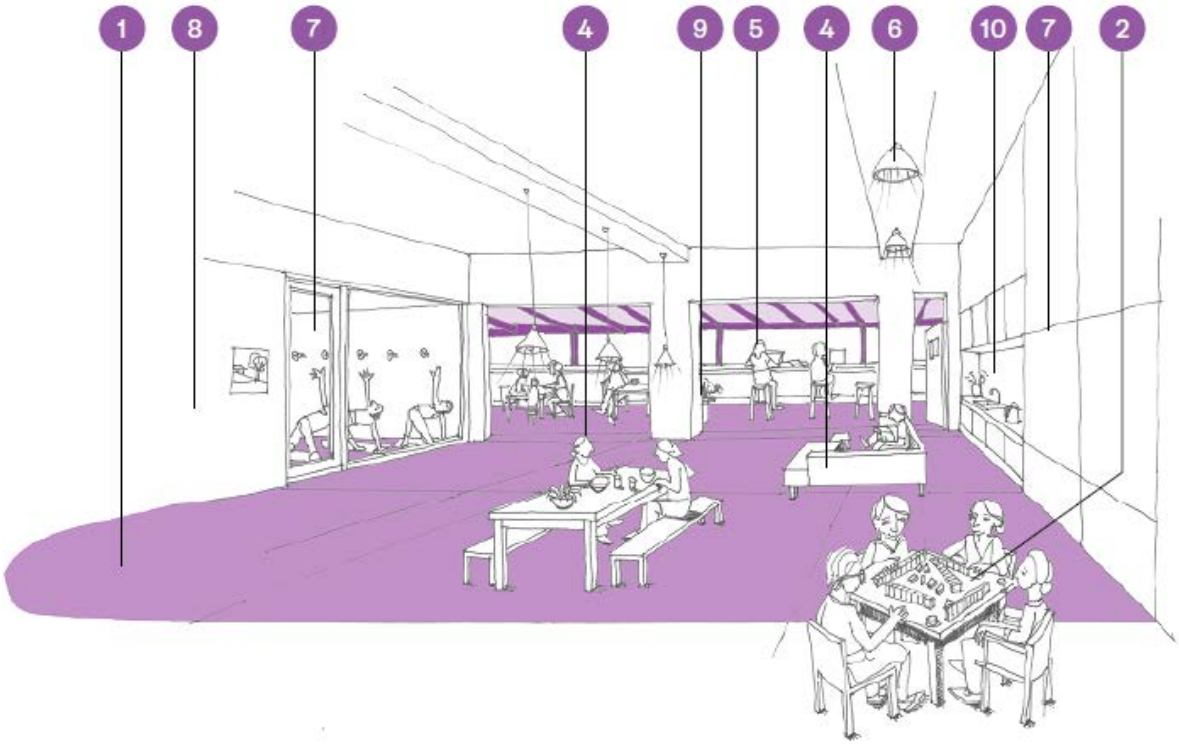
Example policy text:

The following figures present excerpts of the policies and design guidelines relating to communal indoor space from *A Design Guide for Older Women's Housing* and the *City of Vancouver Housing Design and Technical Guidelines*. Figure 2.5.1 provides an example of detailed descriptive and best practice guidelines for communal indoor space. Figure 2.5.2 Illustrates a more quantitative, text based policy similar to the nature of the policy in the current *South Australian Planning and Design Code*. For further detail on the guidelines presented in *A Design Guide for Older Women's Housing*, see Appendix E pp.192-217. For further detail on the City of Vancouver policy related to communal indoor space, see Appendix H pp. 270-279.

Figure 2.5.1 Excerpt from Design Guide for Older Women's Housing

Components

FIGURE 3: COMMUNAL SPACE: INDOOR



1. The size of communal space matters for older women; many older women are more likely to meet and catch up in communal areas in smaller developments (under 30 dwellings) where it is easier to foster an onsite community.

2. The communal space areas need to be large enough to accommodate groups of older women sitting comfortably, with generous circulation space for access and egress.

3. Communal spaces for older women should be located centrally within a development and accessible to all older women, not just a few who live adjacent to the space. A central and easily accessible communal space can avoid a sense of ownership.

4. Older women may form different social groups within a development. Provide multiple and different seating options for different group sizes and activities to encourage active engagement of older women.

5. Furniture and seating can be built-in and provide a dual purpose, such as storage, or they can be free-standing. The developer should provide furniture in these spaces rather than leave it to older women to provide their own.

6. Older women will use communal spaces differently and at different times of the day and night. Provide good natural and artificial lighting options to ensure well-lit spaces so older women avoid trip hazards or obstacles.

Figure 2.5.2 Excerpt from City of Vancouver Housing Design and Technical Guidelines

4.2 INDOOR AMENITY, PROGRAM AND OFFICE SPACES (Additional Requirements)

.1 General (Add to BCH Requirements)

a. For projects with less than 26 units, provide a minimum amenity space of 37 sq.m. (398 sq.ft.).
b. A minimum of 15 square feet of amenity space is required per unit.
c. In larger buildings with more than 90 units, consider a second amenity space for other activity uses (minimum size of 37 sq.m).
d. Provide access to natural daylight in all amenity spaces.
e. Provide access to an amenity space for all occupants.
f. Indoor amenity space to be directly linked to at-grade, rooftop or podium outdoor amenity space as a priority, where possible. Refer to the High-Density Housing for Families with Children Guidelines and Urban Agriculture Design Guidelines for the Priva Realm policies.
g. Clear ceiling heights to be a minimum of 2438 mm (8'-0").
h. Provision to accommodate smudging at indoor amenity spaces as required.
   - Refer to City of Vancouver Facilities Standard Manual details on smudging.
   - Provide appropriate mechanical ventilation and fire alarm interface.

.2 Family Housing and Independent Seniors Housing (Add to BCH Requirements)

a. Revise BCH Guidelines requirements for amenity kitchenette to include:
   - 1828 mm (6 feet) minimum length of millwork lower cabinets with drawers and a double bowl stainless steel sink.
   - Refrigerator.
   - A microwave and shelf.
b. Provide one storage closet for the storage of stacking chairs and folding tables. The amount of storage closet space would conform to the size of the amenity room.
c. Provide a furniture layout with table and chairs, drawn to scale. Provide furnishings in accordance with this layout, or cash allowance for the operator to purchase.
d. Housing with common dining and meal preparation, replace BCH Guidelines with:
   - If a larger community style kitchen is provided, confirm cooking types expected. (Class 1 - 5 as per bulletin). Exhaust and equipment to be provided per the City of Vancouver's current Kitchen Ventilation Systems bulletin requirements. http://former.vancouver.ca/commsvcs/LICANDINSP/bulletins/2007/2007-005.pdf
e. For buildings with less than 25 units, provide a project office of approximately 9.29 sq. m. (100 sq. ft.). In buildings with more than 25 units, provide an office of a minimum of 24.52 sq. m. (264 sq. ft.) that will include:
   - A 12.08 sq. m. (130 sq. ft.) lockable office including provision of a desk with a return, task chair, across desk seating for 2 guests as well as a minimum of a 30" long, 3-drawer-high filing cabinet, or cash allowance for the operator to purchase.
   - A small area for reception and for accompanying guest and/or children to wait and play. A window may be required to view the reception area.
   - A LAN closet - approximately 610mm x 610 mm (2'- 0" x 2'-0") minimum.
f. An additional minimum 3048 mm x 3048 mm (10 '- 0" x 10'-0" sq. ft.) office may be required if building maintenance and management is handled on site.

3 Co-living accommodation

3.1 Classifications of co-living accommodation types by jurisdiction

Co-living and purpose-built-for-cohort accommodation such as student accommodation are classified differently across different jurisdictions in Australia. Table 3.1.1 compares the classifications that Australian jurisdictions use to describe and control co-living and purpose-built-for-cohort accommodation types, including student accommodation.

Table 3.1.1 Purpose-built-for-cohort & co-living accommodation classifications by jurisdiction

	SA	NSW	VIC	QLD	WA *
Accessible dwelling					✓
Aged or dependent persons' dwelling					✓
Boarding houses		✓			
Build to rent		✓			
Co-living		✓			
Community care accommodation			✓		
Future Homes			✓		
Housing for seniors and people with a disability		✓			
Public Housing			✓		
Residential aged care facility			✓	✓	
Residential care	✓				
Residential park	✓				
Retirement facility	✓			✓	
Rooming house			✓	✓	
Short term rental accommodation		✓			
Single bedroom dwelling					✓
Small dwelling					✓
Student accommodation	✓				
Supported accommodation	✓	✓			

Includes student accommodation

South Australia is the only Australian jurisdiction to have separate regulations for 'student accommodation'. In other jurisdictions, student accommodation is grouped together with other co-living housing models.

In New South Wales, student accommodation is regulated under the policy of either boarding houses or co-living accommodation. In Queensland and Victoria, student accommodation is regulated under the policy of rooming house. In all jurisdictions, these accommodation types must meet the national standards set out in the Building Code of Australia (BCA). While Western Australia have no specific planning provisions for student housing, specific requirements and policy for small dwellings, single bedroom dwellings, accessible dwellings and aged and dependent dwellings are incorporated into the general medium density residential design codes.

Co-living accommodation types are under-represented in South Australia, with limited classifications and narrowly defined policy limited to student and residential care accommodation.

Observation:

Reviewing the classification of 'student accommodation' and developing a more broad classification that is inclusive of other co-living accommodation types may facilitate for more diverse housing models based on smaller sole occupancy units and shared facilities. This approach could lead to development that would accommodate a broader spectrum of the population.

3.2 Definitions of co-living accommodation types by jurisdiction

The definitions of co-living accommodation across the reviewed jurisdictions vary significantly. South Australia, Victoria, New South Wales and Queensland have specific policies in place that relate to co-living accommodation, while this form of accommodation in Western Australia is subject only to the requirements of the Building Code of Australia. Table 3.2.1 below summarises the key terms and objectives of each of these policies.

Table 3.2.1: Description, key terms, and objectives associated with co-living accommodation policies by jurisdiction

SA	**Student accommodation**
	Enable dormitory style accommodation without self-contained facilities
NSW	**Co-living**
	Enable shared and community-based living for long term accommodation
	Boarding house
	Provide affordable housing by permitting smaller dwelling units with communal facilities
VIC	**Rooming house**
	Provide formalized accommodation with shared facilities as an alternative to share house arrangements.
QLD	**Rooming house**
	Provide legal structure for sharing dwellings with limited or no self-contained facilities.
BCA	**Class 1B**
	Enable shared dwellings for less than 12 people
	Class 3
	Enable shared dwellings for 12 or more people for long term or short term accommodation or for supported care accommodation

The specific descriptions and details of each policy also contain significant variation. Tables 3.2.2 to 3.2.5 below present an extract from reviewed policies across each jurisdiction.

Table 3.2.2: Policy enabling co-living development in South Australia – "Student accommodation"

SA	Student accommodation
	Premises used to accommodate students in room or dormitory style accommodation that can be (but need not be) self-contained and that includes common facilities for shared use by student occupants such as: a) shared cooking facilities and/or the provision of meals; b) common rooms and recreation areas; c) shared laundry facilities or a laundry service; or d) shared bathroom facilities.

Table 3.2.3: Policy enabling co-living development in New South Wales – "Boarding houses" and "Co-living"

NSW	Co-living and boarding houses	
	"Boarding houses and co-living housing provide compact rental accommodation for a range of occupants, with minimum tenancies of 3 months. Both housing types are typically built in well-connected areas, where residents have convenient access to work, study and recreation opportunities. There are maximum room sizes for private rooms to make a clear distinction between apartments in a residential flat building and these housing types. The smaller room sizes are offset by the shared spaces and communal facilities provided in these developments. One key difference between boarding houses and co-living housing is that boarding houses are a type of affordable housing that must be managed by registered community housing providers in perpetuity. Co-living housing has no affordability requirement. Boarding houses receive a larger density bonus (30% above the floor space ratio standard) compared with co-living housing, which attracts a 10% bonus. Co-living housing must contain at least 6 private rooms and include key features such as fully furnished, ready-to-occupy private and shared spaces. A manager, who is responsible for the shared spaces, should actively encourage a sense of community. Co-living housing often appeals to young professionals and key workers."	
	Boarding houses: "Must be used for affordable housing in perpetuity must be managed by a registered community housing provider in perpetuity attract a 30% floor space ratio bonus (on land where residential flat buildings or shop top housing are permitted with consent) can provide private room sizes ranging from 12 m^2 for a single person or 16 to 25 m^2 for a couple, excluding any space	**Co-living:** "Subject to similar built-form development standards as boarding houses must provide a primary place of residence for all occupants – it may not be used for short-term tourist and visitor accommodation may have as few as 6 private rooms (but most co-living housing developments will typically have about 30 to 40 private rooms) must provide indoor and outdoor communal space for residents to relax and socialise must have a manager, who will be responsible for implementing the plan of management for the property. The manager does not have to be

used for private kitchen or bathroom facilities must meet minimum standards for communal living areas, communal open space and landscaping must demonstrate compatibility with the character of the local area or the desired future character for areas under transition."	always on site but must be contactable by phone 24/7."

Table 3.2.4: Policy enabling co-living development in Victoria and Queensland – "Rooming house"

VIC/QLD	Rooming house	
	VIC: "A building where four or more people can live in rented rooms, some of which might be shared. The rooming house is managed by a rooming house operator and individual residents usually have separate agreements with the operator. The operator can decide who can live in the property without consulting the residents. In most rooming houses, residents share bathrooms, kitchens, laundries and other common areas. The rooming house operator and their family do not usually live in the property. It is different to a share house, where everyone signs the same agreement."	**QLD:** "(a)residential accommodation, if each resident— (i)has a right to occupy 1 or more rooms on the premises; and (ii)does not have a right to occupy the whole of the premises; and (iii)does not occupy a self-contained unit, as defined under the *Residential Tenancies and Rooming Accommodation Act 2008*, schedule 2, or has only limited facilities available for private use; and (iv)shares other rooms, facilities, furniture or equipment outside of the resident's room with 1 or more other residents, whether or not the rooms, facilities, furniture or equipment are on the same or different premises; or (b)a manager's residence, an office or providing food or other services to residents, if the use is ancillary to the use in paragraph (a).

Table 3.2.5: Policy enabling co-living development in the Building Code of Australia – "Building classifications"

BCA	Building Classifications	
	Class 1B: A boarding house, guest house or hostel that has a floor area less than 300 m2 and ordinarily has less than 12 people living in it. It can also be 4 or more single dwellings located on one allotment which are used for short-term holiday accommodation.	**Class 3:** A common place of long term or transient living for a number of unrelated people. Examples include a boarding house, guest house, hostel or backpackers (that are larger than the limits for a Class 1b building). Class 3 buildings could also include dormitory style accommodation, or workers' quarters.

	Class 3 buildings may also be 'care-type' facilities such as accommodation buildings for children, the elderly, or people with disability.

All jurisdictions in Australia are subject to the requirements of the Building Code of Australia (BCA) in addition to local statutory policies. The BCA standards are dependent on size of the development with <12 residents and <300m^2 of floor area resulting in a building being classified as Class 1b, while >12 residents and >300m^2 floor area results in a building being classified as Class 3.

New South Wales has two separate classifications, with the 'boarding house' descriptor directed at providing affordable housing that is managed by a registered community housing provider, and the 'co-living' descriptor being used to describe a community-based way of living that is not price-dependent. Both classifications incorporate a density bonus to incentivise these co-living development types in New South Wales.

In addition to specifically targeting a cohort (students) rather than tenure type, South Australia is the only state jurisdiction to reference dormitory style accommodation in a co-living policy. Dormitory style accommodation in other jurisdictions is governed by the requirements of a Class 3 building under the BCA.

Observation:

The immense variation that is evident in co-living accommodation policies highlights the importance of defining the overarching purpose of such policies. South Australia may benefit from developing two co-living policies, based on the classifications established in the BCA, with one for developments accommodating up to 12 people, and the other for large, high-rise developments akin to the student accommodation towers that have already been constructed. Establishing a separate policy for smaller co-living accommodation with <12 people is likely to support the development of more diverse co-living accommodation, including outside of the CBD (see, for example, Anne Street Garden Villas case study in Section 4.)

3.3 Policy content

Limited policy exists across Australian jurisdictions regulating co-living accommodation developments, with a heavy reliance on the Building Code of Australia and National Construction Code, particularly in relation to shared bathroom facilities. Figure 3.3.1 presents all the policy relevant to student accommodation in the *South Australia Planning and Design Code*. Table 3.3.2 summarizes the national standards for facilities in Class 3 residential buildings. Tables 3.3.3 to 3.3.15 compare the policies related to co-living accommodation from the *New South Wales SEPP (Housing) 2021* and the *Victoria Residential tenancies (Rooming House Standards) Regulations 2023*.

Figure 3.3.1 Policy related to student accommodation in *South Australia Planning and Design Code*

Student Accommodation	
PO 41.1 Student accommodation is designed to provide safe, secure, attractive, convenient and comfortable living conditions for residents, including an internal layout and facilities that are designed to provide sufficient space and amenity for the requirements of student life and promote social interaction.	DTS/DPF 41.1 Student accommodation provides: (a) a range of living options to meet a variety of accommodation needs, such as one-bedroom, two-bedroom and disability access units (b) common or shared facilities to enable a more efficient use of space, including: (i) shared cooking, laundry and external drying facilities (ii) internal and external communal and private open space provided in accordance with Design in Urban Areas Table 1 - Private Open Space (iii) common storage facilities at the rate of $8m^3$ for every 2 dwellings or students (iv) common on-site parking in accordance with Transport, Access and Parking Table 1 - General Off-Street Car Parking Requirements or Table 2 - Off-Street Car Parking Requirements in Designated Areas (v) bicycle parking at the rate of one space for every 2 students.

Table 3.3.2: Bathroom facilities in residential buildings in the *Building Code of Australia*

Bathroom facilities
BCA: **F4D2 Facilities in residential buildings** For facilities in Class 3 buildings other than *residential care buildings*, the following applies: a. For residents in each building or group of buildings, for each 10 residents for whom private facilities are not provided, provide— i. a bath or shower; and ii. a closet pan; and iii. a washbasin. b. Notwithstanding (a), if one urinal is provided for each 25 males up to 50 and one additional urinal for each additional 50 males or part thereof, one closet pan for each 12 males may be provided. c. Facilities for employees must be provided in accordance with F4D4. d. Facilities *required* by (a), (b) or (c) need not be situated in the same building.

For facilities in Class 3 *residential care buildings*, the following applies:

a. For residents in each building or group of buildings, provide—
   i. a shower, closet pan and wash basin for each 8 residents or part thereof where private facilities are not provided; and
   ii. a suitable bath for each 30 residents or part thereof.

b. For the purposes of (a), urinals must not be taken into consideration in calculating the number of facilities.

Table 3.3.3: Locational requirements of co-living accommodation in New South Wales and Victoria

Locational requirements	
NSW: Proximity to activity centres and public transport hubs Maximum 12 rooms in a low-density Residential land use zone	**VIC:** *No specific policy for locational requirements*

Table 3.3.4: Siting requirements of co-living accommodation in New South Wales and Victoria

Siting requirements	
NSW: Compatible with the desirable elements of the character of the local area Front, side and rear setbacks to meet minimum requirements for multi-dwelling housing or residential flat building depending on scale and zone =>3 storeys – meet minimum building separations distances specified in SEPP 65 + Apartment Design Guide	**VIC:** *No specific policy for siting requirements*

Table 3.3.5: Floor space ratio requirements of co-living accommodation in New South Wales and Victoria

Floor space ratios	
NSW: 25% density bonus if entire building is boarding house 10% density bonus if entire building is co-living accommodation	**VIC:** *No specific policy for floor space ratios*

Table 3.3.6: Communal open space requirements of co-living accommodation in New South Wales and Victoria

Communal open space	
NSW: Minimum 20% of the site area Minimum dimension 3m Landscaping to meet minimum requirements for multi-dwelling housing or residential flat building depending on scale and zone	**VIC:** *No specific policy for communal open space*

Table 3.3.7: Individual room requirements of co-living accommodation in New South Wales and Victoria

Floor area for individual rooms	
NSW: Single room - minimum 12m^2 (exc. private kitchen and bathroom) Double room – minimum 16m^2 (exc. private kitchen and bathroom) Maximum floor area of 25m^2 (exc. private kitchen and bathroom facilities) Maximum 2 adult residents per room	**VIC:** *No specific policy for floor area for individual rooms*

Table 3.3.8: Communal living space requirements of co-living accommodation in New South Wales and Victoria

Communal living space	
NSW: <=6 rooms – minimum 30m^2 min dimension 3m > 6 rooms – minimum 30m^2 + 2m^2 for every room above 6th. min dimension 3m At least 3 hours direct solar access between 9am – 3pm at mid-winter in at least 1 communal living area	**VIC:** *No specific policy for communal living space*

Table 3.3.9: Kitchen facilities requirements of co-living accommodation in New South Wales and Victoria

Kitchen facilities	
NSW: "Adequate" kitchen facilities available for the use of each resident	**VIC:** (a) an area which is intended to be used solely for food preparation— (i) in each resident's room; or (ii) in a common area; (b) a sink— (i) in each resident's room; or (ii) in a common area; (c) an oven that is in good working order— (i) in each resident's room; or (ii) in a common area, for every 12 or fewer residents of the rooming house who do not have an oven in their room, based on the maximum number of residents that the rooming house can accommodate; (d) a cook top that is in good working order— (i) in each resident's room; or (ii) with 4 burners, in a common area, for every 12 or fewer residents of the rooming house who do not have a cook top in their room, based on the maximum number of residents that the rooming house can accommodate; (e) a refrigerator that is in good working order— (i) with a minimum gross capacity of 80 litres, in each resident's room; or (ii) with a minimum gross capacity of— (A) 400 litres for every 4 or fewer residents who are not provided a refrigerator in their room; and (B) an additional 28·5 litre capacity for each additional resident who is not provided a refrigerator in their room— based on the maximum number of residents that the rooming house can accommodate, in a common area. (f) not less than one cupboard for each resident, based on the maximum number of residents that the rooming house can accommodate— (i) with a minimum storage space of 0·10 cubic metres; and (ii) that is lockable, if provided in a common area.

Table 3.3.10: Dining facilities requirements of co-living accommodation in New South Wales and Victoria

Dining facilities	
NSW: *No specific policy for dining facilities*	**VIC:** (a) a number of chairs equal to the maximum number of residents that can be accommodated in a resident's room in the rooming house— (i) in each resident's room; or (ii) in a common area; (b) one or more dining tables that can comfortably accommodate the number of chairs referred to in paragraph (a)— (i) in each resident's room; or (ii) in a common area. For the purposes of (b), a dining table— (a) includes a benchtop that is large enough to accommodate the number of chairs required under (a); and (b) does not include a benchtop that is wholly or partially in an area for food preparation.

Table 3.3.11: Laundry facilities requirements of co-living accommodation in New South Wales and Victoria

Laundry facilities	
NSW: “Adequate” laundry facilities available for the use of each resident	**VIC:** Provision of the following in good working order for every 12 or fewer residents based on the maximum number of residents that the rooming house can accommodate— one of each of the following: (a) a communal laundry wash trough or basin plumbed to a continuous and adequate supply of hot and cold water; (b) a designated space, immediately next to the laundry wash trough or basin, with hot and cold water supply outlets suitable for a washing machine; (c) a clothes line or other clothes drying facility. (d) a washing machine.

Table 3.3.12: Bathroom facilities requirements of co-living accommodation in New South Wales and Victoria

Bathroom facilities	
NSW: "Adequate" bathroom facilities available for the use of each resident	**VIC:** *No specific policy for bathroom facilities*

Table 3.3.13: Parking requirements of co-living accommodation in New South Wales and Victoria

Parking	
NSW: Boarding house - "Adequate" bicycle and motorbike parking spaces Co-living accommodation – 0.2-0.5 parking spaces for each private room depending on zone.	**VIC:** *No specific policy for parking*

Tables 3.8 to 3.18 illustrate that co-living accommodation standards varies greatly between New South Wales and Victoria. New South Wales policy has a stronger focus on locational and site level requirements with prescriptive policy on minimum and maximum individual room sizes but limited to no policy on communal indoor space and shared facilities. Victorian policy provides much more detailed and prescriptive requirements for kitchen, laundry, bathroom facilities. Both policies provide provision for individual rooms to have private kitchen and bathroom facilities.

It should be noted that across Victoria, New South Wales, and Queensland, more detailed policy is provided in some local government development control plans and/or in the case of student accommodation, by individual universities.

The disparate nature of the policies across New South Wales and Victoria reflects the diversity of the definitions, key terms and objectives of co-living accommodation between the two jurisdictions and demonstrates the importance of clearly defining the purpose, scope and legislative definition of co-living accommodation prior to preparing specific policy.

Observation:

As there are limited examples of co-living accommodation and related policies in Australia, more investigation into international co-living accommodation case studies is recommended before detailed standards or policy is produced.

3.4 Co-living policy outcome targets

The following section provides suggested policy outcomes for a future Co-living policy in South Australia. Suggested policy outcome targets have been developed based on an assumption that the co-living policy will be applied to both high-rise student accommodation development in the Adelaide CBD, and low- and medium-density co-living development in suburban areas.

Where possible, the statements reflect best practice from other jurisdictions. However, as the previous sections have illustrated, co-housing is a relatively new area of policy so in some instances new guidelines have needed to be drafted. Where this is the case, these recommendations have been based on the following assumptions.

Assumptions used for shared facility calculations

Use of spaces:

Assumption 1: Both self-contained residents and co-living residents will use communal open space.

Assumption 2: Some self-contained residents will use communal indoor recreation space, but not at the same rate as co-living residents.

Assumption 3: Only co-living residents will use shared kitchen facilities.

Assumption 4: Only co-living residents will use shared bathroom facilities.

Assumption 5: In all instances, co-living residents will not have a private laundry.

Assumption 6: In some instances self-contained apartments will include a private laundry while in others they will not.

Rates of provision for space and / or appliances

Assumption 7: All co-living residents need to cook and eat at each meal, but not all at the same time. It is assumed residents could be split over 3 approximate time periods, and that they would likely use cooking, dining, and living facilities sequentially. For example: residents may spread at a rate of 30%, 40%, 30% over 6-10am for breakfast or 5-10pm for dinner. Therefore, a rate of 40% has been used to determine the requirements for cooking, dining, and living spaces

Assumption 8: While at any one meal, a proportion of co-living residents may be eating out, there should be a provision for all to eat-in for each meal. 40% overall rate for kitchen, assumes everyone dining at once will require kitchen space for preparation or washing up of meal.

Assumption 9: 10% for oven/cooktop and 20% for microwave oven means that each of the 40% of co-living residents cooking at once have an appliance to use. For example: 100 residents would have access to kitchen space(s) for 40 to be preparing meals at once. This would include ovens for 10 residents to use at once, cooktops for 10 residents at once, microwave ovens for 20 residents to use at once.

Assumption 10: The provision of microwave ovens in private co-living resident rooms does not remove the need for these to be provided in communal kitchen spaces as these are required to be proximate to food preparation areas. However, the provision of refrigerators in private co-living resident rooms does remove the

need for these to be provided in communal kitchen spaces as ingredients may be transported as required.

Assumption 11: Co-living resident rooms may be designed to house only a single bed or be designed for dual occupancy with a maximum number of 2 residents.

Assumption 12: For all co-living developments, the maximum rate of occupancy will be known at planning stage.

Recommended policy outcome targets are provided for communal outdoor space (Table 3.4.1), communal indoor recreation space (Table 3.4.2), communal dining space (Table 3.4.3), shared kitchens (Table 3.4.4), shared bathrooms (Table 3.4.5), shared laundries (Table 3.4.6), co-living resident rooms (Table 3.4.7), and parking (Table 3.4.8) below.

Table 3.4.1: Recommended policy outcome for communal outdoor space

Communal outdoor space
2.5m^2 per resident (co-living and self-contained residents). Minimum dimension of 3m Landscaping must meet the requirements of Design in Urban Areas: All Development – medium and high rise, or Design in Urban Areas: residential development – low rise (whichever is applicable) minimum 2 hours direct solar access per day to at least 50% of communal outdoor space

Table 3.4.2: Recommended policy outcome for communal indoor recreation space

Communal indoor recreation space
At least 1 communal indoor recreation space adequately sized to cater for 40% of all co-living residents and 15% of self-contained residents at one time. If accessible only by stairs, communal indoor recreation space must be no more than 1 floor from the co-living residents it services. If accessible by lift, communal indoor recreation space must be no more than 4 floors from the co-living residents it services. At least one communal indoor recreation space must be adjacent to communal outdoor space. Communal indoor recreation space may - but is not required to - be co-located with communal dining space and shared kitchen(s). Minimum 3 hours direct solar access to at least one communal indoor recreation space, or demonstration of sDA300,50% of 55% and ASE1000,250 ≤10% for communal indoor recreation space(s).

Table 3.4.3: Recommended policy outcome for communal dining space

Communal Dining Space
At least 1 dining space adequately sized to cater for room for 40% of all co-living residents to eat a meal at one time, i.e: 1 dining chair for every 2.5 or fewer co-living resident. Dining table or tables adequately sized to accommodate the required number of chairs. If accessible only by stairs, communal dinning space must be no more than 1 floor from the co-living residents it services. If accessible by lift, communal dining space must be no more than 4 floors from the co-living residents it services. Communal dining space may – but is not required to – be co-located with communal indoor recreation space. Minimum dimension of dining space: 3m, to accommodate dining table(s) with seating on both sides.

Table 3.4.4: Recommended policy outcome for shared kitchens

Shared kitchens
At least 1 shared kitchen space that is to be used solely for the preparation of food, adequately sized to cater for 40% of all co-living residents to cook a meal at one time. Provision of cooking appliances (oven and cooktop) to cater for 10% of co-living residents to use at one time, i.e: 1x full size oven per 10 co-living residents 1x 4 burner cooktop per 10 co-living residents. Provision of microwave oven to cater for 20% of all co-living residents to use at one time, i.e: 1x microwave oven per 5 co-living residents. Provision of refrigeration: 100L per co-living resident, provided either in the resident's room or within the communal kitchen servicing that resident. Adequate provision of kitchen sink(s) to cater for the number of residents that the kitchen space is servicing, even in instances where dedicated dishwasher appliances are provided. If accessible only by stairs, shared kitchens must be no more than 1 floor from the co-living residents it services. If accessible by lift, shared kitchens must be no more than 4 floors from the co-living residents it services. Where more than 1 shared kitchen is provided, at least 1 shared kitchen must be co-located with communal dining space. Shared kitchens may – but are not required to – be co-located with communal indoor recreation space.

Table 3.4.5: Recommended policy outcome for shared bathrooms

Shared bathrooms
Location: In a low rise development (<=2 storeys), no more than 1 floor from the residents it services In a medium or high rise development, on the same floor as the residents it services. Provision rate should be tied to the BCA (current rates below): 1x bath or shower provided per 10 co-living residents 1x toilet provided per 10 co-living residents 1x washbasin provided per 10 co-living residents

Table 3.4.6: Recommended policy outcome for shared laundries

Shared laundries
Capacity for 10% of residents who do not have private laundry facilities to use shared laundry facilities at one time, i.e: 1 x trough or basin with hot and cold water with plumbed washing machine installed directly adjacent for every 10 or fewer residents without private laundry facilities (co-living and self-contained residents) Either: adjacent or directly accessible to a drying area with clothes line, OR 1x dedicated tumble dryer for every 10 or fewer residents (co-living and self-contained residents)

Table 3.4.7: Recommended policy outcome for co-living resident rooms

Co-living resident rooms
Minimum dimension of 2.5m for all single occupancy co-living resident rooms with only 1 bedspace Minium dimension of 3m for all dual occupancy co-living resident rooms with 2 bedspaces, or rooms where the occupancy is not known. Maximum 2 adult residents per room.

Table 3.4.8: Recommended policy outcome for parking facilities

Parking
Bicycle parking must be provided at a rate of 1 per private resident room (co-living or self-contained) for residents, plus 1 per 10 private resident rooms (co-living or self-contained) for visitors. Carparking must be provided in accordance with Transport, Access and Parking: Table 1 - General Off-Street Car Parking Requirements or Transport, Access and Parking: Table 2 - Off-Street Car Parking Requirements in Designated Areas (whichever is applicable) at the rate of a studio dwelling/dwelling with no separate bedroom unless the development meets the following requirements: Location of development achieves a Walk Score of 90 or above, OR Location of development achieves Walk Score of 80 or above AND a Transit Score of 80 or above. If the development meets the above requirements, no minimum carparking is required.

4 Case Studies

The following pages present case studies of apartment-style dwellings and co-living accommodation from the jurisdictions reviewed in this report. Section 4.1 presents a 'current practice' apartment-style development in South Australia. Section 4.2 presents a 'best practice' apartment development from each of the Australian jurisdictions reviewed in this report. Section 4.3 presents a 'current practice' co-living accommodation development in South Australia. Section 4.4 presents 'best practice' Australian co-living accommodation developments in the form of a micro-apartment development and a low-rise infill development (not purpose built for students) and a purpose-built-student-accommodation (PBSA) tower development. An international PBSA has also been included in this section for a broader frame of reference given PBSA developments are relatively new and limited precedents exist in Australia.

All case studies that are identified here as 'best practice' have been recognized by the Australian Institute of Architects (or equivalent), the Planning Institute of Australia (or equivalent) and/or state government bodies as being outstanding in design quality, sustainability and resident amenity.

4.1 Current practice apartment-style dwellings in South Australia

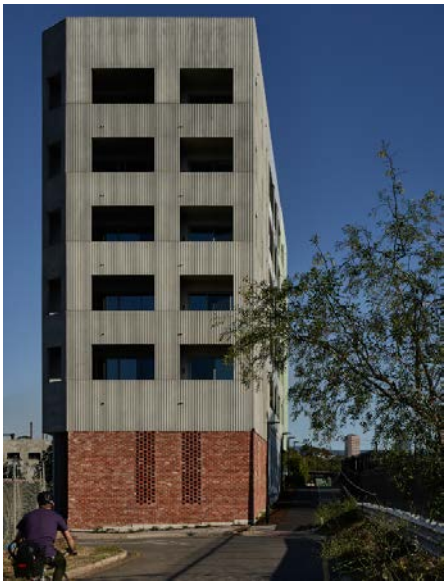
Image sources: realestate.com

Applicable policy: Development Plan for the City of Marion ***(****Approved prior to implementation of the Planning and Design Code)*

Nature of applicable policy: Prescriptive policy descriptors with quantifiable standards and qualitative performance outcomes

Description: 4 storey residential building with a mix of studio, 1-, 2- and 3- bedroom dwellings. The apartment building was constructed in 2021 in the first stage of residential development released within the brownfield Tonsley Park project.

4.2 Best practice apartment-style dwellings in Australian jurisdictions



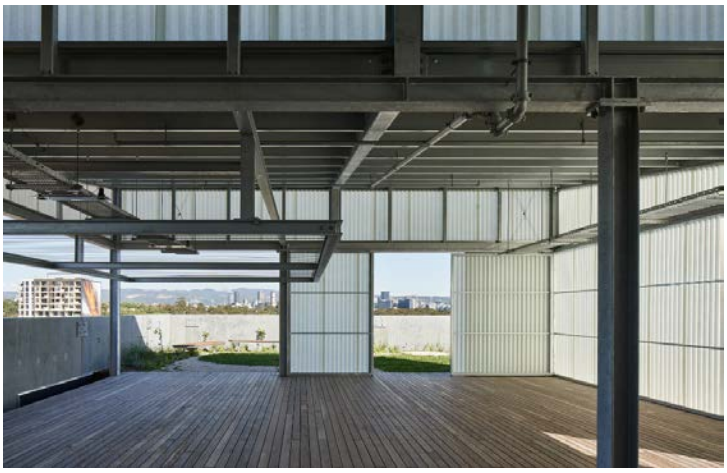


Image sources: Breathe Architecture

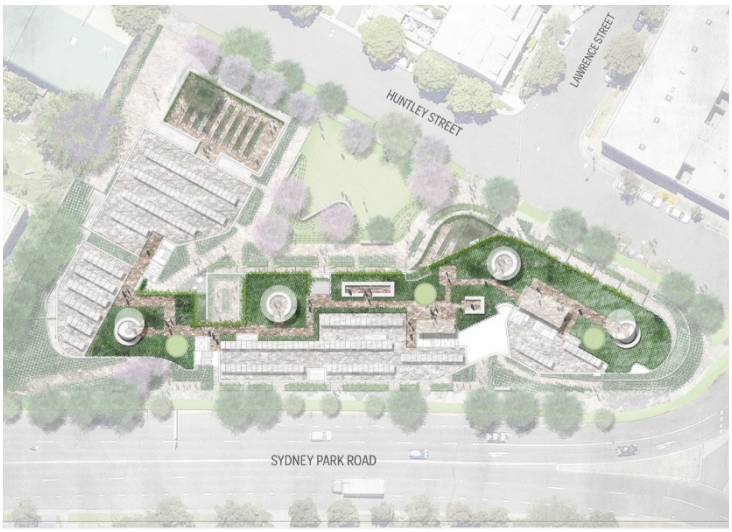
Nightingale Bowden Breathe Architecture

Location: Bowden, South Australia

Applicable policy: Charles Sturt Council Development Plan *(Approved prior to implementation of the Planning and Design Code)*

Nature of applicable policy: Prescriptive policy descriptors with quantifiable standards and qualitative performance outcomes.

Description: 5 storey development of 36 1- and 2- bedroom apartments. 50% dwellings are privately owned and 50% are social and community rental properties managed by not-for-profit housing provider. Average 8.2 stars NatHERS rating and 5 green star rating with extensive sustainability attributes. Shared rooftop terrace and common room. Apartments delivered for a lower price, achieved by reductionist architectural approach such as removing all carparking to reduce overall cost of development.



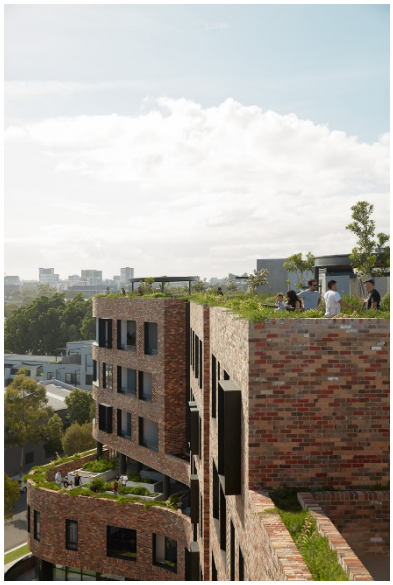


Image sources: Breathe Architecture

Arkadia Apartments Breathe Architecture + DKO with Defence Housing Australia

Location: Alexandria, NSW.

Applicable policy: New South Wales SEPP 65 + Apartment Design Guide

Nature of applicable policy: Performance based design guide with quantifiable standards, descriptive guidelines, explanatory diagrams, and "good practice" case study examples.

Description: 6 storey development of 152 new dwellings. Comprises 4 buildings, each with its own entrance, community garden, lift lobby and address. Maximum 7-8 apartments on each level per building. Diverse range of apartment typologies from studios to 3-bedroom apartments and accessible adaptable plans. Extensive and integrated landscaping including through-links, a public pocket park, and rooftop terrace and garden shared by all four buildings.

Image sources: Six Degrees Architects

Ferrars and York Six Degrees Architects with Hip V Hype

Location: South Melbourne, Victoria.

Applicable policy: Apartment Design Guidelines for Victoria.

Nature of applicable policy: Performance based design guidelines with quantifiable standards, descriptive guidelines, explanatory diagrams, and “good practice” case study examples.

Description: 6 storey development of 22 new dwellings. Diverse range of 1-, 2- and 3-bedroom apartments. A narrow site adjacent to a tram track, the development is only 1 apartment wide allowing each dwelling to be dual aspect providing better natural light and ventilation. Average energy rating of 8.6 stars. Open walkways and communal roof terrace to facilitate social interaction between residents.

Image sources: MJA Studio

Clifton & Central MJA Studio

Location: Mount Lawley, Western Australia. Infill development on

Applicable policy: WA State Planning Policy 7.3 *(developed prior to implementation of the Western Australia Residential Design Codes that were reviewed as part of this report and were only implemented in April 2024)*

Nature of applicable policy: 2-pathway approach offering "deemed-to-comply" provisions or meet 'design principles' through a merit based solution. The superseded policy employed a combination of quantifiable standards, descriptive guidelines, and explanatory diagrams.

Description: 3 storey mixed use development of 15 new dwellings, 6 new shops and the refurbishment of an existing heritage corner store. Surrounded by single residential dwellings on a suburban site zoned as a 'local centre'. All apartments dual aspect and naturally ventilated with significant sustainability attributes. Sited and orientated away from neighbouring blocks with an increased setback of over 10 metres to significantly reduce bulk and overshadowing. Building entrance and lobby designed to facilitate interaction between residents and local community, providing vibrant pedestrian environment and increased housing diversity in an established suburb.

Image sources: Conrad Gargett

East Street Public Housing Conrad Gargett

Location: Ipswich, Queensland

Applicable policy: Consolidated Ipswich Planning Scheme (Local Government Planning Scheme)

Nature of applicable policy: Performance based policy with qualitative descriptions.

Description: 20 public housing apartments over 5 storeys. Developed for QLD government as a 'missing middle' demonstration project. Dwellings are designed for residents with varying levels of mobility, with 10% of dwellings fully accessible to wheelchair users. Dwellings are oriented on the site around a north facing courtyard. A multi-purpose community room on the ground level is managed by a community provider. The community space engages the development with the streetscape and provides additional support for some of the residents.

4.3 Current practice student accommodation in South Australia

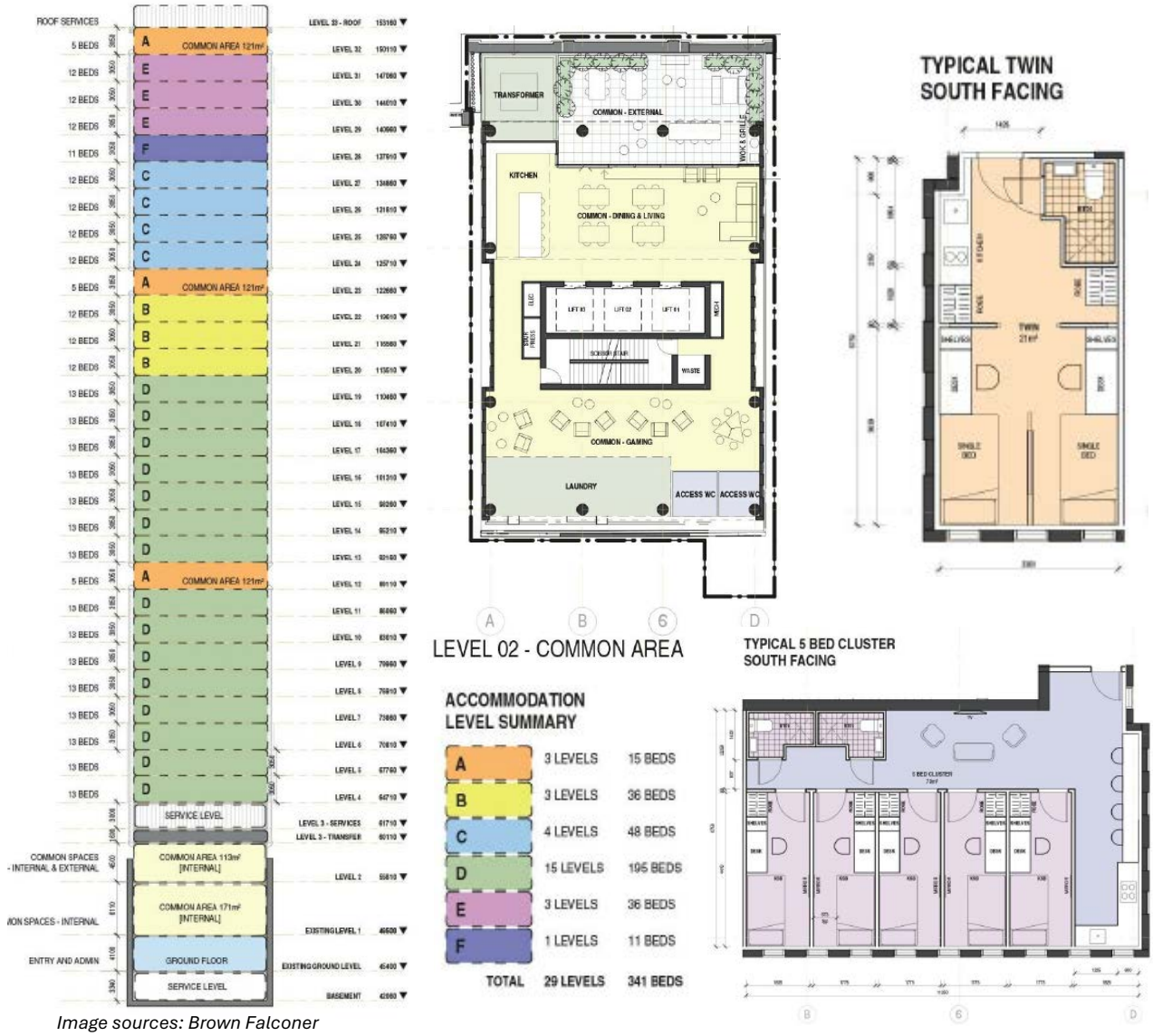


Image sources: Brown Falconer

The Switch Brown Falconer

Location: Adeliade, South Australia

Applicable policy: Adelaide (City) Development Plan *(Approved prior to the implementation of the Planning and Design Code)*

Nature of applicable policy: Prescriptive policy descriptors with quantifiable standards and qualitative performance outcomes

Description: Purpose-built student accommodation (PBSA) providing 347 beds across a 34 storey tower. A mix of studio apartments (with and without ensuite) and shared multi-bedroom apartments. A communal kitchen, laundry, co-working spaces, lounge and outdoor terrace garden is provided in the development.

4.4 Best Practice Micro-dwellings and Co-living Accommodation

Image sources: SJB

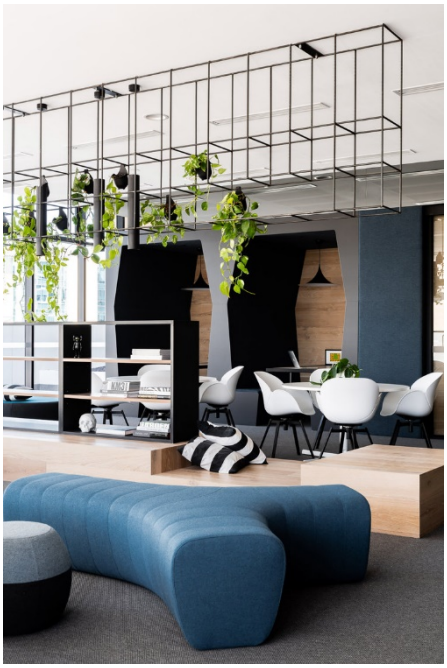
Nightingale Marrickville SJB in partnership with Fresh Hope Communities

Location: Marrickville, New South Wales

Applicable policy: New South Wales SEPP (Housing) 2021- Chapter 3 Affordable housing, Part 4 Build-to-rent housing *(flexibility is afforded to SEPP 65 + Apartment Design Guide requirements as it is a purpose-built build-to-rent development)*

Nature of applicable policy: Prescriptive policy specific to built-to-rent housing with flexibility from SEPP 65 + Apartment design guide specifically in relation to private open space, balconies, storage, and apartment mix, on the proviso that adequate shared amenities are provided.

Description: 54 small footprint apartments developed as build-to-rent dwellings that are offered at 80% of the going market rate in the area. Six storey development with two commercial spaces occupy the ground floor. Each dwelling ranges in size between 22m^2 and 31m^2, designed in 'Teilhaus' style with private bathroom, small kitchenette and extensive joinery providing quality, amenity and functionality to each private each dwelling. A large shared kitchen, communal dining area, laundry, and garden terrace provide additional amenity.



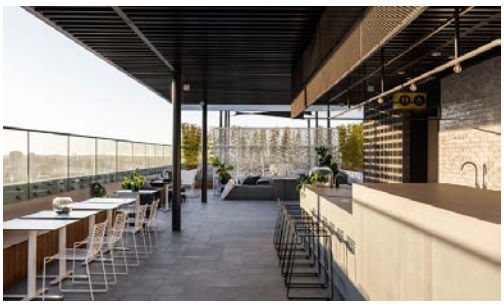


Image sources: MJA Studio

The Boulevard PBSA MJA studio

Location: Perth CBD, Western Australia

Applicable policy: Western Australia Residential Design Codes Vol 2

Nature of applicable policy: Performance based design guide with quantifiable standards, descriptive guidelines, explanatory diagrams, and “good practice” case study examples.

Description: Purpose-built student accommodation (PBSA) providing 571 beds, 351 bathrooms and on-site management office across a 23 storey tower. The first purpose-built student accommodation development in Western Australia. A mix of studio apartments and shared multi-bedroom apartments. The development features a communal kitchen, laundry and study spaces and a rooftop lounge.

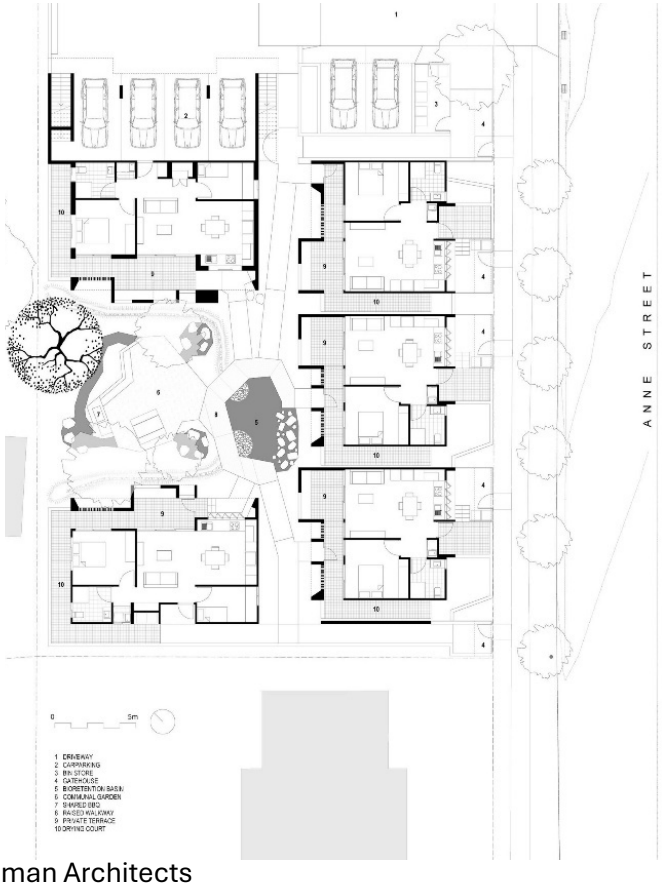


Image sources: Anna O'Gorman Architects

Anne Street Garden Villas Anna O'Gorman Architects

Location: Gold Coast, QLD. Infill development on 615sqm block in existing suburb

Applicable policy: Multiple Dwelling Code with additional design criteria set out as part of Queensland Government initiative.

Nature of applicable policy: prescriptive policy controlled at local government level.

Description: Social housing development of 7 dwellings, constructed as part of QLD demonstration project *Density and Diversity Done Well* competition. Stakeholder workshops and social housing design reviews were carried out as part of the design process. The development features passive sustainability attributes including solar energy and water storage. Each dwelling meets the requirements for gold accreditation in the Liveable Housing Design Guidelines.

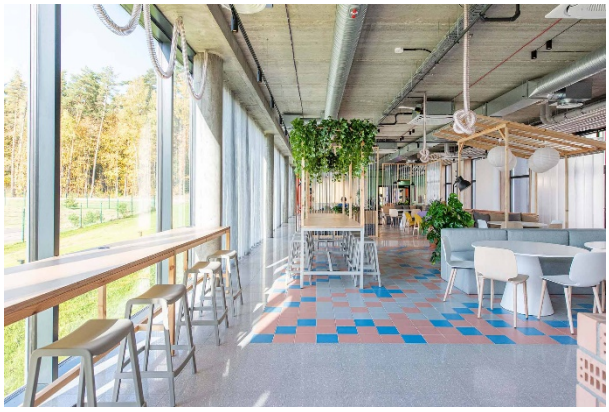



Image sources: Class Foundation

SHED co-living

Location: Vilnius, Lithuania

Description: Purpose-built -student-accommodation with 200 single and double rooms, accommodating a total of 250 residents. Each room has a kitchenette and bathroom. Single rooms range between 19m2 and 21m2 , twin rooms are 21m2, premium studios are 28-32m2 and accessible studios are 29m2 in size. Shared facilities include gym, laundry and storage areas as well as communal living spaces which are located separately to private resident rooms for acoustic privacy. The development was a finalist in the 2023 Best In Class Best Student Housing Property presented by The Class Foundation.

Appendix A South Australian Planning and Design Code

6. Attachment 2 – Existing provisions

The following policies relating to apartment size and amenity, student accommodation, private and communal open space, and public realm are found in the Planning and Design Code.

Apartment Size

Current policy in the Code species a minimum floor area requirement for dwellings of various sizes in a residential flat building / apartment building, as per PO 29.1 of the Design in Urban Areas general policy module outlined below:

Residential Development - Medium and High Rise (including serviced apartments)	
Dwelling Configuration	
PO 29.1 Buildings containing in excess of 10 dwellings provide a variety of dwelling sizes and a range in the number of bedrooms per dwelling to contribute to housing diversity.	**DTS/DPF 29.1** Buildings containing in excess of 10 dwellings provide at least one of each of the following: a) studio (where there is no separate bedroom) b) 1 bedroom dwelling / apartment with a floor area of at least 50m2 c) 2-bedroom dwelling / apartment with a floor area of at least 65m2 d) 3+ bedroom dwelling / apartment with a floor area of at least 80m2, and any dwelling over 3 bedrooms provides an additional 15m2 for every additional bedroom.

Apartment Amenity

The Code also contains a range of provisions relating to apartment amenity and facilities such as overlooking / visual privacy, access to light and ventilation, storage requirements, balcony (and separation between balconies) and requirements for private open space:

All Development - Medium and High Rise	
Overlooking/Visual Privacy	
PO 16.1 Development mitigates direct overlooking of habitable rooms and private open space of adjacent residential uses in neighbourhood-type zones through measures such as: (a) appropriate site layout and building orientation. (b) off-setting the location of balconies and windows of habitable rooms with those of other buildings so that views are oblique rather than direct to avoid direct line of sight.	**DTS/DPF 16.1** None are applicable.

All Development - Medium and High Rise	
Overlooking/Visual Privacy	
(c) building setbacks from boundaries (including building boundary to boundary where appropriate) that interrupt views or that provide a spatial separation between balconies or windows of habitable rooms. (d) screening devices that are integrated into the building design and have minimal negative effect on residents' or neighbours' amenity.	

Residential Development - Medium and High Rise (including serviced apartments)	
Private Open Space	
PO 27.1 Dwellings are provided with suitable sized areas of usable private open space to meet the needs of occupants.	**DTS/DPF 27.1** Private open space provided in accordance with Design in Urban Areas Table 1 – Private Open Space.

Table 1 - Private Open Space

Dwelling Type	Dwelling / Site Configuration	Minimum Rate
Dwelling in a residential flat building or mixed use building which incorporate above ground level dwellings	Dwellings at ground level:	15m2 / minimum dimension 3m
	Dwellings above ground level:	
	Studio (no separate bedroom)	4m2 / minimum dimension 1.8m
	One bedroom dwelling	8m2 / minimum dimension 2.1m
	Two bedroom dwelling	11m2 / minimum dimension 2.4m
	Three + bedroom dwelling	15 m2 / minimum dimension 2.6m

Residential amenity in multi-level buildings	
PO 28.1 Residential accommodation within multi-level buildings have habitable rooms, windows and balconies designed and positioned to be separated from those of other dwellings and accommodation to provide visual and acoustic privacy and allow for natural ventilation and the infiltration of daylight into interior and outdoor spaces.	**DTS/DPF 28.1** Habitable rooms and balconies of independent dwellings and accommodation are separated by at least 6m from one another where there is a direct line of sight between them and 3m or more from the side or rear property boundary.
PO 28.2	**DTS/DPF 28.2** Balconies utilise one or a combination of the following design elements:

Residential Development - Medium and High Rise (including serviced apartments)	
Private Open Space	
Balconies are designed, positioned and integrated into the overall architectural form and detail of the development to: (a) respond the daylight, wind, and acoustic conditions to maximise comfort and provide visual privacy. (b) allow views and casual surveillance of the street while providing for safety and visual privacy of nearby living spaces and private outdoor areas.	(a) sun screens. (b) pergolas. (c) louvres. (d) green facades. (e) openable walls.
PO 28.3 Balconies are of a sufficient size and depth to accommodate outdoor seating and promote indoor / outdoor living.	**DTS/DPF 28.3** Balconies open directly from a habitable room and incorporate a minimum dimension of 2m.
PO 28.4 Dwellings are provided with sufficient space for storage to meet likely occupant needs.	**DTS/DPF 28.4** Dwellings (not including student accommodation or serviced apartments) are provided with storage at the following rates with at least 50% or more of the storage volume to be provided within the dwelling: (a) studio: not less than 6m3. (b) 1 bedroom dwelling / apartment: not less than 8m3. (c) 2 bedroom dwelling / apartment: not less than 10m3. (d) 3+ bedroom dwelling / apartment: not less than 12m3.
PO 28.5 Dwellings that use light wells for access to daylight, outlook and ventilation for habitable rooms, are designed to ensure a reasonable living amenity is provided.	**DTS/DPF 28.5** Light wells: (a) Are not used as the primary source of outlook for living rooms. (b) Up to 18m in height have a minimum horizontal dimension of 3m, or 6m if overlooked by bedrooms. (c) Above 18m in height have a minimum horizontal dimension of 6m, or 9m if overlooked by bedrooms.
PO 28.6 Attached or abutting dwellings are designed to minimise the transmission of sound between dwellings and, in particular, to protect bedrooms from possible noise intrusions.	**DTS/DPF 28.6** None are applicable.
PO 28.7 Dwellings are designed so that internal structural columns correspond with the position of internal walls to ensure that the	**DTS/DPF 28.7** None are applicable.

Residential Development - Medium and High Rise (including serviced apartments)	
Private Open Space	
space within the department / apartment is useable.	
Dwelling Configuration	
PO 29.2 Dwellings located on the ground floor of multi-level buildings with 3 or more bedrooms have the windows of their habitable rooms overlooking internal courtyard space or other public space, where possible.	**DTS/DPF 29.2** None are applicable.
Common Areas	
PO 30.1 The size of lifts, lobbies and corridors is sufficient to accommodate movement of bicycles, strollers, mobility aids and visitor waiting areas.	**DTS/DPF 30.1** Common corridor or circulation areas: (a) have a minimum ceiling height of 2.7m. (b) provide access to no more than 8 dwellings. (c) incorporate a wider section at apartment entries where the corridors exceed 12m in length from a core.

Student Accommodation

Student Accommodation differs from conventional apartment dwellings by definition – individual rooms can be (but need not be) self-contained and no minimum room size applies, and communal space must also be provided.

Student accommodation policy in the Code (outlined in Design in Urban Areas general policy module PO and DTS/DPF DC 41.1) covers the provision of common or shared facilities as follows:

Student Accommodation	
PO 41.1 Student accommodation is designed to provide safe, secure, attractive, convenient and comfortable living conditions for residents, including an internal layout and facilities that are designed to provide sufficient space and amenity for the requirements of student life and promote social interaction.	**DTS/DPF 41.1** Student accommodation provides: a) a range of living options to meet a variety of accommodation needs, such as one-bedroom, two-bedroom and disability access units b) common or shared facilities to enable a more efficient use of space, including: i. shared cooking, laundry and external drying facilities ii. internal and external communal and private open space provided in accordance with Design in Urban Areas Table 1 - Private Open Space iii. common storage facilities at the rate of 8m3 for every 2 dwellings or students

Student Accommodation	
	iv. common on-site parking in accordance with Transport, Access and Parking Table 1 - General Off-Street Car Parking Requirements or Table 2 - Off-Street Car Parking Requirements in Designated Areas v. bicycle parking at the rate of one space for every 2 students

Application of Private versus Communal Open Space

The Design in Urban Areas general policy from the Code enables the provision of communal open space for residential flat buildings (which typically take the form of apartment buildings).

PO 32.1 outlined below provides an option for private open space to be substituted for communal open space in these forms of development:

Communal Open Space	
PO 32.1 Private open space provision may be substituted for communal open space which is designed and sited to meet the recreation and amenity needs of residents.	**DTS/DPF 32.1** None are applicable.

The following other provisions are also provided in relation to communal open space:

Communal Open Space	
PO 32.2 Communal open space is of sufficient size and dimension to cater for group recreation.	**DTS/DPF 32.2** Communal open space incorporates a minimum dimension of 5 metres.
PO 32.3 Communal open space is designed and sited to: (a) be conveniently accessed by dwellings which it services. (b) have regard to acoustic, safety, security and wind effects.	**DTS/DPF 32.3** None are applicable.
PO 32.4 Communal open space contains landscaping and facilities that are functional, attractive and encourage recreational use.	**DTS/DPF 32.3** None are applicable.
PO 32.5 Communal open space is designed and sited to: (a) in relation to rooftop or elevated gardens, minimise overlooking into habitable room windows or onto the useable private open space of other dwellings.	**DTS/DPF 32.5** None are applicable.

Communal Open Space	
(b) In relation to ground floor communal open space, be overlooked by habitable rooms to facilitate passive surveillance.	

While there are no mechanisms to enforce communal open space in such developments, there are examples of apartment buildings in both the CBD and urban corridors where rooftop communal open space is provided in apartment buildings for use by all residents.

Environmental considerations for Apartment buildings

The Design in Urban Areas general policy from the Code also promotes good building design for medium to high rise development to minimise micro-climatic conditions and improve the sustainability of new buildings:

All Development - Medium and High Rise ***Environmental***	
PO 14.1 Development minimises detrimental micro-climatic impacts on adjacent land and buildings.	**DTS/DPF 14.1** None are applicable.
PO 14.2 Development incorporates sustainable design techniques and features such as window orientation, eaves and shading structures, water harvesting and use, green walls and roof designs that enable the provision of rainwater tanks (where they are not provided elsewhere on the site), green roofs and photovoltaic cells.	**DTS/DPF 14.2** None are applicable.
PO 14.3 Development of 5 or more building levels, or 21m in height (as measured from the ground level and excluding roof-mounted mechanical plant and equipment) is designed to maximise the impacts of wind through measures such as: (a) a podium at the base of a tall tower and aligned with the street to deflect wind away from the street. (b) substantial verandahs around a building to deflect downward travelling wind flows over pedestrian areas. (c) the placement of buildings and use of setbacks to deflect the wind at ground level. (d) avoiding tall shear elevations that create windy conditions at street level.	**DTS/DPF 14.3** None are applicable.

Public Realm

The Design in Urban Areas general policy from the Code promotes medium to high rise development that contributes to improved public realm through building design / appearance and activation:

External Appearance	
PO 12.1 Buildings positively contribute to the character of a local area by responding to local context.	**DTS/DPF 12.1** None are applicable.
PO 12.2 Architectural detail at street level and a mixture of materials at lower building levels near the public interface are provided to reinforce a human scale.	**DTS/DPF 12.2** None are applicable.
PO 12.3 Buildings are designed to reduce visual mass by breaking up building elevations into distinct elements.	**DTS/DPF 12.3** None are applicable.
PO 12.4 Boundary walls visible from public land include visually interesting treatments to break up large blank elevations.	**DTS/DPF 12.4** None are applicable.
PO 12.5 External materials and finishes are durable and age week to minimise ongoing maintenance requirements.	**DTS/DPF 12.5** Buildings utilise a combination of the following external materials and finishes: (a) masonry. (b) natural stone. (c) pre-finished materials that minimise staining, discolouring or deterioration.
PO 12.6 Street-facing building elevations are designed to provide attractive, high quality and pedestrian-friendly street frontages.	**DTS/DPF 12.6** Building street frontages incorporate: (a) active uses such as shops or offices. (b) prominent entry areas for multi-storey buildings (where it is a common entry). (c) habitable rooms or dwellings. (d) areas of communal public realm with public art or the like, where consistent with the zone and/or subzone provisions.
PO 12.7 External materials and finishes are durable and age week to minimise ongoing maintenance requirements.	**DTS/DPF 12.7** Entrances to multi-storey buildings are: (a) oriented towards the street. (b) clearly visible and easily identifiable from the street and vehicle parking areas. (c) designed to be prominent, accentuated and a welcoming feature if there are no active or occupied ground floor uses. (d) designed to provide shelter, a sense of personal address and transitional space around the entry.

External Appearance	
	(e) located as close as practicable to the lift and / or lobby access to minimise the need for long access corridors. (f) designed to avoid the creation of potential areas of entrapment.
PO 12.8 Building services, plant and mechanical equipment are screened from the public realm.	**DTS/DPF 12.8** None are applicable.

The Capital City Zone and City Main Street Zone in the City of Adelaide each contain the same policy that addresses development that involves the public realm:

Public Realm	
PO 10.1 Development in the public realm where it: (a) does not present a safety risk to pedestrians or other users of the public road (b) does not interrupt pedestrian movement (c) does not interfere with existing infrastructure or services on the street (d) positively contributes to the vibrancy of the area (e) is consistent with the outcomes of the zone.	**DTS/DPF 10.1** None are applicable.

The City Riverbank Zone in the City of Adelaide contains the following policy that addresses development that involves the public realm:

Built Form and Character	
PO 2.2 Development: (a) contributes to the activation of the public realm by presenting an attractive human scaled pedestrian-oriented frontage (b) does not interrupt pedestrian movement (c) does not interfere with existing infrastructure or services on the street (d) positively contributes to the vibrancy of the area (e) is consistent with the outcomes of the zone.	**DTS/DPF 2.2** None are applicable.

Appendix B Apartment Design Guidelines for Victoria

Apartment Design Guidelines for Victoria

VICTORIA State Government | Environment, Land, Water and Planning

Guidance to communal open space

Why this is important

Communal open space helps improve people's mental and physical health. In well-designed, accessible, communal open space, individuals, families and communities can exercise, play and relax. They are places that neighbours can socialise and build relationships including through activities like gardening and entertaining. They can also help increase perceptions of safety, with more people keeping an eye out for others.

Application

Clause 55.07-2 (Communal open space) applies to apartment developments of four storeys or less (excluding a basement).

Clause 58.03-2 (Communal open space) applies to apartment developments of five or more storeys (excluding a basement) in a residential zone and all apartment developments in other zones.

Communal open space objective (Clause 58.03-2 or Clause 55.07-2)

To provide communal open space that meets the recreation and amenity needs of residents.

To ensure that communal open space is accessible, functional, and is easily maintained.

To ensure that communal open space is integrated with the layout of the development and enhances resident amenity.

Standard (D7 or B36)

A development of 10 or more dwellings should provide a minimum area of communal outdoor open space of 30 square metres.

If a development contains 13 or more dwellings, the development should also provide an additional minimum area of communal open space of 2.5 square metres per dwelling, or 220 square metres. This additional area may be indoors or outdoors and consist of multiple separate areas of communal open space.

Each area of communal open space should be:

- Accessible to all residents.
- A usable size, shape and dimension.
- Capable of efficient management.
- Located to:
  - Provide passive surveillance, where appropriate.
  - Provide outlook for as many dwellings as practicable.
  - Avoid overlooking into habitable rooms and the private open space of new dwellings.
  - Minimise noise impacts on new and existing dwellings.

Any area of communal outdoor open space should be landscaped and include canopy cover and trees.

Decision guidelines

Before deciding on an application, the responsible authority must consider:

- Any relevant urban design objective, policy or statement set out in this planning scheme.
- The design response.
- The availability of and access to public open space.

Design guidance

Interpreting the standard

Every development of 10 or more dwellings should provide a minimum area of landscaped communal outdoor open space of 30 square metres. The intention is to provide for residents shared space that accommodates a canopy tree for shade and cooling, or at least a pergola covered by climbing plants.

Developments of 13 or more dwellings need to also provide an additional 2.5 metres of communal open space, in addition to the 30 square metres of landscaped outdoor communal open space.

Calculate the additional communal open space by subtracting the number 12 from the total number of dwellings and then multiply that number by 2.5 metres

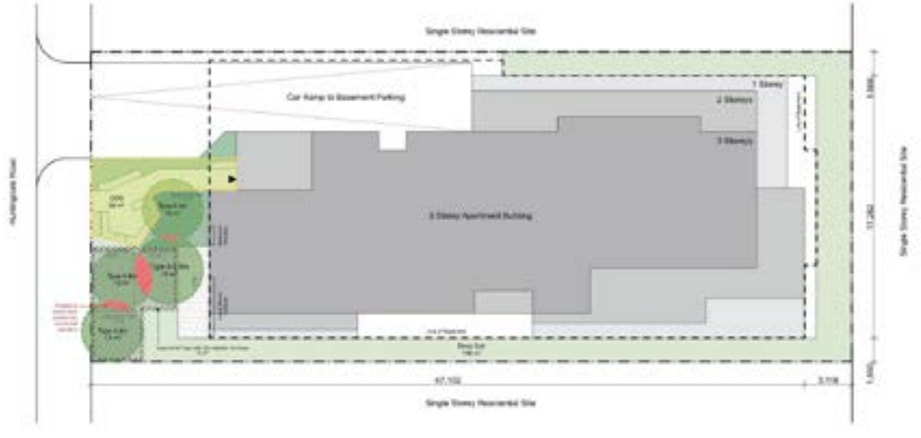
The additional communal open space can be indoor or outdoor communal open space.

The total combined area of communal open space can consist of multiple separate areas.

The table below summaries the communal open space requirements for a range of developments.

Table 1: Communal open space requirement

Number of dwellings	Minimum area of landscaped communal outdoor open space	Minimum area of communal open space	Total minimum area of communal open space
10	30 square metres	nil	30 square metres
13	30 square metres	2.5 square metres (1 x 2.5 metres)	32.5 square metres
50	30 square metres	95 square metres (38 x 2.5 metres)	125 square metres
100 or more	30 square metres	220 square metres (88 x 2.5 metres) (maximum requirement reached)	250 square metres (maximum requirement reached)



Landscaped outdoor communal open space can be provided in the front setback as appropriate to the urban context.

About outdoor communal open space

Outdoor communal open space:

- is communal open space which is external to a building and has been set aside within the development for use by occupants. It can be provided in multiple places in an apartment development
- provides amenity for residents by accommodating canopy trees, productive gardens and other types of landscaping, access to outlook and sunlight and access to seating and a variety of communal outdoor recreation facilities for all ages
- is also distinct from private open space, common areas, service access areas and indoor communal spaces. These areas do not contribute to the minimum provision of outdoor communal open space. Common areas include circulation corridors, an entry lobby, outdoor pathways, waste rooms, car parking, bike storage, light courts and private gardens located within building setbacks
- can incorporate outdoor circulation spaces or pathways, provided these are functionally integrated with the outdoor communal open space and support the creation of comfortable gathering spaces
- can be located on rooftops, podiums, at the ground floor in setbacks from boundaries or in ground-level courtyards. The siting and design of communal open space should relate to the context of the site and the typology of the development.

1 **Provide a communal open space that enables a comfortable outdoor area for residents' recreation.**

→ DESIGN IDEAS: To enable a comfortable outdoor communal open space that is useable throughout the year and in a range of weather conditions, ideas include:

- Orientating the space to the north of the site to benefit from solar access
- Locating the space off a multi-purpose recreation room
- Planting a mix of deciduous and evergreen vegetation, especially canopy trees
- Implementing pergolas and fixed shading devices
- Providing wind protection via hard and soft landscaping
- Co-locating with communal open space on neighbouring sites to enable the clustering of trees and vegetation.

→ GUIDANCE: Outdoor communal open space, particularly at podiums or rooftops, should be protected from strong winds.

Hawke + King apartments, West Melbourne

The interior, landscaped, communal open space provides shared open space and allows for dual-aspect apartments.

Architect: Six Degrees Architects. Landscaping: TNLA Landscape Architects. Photo: Greg Elms.

Arkadia Apartments, Alexandria, NSW

This communal open space is on a roof terrace.

Architect and landscaping: Breathe Architecture, DKO Architecture and Oculus. Photo: Tom Ross.

2 **Facilitate convenient access to outdoor communal open space.**

→ DESIGN IDEAS: To provide conveniently located outdoor communal open space, ideas include:

- A designated area with seating and landscaping within the street setback adjacent to the building entry
- A green common or linear courtyard with individual access from private open space to dwelling entries
- A centrally located courtyard accessed from a lobby or common area
- A rooftop garden adjacent to shared amenities.

→ GUIDANCE: Ideally, make communal open space visible from circulation areas.

→ GUIDANCE: Provide convenient access to landscaping and furniture for maintenance.

→ GUIDANCE: If a site is located next to a public park, consider the accessibility and functionality of the park in determining the size and type of the development's communal open space.

Nightingale 1, Brunswick

The communal open space is adjacent to shared amenities

Architect: Breathe Architecture. Photo: Tom Ross.

9 Smith Street, Fitzroy

The communal open space is in a light court accessed from a lobby.

Architect: MAArchitects. Photo: Derek Swalwell.

Cantala Apartments, Caulfield North

The communal open space is along a pathway between apartment buildings.

Architect: Tristan Wong, SJB Architects. Landscape: Jack Merlo. Photo: Aaron Puls.

3 **Integrate canopy trees and landscaping to provide summer shade and habitat to outdoor areas.**

→ GUIDANCE: Canopy trees should be provided in communal open space. Where canopy trees cannot be provided, implement pergolas or similar structures with climbing plants as per landscaping requirements.

→ GUIDANCE: Supplementary landscaping should be provided in communal open space to improve the outlook into and within the communal open space and to create a visual and noise buffer to other uses in the building.

Nightingale 2, Fairfield

Trees in raised planters integrate with a pergola structure and climbing plants on the communal roof terrace.

Architecture and landscaping: Six Degrees Architects, SBLA landscape architecture + urban design. Photo: Rory Gardiner.

Essence Apartments, Perth

Trees in raised planters are a key feature of the central communal courtyard.

Architecture and landscaping: Hames Sharley, CAPA. Photo: Douglas Mark Black.

4 **Minimise adverse amenity impacts on neighbouring sites from upper-level outdoor communal open spaces**.

→ DESIGN IDEAS: To manage overlooking from upper-level communal open space into private open space or habitable room windows on adjacent sites, ideas include:

- Perimeter planters comprising shrubs or other types of screening vegetation
- Permeable balustrades or feature screens which complement the design of the building.

→ GUIDANCE: Communal open space should be oriented to street frontages and/or public open space to avoid overlooking into neighbouring sites and allow for passive surveillance to the public realm.

Oxford and Peel, Collingwood

Perimeter planters have screening vegetation.

Architecture: Jackson Clements Burrows Architects. Photo: Peter Clarke.

ILK Apartments, South Yarra

Permeable balustrades and landscaping define the perimeter of the communal open space.

Architecture and landscaping: Cox Architecture, Tract Consultants. Photo: Robyn Oliver.

5 **Support passive surveillance while protecting the amenity of dwellings within the site.**

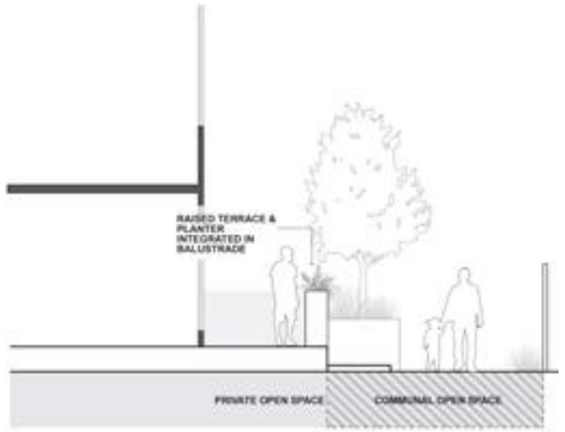
→ DESIGN IDEAS: To enable passive surveillance and green outlooks to communal open spaces while maintaining visual privacy for dwellings on-site, ideas include:

- Raised planters or low, permeable fencing from ground-level dwellings and private open space
- Operable external blinds or screens to habitable room windows, to enable flexibility in outlook and privacy.

Arkadia Apartments, Alexandria, NSW

Raised planters and low fencing separate private and communal open space.

Architect and landscaping: Breathe Architecture, DKO Architecture and Oculus. Photo: Tom Ross.



Separating communal and private open space

Communal open space and private open space are separated, maintaining passive surveillance and outlook.

6 **Create a useful and attractive outdoor communal open space that can accommodate a range of activities**.

→ DESIGN IDEAS: To create useful and attractive outdoor communal open spaces, ideas include:

- A mix of seating areas to enable flexible social interaction
- Productive or communal gardens
- Barbecue facilities and outdoor dining
- Playgrounds and other spaces suitable for children to play
- Outdoor gym equipment and/or sporting facilities
- Lighting to enable the space to be used by day and night.

→ GUIDANCE: Outdoor communal open space should accommodate access and activities for people of all ages and abilities.

→ GUIDANCE: Communal open space should be protected from visible or noisy building services.

→ GUIDANCE: Communal open space should accommodate facilities for maintenance and storage and a hose point.

→ GUIDANCE: Furniture, materials and surface finishes should be robust and easily maintained, to preserve the longevity of the space.

→ GUIDANCE: Avoid light spill into apartment windows and private open space from lighting within communal open space

Nightingale 1, Brunswick

This rooftop terrace comprises seating areas and shade structures.

Architect and landscaping: Breathe Architecture, Oculus. Photo: Tom Ross.

Nightingale 1, Brunswick

This rooftop terrace includes productive gardens.

Architect and landscaping: Breathe Architecture, Oculus. Photo: Tom Ross

Guidance to solar access to communal outdoor open space

Why this is important

Providing good solar access to communal open space ensures these spaces are desirable and usable for residents. Well-designed communal outdoor open spaces are used more frequently and support a sense of community.

Application

Clause 55.07-3 (Solar access to communal open space) applies to apartment developments of four storeys or less (excluding a basement).

Clause 58.03-3 (Solar access to communal outdoor open space) applies to apartment developments of five or more storeys (excluding a basement) in a residential zone and all apartment developments in other zones.

Solar access to communal outdoor open space objective (Clause 58.03-3 or Clause 55.07-3)

To allow solar access into communal outdoor open space.

Design guidance

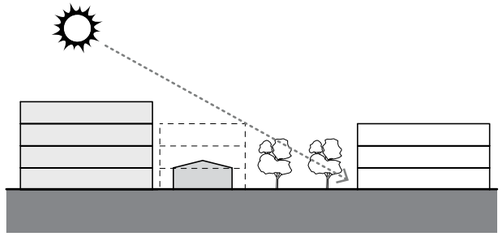
Intepreting the Standard

The minimum of two hours of sunlight does not need to be a continuous two-hour duration.

Where the communal open space is provided in multiple locations, then the solar access requirement applies to the primary space.

Where the proposal includes more than one area for communal open space, the primary communal open space should be a minimum of 50 percent of the total consolidated area.

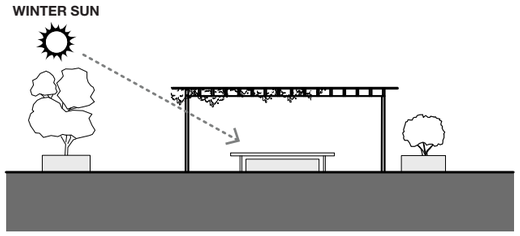
1 Locate communal open space in areas that will have minimal overshadowing from surrounding buildings.



Section diagram. Locate communal open space to have minimal overshadowing

2 When locating communal open space to achieve winter sun, also select the location to provide usability and amenity.

→ GUIDANCE: Rooftop communal open spaces provide opportunity for good solar access, however, they require careful design to prevent undesirable exposure to wind, rain and heat during summer.



Section diagram. Locate communal open space to have minimal overshadowing

Supporting documentation

Provide shadow diagrams for the communal open space for June 21 to demonstrate existing solar access, and any future overshadowing potential.

Guidance to landscaping

Why this is important

Landscaping establishes the presence of nature in a development, providing places to enjoy the fresh air and shade during the warmer months and year-round calming effects shown to improve creativity and comfort and reduce depression, anxiety and stress. Canopy trees, plants and other greenery consume carbon dioxide; reduce stormwater runoff; make cities cooler, greener and more water-sensitive; provide habitat for native species; and soften the visual impact of apartment buildings.

Application

Both Clause 55.07-4 (Landscaping) applies to apartment developments of four storeys or less (excluding a basement).

Clause 58.03-5 (Landscaping) applies to apartment developments of five or more storeys (excluding a basement) in a residential zone and all apartment developments in other zones.

Landscaping objectives (Clause 58.03-5 or Clause 55.07-4)

To provide landscaping that supports the existing or preferred urban context of the area and reduces the visual impact of buildings on the streetscape.

To preserve existing canopy cover and support the provision of new canopy cover.

To ensure landscaping is climate responsive, supports biodiversity, wellbeing and amenity and reduces urban heat.

Standard (D10 or B38)

Development should retain existing trees and canopy cover.

Development should provide for the replacement of any significant trees that have been removed in the 12 months prior to the application being made.

Development should:

- Provide the canopy cover and deep soil areas specified in Table D2. Existing trees can be used to meet the canopy cover requirements of Table D2.
- Provide canopy cover through canopy trees that are:
  - Located in an area of deep soil specified in Table D3. Where deep soil cannot be provided trees should be provided in planters specified in Table D3.
  - Consistent with the canopy diameter and height at maturity specified in Table D4.
  - Located in outdoor communal outdoor open space or common areas or street frontages.
- Comprise smaller trees, shrubs and ground cover, including flowering native species.
- Include landscaping, such as climbing plants or smaller plants in planters, in the street frontage and in outdoor areas, including outdoor communal open space.
- Shade outdoor areas exposed to summer sun through landscaping or shade structures and use paving and surface materials that lower surface temperatures and reduce heat absorption.
- Be supported by irrigation systems which utilise alternative water sources such as rainwater, stormwater and recycled water.
- Protect any predominant landscape features of the area.
- Take into account the soil type and drainage patterns of the site.
- Provide a safe, attractive and functional environment for residents.
- Specify landscape themes, vegetation (location and species), irrigation systems, paving and lighting.

Table D2 Deep soil areas and deep soil requirements

Site area	Canopy cover	Deep soil
1000 square metres or less	5% of site area Include at least one Type A tree	5% of site area or 12 square metres whichever is greater
1001 – 1500 square metres	50 square metres plus 20% of site area above 1000 square metres Include at least one Type B tree	7.5% of site area
1501 - 2500 square metres	150 square metres plus 20% of site area above 1,500 square metres Include at least two Type B trees or one Type C tree	10% of site area
>2500 square metres	350 square metres plus 20% of site area above 2500 square metres Include at least two Type B trees or one Type C tree	15% of site area

Table D3: Soil requirements for trees

Tree type	Tree in deep soil	Tree in planter	
	Area of deep soil	Volume of planter soil	Depth of planter soil
A	12 square metres (min. plan dimension 2.5 metres)	12 cubic metres (min. plan dimension of 2.5 metres)	0.8 metres
B	49 square metres (min. plan dimension 4.5 metres)	28 cubic metres (min. plan dimension of 4.5 metres)	1 metre
C	121 square metres (min. plan dimension 6.5 metres)	64 cubic metres (min. plan dimension of 6.5 metres)	1.5 metres

Note: *Where multiple trees share the same section of soil, the total required amount of soil can be reduced by 5% for every additional tree, up to a maximum reduction of 25%.*

Table D4: Tree types and sizes

Tree type	Minimum canopy diameter at maturity	Minimum height at maturity
A	4 metres	6 metres
B	8 metres	8 metre
C	12 metres	12 metres

Decision guidelines

Before deciding on an application, the responsible authority should must consider:

- Any relevant neighbourhood character, landscaping or environmental policy, objective, strategy or statement set out in this planning scheme.
- The design response.
- The health of any trees to be removed.
- The suitability of the proposed location, deep soil area and planter soil volume for canopy trees.
- The suitability of the proposed landscaping in outdoor communal outdoor open space.
- The type and quantity of canopy cover, including any alternatives to trees.
- The soil type and drainage patterns of the site.
- The ongoing management of landscaping, including any irrigation systems.

Design guidance

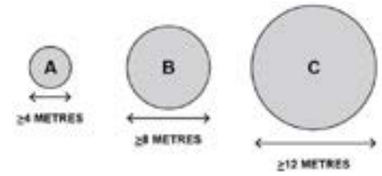
Interpreting the standard

Designing the landscaping should be an integral part of a development's design and planning phase, rather than an after-thought when space for landscaping and solar access is constrained.

The standard focuses on the provision of canopy cover. Table A details what 'canopy cover' includes and does not include.

The following is a suggested method to meet the standard's requirements.

<table>
<tr><th>Step</th><th>Method</th></tr>
<tr><td>1</td><td>Ensure a suitably qualified professional designs the landscaping of the apartment development.</td></tr>
<tr><td>2</td><td>Work with a landscape architect and commission an arborist report to ascertain which existing canopy trees are high-quality and should be retained. Existing trees can count toward the canopy cover requirement: Table D4 shows tree types and sizes and Table D2 canopy cover and deep soil requirements.</td></tr>
<tr><td>3</td><td>Where existing trees will be retained on-site and on adjoining land and require protection, nominate a tree protection zone in the arborist's report. Keep basements and all storeys of the building clear of the tree protection zone.</td></tr>
<tr><td>4</td><td>Architects and building designers can calculate the space requirements for canopy trees and deep soil, using the steps below.
<table>
<tr><th>Step</th><th>Example</th></tr>
<tr><td>a) Determine the site area</td><td>The example site is 1,501 square metres</td></tr>
<tr><td>b) Calculate the square meterage of canopy cover required (using Table D2, column 2)</td><td>The site requires 150 square metres plus 20% of the site area above 1,500 square metres which is:

150 square metres + (1*.2) = 150.2 square metres</td></tr>
<tr><td>c) Determine the canopy tree requirement (using Table D2, column 2)</td><td>A 1,501 square metre site requires at least two Type B trees or one Type C tree</td></tr>
<tr><td>d) Determine the canopy tree plan dimensions (using Table D4, column 2)</td><td>The image below shows the dimensions diagrammatically
 
</td></tr>
<tr><td>e) Determine the size of canopy trees needed to achieve the required canopy cover (using Table B)

If trees are located close together, any area of canopy overlap must be counted only once when calculating canopy cover</td><td>a) 150.2 square metres of canopy cover is required (from step 2)

b) The site requires at least two Type B trees or one Type C tree (from step c)

c) Two Type B canopy trees of 8–8.9 metres will provide at least 50.3*2 = 100.6 square metres mature canopy cover area (using Table B)

d) Two Type A canopy trees of 6–6.9 metres will provide at least 28.3*2 = 56.6 square metres mature canopy cover area (using Table B)

... thus providing 100.6+56.6 = 157.2 square metres mature canopy cover area and so satisfying the requirement</td></tr>
<tr><td>f) Determine the deep soil area required (using Table D2)

Deep soil is an area of natural or newly prepared ground with no structure located below or above it</td><td>A 1501 square metre site requires 10% of the site (150.1 square metres) to be deep soil area</td></tr>
</table></td></tr>
</table>

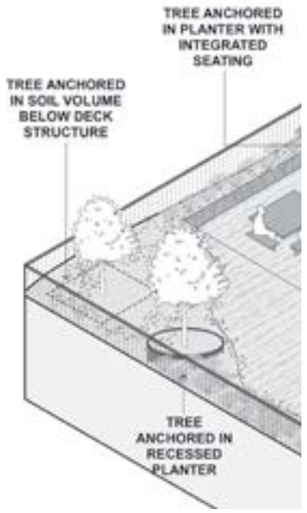
Step	Method	
	Step	**Example**
	g) If canopy trees are to be clustered in the same area of soil, the total area of soil required can be reduced (as per the note in the standard) by 5% for every additional canopy tree up to a maximum of 25% soil reduction for six or more canopy trees. The minimum dimensions and depth for the soil are based on what is required for the largest canopy tree in the cluster.	Use Table E to determine the soil reduction
5	Locate the required (new and existing) canopy trees during the initial design analysis and in consultation with the landscape architect. Locate canopy trees: • where they will receive solar access (as they will perform better) • within deep soil areas (as they will have access to groundwater and nutrients) • in areas of outdoor communal open space or other outdoor common areas (where they will have more permanence), then in areas of private open space Plan the form of the development around the location of these canopy trees, as well as any requirements for setbacks from boundaries and allocations for communal or private open space. If deep soil areas are not available, use constructed planters recessed into the building structure at the ground, podium or rooftop levels. Use Table D3 to determine planter sizes. If there is a risk of instability due to wind (especially on rooftop and podium terraces), anchor trees in planters, as in the illustration. The ground surface around trees should be permeable. A solid pavement should not encroach more than 1.2 metres into the tree protection zone and be on non-compacted soil. There is further information about soil space requirements in: • Table B: Deep soil area requirements for canopy trees • Table C: Planter soil volume requirements for canopy trees  	
6	If climbing plants are to be used to provide canopy cover and be in a planter, provide sufficient volumes of soil to ensure the plant can spread to cover the pergola structure. Use Table D to determine the size of planters for climbing plants on vertical or horizontal surfaces.	

Table A: Canopy cover inclusions and exclusions

Canopy cover includes	Canopy cover does not include
• The area of the canopy of an existing retained tree on the site that provides effective shade and shelter for people • The area of the mature canopy of a new canopy tree to be planted within the title boundary of the site • The area of the mature canopy of a new canopy tree planted in a raised planter • Where canopy trees are not provided, canopy cover can comprise the area covered by climbing plants on a pergola with a minimum clear height of 2.4 metres	• Built structures (such as roofs, eaves, awnings and roofed or textile-covered shade structures) • Areas of open built structures that do not have coverage by climbing plants • Ground covers, shrubs and climbing plants on vertical surfaces including green walls or green façades • Any tree or plant that cannot provide effective shade or shelter for a person • A tree planted outside the title boundary of the subject site including on public land • Any area of canopy cover below a cantilevered or overhanging built form or structure • Any area of canopy cover that overlaps with the canopy of another tree that has already been included in the calculation of canopy cover

Note: *Areas of canopy cover provided by mature canopy trees are described in Table B below.*

Table B: Deep soil area requirements for canopy trees

Tree Size	Mature canopy diameter[1]	Mature canopy cover area	Minimum deep soil area required	Minimum soil plan dimension
TYPE A	4–4.9 metres	12.6–19.6 square metres	12 square metres	2.5 metres
	5–5.9 metres	19.7–28.2 square metres	16 square metres	3 metres
	6–6.9 metres	28.3–38.4 square metres	25 square metres	3.5 metres
	7–7.9 metres	38.5–50.2 square metres	36 square metres	4 metres
TYPE B	8–8.9 metres	50.3–63.5 square metres	49 square metres	4.5 metres
	9–9.9 metres	63.6–78.4 square metres	64 square metres	5 metres
	10–10.9 metres	78.5–94.9 square metres	81 square metres	5.5 metres
	11–11.9 metres	95.0–113.0 square metres	100 square metres	6 metres
TYPE C	12–12.9 metres	113.1–132.6 square metres	121 square metres	6.5 metres
	13–13.9 metres	132.7–153.8 square metres	136 square metres	7 metres
	14 metres and greater	Above 153.9 square metres	144 square metres	7.5 metres

Note

*1. If using the radius rather than the diameter to calculate the mature canopy cover area, use the formula area = 3.14*r2: the radius is half the diameter. For example, for a diameter of 4 metres, use area = 3.14*2*2 = 12.56.*

Table C: Planter soil volume requirements for canopy trees

Tree Size	Mature canopy diameter	Minimum required planter soil volume[1]	Minimum soil plan dimension	Minimum planter soil depth[1]
TYPE A	4m–4.9 metres	7.54 cubic metres	2.5 metres	0.8 metres
	5m–5.9 metres	11.78 cubic metres	3 metres	0.8 metres
	6m–6.9 metres	16.96 cubic metres	3.5 metres	0.8 metres
	7m–7.9 metres	23.09 cubic metres	4 metres	0.8 metres
TYPE B	8m–8.9 metres	30.16 cubic metres	4.5 metres	1.0 metres
	9 metres–9.9 metres	38.17 cubic metres	5 metres	1.0 metres
	10m–10.9 metres	47.12 cubic metres	5.5 metres	1.0 metres
	11m–11.9 metres	57.02 cubic metres	6 metres	1.0 metres
TYPE C	12m–12.9 metres	67.86 cubic metres	6.5 metres	1.5 metres
	13m–13.9 metres	79.64 cubic metres	7 metres	1.5 metres
	14m and greater	92.36 cubic metres	7.5 metres	1.5 metres

Notes

1. To calculate the required soil volume for a planter, use the formula Soil required in cubic metres = Canopy cover area. For example, for a canopy tree with a mature diameter of 7 metres, soil required = (from Table B column 3) 38.5.6 = 23.1 cubic metres.*

2. The minimum planter soil depth excludes any drainage layers provided within the planter structure.

Table D: Planter soil volume requirements for climbing plants

Canopy cover area	Minimum width of soil in planter	Maximum distance of soil from climbing plant stem	Minimum planter soil depth
< 5 square metres	450 millimetres	3 metres	450 millimetres
5–10 square metres	500 millimetres	5 metres	450 millimetres
> 10 square metres	600 millimetres	7 metres	550 millimetres

Note

Multiple climbing plants may be used to provide canopy cover. Where climbing plants are planted in the ground, use the total area of canopy cover of the climbing plants to determine the required deep soil areas.

Table E: Reduction in soil areas for clusters of trees

No. of trees	% soil reduction	Example
1	0%	a) There are two Type B canopy trees (one 11 metre & one 9 metre canopy) and one Type A (7 metre canopy) clustered in an area of deep soil b) These trees need 100 square metres, 64 square metres & 36 square metres of deep soil respectively (using Table B) for a total soil requirement of 200 square metres c) Three trees means a 10% reduction = 20 square metre reduction, so the total required soil area is 180 square metres d) The largest tree is 11-metre canopy, so the minimum soil plan dimension is 6 metres (using Table B)
2	5%	
3	10%	
4	15%	
5	20%	
6 or more	25%	

Note

Multiple climbing plants may be used to provide canopy cover. Where climbing plants are planted in the ground, use the total area of canopy cover of the climbing plants to determine the required deep soil areas.

1 **Accommodate canopy trees in communal open spaces to support residential amenity.**

→ DESIGN IDEAS: To create a landscaped communal open space, ideas include:

- Canopy tree planting in front setbacks where these are characteristic of the area
- A large or small courtyard with a canopy tree
- A walkway between the buildings which features canopy trees in landscaped planters.

The Eastbourne, East Melbourne

Communal open space is provided as an entry forecourt. Canopy trees are planted in raised planters, enhancing the adjacent Fitzroy Gardens.

Architect: Bates Smart. Photo: Mirvac.

Fig Tree Pocket, Newmarket, NSW

Communal open space and buildings are arranged around a significant fig tree in a courtyard.

Architect: Smart Design Studio. Image: Robert Walsh.

Assembly Apartments, North Melbourne

Communal open space is a courtyard accessed by walkways, with canopy trees in raised planters.

Architect: Woods Bagot. Photo: Trevor Mein.

Boggo Road Urban Village, Dutton Park, Qld

This building abuts a communal open space.

Architect: Cox Architecture. Photo: Christopher Frederick Jones.

9 Smith Street, Fitzroy

A canopy tree in a small courtyard can provide relief to a lift lobby or similar space on a small site.

Architect: MAArchitects. Photo: Derek Swalwell.

Front garden communal open space

In this illustration, communal open space is a front garden, with canopy trees and seating that respond to the setbacks and landscaping of the residential neighbourhood.

122 Roseneath Street, Clifton Hill

Communal open space is a walkway between the buildings with trees planted in raised planters.

Architecture and landscaping: Fieldwork, MALA Studio. Image: Tom Ross

2 **Use landscaping to complement the building or street or to provide privacy.**

→ DESIGN IDEAS: Where there is no significant street setback to create a landscape setting for the building, ideas include:

- Landscaping in planters at street level to separate the public realm from dwellings or private open space
- Landscaping in planters at building entries or in the front garden of ground-floor terrace dwellings
- Climbing plants on external walls or supports, planted in deep soil in a small setback or at building entries
- Landscaping in planters at upper floor levels adjacent to windows or forming part of balconies
- Landscaping in planters at the perimeter of the rooftop or podium terraces.

→ GUIDANCE: Landscaping to building frontages should be designed to last for the life of the building and be easily maintained.

Hawke + King apartments, West Melbourne

Landscaping in planters at street level provides privacy to ground floor dwellings and private open space on a busy street.

Architect: Six Degrees Architects. Landscaping: TNLA Landscape Architects. Photo: DELWP.

Hawke + King apartments, West Melbourne

The front gardens of ground-floor terrace dwellings use brickwork and planting to the street interface to mediate privacy and to scale materials to the pedestrian level.

Architect: Six Degrees Architects. Landscaping: TNLA Landscape Architects. Photo: DELWP.

Peel Street, Collingwood

Climbing plants in deep soil are used in a small setback to the street frontage.

Architect: DKO Architecture. Photo: Joel Schmetzer, Hansen Partnership.

Short Lane, Surry Hills, NSW

Planting on balconies are part of the façade.

Architect: Woods Bagot. Photo: Trevor Mein.

Fig Tree Pocket, Newmarket, NSW

Planters and visually permeable balustrades separate the public realm and the dwellings.

Architect: Smart Design Studio. Image: Robert Walsh.

3 **Where canopy trees are not provided, use equivalent alternatives to provide shade and cooling**.

→ DESIGN IDEA: Where canopy trees have not been used to meet the canopy cover requirements, ideas to create a landscape setting and shade for the building and paving include:

- Pergolas or similar open-framed structures covered by climbing plants on the rooftop or podium terraces.

→ GUIDANCE: Select climbing plants to ensure their suitability for the proposed locations.

→ GUIDANCE: Use Table D to determine planter soil volume requirements (and thus planter sizes) for climbing plants.

Nightingale 2, Fairfield

A pergola structure supports climbing plants on a communal rooftop.

Architecture and landscaping: Six Degrees Architects, SBLA landscape architecture + urban design. Photo: Rory Gardiner.

4 **Create a landscape that develops a sense of place and is resilient to the impacts of climate change**.

→ DESIGN IDEAS: To create a place that is resilient to the impacts of climate change, ideas include:

- Supplementing canopy trees or climbing plants with a variety of small trees, shrubs, lawns and ground covers that include indigenous species and flowering and fruiting varieties
- Using light-coloured paving, ground covers, lawns, raingardens and ponds in outdoor areas
- Providing light-coloured roof finishes and/or trafficable or non-trafficable green roofs
- Irrigating canopy trees and planters with water from on-site stormwater collection
- Using paving that allows water infiltration
- Providing a tap and drainage point within all outdoor areas.

→ GUIDANCE: Provide a range of functional hardscape elements to support soft landscaping (such as paths, paving, decks, fences and screens, shade structures, furniture, lighting and irrigation).

Eve Apartments, Erskineville, NSW

Climbing plants are integrated into the building façade and light-coloured paving to an outdoor area.

Architecture and landscaping: DKO Architecture, 360 Degrees Landscape Architects. Photo: Brett Boardman.

Arkadia Apartments, Alexandria, NSW

Raised garden beds are a feature of the communal open space.

Architect and landscaping: Breathe Architecture, DKO Architecture and Oculus. Photo: Tom Ross.

Supporting documentation

Architectural and landscape drawings

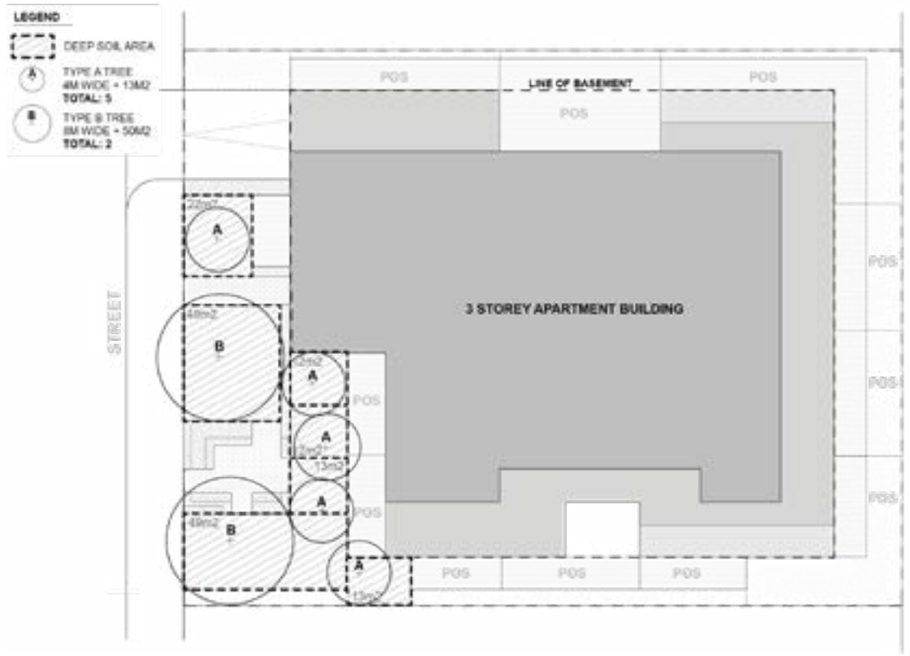
Architectural and landscape drawings should be consistent and demonstrate compliance with the standard. The architectural drawings need to show how the structure will accommodate the landscaping.

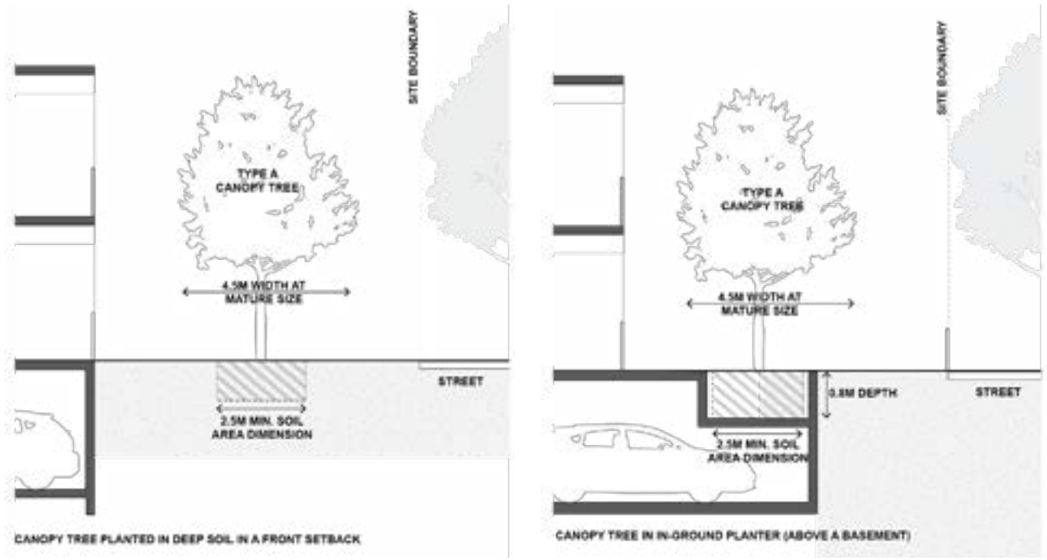
What architects and building designers should show on the drawings

Architectural drawings should include:

- an existing conditions site plan that locates the existing trees including trees that have been removed up to 12 months before the application
- a site plan that indicates:
  - the required canopy tree(s) including retained and proposed canopy trees and their size in diameter. Where the minimum number of canopy trees is not provided, indicate how the alternative solution provides suitable canopy cover
  - deep soil areas and planters
  - areas of outdoor communal and private open space
- sections indicating the location and dimensions of the required canopy trees, deep soil areas and planters
- a development summary table which includes:
  - the site area
  - the required canopy cover for the site
  - the number of canopy trees on the site and their size in diameter and the total amount of canopy cover provided for the site
  - the required deep soil area for the site, the amount provided and/or the planter soil volumes provided.

The landscape drawings should be prepared by a suitably qualified landscaping professional.





Example site plans

Canopy trees located in deep soil in a suburban context achieve the required canopy cover

What planners should look for on the drawings

Planners might:

- verify that the architectural drawings include the provision of the required canopy trees, canopy cover, deep soil areas and/or planters soil volumes
- confirm other landscaping requirements of the standard are met, such as irrigation systems.

The responsible authority should check:

- the architectural drawings are consistent with the landscape drawings
- the architectural drawings include any tree protection zone(s) and works recommended in the arborist's report
- the arborist's report and other technical reports to determine the suitability of the proposed landscaping.

Arborist's report

Provide an arborist's report where relevant, including information about removed trees (such as aerial photography or survey) and any tree protection zone(s), with details of the protection to be undertaken during construction.

Where existing trees are proposed to be retained, a tree protection zone should be nominated in an arborist's report and shown on the architectural site plan, together with details of the protection to be undertaken during construction.

Landscape maintenance management plan

The architectural and landscape drawings should consider ease of and access for maintenance.

Owners corporations should engage a suitably qualified gardener to maintain communal garden areas to ensure sound maintenance practices and consistent care.

Properly functioning irrigation systems and routine formative pruning by an arborist will be required for the life of the trees, to ensure their ongoing health and safety.

A landscape maintenance management plan (which might include a maintenance manual) may, depending on the complexity of the project, be a permit condition of the responsible authority. The following model permit condition is a guide.

Model landscape maintenance management plan permit condition

Before the development starts, a landscape maintenance management plan must be submitted to and approved by the responsible authority. Once approved, the landscape maintenance management plan will form part of the permit and must be implemented to the satisfaction of the responsible authority.

The landscape maintenance management plan must include a protocol for gaining access for maintenance purposes to privately owned land and to planting in common areas.

The endorsed landscape maintenance management plan must be implemented to the satisfaction of the responsible authority.

Whitlam Place, Fitzroy

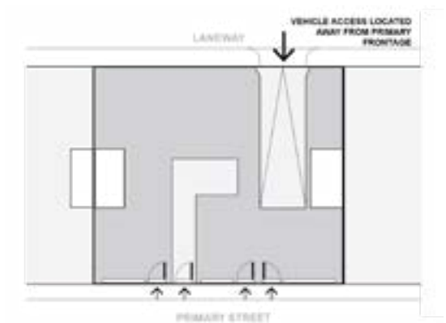
Vehicle access to the building is from the rear lane and is not visible from the primary street or public parkland.

Architect: Freadman White in collaboration with Anon Studio. Photo: Gavin Green.

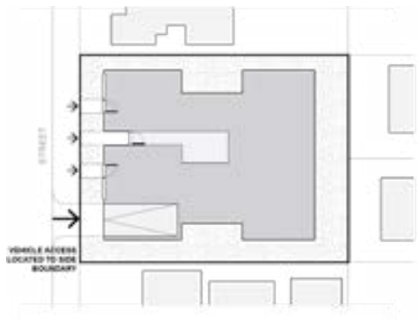
Oxford and Peel, Collingwood

Vehicle access is on the secondary street frontage, with a recessive and integrated car parking entry/exit.

Architecture: Jackson Clements Burrows Architects. Photo: Peter Clarke.



Vehicle access in an activity centre context



Vehicle access in a suburban context

2 **Prioritise safe pedestrian and cycle access to the site.**

→ DESIGN IDEAS: To prioritise pedestrian and cyclist safety, ideas include separating them from vehicles such as by:

- A separate pathway for cyclists and pedestrians leading to the building entry, separated from the driveway
- Cyclists accessing the building using the pedestrian entry on the primary street frontage.

→ DESIGN IDEAS: Where it is not possible to separate cyclists and pedestrians from vehicles, ideas include providing features between vehicle and pedestrian access paths such as:

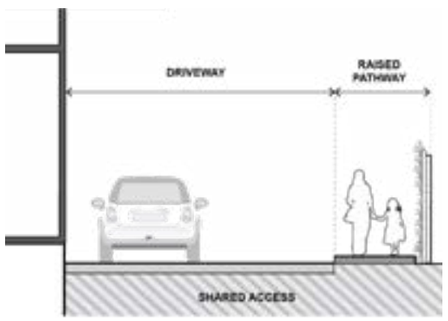
- A change in surface level
- Varying surface treatments
- Landscaping buffers
- For internal roads, incorporating traffic calming measures including rumble strips, pinch-points or raised speed tables.

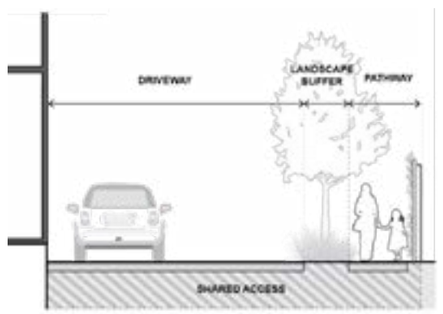
→ GUIDANCE: Providing direct access to the bike storage area from the main lobby or a separate bike entry will prioritise cyclists' safety.

Nightingale 2, Fairfield

This development has wayfinding signage for direct, separate cyclist access into the building.

Architecture and photo: Six Degrees Architects.





Treatments to shared pedestrian-vehicle access

Nightingale 1, Brunswick

There is direct access to the bicycle storage area from the pedestrian building entry.

Architect: Breathe Architecture. Photo: Peter Clarke .

3 **Design vehicle access as a recessive and integrated component of the building facade.**

→ DESIGN IDEAS: To design car parking access as a recessive and integrated component of the building, ideas include:

- Providing permeable security gates/doors at the street edge
- Recessing car park entries from the main façade alignment

→ GUIDANCE: Avoid creating entrapment spaces when recessing car park entries.

→ GUIDANCE: Finishing garage doors with materials and colours minimises their visibility from the street.

→ GUIDANCE: Providing landscaping along driveways and retaining walls can soften and screen hard surfaces.

2 St Georges Road, Fitzroy North

There is recessive, integrated vehicle access in the building's façade (on the far right side).

Architect: Fieldwork. Photo: Rory Gardiner.

122 Roseneath Street, Clifton Hill

Integrated vehicle access is set back in the front façade (on the far left side) with clear sightlines for pedestrians. The garage door adds visual interest and conceals the car park.

Architect: Fieldwork. Photo: Tatjana Plitt.

Cirqua Apartments, Ivanhoe East

Integrated vehicle access is set back in the front façade (on the far left-hand side) with clear sightlines for pedestrians. The garage door conceals the car park.

Architect: BKK Architects. Photo: Peter Bennetts.

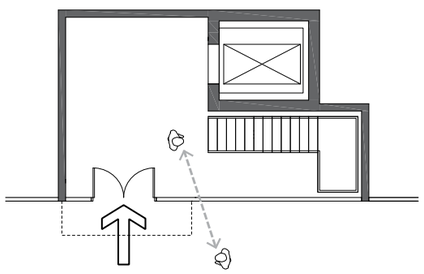
1 **Locate the main pedestrian entry to provide a sense of address by being clearly visible and accessible from the street.**

→ GUIDANCE: Building entrances help visitors orient themselves. Entries and foyers should be comfortable, sheltered, safe, convenient and visible during the day and night.

→ GUIDANCE: Emphasise residential entry lobbies with prominent design features, signage or landscape treatments

→ GUIDANCE: Provide a sense of identity to individual dwellings with an internal entry that can be easily recognised.

2 **Provide clear sightlines from the foyer to the street so people can see both in and out when entering or leaving the building.**

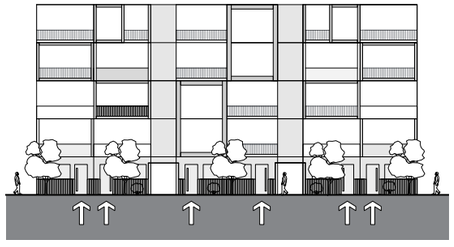


Clear sightlines to entry lobby.

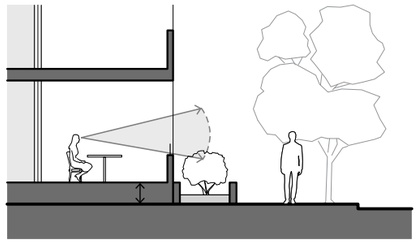
3 **Where ground floor dwellings face the street, individual entrances can assist in promoting a sense of personal address and activate the street**.

→ GUIDANCE: Elevating dwelling floors and balcony spaces slightly above the street level provides both a sense of privacy and better sightlines to streets and public spaces.

→ GUIDANCE: Where ground level units are raised above street level, achieve level access via the main apartment entry door off the circulation corridor.



Section diagram. Ground floor dwellings with individual entries.

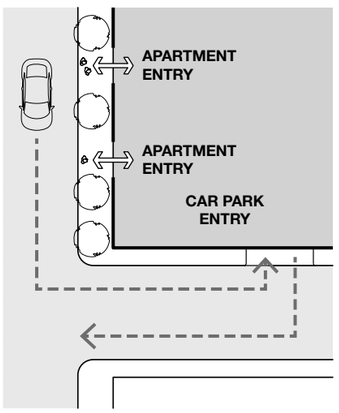


Section diagram. Elevated dwelling above the street level

4 **Separate the pedestrian and vehicle entries to the buildings**.

→ GUIDANCE: Separating vehicle entries from pedestrian entries enhances pedestrian safety.

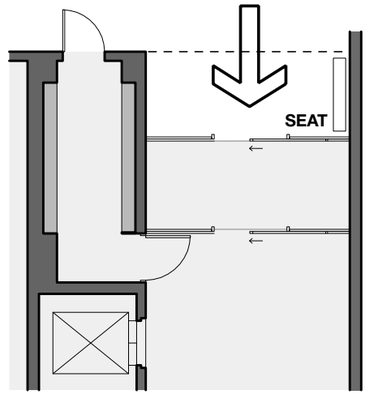
→ GUIDANCE: Vehicle entries that are designed to be less prominent or recessive improve the streetscape.



Plan diagram. Separate pedestrian and vehicle entry.

5 **Provide shelter and waiting space on the street at pedestrian entries to buildings.**

→ GUIDANCE: Design sheltered areas outside the secure entry areas in higher density residential buildings with canopies or building overhangs.



Plan diagram. Shelter and waiting space outside a lobby.

Section 3 - Dwelling Amenity

Guidance to functional layout

Why this is important

Functional apartments have layouts that meet the needs of residents and room sizes and configurations appropriate for their intended use. Adaptable layouts provide for future household changes, which provides longevity of housing stock. The long-term needs of a community require a range of housing types so people of different ages, backgrounds and needs are provided for.

Application

Clause 55.07-12 (Functional layout) applies to apartment developments of four storeys or less (excluding a basement).

Clause 58.07-1 (Functional layout) applies to apartment developments of five or more storeys (excluding a basement) in a residential zone and all apartment developments in other zones.

Functional layout objective (Clause 58.07-1 or Clause 55.07-12)

To ensure dwellings provide functional areas that meet the needs of residents.

Standard (D24)

Bedrooms should:

- Meet the minimum internal room dimensions and area specified in Table D7.
- Provide an area in addition to the minimum internal room dimensions and area to accommodate a wardrobe.

Table D7 Bedroom dimensions

Bedroom type	Minimum width	Minimum depth	Minimum area
Main bedroom	3 metres	3.4 metres	10.2 sqm
All other bedrooms	3 metres	3 metres	9 sqm

Living areas (excluding dining and kitchen areas) should meet the minimum internal room dimension and area specified in Table D8.

Table D8 Living area dimensions

Dwelling type	Minimum width	Minimum area
Studio and 1 bedroom dwelling	3.3 metres	10 sqm
2 or more bedroom dwelling	3.6 metres	12 sqm

Decision guidelines

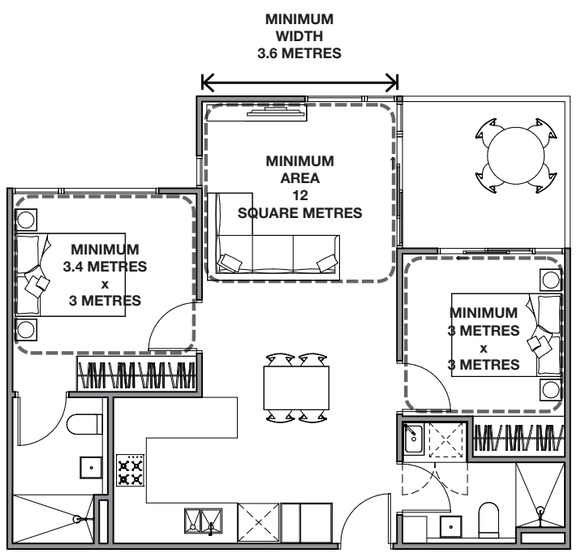
Before deciding on an application, the responsible authority must consider:

- The design response.
- The useability, functionality and amenity of habitable rooms

Design guidance

Interpreting the Standard

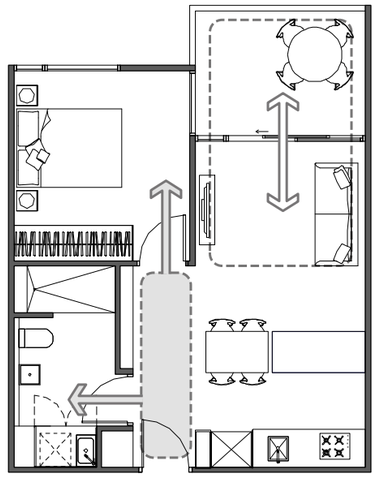
There is no restriction on how the width and depth dimensions are applied to a bedroom layout.



1 **Demonstrate usability and functionality of room configurations by including furniture layouts with realistically scaled furniture and adequate circulation space.**

→ GUIDANCE: Arrange rooms with efficient circulation and appropriate privacy between spaces.

→ GUIDANCE: Provide kitchen layouts with sufficient space for cooking, cleaning, food preparation and storage. Where dining is included within a kitchen, adequate bench space should be provided.



Plan diagram. Furnished layouts demonstrate the function of the rooms.

2	**Apartment layouts which propose irregularly shaped or atypical spaces, need to demonstrate functionality and usability of the design with realistically scaled furniture and circulation.** → GUIDANCE: Use standard bed sizes and allow for a functional circulation path. → GUIDANCE: Demonstrate that areas for dining provide for functional seating arrangements appropriate to the apartment size and number of bedrooms.

Supporting documentation

Provide dimensioned plans showing minimum depth, width and area outline of bedrooms and the living room.

Guidance to room depth

Why this is important

Room depth and height determine the amount and quality of daylight penetration from a window.

Adequate daylight is important for occupant health and energy efficiency.

Application

Clause 55.07-13 (Room depth) applies to apartment developments of four storeys or less (excluding a basement).

Clause 58.07-2 (Room depth) applies to apartment developments of five or more storeys (excluding a basement) in a residential zone and all apartment developments in other zones.

Room depth objective (Clause 58.07-2 or Clause 55.07-13)

To allow adequate daylight into single aspect habitable rooms.

Standard (D25 or B47)

Single aspect habitable rooms should not exceed a room depth of 2.5 times the ceiling height.

The depth of a single aspect, open plan, habitable room may be increased to 9 metres if all the following requirements are met:

- The room combines the living area, dining area and kitchen.
- The kitchen is located furthest from the window.
- The ceiling height is at least 2.7 metres measured from finished floor level to finished ceiling level. This excludes where services are provided above the kitchen.

The room depth should be measured from the external surface of the habitable room window to the rear wall of the room.

Decision guidelines

Before deciding on an application, the responsible authority must consider:

- The design response.
- The extent to which the habitable room is provided with reasonable daylight access through the number, size, location and orientation of windows.
- The useability, functionality and amenity of the dwelling based on layout, siting, size and orientation of habitable rooms.
- Any overhang above habitable room windows that limits daylight access.

Design guidance

Interpreting the Standard

Depth is measured at the deepest point of the room where a room has an irregular shape.

The depth of cupboards should be included within the room depth dimension.

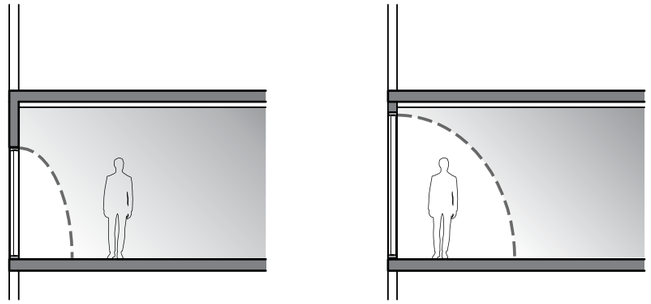
Refer to the National Construction Code for minimum ceiling heights for habitable rooms.

Where a habitable room is an open plan layout (combined living area, dining area and kitchen) with a ceiling height of 2.7m, the room depth can be extended to 9m as described in the standard above.

Where habitable rooms have a ceiling height of 2.4m the maximum room depth is 6m (2.5 x 2.4m).

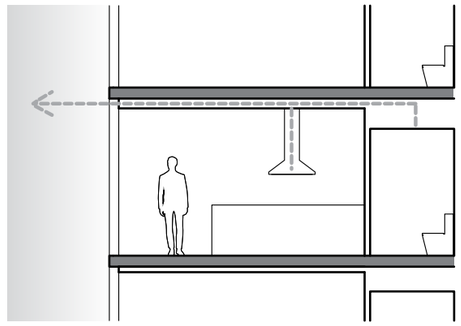
Where habitable rooms have a ceiling height of 2.7m the maximum room depth is 6.75m (2.5 x 2.7m).

1 **Increase the size and head height of windows to improve the daylight penetration into the depth of the room.**



2 **Allow for sufficient structural floor to floor heights to achieve required ceiling heights for the room depth.**

→ GUIDANCE: Allow space for services and insulation between the ceiling and structure.

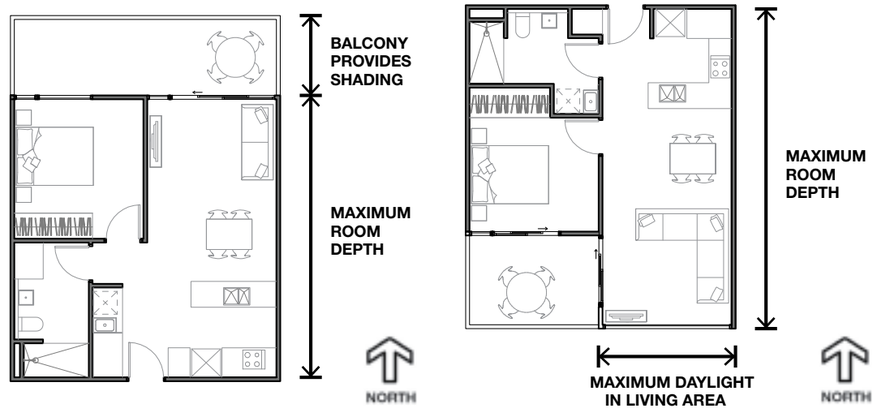


Section diagram. Ceiling space for services and insulation.

3 **Configure balconies to suit the orientation of the apartment and increase daylight while controlling sunlight.**

→ GUIDANCE: Large continuous overhangs beyond a single aspect room of 9m depth should be avoided

Refer to private open space for guidance on balcony configurations



Plan diagram. Balconies can be configured and located to improve internal daylight.

Supporting documentation

Provide dimensions of habitable room depths.

Guidance to windows

Why this is important

Windows provide access to natural daylight, direct sunlight and airflow into habitable rooms of apartments, contributing to the health and wellbeing of occupants. They can reduce energy use by enabling occupants to go about their daytime activities without using artificial lighting. Daylight conditions vary according to the time of day, the season and the weather. Apartments should preferably let in direct sunlight: it helps make the living environment pleasant and reduces energy use by providing passive heat in cooler weather.

Application

Clause 55.07-14 (Windows) applies to apartment developments of four storeys or less (excluding a basement).

Clause 58.07-3 (Windows) applies to apartment developments of five or more storeys (excluding a basement) in a residential zone and all apartment developments in other zones.

Windows objective (Claue 58.07-3 or Clause 55.07-14)

To allow adequate daylight into new habitable room windows.

Standard (D26 or B48)

Habitable rooms should have a window in an external wall of the building.

A window may provide daylight to a bedroom from a smaller secondary area within the bedroom where the window is clear to the sky.

The secondary area should be:

- A minimum width of 1.2 metres.
- A maximum depth of 1.5 times the width, measured from the external surface of the window.

Decision guidelines

Before deciding on an application, the responsible authority must consider:

- The design response.
- The extent to which the habitable room is provided with reasonable daylight access through the number, size, location and orientation of windows.
- The useability and amenity of the dwelling based on the layout, siting, size and orientation of habitable rooms.

Design guidance

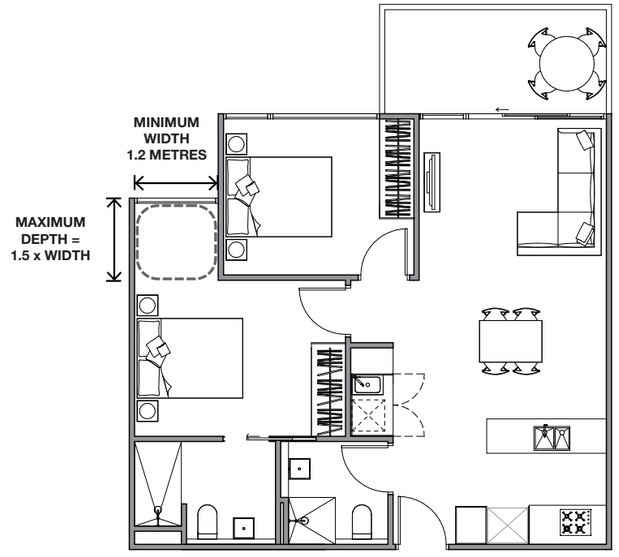
Interpreting the standard

The functional areas of habitable rooms including living areas should be located directly adjacent to the window on an external wall.

Borrowed light arrangements (where a room borrows light via an opening to another room) do not meet the standard.

Refer to further the National Construction Code for minimum window requirements for habitable spaces.

Snorkel arrangements can only be provided for bedrooms. The maximum depth (1.5 x width) control applies to the secondary area within the room.

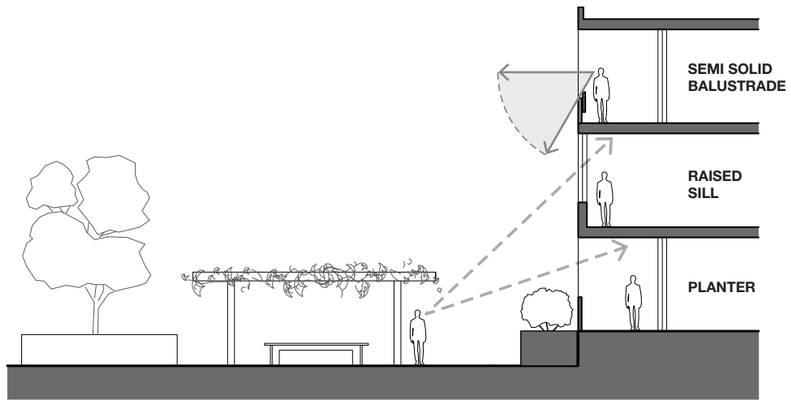


WINDOWS

1	**Design the window type, size, glazing selection, orientation and placement to respond to the site context and to optimise daylight.** → GUIDANCE: Factors to consider include: • Access to and control of direct sunlight through orientation and shading • Access to daylight due to surrounding buildings for example in built up urban locations • Optimising views and outlook while protecting privacy • Opportunities for natural ventilation and the direction of prevailing breezes • Impact of low amenity interfaces with exposure to noise, pollution and poor outlook.

2 **Design windows and other openings to balance privacy with daylight and outlook.**

→ GUIDANCE: Using raised sills or semi- solid balustrades protects privacy into spaces from below while allowing views out



Section diagram. Design techniques to balance outlook and privacy.

3 **Skylights may be used to contribute to daylight but should not provide the only source of daylight into a habitable room.**

Supporting documentation

Include dimensions for bedrooms which access daylight via a smaller space within the room to demonstrate compliance with the standard.

Guidance to storage

Why this is important

Having access to convenient, accessible and secure storage improves the functionality of apartments.

Application

Clause 55.07-10 (Storage) applies to apartment developments of four storeys or less (excluding a basement).

Clause 58.05-4 (Storage) applies to apartment developments of five or more storeys (excluding a basement) in a residential zone and all apartment developments in other zones.

Storage objective (Clause 58.05-4 or Clause 55.07-10)

To provide adequate storage facilities for each dwelling.

Standard (D20 or B44)

Each dwelling should have convenient access to usable and secure storage space.

The total minimum storage space (including kitchen, bathroom and bedroom storage) should meet the requirements specified in Table D6.

Decision guidelines

Before deciding on an application, the responsible authority must consider:

- The design response.
- The usability, functionality and location of storage facilities provided for the dwelling.

Table D6 Storage

Dwelling type	Total minimum storage volume	Minimum storage volume within the dwelling
Studio	8 cubic metres	5 cubic metres
1 bedroom dwelling	10 cubic metres	6 cubic metres
2 bedroom dwelling	14 cubic metres	9 cubic metres
3 or more bedroom dwelling	18 cubic metres	12 cubic metres

Design guidance

Interpreting the Standard

The total minimum storage volume in Table D6 includes the minimum storage volume within a dwelling.

Whitegoods and appliances such as refrigerators, ovens, dishwashers and washing machines should have dedicated spaces and are not included in the calculation of storage.

Spaces for bicycle and car parking are additional to the storage space requirements in Table D6.

1 **Provide practical arrangement of storage appropriate to each space within the dwelling.**

→ GUIDANCE: A minimum of 1.8 meters of robe length for the main bedroom and a 1.5 meters for all other bedrooms is practical for clothes storage.

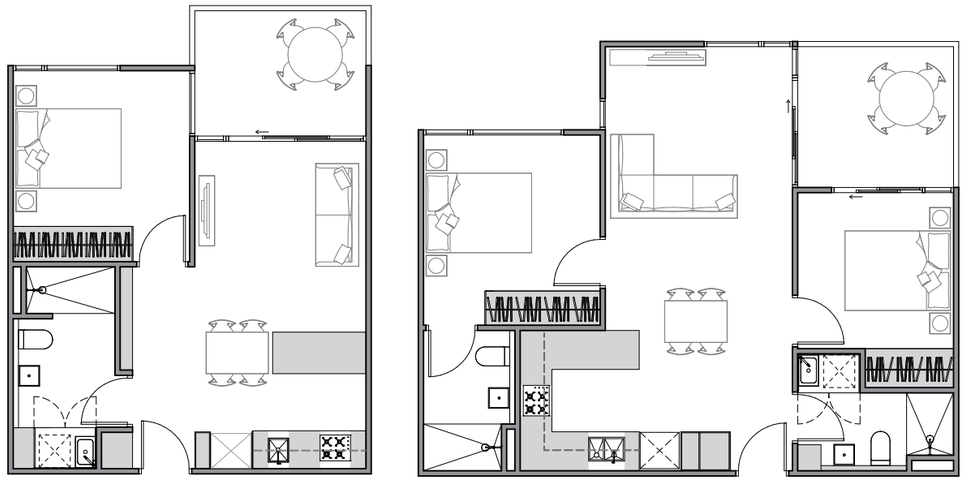
→ GUIDANCE: As a rule of thumb, storage volumes (m3) per linear meter of cupboards are as follows:

For 600mm deep cupboards

- 750mm bench height = 0.45m^3
- 2400mm full height = 1.44m^3

For 300mm deep cupboards

- 750mm overhead cupboard = 0.225m^3



Plan diagram. Examples of storage areas in typical 1 bed and 2 bed layouts.

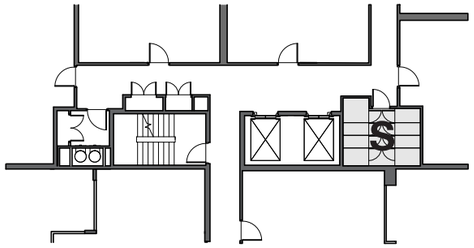
2 **Long term storage provided externally to an apartment can be provided in basements and car parking areas, or in a common area convenient to the apartment.**

→ GUIDANCE: Dedicated storage rooms can make use of areas within the floor plate which have limited access to natural light and ventilation

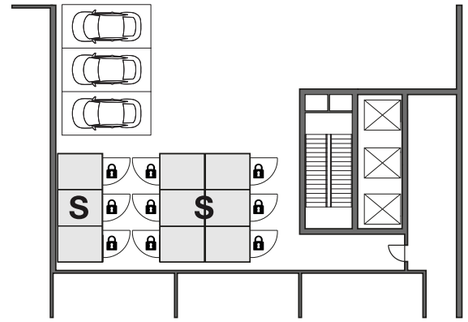
→ GUIDANCE: Locate lockable storage in locations with good informal surveillance to improve security as they are prone to theft

→ GUIDANCE: Dedicated storage lockers in basements are preferred as they provide easier access when compared to over car bonnet storage

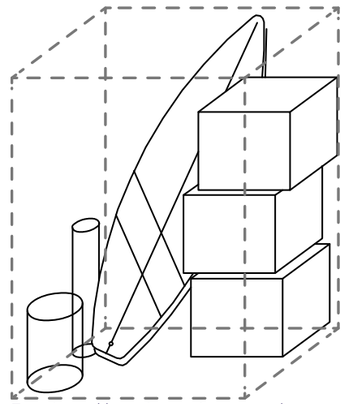
→ GUIDANCE: Make storage enclosures a functional shape and size to suit various needs such as storing bulky items.



Plan diagram. Long term storage convenient to apartments.



Plan diagram. Long term storage in a car park area.



Functional long term storage volume.

Supporting documentation

Provide a schedule with a breakdown of minimum internal and external storage provisions for each apartment type.

Guidance to natural ventilation

Why this is important

Natural ventilation is the movement and change of fresh air in internal spaces by natural means using windows that can be opened.

Cross ventilation is the movement of air through an internal space (or spaces) between one external opening and another.

Fresh air movement through an apartment is important because it contributes to thermal comfort, increases passive cooling opportunities and creates a comfortable and healthy indoor environment.

Application

Clause 55.07-15 (Natural ventilation) applies to apartment developments of four storeys or less (excluding a basement).

Clause 58.07-4 (Natural ventilation) applies to apartment developments of five or more storeys (excluding a basement) in a residential zone and all apartment developments in other zones.

Natural ventilation objectives (Clause 58.07-4 or Clause 55.07-15)

To encourage natural ventilation of dwellings.

To allow occupants to effectively manage natural ventilation of dwellings.

Standard (D27 or B49)

The design and layout of dwellings should maximise openable windows, doors or other ventilation devices in external walls of the building, where appropriate.

At least 40 per cent of dwellings should provide effective cross ventilation that has:

- A maximum breeze path through the dwelling of 18 metres.
- A minimum breeze path through the dwelling of 5 metres.
- Ventilation openings with approximately the same area.

The breeze path is measured between the ventilation openings on different orientations of the dwelling.

Decision guidelines

Before deciding on an application, the responsible authority must consider:

- The design response.
- The size, orientation, slope and wind exposure of the site.
- The extent to which the orientation of the building and the layout of dwellings maximises opportunities for cross ventilation.
- Whether an alternative design meets the relevant objectives having regard to the amenity of the dwelling and the site context.

Design guidance

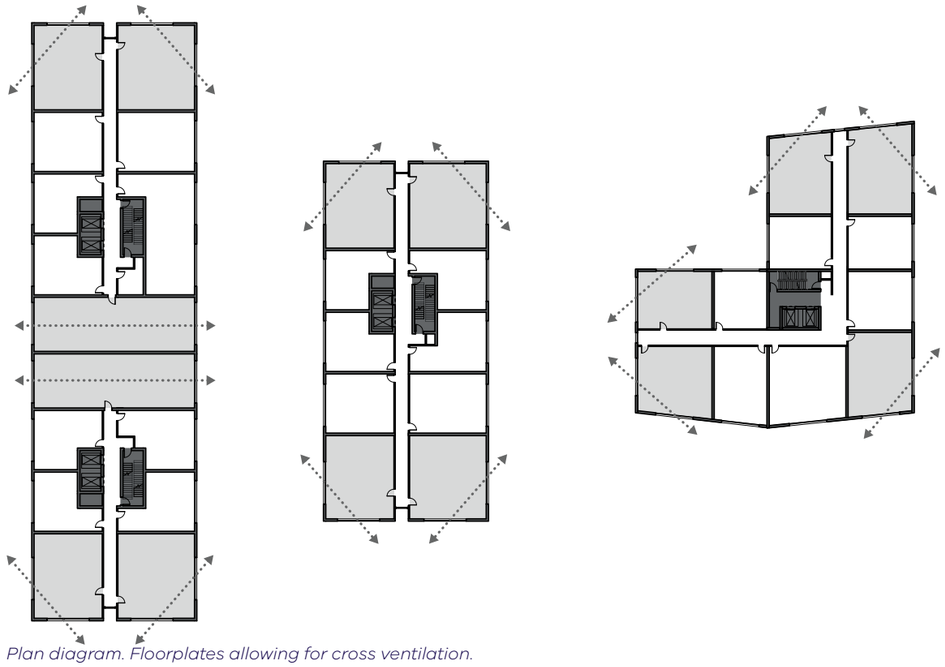
Interpreting the standard

A breeze path is measured as a sequence of straight line segments measured from the centreline of openings.

A minimum of one breeze path needs to be nominated.

Refer to the National Construction Code further guidance for minimum ventilation requirements.

1 **Configure floorplates with corner or through apartments to achieve effective cross ventilation.**



Plan diagram. Floorplates allowing for cross ventilation.

2 **Wherever possible, provide openable windows or doors into habitable rooms to achieve natural air flow.**

→ GUIDANCE: Effective natural ventilation is influenced by:

- the clear openable area of varied window types
- prevailing wind conditions and air pressures
- temperature differentials
- the surrounding built environment
- the length of breeze path and number of obstructions through an apartment.

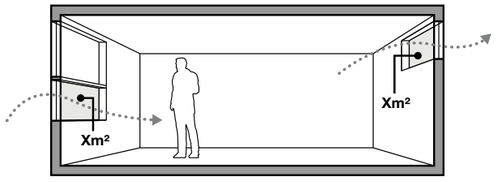
→ GUIDANCE: Use the urban context report of prevailing winds to ensure that opportunities for natural air flow are maximised.

→ GUIDANCE: Tall buildings may be constrained from providing openable windows at higher levels due to environmental factors.

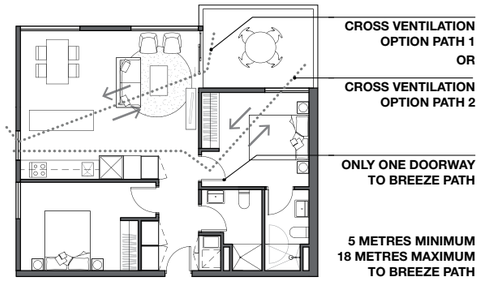
3 **Locate and design windows that are on different orientations of a dwelling to provide cross ventilation with optimal breeze paths**.

→ GUIDANCE: Effective cross ventilation is achieved when the inlet and outlet have approximately the same area allowing air to be drawn through the apartment using opposite air pressures on each side of the building.

→ GUIDANCE: An effective breeze path should minimise the number of doors and obstructions along the breeze path.



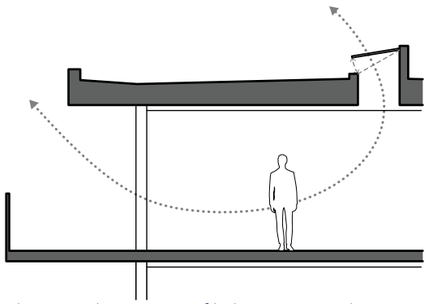
Section diagram. Breeze path showing.



Plan diagram. Examples of measuring breeze path length.

4 **An adequately sized operable roof light in a single aspect apartment may achieve cross ventilation where adequate air flow can be demonstrated by engineering analysis.**

→ GUIDANCE: Roof lights should be designed to be weather protected, secure and maintain good thermal performance.



Elevation diagram. Roof lights can provide cross ventilation.

5 **Demonstrate alternative effective ventilation solutions where cross ventilation is constrained, for example, by consistently high wind conditions or heritage or adaptive reuse of existing buildings.**

Supporting documentation

Nominate on a plan which apartments are cross ventilated and illustrate the location and length of the breeze path, or provide a ventilation report for an alternative solution.

Guidance to private open space

Why this is important

Access to functional and usable private open spaces — outdoor spaces such as balconies, courtyards and terraces, accessible only to the particular apartment — allows occupants to extend their living spaces outdoors to enjoy a variety of recreations.

Balconies on taller buildings can be unpleasant, so the apartment standards provide flexibility to provide internal spaces instead (such as extra sitting areas, study areas and play areas for children).

Application

Both Clause 55.05-4 (Private open space) and Clause 55.07-9 (Private open space above ground floor) apply to apartment developments of four storeys or less (excluding a basement).

Clause 58.05-3 (Private open space) applies to apartment developments of five or more storeys (excluding a basement) in a residential zone and all apartment developments in other zones.

Note: For simplicity, only the Objective and Standard relating to Clause 58.05-3 is shown below.

Private open space objective (Clause 58.05-3)

To provide adequate private open space for the reasonable recreation and service needs of residents.

Standard (D19)

A dwelling should have private open space consisting of at least one of the following:

- An area at ground level of at least 25 square metres, with a minimum dimension of 3 metres and convenient access from a living room.
- A balcony with at least the area and dimension specified in Table D5 and convenient access from a living room.
- An area on a podium or other similar base of at least 15 square metres, with a minimum dimension of 3 metres and convenient access from a living room.
- An area on a roof of 10 square metres, with a minimum dimension of 2 metres and convenient access from a living room.

If a cooling or heating unit is located on a balcony, the minimum balcony area specified in Table D5 should be increased by at least 1.5 square metres.

If the finished floor level of a dwelling is 40 metres or more above ground level, the requirements of Table D5 do not apply if at least the area specified in Table D6 is provided as living area or bedroom area in addition to the minimum area specified in Table D7 or Table D8 in Standard D24.

Table D5: Balcony size

Orientation of dwelling	Dwelling type	Minimum area	Minimum dimension
North (between north 20 degrees west to north 30 degrees east)	All	8 square metres	1.7 metres
South (between south 30 degrees west to south 20 degrees east)	All	8 square metres	1.2 metres
Any other orientation	Studio or 1 bedroom dwelling	8 square metres	1.8 metres
	2 bedroom dwelling	8 square metres	2 metres
	3 or more bedroom dwelling	12 square metres	2.4 metres

Table D6: Additional living area or bedroom area

Dwelling type	Additional Area
Studio or 1 bedroom dwelling	8 square metres
2 bedroom dwelling	8 square metres
3 or more bedroom dwelling	12 square metres

Decision guidelines

Before deciding on an application, the responsible authority must consider:

- The design response.
- The usability and functionality of the private open space, including its size and accessibility.
- The amenity of the private open space based on the orientation of the lot, noise exposure, the wind conditions and the sunlight it will receive.
- The availability of and access to public or communal open space.
- The usability and functionality of any additional living area or bedroom area, including its size and layout.

Design guidance

Interpreting the standard

To improve liveability, minimum balcony sizes vary according to the orientation of the apartment.

Minimum balcony sizes vary according to the solar access to an apartment. This is to minimise overshadowing of living areas, which will improve a home's energy efficiency.

New north- and south-facing apartments can have narrower (but longer) balconies than east- or west-facing apartments.

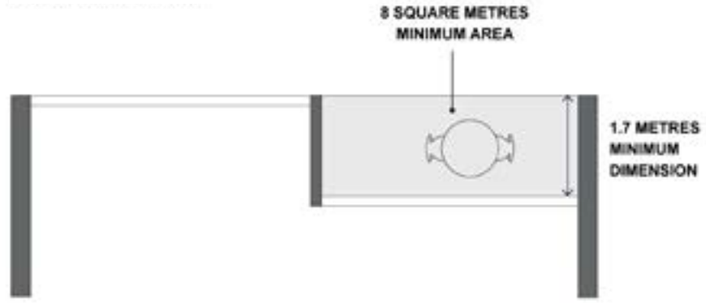
Balconies can be larger than the minimum sizes.

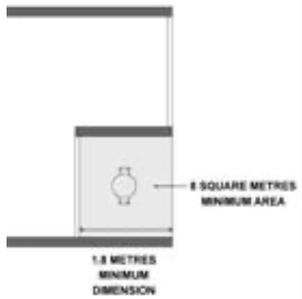
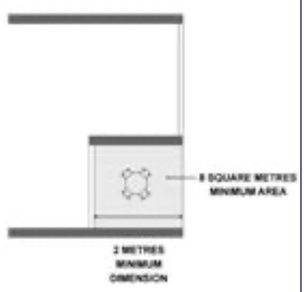
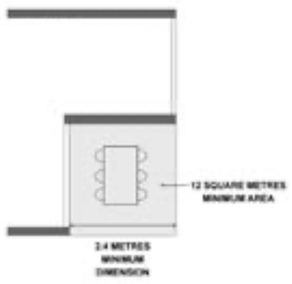
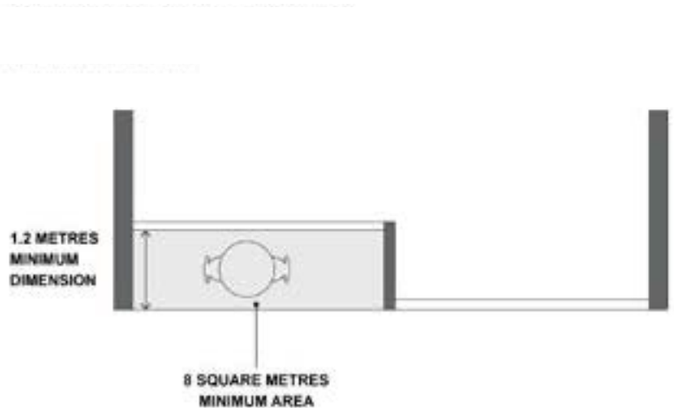
The reason for this variation in balcony sizes is because:

- a narrow balcony above a north-facing window protects the apartment from summer sun and allows good winter sun, which may reduce the need for heating and lighting
- a south-facing window that has no balcony overhead receives more daylight in winter, which may reduce the need for lighting
- east- and west-facing apartments are not affected by overshadowing from a balcony overhead, so they can have deep balconies.

An apartment's orientation influences minimum balcony areas and dimensions

These illustrations show examples of the minimum sizes of balconies according to an apartment's orientation, in line with Table D5.

Apartment faces north	 1 OR MORE BEDROOM DWELLING

Apartment faces east or west	 1 BEDROOM DWELLING	 2 BEDROOM DWELLING	 3 BEDROOM DWELLING
Apartment faces south	 1 OR MORE BEDROOM DWELLING		

Where site conditions constrain the use of balconies on the upper levels of taller buildings, compensate by providing extra space in the living area or bedroom.

At a height of 40 metres or more from the ground level, the balcony can be replaced with extra space in the living area or bedrooms to support work, play, utility and storage.

The height of 40 metres — 13 storeys — means that balconies are provided at the lower levels of apartment buildings, which contributes to the streetscape.

If a balcony is being replaced with extra space in the living area or bedrooms, it needs to be in addition to the minimum areas required under functional layout Standard D24.

The extra space to be provided in the living area or bedrooms if there is no balcony is for:

- a north- or south-facing apartment: 8 square metres
- an east- or west-facing apartment: 8–12 square metres, depending on the number of bedrooms in the apartment.

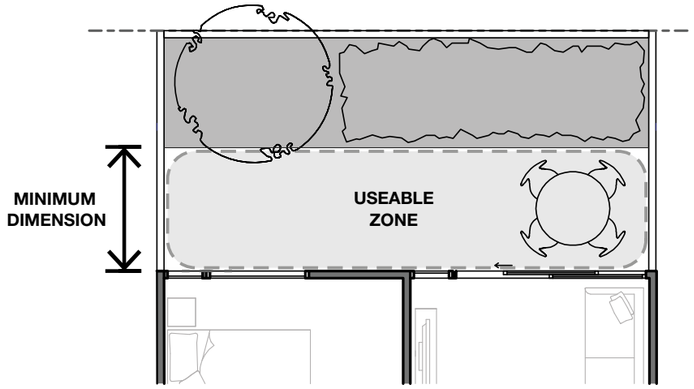
The internal space replacing a balcony can be provided in multiple locations in the living area and/or bedrooms.

For amenity, the space should be part of the living area or bedroom space or be an alcove or a joinery unit that opens to the living area or bedroom.

The standard allows the flexibility to not provide balconies on any or all sides of a building (for example, due to noise, winds or lack of sunlight).

Measuring private open space abutting gardens and odd-shaped balcony sizes

Planting areas are included in the measurement of ground-floor private open space. The clear usable space should have the minimum dimension and areas shown in Table D5.



Plan diagram. Planting areas are included in ground floor private open spaces with a clear usable space which meets the minimum dimension and areas shown in Table D5.

Measuring odd-shaped balcony sizes

Where irregularly shaped balconies are proposed, only the portion of the balcony which meets the minimum

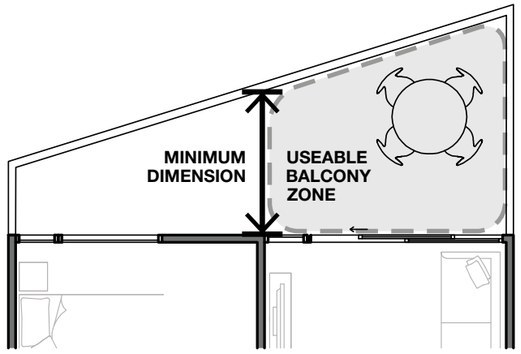
dimension will be calculated towards the minimum area.

The minimum area must be provided in a single usable space. Other balcony areas may be provided in addition.

The additional area for an air conditioning unit does not need to meet the minimum balcony dimension: it can be a smaller dimension.

Where storage is integrated into the balcony design, it is not included in the minimum area requirements.

Wintergardens can be counted as private open space, providing they do not compromise adequate daylight and ventilation to the dwelling. Where planting areas are included in ground floor, podium or rooftop private open spaces, provide a clear usable space which meets the minimum dimensions and areas included in Table D5.

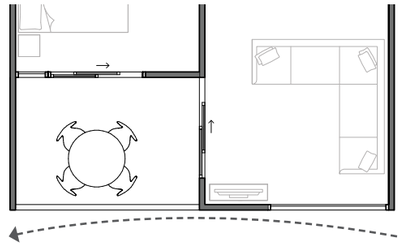


Plan diagram. The minimum area provided in a single usable space.

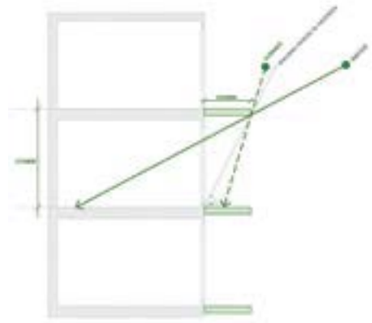
1 **Configure balconies to support other internal apartment amenity objectives.**

→ GUIDANCE: design ideas include:

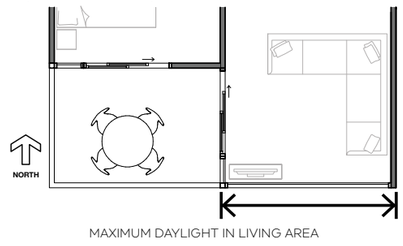
- Inset balconies, rather than projecting balconies, provide greater wind protection.
- Limiting the depth of north- and south-facing balconies optimises the energy efficiency of the apartments below.
- Inset balconies to allow living rooms to be located at the building edge (which increases daylight to the room), but still consider the need for summer sun protection according to orientation.
- Locate balconies to avoid exposure to noise sources.
- Wintergardens reduce exposure to noisy conditions.



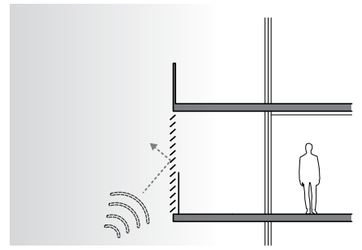
Plan diagram. Inset balconies can reduce exposure in windy conditions.



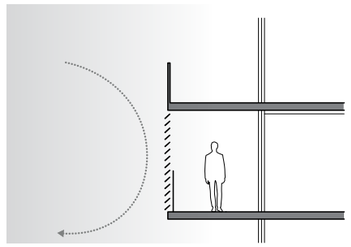
Section diagram. Narrow north-facing balconies improve winter sun access while still providing summer shading.



Plan diagram. Increasing daylight into living areas.



Section diagram. Wintergardens provide protection in windy conditions.



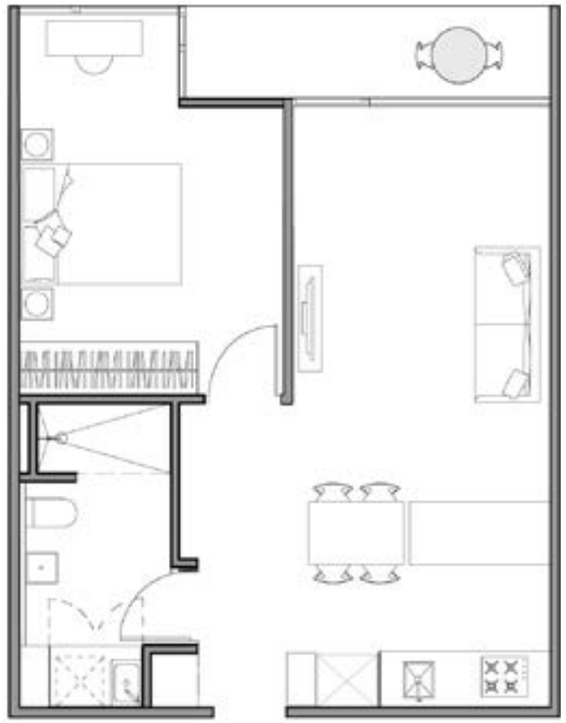
Section diagram. Wintergardens provide protection from noise.

2 **For north- and south-facing apartments, run narrower balconies across the living area and bedroom to connect the indoor and outdoor spaces.**

→ GUIDANCE: If narrower balconies are going to be provided on north- and south-facing apartments, making a long balcony will deliver the required minimum balcony area.

→ DESIGN IDEAS include:

- Extending the balcony in front of the bedroom as well as the living room on the north or south side of the building, to provide some outdoor space accessed from those rooms.



Plan diagram: Narrow balcony extending in front of living area and bedroom area.

3 **For taller buildings — where the urban context and site layout constrain provision of outdoor private open space (balconies) —provide extra space inside: in the living area or bedroom.**

→ GUIDANCE: Examples of constrained situations include high-wind conditions, proximity to high noises and adaptive reuse of existing buildings.

→ GUIDANCE: Useful space that can be added to an apartment includes a study, play or exercise area, extra storage space or a ventilated drying and utility space.

→ DESIGN IDEAS include:

- space in the living room (such as more seating or a day bed) for socialising or relaxing
- deep window ledges in the bedroom and/or living room for seating, relaxing or for a play area for children
- space for children's play or home exercise (such as yoga, weights or cardio equipment)
- a concealed utility space with access to light and natural ventilation to store mops and other household equipment, a pet toilet and/or a dedicated laundry and drying space
- space in the living area or bedroom to work from home or a secluded, built-in desk in an alcove
- space in the living area for a bike, storage for other equipment or shelves for books or household items.

Plan A. Additional living area (with 8 square metres dimension).

Appendix C Western Australia Residential Design Codes Vol 2

Department of **Planning, Lands and Heritage**

GOVERNMENT OF WESTERN AUSTRALIA

ACTIVE
IN FORCE

Western Australian Planning Commission

Residential Design Codes

Volume 2

2024

Tree canopy and deep soil areas

Intent

Trees and gardens make a significant contribution to the ecology, character and **amenity** of neighbourhoods. They provide habitat for fauna, shade, **stormwater** management and micro-climate benefits, as well as improve **apartment** outlook and privacy.

The removal of trees from private land is contributing to a significant loss of urban tree canopy, which can take decades to replace. The planning of a **development** should make all reasonable efforts to retain appropriate existing trees within the **site** and have no significant detrimental impact on trees on land adjoining the property.

The provision of **deep soil areas** to support and sustain the development of tree canopy can also make a major contribution to the retention of existing trees. A deep soil area is an area of soil that is free of built structure and has sufficient area and depth to support tree growth and infiltrate **rainwater**. Site planning should seek to co-locate deep soil areas with existing trees on and adjacent to the site, and in locations best suited to the development of a viable tree canopy and **landscaping**.

Achieving the requirement for deep soil areas may not be possible in some locations that have limited or no space for deep soil due to constraints such as the requirement for **basement** parking or in highly urbanised areas. These developments should locate landscaping on the structure wherever it provides the most benefit, such as on **podiums** or roof **terraces**, the greening of a lobby or softening car parking areas. Landscaping on structures should be of sufficient size and species selection to ensure that plants can thrive without causing damage to the **building**.

Related Elements

- *3.4 Communal open space*
- *4.12 Landscape design*
- *4.16 Water management and conservation*

Photo 3.3a This large tree has been retained and the surrounding deep soil areas are being used for landscaping.

ELEMENT OBJECTIVES

Development is to achieve the following Element Objectives:

O 3.3.1 **Site** planning maximises retention of existing healthy and appropriate trees and protects the viability of **adjoining trees**.

O 3.3.2 Adequate measures are taken to improve tree canopy (long term) or to offset reduction of tree canopy from pre-**development** condition.

O 3.3.3 **Development** includes **deep soil areas**, or other infrastructure to support planting on structures, with sufficient area and volume to sustain healthy plant and tree growth.

ACCEPTABLE OUTCOMES

Acceptable Outcomes are likely to assist in satisfying the objectives but are not a comprehensive 'deemed-to-comply' list. In order to achieve the Element Objectives, proposals may require additional and/or alternative design solutions in response to the site conditions, streetscape and design approach.

A 3.3.1 Retention of existing trees on the **site** that meet the following criteria:

- healthy specimens with ongoing viability **AND**
- species is not included on a State or local area weed register **AND**
- height of at least 4m **AND/OR**
- trunk diameter of at least 160mm, measured 1m from the ground **AND/OR**
- average canopy diameter of at least 4m.

A 3.3.2 The removal of existing trees that meet any of the criteria at A3.3.1 is supported by an arboriculture report.

A 3.3.3 The **development** is sited and planned to have no detrimental impacts on, and to minimise canopy loss of **adjoining trees**.

A 3.3.4 **Deep soil areas** are provided in accordance with Table 3.3a. Deep soil areas are to be co-located with existing trees for retention and/or **adjoining trees**, or alternatively provided in a location that is conducive to tree growth and suitable for **communal open space**.

A 3.3.5 **Landscaping** includes existing and new trees with shade producing canopies in accordance with Tables 3.3a and 3.3b.

A 3.3.6 The extent of **permeable paving** or decking within a **deep soil area** does not exceed 20 per cent of its area and does not inhibit the planting and growth of trees.

A 3.3.7 Where the required **deep soil areas** cannot be provided due to **site** restrictions, planting on structure with an area equivalent to two times the shortfall in deep soil area provision is provided.

Table 3.3a Minimum deep soil area and tree provision requirements

Site Area	Minimum deep soil area	Minimum requirement for trees [1]
Less than 700m²	10% **OR** 7% if existing tree(s) retained on site (% site area)	1 medium tree and small trees to suit area
700 – 1,000m²		2 medium trees **OR** 1 large tree **AND** small trees to suit area
› 1,000m²		1 large tree and 1 medium tree for each additional 400m² in excess of 1000m² **OR** 1 large tree for each additional 900m² in excess of 1000m² **AND** small trees to suit area
[1] Minimum requirement for trees includes retained or new trees Refer Table 3.3b for tree sizes		

Table 3.3b Tree sizes

Tree size	Indicative canopy diameter at maturity	Nominal height at maturity	Required DSA per tree	Recommended minimum DSA width	Minimum DSA width where additional rootable soil zone (RSZ) width provided[1] (min 1m depth)	Indicative pot size at planting
Small	2-6m	3-8m	9m²	2m	1m (DSA) + 1m (RSZ)	100L
Medium	6-9m	8-12m	36m²	3m	2m (DSA) + 1m (RSZ)	200L
Large	›9m	›12m	64m²	6m	4.5m (DSA) + 1.5m (RSZ)	500L
[1] Rootable areas are for the purposes of determining minimum width only and do not have the effect of reducing the required DSA.						

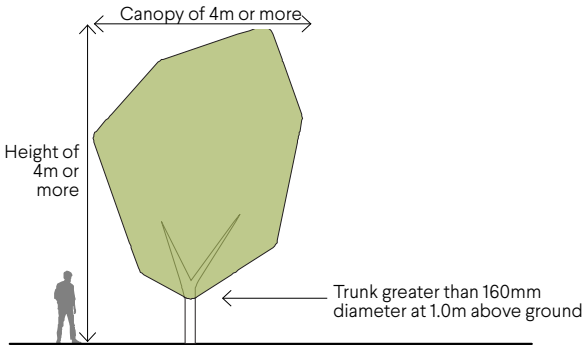


Figure 3.3a Size criteria used to identify existing trees for retention (refer A3.3.1 for full criteria).

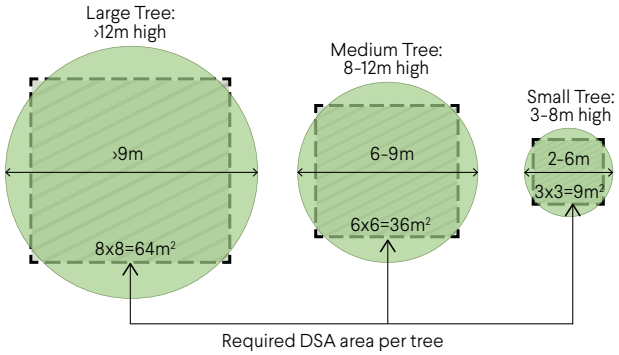


Figure 3.3b Tree size definitions when mature for deep soil areas.

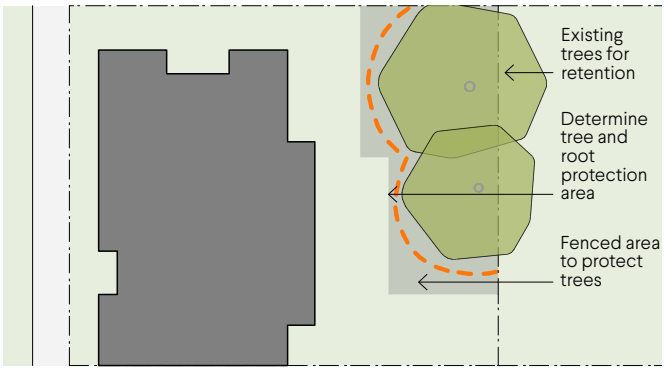


Figure 3.3c Tree and root protection areas should be identified and maintained throughout construction period.

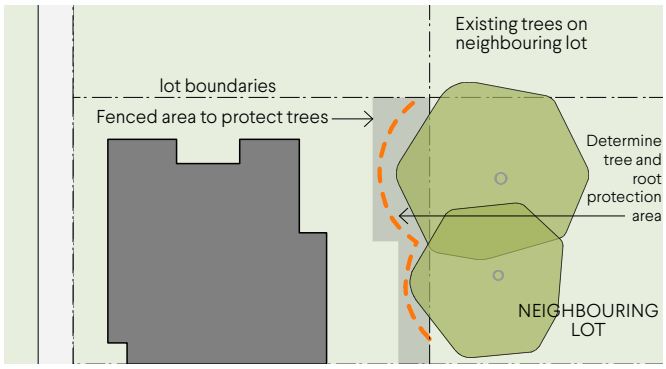


Figure 3.3d Trees on neighbouring lots and their root systems may also require protection during construction period.

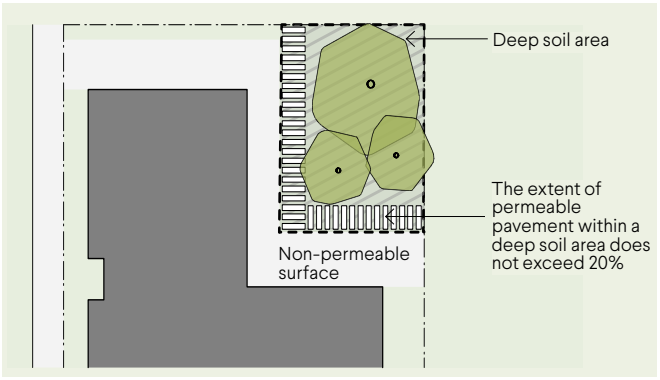


Figure 3.3e Deep soil area and permeable paving (refer A3.3.6).

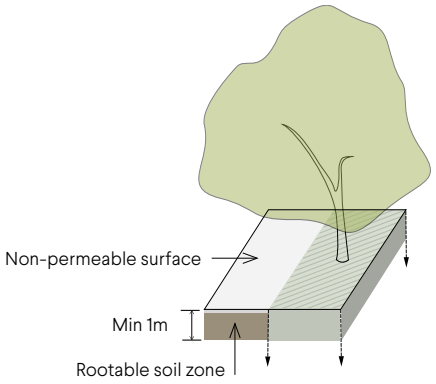


Figure 3.3f Rootable soil zone.

3.3

DESIGN GUIDANCE

Potential alternative solutions to satisfy the Element Objectives will be considered on a performance basis.

DG 3.3.1 Existing and adjacent trees should be assessed during the **site** analysis phase for possible retention. Design testing should seek to retain trees and provide protection for adjacent trees. Where existing trees within the site or adjacent to the site boundary are identified for retention (or on site relocation), arboricultural advice should be obtained on the design of **deep soil areas** and management requirements to preserve the trees during and after construction.

DG 3.3.2 The location of **deep soil areas** should be determined early in the design process and arboricultural advice obtained to ensure the deep soil areas can sustain trees. Where trees are being retained, the deep soil area should be co-located with the existing trees and be of sufficient dimensions to protect and sustain healthy root systems and provide stability for mature specimens. Where new trees are proposed, the deep soil area should be sited to maximise their contribution to local **amenity**, such as providing shade, contributing to the tree canopy, the quality of the **streetscape** and improving the outlook of residents.

DG 3.3.3 Whole of **lot** design solutions to maximise tree canopy and the effectiveness of **deep soil areas** may include:

- **basement** and sub-basement car park design being consolidated beneath **building** footprints
- use of increased front, side or rear **setbacks**
- providing adequate clearance around trees to ensure long term health based on expert advice
- the engineering of additional **rootable soil space** beneath proposed hardstand areas to increase the area available for root development and tree stability
- co-location with other deep soil areas on neighbouring **sites** to create larger contiguous areas of deep soil (especially in rear setback areas)
- selecting plant species that suit the available space and micro-climate of the deep soil area, including consideration that the size, shape and attributes of trees at maturity suit the location.

DG 3.3.4 Where the required **deep soil areas** cannot be achieved, consider the following options for planting on structures:

- **green walls**, living walls and vertical gardens that enable **landscaping** of highly constrained spaces, supported by expert advice with respect to technical and maintenance considerations
- wall design that incorporates planting including trellis structures
- **green roofs**, particularly where roofs are visible from the **public domain** or other parts of the **development**
- large scale planter boxes suited to small or medium trees.

DG 3.3.5 Planting on structures will require expert technical advice for design and specification of the planting elements and systems. Planter requirements will need to be determined early in the design process to ensure they are of sufficient size to sustain plants and the **building** structure is reinforced to account for additional saturated soil weight.

DG 3.3.6 Design should account for irrigation and for drainage pathways to reduce staining and ongoing maintenance of the planting infrastructure and the **building** fabric.

DG 3.3.7 If extensive planting on structure is proposed, such as **green walls** or roofs, consider the use of an alternative water source, such as **rainwater** or recycled **greywater**.

Communal open space

Intent

Well-designed **communal open space** provides residents with opportunities to recreate and socialise beyond their private living areas. Communal open space also creates **landscaping** opportunities between **buildings** that enhances resident **amenity** through the aesthetic and micro-climate benefits of landscaping and tree canopy. Communal open space that is located at **street** and public realm **frontages** may also increase interactions with the broader community.

The size, location and design of communal space will vary depending on the **site** context and the scale of **development**. Design solutions should provide quality spaces that benefit residents, visitors and, where appropriate, the public should have regard for how communal needs are currently met within the **walkable catchment** of the development and consider how the communal open space areas complement the public realm.

Developments that are located in high amenity areas, with a choice of recreation and social facilities for residents within a walkable catchment of 400m, may seek a reduction in the amount of communal open space, but are not exempt from providing at least one useable communal open space area (where this is required under this policy). Low-rise developments with large private **courtyards** to ground floor units may also seek a reduction in the amount of communal open space provided.

Related Elements

- *2.4 Side and rear setbacks*
- *3.2 Orientation*
- *3.3 Tree canopy and deep soil areas*
- *4.4 Private open space and balconies*
- *4.5 Circulation and common spaces*
- *4.9 Universal design*
- *4.11 Roof design*
- *4.12 Landscape design*

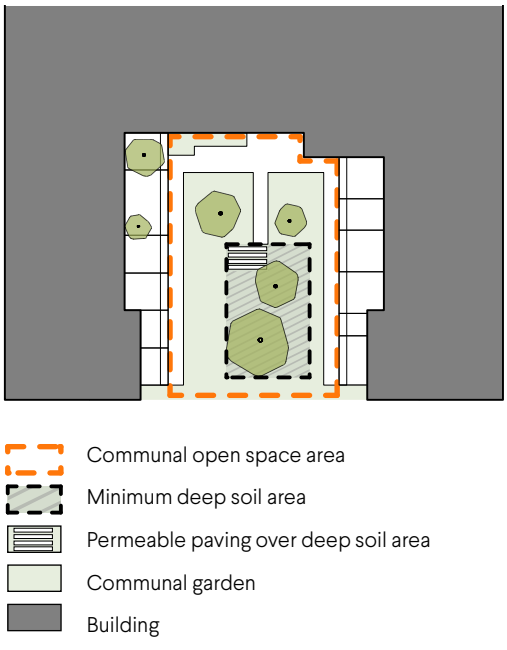


Figure 3.4a The principle usable part of communal open spaces should be consolidated.

3.4

ELEMENT OBJECTIVES

Development is to achieve the following Element Objectives:

O 3.4.1 Provision of quality **communal open space** that enhances resident **amenity** and provides opportunities for **landscaping**, tree retention and **deep soil areas**.

O 3.4.2 **Communal open space** is safe, **universally accessible** and provides a high level of **amenity** for residents.

O 3.4.3 **Communal open space** is designed and oriented to minimise impacts on the **habitable rooms** and **private open space** within the **site** and of neighbouring properties.

ACCEPTABLE OUTCOMES

Acceptable Outcomes are likely to assist in satisfying the objectives but are not a comprehensive 'deemed-to-comply' list. In order to achieve the Element Objectives, proposals may require additional and/or alternative design solutions in response to the site conditions, streetscape and design approach.

A 3.4.1 **Developments** include **communal open space** in accordance with Table 3.4.

A 3.4.2 **Communal open space** located on the ground floor or on floors serviced by lifts must be **universally accessible** from the **primary street** entry of the **development**.

A 3.4.3 There is 50 per cent direct **sunlight** to at least one **communal open space** area for a minimum of two hours between 9am and 3pm on 21 June.

A 3.4.4 **Communal open space** is co-located with **deep soil areas** and/or planting on structure areas and/or co-indoor communal spaces.

A 3.4.5 **Communal open space** is separated or screened from adverse **amenity** impacts such as bins, vents, condenser units, noise sources and vehicle circulation areas.

A 3.4.6 **Communal open space** is well-lit, minimises places for concealment and is open to **passive surveillance** from adjoining **dwellings** and/or the public realm.

A 3.4.7 **Communal open space** is designed and oriented to minimise the impacts of noise, odour, light-spill and overlooking on the **habitable rooms** and **private open spaces** within the **site** and of neighbouring properties.

Table 3.4 Provision of communal open space

Development size	Overall communal open space requirement	Minimum accessible / hard landscape area (included in overall area requirement)	Minimum open space dimension
Up to 10 dwellings	Informal seating associated with deep soil or other landscaped areas	NA	NA
More than 10 dwellings	Total: 6m² per dwelling up to maximum 300m²	At least 2m² per dwelling up to 100m²	4m

Photo 3.4a Communal open space should be designed to be accessible, useable and attractive, allowing a range of activities for all residents.

Photo 3.4b An enclosed communal open space can be bright and airy when it is open to the sky. (PC)

Photo 3.4c This wide landscaped footpath doubles as communal open space, creating a environment conducive to incidental encounters between residents. The separation of buildings surrounding this space also allows for direct sunlight access.

Photo 3.4d This rooftop communal space provide a pool, BBQ, dining, as well as a shady, inviting environment for all users. (PC)

Photo 3.4e Communal open spaces are often located on the podium or rooftop and should offer gathering areas to provide opportunity for social interaction amongst residents. (PC)

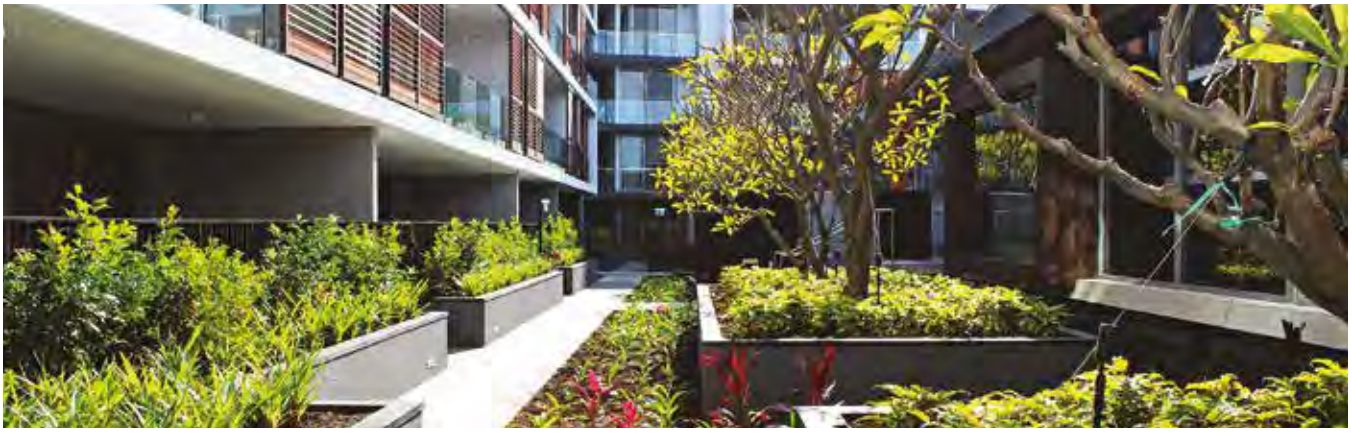


Photo 3.4f This communal area has plenty of access to natural light, with private balconies overlooking and providing passive surveillance making it a safe, enjoyable environment.

DESIGN GUIDANCE

Potential alternative solutions to satisfy the Element Objectives will be considered on a performance basis.

DG 3.4.1 **Communal open space** may include outdoor and semi-**enclosed** and/or partially covered areas located at ground level or on upper level **podiums**, **terraces** or useable flat roofs. Communal open space should be sized and designed to be functional, **accessible** and attractive. On smaller **sites**, consider consolidating communal open space into a single easily identified and useable area. On larger sites, consider creating a series of communal open spaces that are well-integrated across the site and offer complementary uses.

DG 3.4.2 The siting of **communal open space** influences its **amenity** value. Consider climate and aspect including **solar access**, wind effects, noise and odours. Wherever possible co-locate communal open space with **deep soil areas**, planting on structure or other **landscaped** areas. Hard landscaping requirements may be included within deep soil areas if **permeable surfaces** are used up to the extent permissible in *3.3 Tree canopy and deep soil areas.*

DG 3.4.3 **Communal open space** should be sited and designed to minimise the visual and aural impacts of services, such as ventilation duct outlets from **basement** car parks, air conditioning units, fire services, electrical substations and detention tanks.

DG 3.4.4 If indoor communal facilities are provided, explore opportunities to connect it with **communal open space** areas.

DG 3.4.5 Subject to the scale of **development**, the projected tenant demographic and available community infrastructure in the **walkable catchment**, **communal open space** may include:

- seating and play areas connected to high **amenity landscaping** and **deep soil areas**
- recreation facilities such as a pool, half-court basketball, tennis court or play equipment
- other facilities responding to particular community needs such as a dog exercise area or garden plots.

Where provided, give consideration to the potential impacts generated by these uses. For example, locate children's play areas or sports courts away from bedrooms to minimise noise impacts, and orient BBQs to reduce the impact of odour and smoke. External lighting should cast light downward and reduce upward light spillage where possible, to reduce the impact on **dwellings** and wildlife.

DG 3.4.6 The maintenance of **communal open space** is typically a shared expense for owners. Communal open space should therefore be designed to be robust and easily maintained.

DG 3.4.7 Where **communal open space** includes space that is accessible to the general public it should:

- include an effective wayfinding system
- be well connected with public **streets** or **public open space** along at least one edge, or via a pedestrian path with clear **sightlines**
- be designed for public safety.

Visual privacy

Intent

The design of **apartments** must carefully balance the need for outlook and **daylight** access with the need for privacy. A room with generous glazing for views and daylight, if poorly oriented, might feel too exposed and overlooked by neighbours or passers-by. Conversely, spaces that are well-screened for privacy may create a dark, constrained internal environment.

Resolving visual privacy issues involves consideration of the views to and from an apartment, between apartments within a **development**, between a development and neighbouring properties, and the potential for overlooking of communal or private outdoor spaces. Addressing these issues through the effective separation and orientation of **buildings** and the considered placement and orientation of rooms and windows reduces the need for excessive **screening**. The separation and orientation of buildings may also benefit neighbourhood character through the retention of view corridors, **open space** and **landscaping**, as well as reducing the perceived bulk and scale of development.

Table 3.5 details standards that generally avoid undesirable conditions. Alternative design solutions may be justified through building siting and articulation. It is also noted that lower levels of visual privacy may be acceptable in denser urban contexts than in low-rise residential areas and this may be a consideration in determining an appropriate design response.

Related Elements

- *2.3 Street setbacks*
- *2.4 Side and rear setbacks*
- *2.7 Building separation*

3.5

ELEMENT OBJECTIVES

Development is to achieve the following Element Objectives:

O 3.5.1 The orientation and design of **buildings**, windows and **balconies** minimises direct overlooking of **habitable rooms** and private outdoor living areas within the **site** and of neighbouring properties, while maintaining **daylight** and **solar access**, ventilation and the external outlook of habitable rooms.

ACCEPTABLE OUTCOMES

Acceptable Outcomes are likely to assist in satisfying the objectives but are not a comprehensive 'deemed-to-comply' list. In order to achieve the Element Objectives, proposals may require additional and/or alternative design solutions in response to the site conditions, streetscape and design approach.

A 3.5.1 Visual privacy **setbacks** to side and rear boundaries are provided in accordance with Table 3.5.

A 3.5.2 **Balconies** are unscreened for at least 25 per cent of their perimeter (including edges abutting a **building**).

A 3.5.3 Living rooms have an external outlook from at least one major opening that is not obscured by a screen.

A 3.5.4 Windows and **balconies** are sited, oriented, offset or articulated to restrict direct overlooking, without excessive reliance on high sill levels or permanent **screening** of windows and balconies.

Table 3.5 Required privacy setback to adjoining sites

Cone of vision from unscreened (refer Figure series A7.3):	First 4 storeys		5th storey and above
	Adjoining sites coded R50 or lower	Adjoining sites coded higher than R50	
Major opening to bedroom, study and open access walkways	4.5m	3m	Refer Table 2.7
Major openings to habitable rooms other than bedrooms and studies	6m	4.5m	
Unenclosed private outdoor spaces	7.5m	6m	

DESIGN GUIDANCE

Potential alternative solutions to satisfy the Element Objectives will be considered on a performance basis.

DG 3.5.1 For people to feel comfortable living in higher-density environments, the siting of **buildings** and the design of **apartments** should carefully balance the need for outlook with the need for privacy.

DG 3.5.2 Document the location of existing windows and **balconies** in adjoining **buildings** during the **site** analysis phase and endeavour to offset new **habitable room** windows and balconies from existing ones.

DG 3.5.3 Retaining an open aspect from **balconies** and principal windows in interior rooms is critical for resident **amenity**. Screens, enclosures, **highlight windows**, or **landscape** elements should not be used to justify a reduction in the visual privacy **setbacks** for the primary outlook from interior spaces. While balconies can increase internal privacy they may also restrict **daylight** access.

DG 3.5.4 Bedrooms, living spaces and other **habitable rooms** should be separated from gallery **walkway** access and other open circulation space by the **apartment**'s **service areas** or **lightwells**.

DG 3.5.5 **Communal open space**, common areas and access paths should be separated from **private open space** and **apartment** windows, particularly to **habitable rooms**. Design solutions may include:

- increased **setbacks**
- solid or partially-solid balustrades to **balconies** at lower levels
- use of fencing and/or trees and vegetation to separate spaces
- **screening** devices
- changes of level
- **bay windows** or pop out windows to direct outlook away from other **dwellings**
- planter boxes incorporated into walls and balustrades
- pergolas or shading devices to limit overlooking of lower dwellings or private open space
- portions of fixed louvres or screen panels to windows and balconies.

Pedestrian access and entries

Intent

The experience of residents and visitors walking into an **apartment building** should be comfortable, safe and easy to navigate.

Building entries and accessways provide the key connection between the public and private realm and their design should reflect this important role. They should be easy to find, while being well integrated into the overall design of the **development** and the **streetscape**. Access to individual apartments from the **street** or through **open space** and circulation areas should be intuitive, even for a first time visitor.

Related Elements

- *3.6 Public domain interface*
- *3.8 Vehicle access*
- *4.5 Circulation and common spaces*
- *4.9 Universal design*
- *4.18 Utilities*

Photo 3.7a An entrance portico offers shelter, security and a recognisable point of address.

Photo 3.7b Successful building entries delineate public and private spaces, are clearly identifiable and help to animate the street. (PC)

Photo 3.7c Signage should respond to the context and desired streetscape character. Here the building address signage has been integrated as a feature of the façade design. (PC)

3.7

ELEMENT OBJECTIVES

Development is to achieve the following Element Objectives:

O 3.7.1 Entries and pathways are **universally accessible**, easy to identify and safe for residents and visitors.

O 3.7.2 Entries to the **development** connect to and address the **public domain** with an attractive **street** presence.

ACCEPTABLE OUTCOMES

Acceptable Outcomes are likely to assist in satisfying the objectives but are not a comprehensive 'deemed-to-comply' list. In order to achieve the Element Objectives, proposals may require additional and/or alternative design solutions in response to the site conditions, streetscape and design approach.

A 3.7.1 Pedestrian entries are connected via a legible, well-defined, **continuous path of travel** to **building** access areas such as lift lobbies, stairs, accessways and individual **dwelling** entries.

A 3.7.2 Pedestrian entries are protected from the weather.

A 3.7.3 Pedestrian entries are well-lit for safety and **amenity**, visible from the **public domain** without opportunity for concealment, and designed to enable casual surveillance of the entry from within the **site**.

A 3.7.4 Where pedestrian access is via a shared zone with vehicles, the pedestrian path is clearly delineated and/or measures are incorporated to prioritise the pedestrian and constrain vehicle speed.

A 3.7.5 Services and **utilities** that are located at the pedestrian entry are integrated into the design and do not detract from the **amenity** of the entry.

A 3.7.6 Bins are not located at the primary pedestrian entry.

DESIGN GUIDANCE

Potential alternative solutions to satisfy the Element Objectives will be considered on a performance basis.

DG 3.7.1 Primary entries to the **site** and **building**(s) should be clearly identifiable from the **street**.

- For taller **developments**, a clearly defined and visible lobby or waiting area should be provided to lifts and stairs
- On sites with a narrow street **frontage**, consider a **primary street** address with clear **sightlines** and pathways to secondary building entries
- Where there are multiple entries, consider design treatments that provide a clear visual hierarchy to distinguish and identify communal entries from private entries, residential entries from non-residential activities and pedestrian entries from vehicle
- Design solutions might include awnings, architectural detailing, materials, colour and **landscape** treatments.

DG 3.7.2 The design of entries should incorporate **CPTED** principles. Direct, clearly visible and well lit access is required from the **street** entry to common circulation areas. Consider lighting and design elements that ensure entries are legible and safe to access at night.

DG 3.7.3 Entries shall be designed in accordance with **universal design** principles. The design of ground floors and car parks should minimise level changes along pathways and at entries. It is often preferable for the entrance to be at **street** level and the level transitions to occur within the **building**. Where required, integrate ramps and steps into the overall building and **landscape** design.

DG 3.7.4 Pedestrian and vehicle paths should be separated wherever possible, with pedestrians given priority over vehicles. Where pedestrian entry is via a shared vehicle space, consider using measures such as a pedestrian gate, differentiated surface, lighting and/or signage to provide a distinct pedestrian entry.

DG 3.7.5 Where security gates are used, consider providing a set-back from the footpath to allow space for a pedestrian to stand while opening the gate without blocking the footpath.

DG 3.7.6 For large **developments** 'wayfinding' signage and maps are recommended to assist visitors and residents, with intercom controls to manage visitor access to private areas.

DG 3.7.7 **Service areas** located at the **building** entry areas (such as fire **utilities** and mailboxes) should be easy to locate, functional and carefully integrated into the overall design of the **development**. Consider access and locations for the delivery of large parcels and shopping.

DG 3.7.8 On large **sites** consider opportunities to provide pedestrian links through the site to provide connections to **open space**, main **streets**, centres and public transport, and to increase site activation. Pedestrian links should be direct, with clear **sightlines** and **passive surveillance** from **dwellings** within the **development**, while maintaining appropriate privacy for residents. Consider integrating passive spaces, such as seating, to facilitate casual interaction.

Car and bicycle parking

Intent

Car parking within **apartment buildings** can have a significant impact on **site** planning, **landscape** and building design. It requires careful consideration in the design phase to ensure that car parking provided does not detract from the overall design intent or the intended character of the **streetscape**.

Car parking can account for significant land-take at the expense of landscaping and **open space**. Car parking areas can also have negative environmental impacts such as heat gain from solar absorption, glare and **stormwater** contamination. Reducing on-site parking requirements can mitigate these impacts and may also encourage greater use of alternative transport modes to the private vehicle. On the other hand residents expect adequate, safe and **accessible** car parking and the local community should not be adversely impacted by on-**street** parking associated with **development.**

The design process must balance these requirements to provide sufficient parking that is well integrated into the overall design of the development and does not detract from the streetscape.

Related Elements

- *2.3 Street setbacks*
- *3.6 Public domain interface*
- *3.8 Vehicle access*

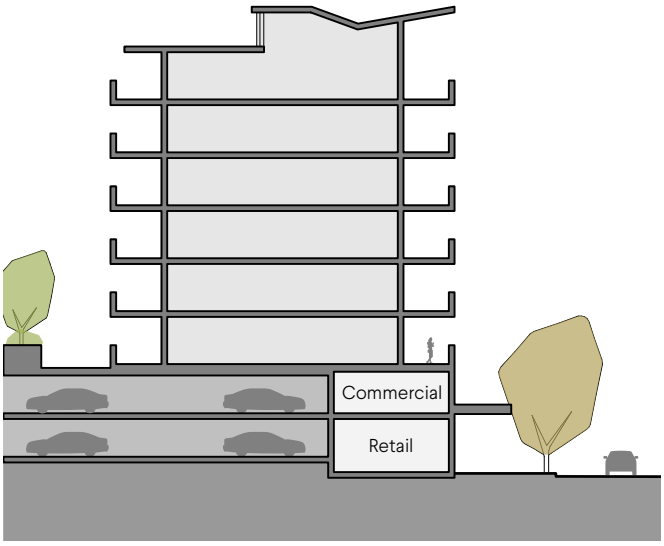


Figure 3.9a Above-ground parking should be concealed behind the building façade and wrapped with other uses along the primary street frontage.

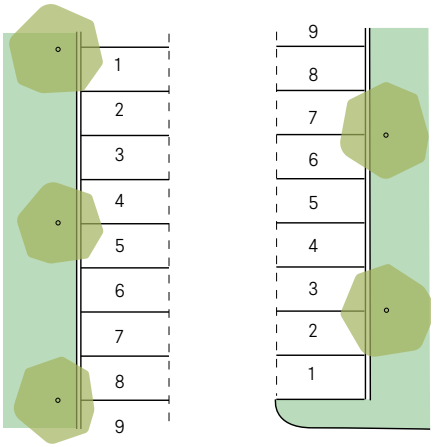


Figure 3.9b Every four at-grade parking bays should be planted with trees (refer A3.9.9).

3.9

ELEMENT OBJECTIVES

Development is to achieve the following Element Objectives:

O 3.9.1 Parking and facilities are provided for cyclists and other modes of transport.

O 3.9.2 Car parking provision is appropriate to the location, with reduced provision possible in areas that are highly walkable and/or have good public transport or cycle networks and/or are close to employment centres.

O 3.9.3 Car parking is designed to be safe and **accessible**.

O 3.9.4 The design and location of car parking minimises negative visual and environmental impacts on **amenity** and the **streetscape**.

ACCEPTABLE OUTCOMES

Acceptable Outcomes are likely to assist in satisfying the objectives but are not a comprehensive 'deemed-to-comply' list. In order to achieve the Element Objectives, proposals may require additional and/or alternative design solutions in response to the site conditions, streetscape and design approach.

A 3.9.1 Secure, undercover bicycle parking is provided in accordance with Table 3.9 and accessed via a **continuous path of travel** from the vehicle or cycle entry point.

A 3.9.2 Parking is provided for cars and motorcycles in accordance with Table 3.9.

A 3.9.3 Maximum parking provision does not exceed double the minimum number of bays specified in Table 3.9.

A 3.9.4 Car parking and vehicle circulation areas are designed in accordance with AS2890.1 (as amended) or the requirements of applicable local planning instruments.

A 3.9.5 Car parking areas are not located within the **street setback** and are not visually prominent from the street.

A 3.9.6 Car parking is designed, **landscaped** or screened to mitigate visual impacts when viewed from **dwellings** and private outdoor spaces.

A 3.9.7 Visitor parking is clearly visible from the **driveway**, is signed 'Visitor Parking' and is accessible from the primary entry or entries.

A 3.9.8 Parking shade structures, where used, integrate with and complement the overall **building** design and **site** aesthetics and have a low reflectance to avoid glare into **apartments**.

A 3.9.9 Uncovered **at-grade** parking is planted with trees at a minimum rate of one tree per four bays.

A 3.9.10 **Basement** parking does not protrude more than 1m above ground, and where it protrudes above ground is designed or screened to prevent negative visual impact on the **streetscape**.

Table 3.9 Parking ratio

Parking types		Location A	Location B
Car parking[1]	1 bedroom dwellings	0.75 bay per dwelling	1 bay per dwelling
	2+ bedroom dwellings	1 bay per dwelling	1.25 bays per dwelling
	Visitor	1 bay per four dwellings up to 12 dwellings 1 bay per eight dwellings for the 13th dwelling and above	
Bicycle parking[1]	Resident	0.5 space per dwelling	
	Visitor	1 space per 10 dwellings	
Motorcycle/ Scooter parking[2]	Developments exceeding 20 dwellings provide 1 motorcycle/scooter space for every 10 car bays		

[1] Calculations of parking ratios shall be rounded up to the next whole number.
[2] For each five motorcycle/scooter parking bays provided in accordance with Table 3.9, car parking bays may be reduced by one bay.

Definitions:
Location A: includes all land located within:
– 800m of a train station on a high-frequency rail route, measured in a straight line from the pedestrian entry to the train station platform to any part of a lot;
– 250m of a high-frequency transit route, or multiple transit routes that if combined have timed stops every 15 minutes during weekday peak periods (7 –9am and 5–7pm), measured in a straight line from along any part of the transit route to any part of the lot; and/or
– within the defined boundaries of an activity centre.
Location B: not within Location A.

Photo 3.9a Open carport structures offer shade and shelter while maintaining good sightlines.

Photo 3.9b Tandem bays can provide increased spatial efficiency.

Photo 3.9c Providing secure, well-integrated bicycle storage is recommended.

Photo 3.9d Car stackers can provide a space-efficient solution.

Photo 3.9e Convenient, secure and undercover parking for bicycles is located next to the entrance of this apartment block.

DESIGN GUIDANCE

Potential alternative solutions to satisfy the Element Objectives will be considered on a performance basis.

DG 3.9.1 The location, form, quantity and organisation of parking is usually a balance of **development** feasibility, **site** constraints, local context, resident expectations, **apartment** types and regulatory car parking requirements. The provisions of **deep soil areas**, **stormwater** management and tree retention can also affect the size and shape of a car park footprint.

DG 3.9.2 Parking requirements should be determined considering the proximity of the **development** to a centre(s) and the availability of public parking or **high-frequency** public transport services. Reducing car parking requirements may reduce car dependency and encourage walking, cycling and the use of public transport.

DG 3.9.3 Visitor parking may be reduced where there is adequate on-**street** parking or public parking in the near vicinity of the **development**.

DG 3.9.4 The provision of parking for alternative forms of transport such as car share vehicles, motorcycles and bicycles should also be considered.

DG 3.9.5 Consideration may be given to the reduction of resident parking (including to zero bays) subject to an assessment of the location, the likely current and future demand for parking spaces, the likely impact on neighbouring land uses and whether it is suitable to allow the supply of fewer spaces.

DG 3.9.6 Options such as tandem parking (where two bays are allocated to one **dwelling**) and car-stackers may also reduce the overall area required for parking.

DG 3.9.7 Consideration should be given to decoupling resident parking from **dwellings** so that all parking bays can be managed allocated or leased according to need.

DG 3.9.8 On-**site** parking provision should include:

- provision for motorbikes and scooters
- secure undercover bicycle parking for residents
- appropriately located bike **storage** for visitors.

DG 3.9.9 Detailed design of internal circulation and car parking areas should provide particular attention to:

- safe and **continuous paths of travel** for pedestrians and cyclists, ideally separated but otherwise via differentiating surface treatments, traffic calming devices and appropriate signage to establish a shared use zone
- in a single width **driveway**, sufficient width for a vehicle to safely pass a pedestrian with child, a cyclist or wheelchair user
- clear **sightlines** within circulation areas
- the visibility and accessibility of visitor parking
- reducing light-spill from headlights and overhead lighting into the **habitable rooms** of **dwellings** within the **development** and adjoining properties
- managing the visual impact, noise, heat absorption and reflective glare associated with long driveways and extensive areas of parking and banks of garage doors.

DG 3.9.10 Consider electric vehicle charging infrastructure for both resident and visitor bays. When not installing charging stations as part of the **development**, electrical supply and car park distribution board should allow for future capacity to supply electric vehicle charging points at a recommended minimum 20 per cent of total bays.

DG 3.9.11 For below-ground car parking:

- excavation should be minimised through efficient car park layouts and ramp design
- where it protrudes above ground, employ design solutions such as stepping car park levels, using split levels on **sloping sites** or design solutions applicable for **at-grade** parking
- avoid underground car parking in locations with high water tables that require de-watering
- ventilation grills or **screening** devices for car parking openings should be integrated into the **façade** and **landscape** design of the **development.**

DG 3.9.12 **At-grade** car parks should be safe, comfortable and **landscaped** environments. Design solutions to achieve this include:

- providing safe and direct access from car parking to **building** entry points
- incorporating parking into the landscape design of the **site**, by extending planting and materials into the car park space
- to manage **stormwater** run-off from car park surfaces, the incorporation of tree pits, vegetated swales, bio-filters, infiltration cells, **permeable paving** and/or on-site detention tanks as appropriate
- using light coloured paving materials or permeable paving systems, and planting shade trees between parking spaces to reduce increased surface temperatures from large areas of paving (refer *4.12 Landscape design*).

DG 3.9.13 For above-ground car parking, consider:

- **screening**, **landscaping**, public art and other design elements to integrate the above ground car parking with the **building façade**
- 'sleeving' the car park with active uses along the **street frontage.**

Solar and daylight access

Intent

Good, climate sensitive design can contribute to significant reductions in energy consumption through good daylighting, maximising beneficial **solar gain** in winter and reducing solar gain in summer. Regular **daylight** exposure also improves people's sense of well-being.

In temperate **climate zones** adequate access to **sunlight** is therefore an important factor in improving the **amenity** of **dwellings**, whereas in hotter tropical climates minimising direct sunlight and providing shade is required.

As the density and scale of **buildings** and localities increases, access to daylight and winter sun typically decreases. **Development** must be sited and designed to optimise **solar** and daylight **access** for dwellings and **open space** considering climatic conditions, both within the development and for adjoining properties and urban spaces.

Related Elements

- *2.2 Building height*
- *2.4 Side and rear setbacks*
- *2.6 Building depth*
- *2.7 Building separation*
- *3.2 Orientation*
- *4.2 Natural ventilation*
- *4.3 Size and layout of dwellings*
- *4.15 Energy efficiency*

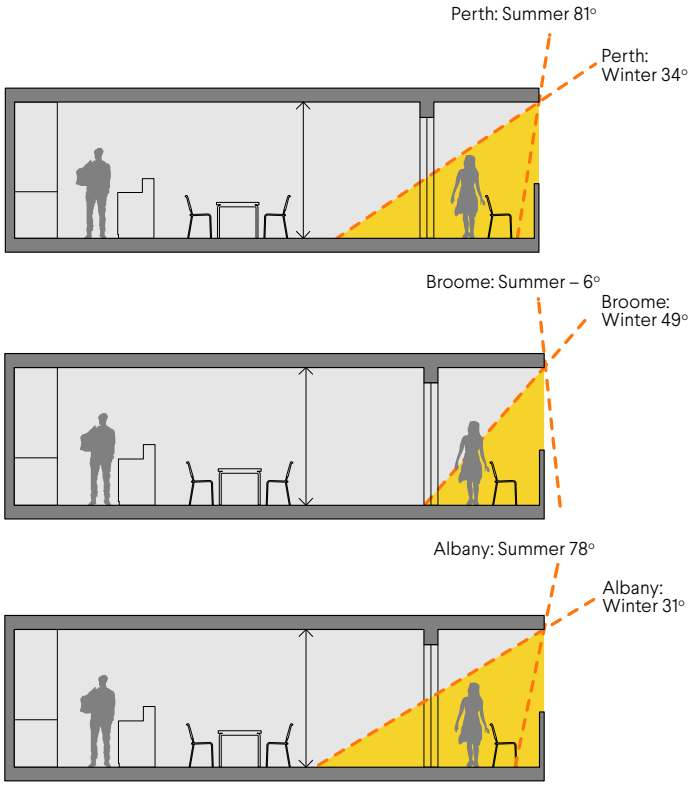


Figure 4.1a Shading devices on balconies should shade summer sun and allow winter sun access to living area. Solar angles vary for Perth, Broome and Albany.

ELEMENT OBJECTIVES

Development is to achieve the following Element Objectives:

O 4.1.1 In **climate zones** 4, 5 and 6: the **development** is sited and designed to optimise the number of **dwellings** receiving winter **sunlight** to **private open space** and via windows to **habitable rooms**.

O 4.1.2 Windows are designed and positioned to optimise **daylight** access for **habitable rooms**.

O 4.1.3 The **development** incorporates shading and glare control to minimise heat gain and glare:

- from mid-spring to autumn in **climate zones** 4, 5 and 6 **AND**
- year-round in climate zones 1 and 3.

ACCEPTABLE OUTCOMES

Acceptable Outcomes are likely to assist in satisfying the objectives but are not a comprehensive 'deemed-to-comply' list. In order to achieve the Element Objectives, proposals may require additional and/or alternative design solutions in response to the site conditions, streetscape and design approach.

A 4.1.1 In **climate zones** 4, 5 and 6 only:

(a) **Dwellings** with a northern aspect are maximised, with a minimum of 70 per cent of dwellings having living rooms and **private open space** that obtain at least 2 hours direct **sunlight** between 9am and 3pm on 21 June **AND**

(b) A maximum of 15 per cent of dwellings in a **building** receiving no direct sunlight between 9am and 3pm on 21 June.

A 4.1.2 Every **habitable room** has at least one window in an external wall, visible from all parts of the room, with a glazed area not less than 10 per cent of the **internal floor area** and comprising a minimum of 50 per cent of clear glazing.

A 4.1.3 **Lightwells** and/or skylights do not form the primary source of **daylight** to any **habitable room**.

A 4.1.4 The **building** is oriented and incorporates external shading devices in order to:

- minimise direct **sunlight** to **habitable rooms**:
  - between late September and early March in **climate zones** 4, 5 and 6 only **AND**
  - in all seasons in climate zones 1 and 3
- permit winter sun to habitable rooms in accordance with A 4.1.1 (a).

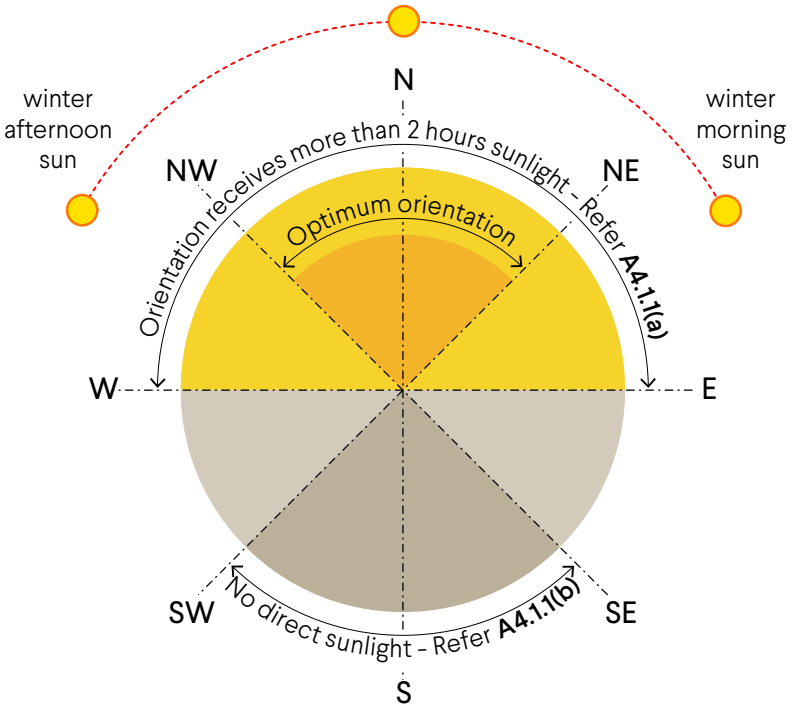


Figure 4.1b The hours of sunlight that can be expected in mid winter are directly related to the orientation of the windows or balconies. To achieve 2 hours sunlight (refer A4.1.1(a)), windows must be facing between west and north; or between north and east. This diagram shows the optimal orientation for sunlight to reach any portion of a window or balcony on 21 June in climate zones 4, 5 and 6.

Photo 4.1a Well sized and oriented glazing brings daylight into open plan spaces. (PC)

Photo 4.1b Optimising daylight access via tall windows/doors that open to a balcony/courtyard and the sky without too much recess or canopy.

Photo 4.1c Louvred balustrades and operable awnings allow residents to adapt the balcony for light or shade throughout the day, as well as controlling shelter and privacy. (PC)

Photo 4.1d Shading and glare-control measures help to moderate solar gain for west-facing windows and balconies, including operable roof louvres to optimise sunlight and shelter.

Photo 4.1e Simple sun shading device can be effective in minimising heat and glare. (PC)

Photo 4.1f Different types of shading elements can adapt to the needs of different internal spaces and orientations. (PC)

DESIGN GUIDANCE

Potential alternative solutions to satisfy the Element Objectives will be considered on a performance basis.

DG 4.1.1 In cooler climates south facing **dwellings** that receive no direct **sunlight** should be minimised. In tropical areas **winter solar gain** is less critical, however winter sun access on cooler dry mornings can still be beneficial. A more important design consideration in tropical areas is shading to southern and western elevations to protect against mid-summer sun.

DG 4.1.2 Minimum requirements for access to **sunlight** for **habitable rooms** and **private open space** is measured at **mid-winter** (21 June) when passive heating is most beneficial. Providing direct sunlight to **dwellings** may be optimised through a number of design features such as:

- **dual aspect apartments**
- shallow **apartment** layouts
- two **storey** and **mezzanine** level apartments
- **bay windows.**

DG 4.1.3 Consider strategies to maximise **solar access** to ground floor **apartments** such as:

- high ceilings and tall windows
- trees and shrubs that allow solar access in winter and shade in summer.

DG 4.1.4 **Daylight** access is optimised when windows are visible from all parts of a **habitable room** and the window has direct access to the sky, rather than being within a deep façade, with overhangs above. Daylight access can also be enhanced through the use of reflected light via **light shelves**, light coloured internal finishes and higher ceilings. However care must be taken to avoid unwanted glare effects.

DG 4.1.5 Where there are restrictions on the use of clear glazing to manage impacts on visual privacy, consider design options such as:

- increasing ceiling heights to increase the overall height of the window and light reflectance from the ceiling
- using a window with a lower sill and providing obscure glazing to 1.6m with clear glazing above.

DG 4.1.6 In **climate zones** 4, 5 and 6, shading from summer sun is most required between November to March. Consider pairing shading treatments with high performance glazing and the insulation of external walls to reduce heat transfer into the **dwelling**.

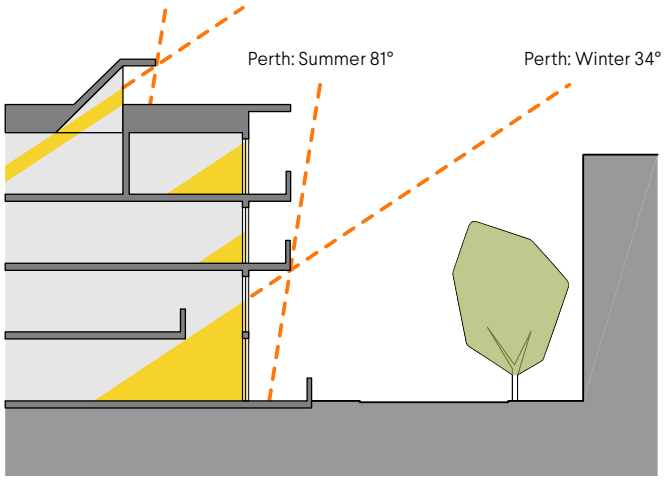


Figure 4.1c Double height apartments and skylights on roofs increase daylight access. Solar angles will vary for different locations in WA.

Natural ventilation

Intent

Good indoor air-quality is essential for healthy and comfortable living environments, with poor indoor air-quality being a significant contributor to poor respiratory health. In most situations, optimising **natural ventilation** is the most affordable and effective way to manage indoor air quality.

Natural ventilation is the movement of a sufficient volume of fresh air through a **dwelling** to refresh indoor air. It is best achieved by **apartments** that have more than one aspect with direct exposure to the prevailing winds, or with windows located in significantly different pressure regions. The use of natural ventilation also reduces the need for mechanical ventilation and air conditioning.

Considering options for **natural cross ventilation** is best undertaken in the early stages of a project when decisions are being made about **building** orientation and **building depth**, the configuration of apartments and the external **building envelope**. Early consideration complements the more technical requirements of the **NCC** applied at building permit stage.

Related Elements

- *2.4 Side and rear setbacks*
- *2.6 Building depth*
- *2.7 Building separation*
- *4.1 Solar and daylight access*
- *4.3 Size and layout of dwellings*
- *4.15 Energy efficiency*

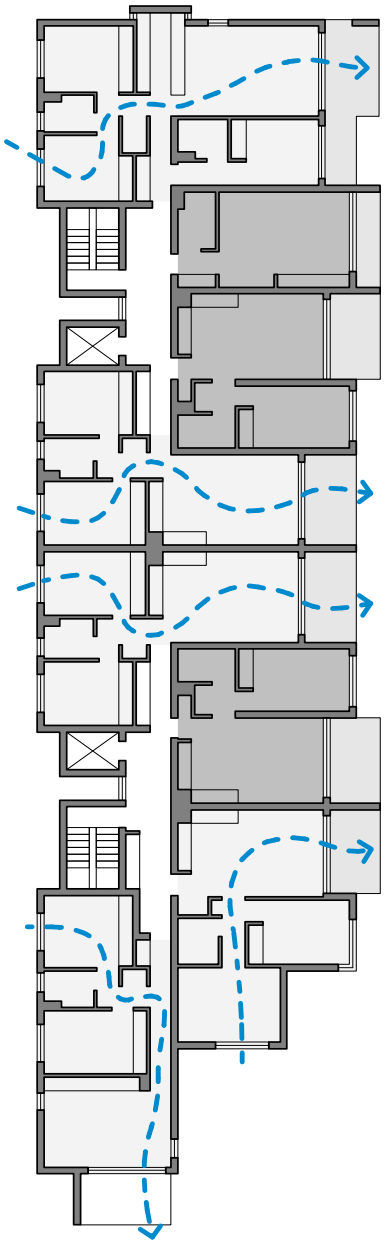


Figure 4.2a Five out of a total of eight apartments in the above example can achieve natural cross ventilation with dual aspects / corner layout. The remaining three single aspect apartments cannot achieve cross ventilation.

4.2

ELEMENT OBJECTIVES

Development is to achieve the following Element Objectives:

O 4.2.1 **Development** maximises the number of **apartments** with **natural ventilation**.

O 4.2.2 Individual **dwellings** are designed to optimise **natural ventilation** of **habitable rooms**.

O 4.2.3 **Single aspect apartments** are designed to maximise and benefit from **natural ventilation.**

ACCEPTABLE OUTCOMES

Acceptable Outcomes are likely to assist in satisfying the objectives but are not a comprehensive 'deemed-to-comply' list. In order to achieve the Element Objectives, proposals may require additional and/or alternative design solutions in response to the site conditions, streetscape and design approach.

A 4.2.1 **Habitable rooms** have openings on at least two walls with a straight line distance between the centre of the openings of at least 2m.

A 4.2.2 **(a)** A minimum 60 per cent of **dwellings** are, or are capable of, being **naturally cross ventilated** in the first nine **storeys** of the **building**

(b) **Single aspect apartments** included within the 60 per cent minimum at (a) above must have:

- ventilation openings oriented between 45° – 90° of the prevailing cooling wind direction **AND**
- room depth no greater than 3 × ceiling height

(c) For dwellings located at the 10th storey or above, **balconies** incorporate high and low level ventilation openings.

A 4.2.3 The depth of **cross-over** and **cross-through apartments** with openings at either end and no openings on side walls does not exceed 20m.

A 4.2.4 No **habitable room** relies on **lightwells** as the primary source of fresh-air.

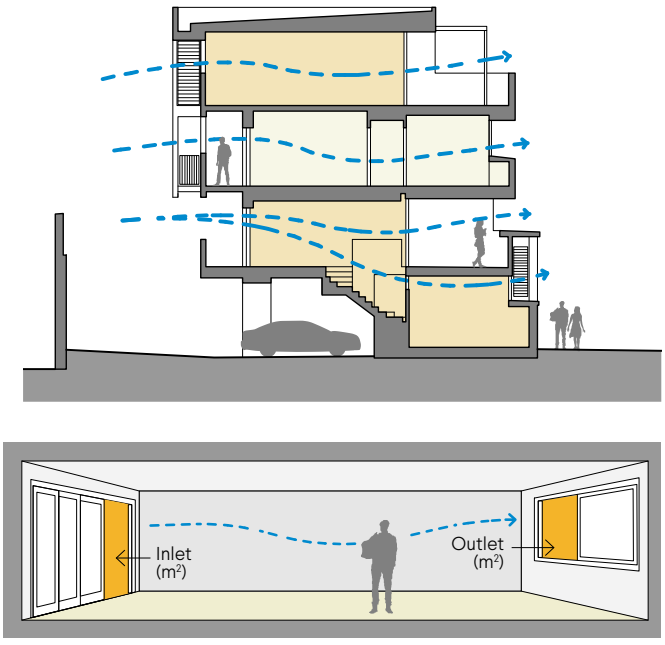


Figure 4.2b Door and window sizes on opposite sides of an apartment influence cross ventilation performance (applicable to cross-through and cross-over apartments).

Photo 4.2a Sun screen and pergola structure provide shade and at the same time allow for natural ventilation. (PC)

Photo 4.2b, c & d (From top) Louvre, casement and awning windows are preferred to sliding windows as the latter provide limited opportunity for the control of breeze. (PC)

DESIGN GUIDANCE

Potential alternative solutions to satisfy the Element Objectives will be considered on a performance basis.

DG 4.2.1 **Natural ventilation** can be achieved by:

- **Natural cross ventilation**, which occurs when **dwellings** have openings with two different orientations so that breeze can flow through the room or **building** to flush out hot or stale air
- passive or buoyancy ventilation, which relies on the effect of rising hot air and requires high and low openings so that warm air is flushed from higher openings and cooler air is drawn in through lower openings.

DG 4.2.2 Optimise the number of **dwellings** with openings oriented in at least two different directions to achieve better **cross ventilation**. The orientation of these openings and the design of **façade** elements and windows can also assist the capture and use of prevailing breezes.

DG 4.2.3 **Apartment** layout and **building depth** are closely linked with the ability of an apartment to be naturally ventilated. Generally as the **building** gets deeper, effective airflow reduces. Minimising the depth of individual apartments, the length of **enclosed** corridors and overall building depth can improve opportunities for **natural ventilation.**

DG 4.2.4 Sliding windows provide limited opportunity for the control of breeze. Preferable options include casement, awning or louvre windows.

DG 4.2.5 Where the use of entry doors for **cross ventilation** is restricted by security of fire considerations, consider alternative design measures such as **highlight windows**, louvre panels and/or screens to funnel breezes into the **apartment**.

DG 4.2.6 Better **natural ventilation** can be achieved for **single aspect dwellings** by having openings that can be left in an open position on at least two sides of the dwelling to create a breeze path. Consider design solutions such as:

- high and low level ventilation openings oriented between 45° to 90° of the prevailing cooling wind direction
- windows in at least two rooms and connecting doors located at the rear of the room rather than adjacent to the windows
- using **stack effect ventilation/solar chimneys** or wind scoops to naturally ventilate internal **building** areas or rooms such as bathrooms and laundries (particularly in **climate zone** 3)
- designing **courtyards** or building indentations that are open on one side and have a width-to-depth ratio of at least 3:1.

DG 4.2.7 Where sufficient **natural ventilation** cannot be achieved due to constraints such as external noise or poor outdoor air quality, consider providing ventilation by passive **trickle vents**, ceiling fans and/or energy-efficient mechanical air exchange systems. Split system air-conditioners do not provide air exchange or ventilation.

DG 4.2.8 Poor ventilation of wet areas can result in mould growth, a decline in indoor air quality in the entire **dwelling** and may cause **building** fabric to deteriorate. External openable windows should be provided to bathrooms and laundries wherever possible. When this is not possible, consider **trickle vents** in addition to mechanical exhaust systems, and switch mechanical exhaust systems separately from lights so they can be left on when the room is unoccupied.

Size and layout of dwellings

Intent

Good design ensures that despite having a smaller size, **apartments** have adequate space and efficiency to meet the needs of occupants and their family and friends, and are flexible enough to respond to changing circumstances.

The overall **internal floor area** of the **dwelling** and the dimensions of individual rooms need to be large enough to accommodate differing arrangements of furniture depending on individual preferences and requirements. The arrangement of doors, windows, circulation paths and electrical fittings also needs careful consideration to maximise flexibility and functionality.

Ceiling height also contributes to the perceived spaciousness of interiors. The width, depth and height of rooms should be considered in concert to create well proportioned spaces. Correct proportions can also improve daylighting and facilitate better **natural ventilation** of rooms.

Related Elements

- *4.1 Solar and daylight access*
- *4.2 Natural ventilation*
- *4.4 Private open space and balconies*
- *4.6 Storage*
- *4.8 Dwelling mix*
- *4.9 Universal design*

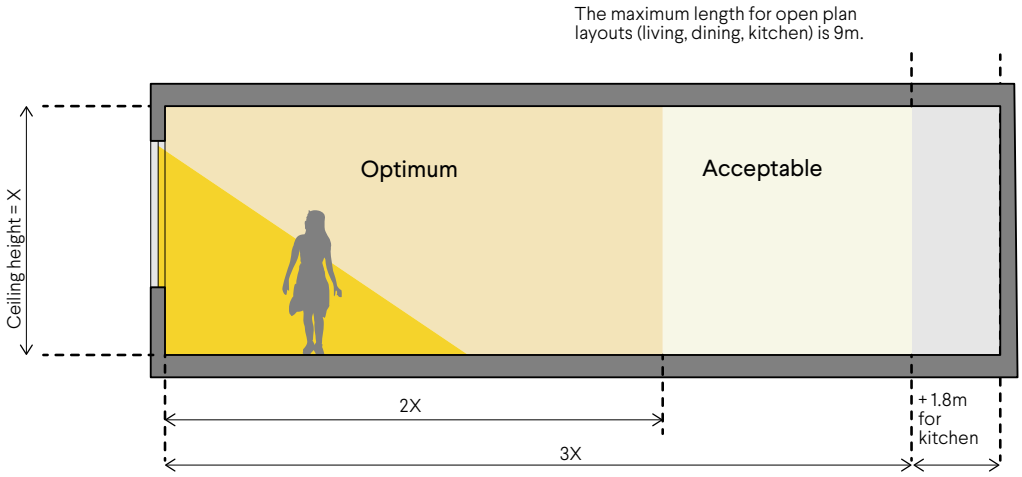


Figure 4.3a The depth of a single aspect apartment relative to the ceiling height directly influences the quality of natural ventilation and daylight access (refer A4.3.4).

4.3

ELEMENT OBJECTIVES

Development is to achieve the following Element Objectives:

O 4.3.1 The internal size and layout of **dwellings** is functional with the ability to flexibly accommodate furniture settings and personal goods, appropriate to the expected household size.

O 4.3.2 Ceiling heights and room dimensions provide for well-proportioned spaces that facilitate good **natural ventilation** and **daylight** access.

ACCEPTABLE OUTCOMES

Acceptable Outcomes are likely to assist in satisfying the objectives but are not a comprehensive 'deemed-to-comply' list. In order to achieve the Element Objectives, proposals may require additional and/or alternative design solutions in response to the site conditions, streetscape and design approach.

A 4.3.1 **Dwellings** have a minimum internal **floor area** in accordance with Table 4.3a.

A 4.3.2 **Habitable rooms** have minimum **internal floor areas** and dimensions in accordance with Table 4.3b.

A 4.3.3 Measured from the finished floor level to finished ceiling level, minimum ceiling heights are:

- **Habitable rooms** – 2.7m
- **Non-habitable rooms** – 2.4m

All other ceilings meet or exceed the requirements of the **NCC**.

A 4.3.4 The length of a **single aspect open plan** living area is equal to or less than 3 x the ceiling height. An additional 1.8m length may be provided for a kitchen, where the kitchen is the furthest point from the window in an open plan living area provided that the maximum length does not exceed 9m.

Table 4.3a Minimum internal floor areas for dwelling types

Dwelling type	Minimum internal floor area
Studio	36m²
1 bed	47m²
2 bed × 1 bath[1]	67m²
3 bed × 1 bath[1]	90m²

[1] An additional 3m² shall be provided for designs that include a second or separate toilet, and 5m² for designs that include a second bathroom.

Table 4.3b Minimum internal floor areas and dimensions for habitable rooms

Habitable room type	Minimum internal floor area	Minimum internal dimension
Master bedroom	10m²	[1]3m
Other bedrooms	9m²	[1]3m
Living room – studio and 1 bed apartments	N/A	3.6m
Living room – other dwelling types	N/A	4m

[1] Excluding robes

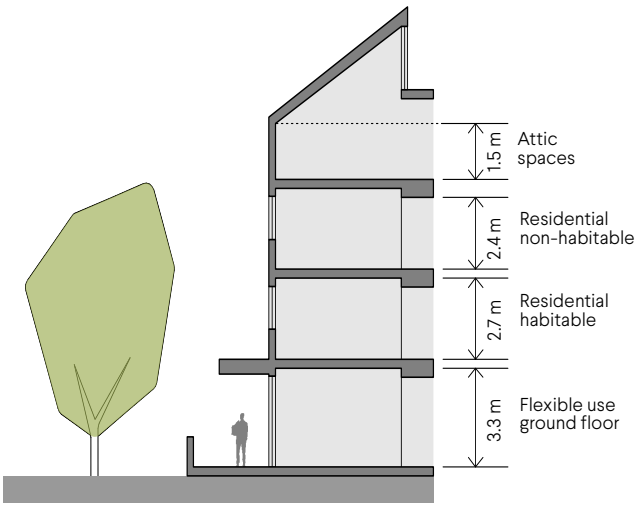


Figure 4.3b Ceiling heights of minimum 2.7m help to achieve good daylight access and natural ventilation to residential apartments.

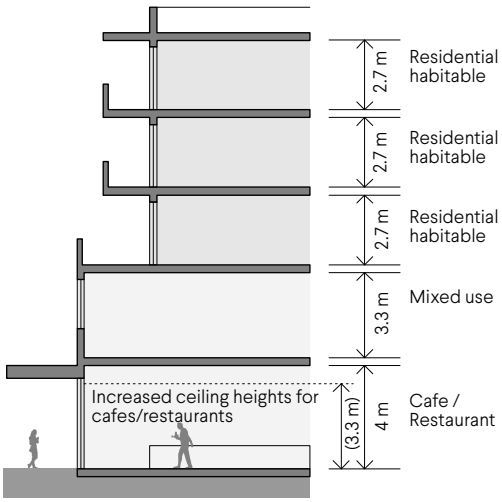


Figure 4.3c Greater than minimum ceiling heights for retail and commercial floors of mixed use developments are encouraged to promote flexibility of use. Cafe and restaurant uses should have ceiling heights of 4m to allow for additional servicing needs.

Photo 4.3a Higher ceilings can make small rooms feel spacious.

Photo 4.3b Bulkheads concealing mechanical services can also serve to delineate spaces in an open plan layout. (PC)

4.3

DESIGN GUIDANCE

Potential alternative solutions to satisfy the Element Objectives will be considered on a performance basis.

DG 4.3.1 People living in **apartments** need spaces that support their lifestyles, with rooms to spend time with family and friends, rooms to seek time alone, and a range of functional spaces for cooking, cleaning, washing and **storage**. Consider layouts that are flexible to accommodate the diverse and changing needs of occupants, including:

- room sizes and dimensions that can accommodate a variety of furniture arrangements, for example, rectangular spaces are often more easily furnished than square spaces
- prepare design drawings that illustrate potential furniture layouts using realistically sized furniture, including living and dining settings in the living space
- arranging internal spaces to maximise flexibility and privacy for individual occupants
- dual-master apartments or **dual key apartments** to provide more flexibility for different household configurations
- locating living areas and bedrooms on the external face of the **building** to receive **daylight**, with living spaces oriented towards views
- providing space for robes, typically with a minimum width of 1.8m for the main bedroom and 1.5m for other bedrooms.

DG 4.3.2 Efficiency of space can be enhanced by co-locating internal circulation areas to maximise the useable area of rooms and improve privacy between different functional areas. Give careful consideration to the location of doors, windows and walls available for furnishing as well as the relationships between different functional spaces. For example, avoid direct access between bedrooms and bathroom via the living room as such access compromises the privacy of these spaces, increases noise transfer and limits the functionality of the living space.

DG 4.3.3 Consider the size and proportions of rooms to create a sense of spaciousness and maximise daylight penetration. For instance, long, narrow rooms in **cross-over** or **cross-through apartments** require a width of at least 4m.

DG 4.3.4 Additional ceiling height adds significantly to the sense of space in a **dwelling**. Higher ceilings may also assist with **natural ventilation** and to accommodate ceiling fans for cooling and heat distribution. Given that the overall **building** height is constrained once constructed, provision for additional ceiling height needs to be considered at the planning stage. When choosing ceiling heights, consider:

- introducing changes in ceiling height to give greater definition to spaces within the dwelling
- locating bulkheads above **non-habitable spaces** such as robes or **storage** areas, to maintain higher ceilings in **habitable space** areas
- providing more ceiling height to ground floor **street** front units to provide greater flexibility for **adaptive reuse**, for instance if located in mixed use areas, consider providing ceiling heights of 3.3m or more
- if ceiling heights are constrained, reducing room depth accordingly to compensate for the loss of **daylight** penetration, reduced volume and sense of spaciousness.

Private open space and balconies

Intent

Well-designed **balconies**, **terraces** and **courtyards** support indoor-outdoor living options in **apartment buildings**. The appropriate size and configuration of **private open space** will vary according to the urban context, **site** orientation and relationship to views and **landscape**, as well as market demands. Whatever the configuration, private open space should be designed to augment internal living areas and provide flexibility for occupants in their use of internal and external spaces.

Good design will balance the relationship between private open space and interior rooms, give consideration to the aspect, orientation and outlook from the **open space**, and management of its interface with common areas, other **dwellings** and the public realm. The location of private open space also needs to minimise impact on winter **solar access** and **natural ventilation**, as well as consider options for summer shading of **habitable rooms**.

The configuration and detailing of private open space is also a significant design element of building **façades** and can be used in the articulation and materiality of the building to improve **streetscape** outcomes.

Related Elements

- *3.4 Communal open space*
- *4.3 Size and layout of dwellings*
- *4.12 Landscape design*
- *4.18 Utilities*

Photo 4.4a Providing generous, covered balconies allows them to be used as living spaces. (PC)

Photo 4.4b Balconies can enhance the amenity of the residents by providing extra space and views. (PC)

4.4

ELEMENT OBJECTIVES

Development is to achieve the following Element Objectives:

O 4.4.1 **Dwellings** have good access to appropriately sized **private open space** that enhances residential **amenity.**

O 4.4.2 **Private open space** is sited, oriented and designed to enhance liveability for residents.

O 4.4.3 **Private open space** and **balconies** are integrated into the overall architectural form and detail of the **building.**

ACCEPTABLE OUTCOMES

Acceptable Outcomes are likely to assist in satisfying the objectives but are not a comprehensive 'deemed-to-comply' list. In order to achieve the Element Objectives, proposals may require additional and/or alternative design solutions in response to the site conditions, streetscape and design approach.

A 4.4.1 Each **dwelling** has **private open space** accessed directly from a **habitable room** with dimensions in accordance with Table 4.4.

A 4.4.2 Where **private open space** requires **screening** to achieve visual privacy requirements, the entire **open space** is not screened and any screening is designed such that it does not obscure the outlook from adjacent living rooms.

A 4.4.3 Design detailing, materiality and **landscaping** of the **private open space** is integrated with or complements the overall **building** design.

A 4.4.4 Services and fixtures located within **private open space**, including but not limited to air-conditioner units and clothes drying, are not visible from the **street** and/or are integrated into the **building** design.

Table 4.4 Private open space requirements

Dwelling type	Minimum Area[1]	Minimum Dimension[1]
Studio apartment + 1 bedroom	8m²	2.0m
2 bedroom	10m²	2.4m
3 bedroom	12m²	2.4m
Ground floor / apartment with a terrace	15m²	3m

[1] Services and fixtures located within private open space, including but not limited to air-conditioner units and clothes drying, are not visible from the street and/or are integrated into the building design.

When calculating the extent of private open space, exclude servicing areas such as bin storage, clothes drying, air conditioning units and the like.

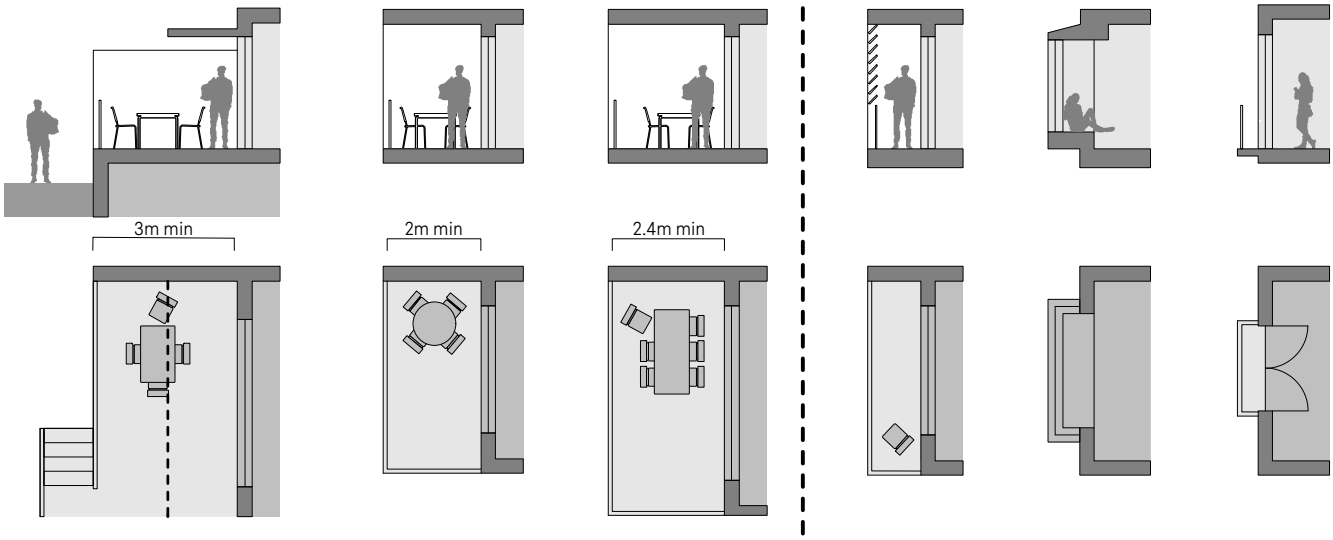


Figure 4.4a Diagrams illustrating minimum balcony depth and options for noise treatment.

Photo 4.4c Apartments with living rooms that extend out to the balcony or terrace are often a preferred layout as it maximises spaces as well as provide dwellers with the feeling of an extended living area. The balcony retains good external outlook to views, landscape and open sky from internal rooms.

Photo 4.4d Operable shutters can be used to control sunlight and wind, as well as enhanced privacy.

4.4

DESIGN GUIDANCE

Potential alternative solutions to satisfy the Element Objectives will be considered on a performance basis.

DG 4.4.1 It is preferable that primary **open space** areas connect and are accessible from, the living room, dining room or kitchen of the **dwelling**.

DG 4.4.2 The location and size of covered **private open space** should balance the functionality of the outdoor space with the climatic performance and daylighting of internal spaces. The following design solutions can assist with this:

- in temperate **climate zones**, deep covered areas are desirable on east and west faces, and to all faces in climate zones 1 and 3, to maximise shading of living spaces
- for single fronted **dwellings** it is preferable that the living room has good **daylight** access and consideration should be given to alternative **balcony** configurations that do not provide deep shade to this room
- west or east facing **open space** may require additional shading from low angle summer sun. Use **operable screens** or angled blades to admit winter sun
- locate balconies to the side of living areas (with side access from the room), or consider the use of a pergola or operable awning, to enable **winter solar gain** and **daylight** to living rooms
- use operable louvres for balconies with high exposure to prevailing winds.

DG 4.4.3 **Balconies** and **open space** should be designed to retain good external outlook to **landscape**, views or open sky via the balcony from internal rooms. Ideally this means that the outer edge of the **private open space** is open to the sky and visible from the living room. Consider orientation of the balcony to avoid or minimise the need for high **screening** to achieve visual privacy requirements, as this can restrict **daylight** access and outlook for both the open space and adjoining **habitable rooms.**

DG 4.4.4 **Private open space** should also offer residents reasonable privacy from neighbouring properties and the public realm. The extensive use of transparent balustrading or fencing, such as glass, pool fencing, or a minimum compliance balustrade, at ground floor and lower levels is not ideal as these solutions offer no privacy for residents. Inclusion of opaque or partially obscured fences and balustrades are preferable. This has the additional advantage of **screening** the **storage** of unsightly objects where required.

DG 4.4.5 In some locations it will not be possible to provide **open space** that has high **amenity** for residents. Examples include **sites** affected by road, rail or aircraft noise, **developments** involving the **adaptive reuse** of existing **buildings**; higher buildings or exposed coastal locations where wind speed restricts the functionality, amenity and safety of outdoor space. In these circumstances consider design solutions such as:

- increasing internal living areas with **bay windows**, **juliet balconies** or **operable walls** opening into narrower open space
- **enclosed** or semi-enclosed / operable **wintergardens**
- roof-top **terraces.**

DG 4.4.6 Where the provision of **private open space** is constrained by other factors, consider providing alternative secondary living spaces and/or increasing the area of **communal open space**. Increasing the area of communal open space commensurate with a decrease in private open space may also be appropriate where there is an explicit intent to facilitate communal living. [1]

DG 4.4.7 Design should also consider the daily useability of **private open space**:

- use **operable screens**, shutters, hoods and pergolas to control **sunlight** and wind access to the **open space** area enabling its use at different times of the day and season
- consider providing a water tap for plants and a gas outlet for a barbeque to primary **balconies** and private open space
- make provision for the safety and **amenity** of pets
- provide additional space where clothes drying, **storage** or air conditioning units are located in private open space, **screening** these **utilities** from the **street** and integrating them in the **building** design
- condenser units should exhaust away from not into the private open space. Consider co-locating these items so that the exhaust assists with clothes drying
- set back balustrades from the building or balcony edge where overlooking or safety is an issue.

DG 4.4.8 Integrate **balconies** and **private open space** into the overall form and aesthetic of the **development**. For example:

- projecting balconies should be integrated into the **building** design and the design and finish of **soffits** considered
- **operable screens**, shutters, hoods and pergolas should complement the materiality of the building
- downpipes and balcony drainage should be integrated with the **façade** and building design
- locate air-conditioning units on roofs, in **basements** or storerooms, or fully integrate them into the building design. Exposed pipework or outdoor units should not be visible from the **street.**

[1] Examples may include student housing, supported housing, co-operative housing, 'Nightingale' projects, Baugruppen and the like.

Circulation and common spaces

Intent

Entries, lifts, stairs, corridors and **walkways** are the stage, and opportunity, for everyday interactions between **apartment** residents. Good design of these spaces, and the interface with **dwellings**, is essential to facilitate the casual interactions between residents that foster a sense of community.

In addition to circulation spaces, the provision of well-designed communal facilities and spaces, that provide residents with options for socialising, exercise or hobbies, will also add to the communal life, engagement and well-being of residents within the **development**.

Circulation and common spaces should meet **universal access** requirements and be designed with consideration of their functionality, safety, security and **amenity**, as well as the potential impacts on dwelling units and neighbours.

Related Elements

- *3.4 Communal open space*
- *3.7 Pedestrian access and entries*
- *4.9 Universal design*

Photo 4.5a Well appointed communal facilities in this common area combined with circulation space enhance the amenity of this apartment development. (PC)

Photo 4.5b & c Use of different materials and textures along circulation spaces can create interest and enhance user experience. (PC)

4.5

ELEMENT OBJECTIVES

Development is to achieve the following Element Objectives:

O 4.5.1 Circulation spaces have adequate size and capacity to provide safe and convenient access for all residents and visitors.

O 4.5.2 Circulation and common spaces are attractive, have good **amenity** and support opportunities for social interaction between residents.

ACCEPTABLE OUTCOMES

Acceptable Outcomes are likely to assist in satisfying the objectives but are not a comprehensive 'deemed-to-comply' list. In order to achieve the Element Objectives, proposals may require additional and/or alternative design solutions in response to the site conditions, streetscape and design approach.

A 4.5.1 Circulation corridors are a minimum 1.5m in width.

A 4.5.2 Circulation and common spaces are designed for **universal access**.

A 4.5.3 Circulation and common spaces are capable of **passive surveillance**, include good **sightlines** and avoid opportunities for concealment.

A 4.5.4 Circulation and common spaces can be illuminated at night without creating light spill into the **habitable rooms** of adjacent **dwellings**.

A 4.5.5 Bedroom windows and major openings to living rooms do not open directly onto circulation or common spaces and are designed to ensure visual privacy and manage noise intrusion.

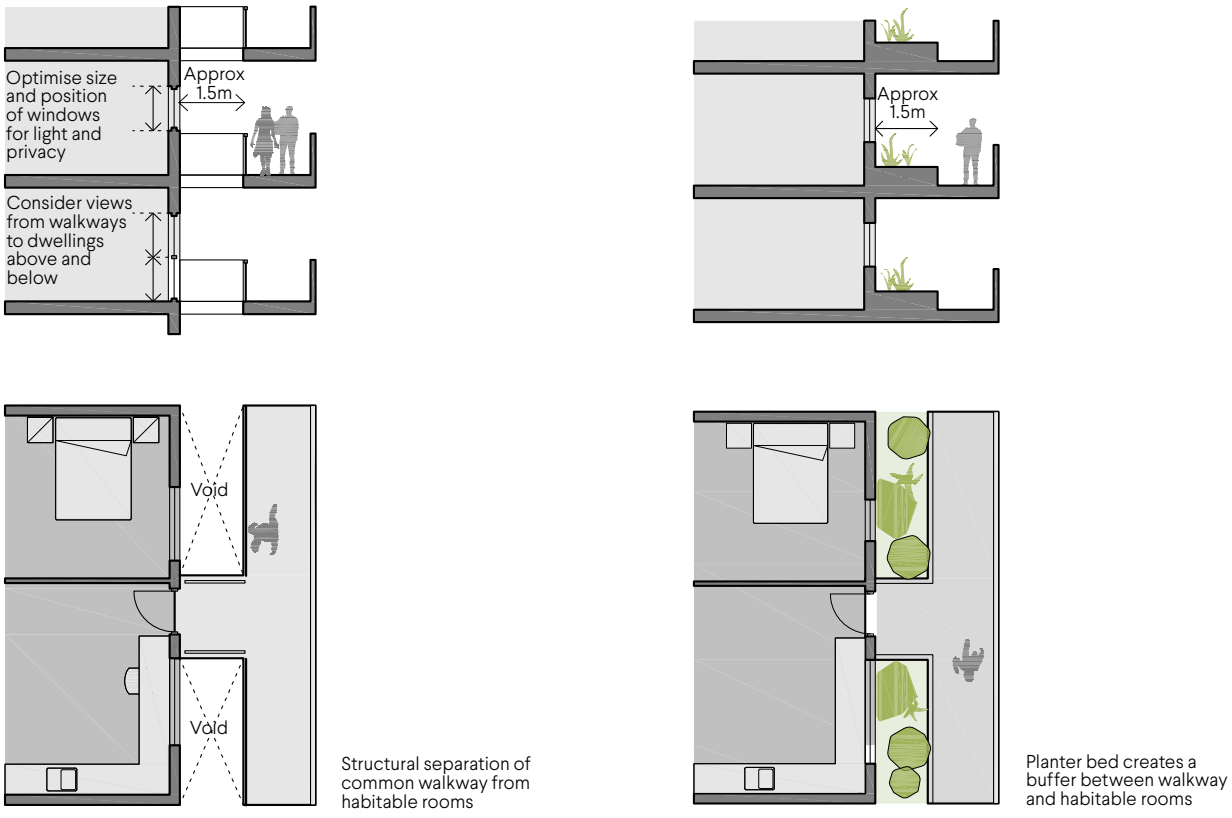


Figure 4.5a A range of design responses to maintaining comfortable separation between open gallery accessways and apartments.

Photo 4.5d Communal walkway is separated by a void from dwelling windows to provide some degree of privacy.

Photo 4.5e Combining circulation pathway with communal open space makes outdoor areas integral to resident experience. (PC)

Photo 4.5f The roof and floors in the middle section of this adaptive reuse of a heritage building have been removed to allow for better natural ventilation and light to reach the circulation area. (PC)

4.5

DESIGN GUIDANCE

Potential alternative solutions to satisfy the Element Objectives will be considered on a performance basis.

DG 4.5.1 The configuration of circulation and common spaces is an important consideration in the early planning phase, as these areas are used by all residents on a daily basis and inform the first impression of visitors. The design of circulation spaces is therefore critical in defining the character, style and **amenity** of the **development**.

DG 4.5.2 **Universal access** is a mandatory requirement of contemporary **building** design for all publicly accessible places. In the context of an **apartment development** this means circulation areas and common spaces must be **universally accessible** via a **continuous path of travel** from the primary entry.

DG 4.5.3 Design considerations to ensure safe and convenient access for all users of these spaces are listed below:

- provide secure access to circulation areas, including intercoms for residents to admit visitors
- consider limiting the number of **dwellings** served by a single **circulation core** to no more than 12 on a floor
- consider providing an additional lift when the number of dwellings serviced by a single lift exceeds 40, or when the travel distance between a single dwelling and a lift exceeds 50m
- provide short, straight **sightlines** by minimising corridors lengths and avoiding tight corners between the circulation core and individual dwellings
- for corridors or galleries with a length of more than 18m (or six entry doors) use changes in height, width, materials or lighting to reduce the apparent length of the corridor and improve **amenity**
- design and locate fire escape stairs so they can be used as an attractive and functional alternative to the lift, particularly for residents on lower floors, having regard to fire safety requirements
- provide low-level of constant light overnight and motion sensors for additional lighting when activated, including directional control of lighting to prevent light spill into dwellings
- include legible signage for **apartment** numbers, common areas and general wayfinding
- design and material selection for the prevention of slips, trips and falls; for example, handrails to assist elderly users, the use of slip resistant floor finishes in external and semi **enclosed** circulation spaces, including stairs, and weather protection at dwelling entries.

DG 4.5.4 The design of circulation spaces should contribute to making **dwelling** entries distinct and private. This can be achieved by offsetting entry doors, creating an entry vestibule or varying ceiling height, width and materials in the corridor to create a 'porch'. In external galleries consider offsetting the dwelling entries from the gallery with an entry court, while avoiding creating spaces for concealment.

DG 4.5.5 Windows of **dwellings** should not open directly onto circulation and common spaces. Use physical separation, **screening**, acoustic glazing, **landscaping**, lighting design and other devices to minimise impacts and to maintain privacy in the dwelling.

DG 4.5.6 Good design can greatly enhance the **amenity** of circulation and common spaces. Consider design solutions such as:

- maximising **daylight** and **natural ventilation** to circulation and common spaces to improve amenity and thermal performance, and reduce operational costs
- incorporating additional width or height in corridors and at entry lobbies, lifts and **dwelling** entries to create a sense of spaciousness and enable the movement of furnishings and bulky goods, for instance, the width of lift landings should exceed the depth of the lift car
- providing seating in foyers and other breakout spaces within circulation and common spaces
- where external galleries are provided, making these more open than closed above the balustrade
- using materials, colours and lighting that create an attractive and welcoming environment.

DG 4.5.7 Communal facilities: In larger **developments**, consider providing common spaces and rooms for a variety of activities and uses, such as facilities for the shared preparation of food, gardening and craft groups, mother's groups and children's play groups, as well as strata or resident meetings. Ideally these spaces will be co-located with **communal open space**. In some cases it might be appropriate to provide public access to promote connection with the wider community, but the safety and **amenity** of residents must be maintained.

Storage

Intent

Apartment sizes vary but in general they are a compact **dwelling** type and need to be designed for particular efficiency. Providing dedicated **storage** space can help to preserve living spaces, reduce the need for off-site storage and enable residents to pursue their hobbies and lifestyle choices.

Site planning and apartment design should include provision for storage proportionate to the size of dwellings and capable of accommodating larger items. Storage should be secure, fit for purpose, weatherproof and safely and easily accessed.

Related Elements

— *4.3 Size and layout of dwellings*

Photo 4.6a Storage cabinets are integrated at the entrances of the dwelling units in this development, making them convenient to use, easily accessible and more secured.

Photo 4.6b This storage area is integrated into the balcony design, weatherproof and screened from view.

4.6

ELEMENT OBJECTIVES

Development is to achieve the following Element Objectives:

O 4.6.1 Well-designed, functional and conveniently located **storage** is provided for each **dwelling**.

Table 4.6 Storage requirements

Dwelling type	Storage area[1]	Minimum dimension[1]	Minimum height[1]
Studio dwelling	3m²	1.5m	2.1m
1 bedroom dwelling	3m²		
2 bedroom dwellings	4m²		
3 bedroom dwellings	5m²		

[1] Dimensions exclusive of services and plant.

ACCEPTABLE OUTCOMES

Acceptable Outcomes are likely to assist in satisfying the objectives but are not a comprehensive 'deemed-to-comply' list. In order to achieve the Element Objectives, proposals may require additional and/or alternative design solutions in response to the site conditions, streetscape and design approach.

A 4.6.1 Each **dwelling** has exclusive use of a separate, ventilated, weatherproof, bulky goods **storage** area. This can be located either internally or externally to the dwelling with dimensions in accordance with Table 4.6.

A 4.6.2 Bulky good stores that are not directly accessible from the **dwelling**/**private open space** are located in areas that are convenient, safe, well-lit, secure and subject to **passive surveillance.**

A 4.6.3 **Storage** provided separately from **dwellings** or within or adjacent to **private open space**[1], is integrated into the design of the **building** or **open space** and is not readily visible from the **public domain.**

[1] Storage on/adjacent to private open space is additional to required open space area and dimensions.

DESIGN GUIDANCE

Potential alternative solutions to satisfy the Element Objectives will be considered on a performance basis.

DG 4.6.1 Given the reliance on storerooms for the secure **storage** of personal goods in **apartment development**, best practice is to ensure that storerooms are ventilated, protected from the weather and free from moisture ingress to provide dry and mould free storage. This can be achieved by:

- integrating the storeroom into the main **building**
- installing fixed vents in the walls and door
- painting or rendering single leaf masonry walls
- providing moisture protection under the slab and/or waterproofing to retaining walls.

DG 4.6.2 Store rooms can be convenient places for the location of services, but this should not be at the cost of valuable **storage** space, or ease of maintenance access. If services are located in the storeroom, consider:

- locating A/C condenser units at a height that retains storage functionality below
- locating electrical distribution boards/ switchboards adjacent to the door so they are readily accessible for maintenance and power outages
- increasing the size of the store room.

DG 4.6.3 Consider providing wall mounted bicycle mounts in storerooms to retain **storage** functionality below and to reduce the requirement for common area bicycle racks.

DG 4.6.4 **Storage** areas should be wide enough to accommodate larger and less frequently accessed items.

DG 4.6.5 **Storage** space in internal or **basement** car parks is best positioned at the rear or side of car spaces or in cages, so that allocated car parking remains accessible and that storage can be accessed even when a car is in the bay.

DG 4.6.6 If communal **storage** is provided, it should be additional to the minimum requirements for individual **dwellings** at A4.6.1 and easily accessed from common circulation areas.

DG 4.6.7 Storerooms that are not attached to a primary **building** should:

- not exceed 5 per cent of the **site area**
- be separated into buildings each with an **internal floor area** not greater than 60m²
- have a wall height not greater than 2.4m
- have a roof ridge line not greater than 4.2m
- be set back behind the **primary** or **secondary street frontage**
- comply with side and rear boundary **setback** requirements.

Managing the impact of noise

Intent

Given the number of people living in close proximity in an **apartment building**, management of noise transfer within the **development** and between **dwellings** is critical to maintain **amenity** and limit disturbances between neighbours. Noise impacts from external sources, such as major roads, rail service, flight paths or entertainment venues, should also be managed.

Responding to these factors in the siting, orientation and initial planning of the development can assist in finding cost-effective strategies to mitigate noise impacts and achieve better amenity for residents.

The **NCC** stipulates performance requirements for managing structure-borne sound. However, evidence suggests these requirements do not manage noise levels to the satisfaction of occupants. This element identifies design initiatives that aim to exceed these minimum requirements to provide better long term outcomes for residents.

Related Elements

- *2.7 Building separation*
- *4.17 Waste management*
- *4.18 Utilities*

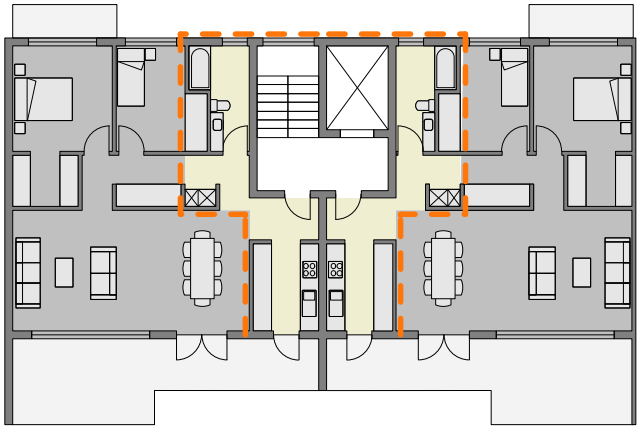


Figure 4.7a The building layout should protect living areas and bedrooms from impacts of noise by avoiding adjacency between living spaces and the noisy circulation core. (Example floorplan only)

ELEMENT OBJECTIVES

Development is to achieve the following Element Objectives:

O 4.7.1 The siting and layout of **development** minimises the impact of external noise sources and provides appropriate **acoustic privacy** to **dwellings** and on-**site open space**.

O 4.7.2 Acoustic treatments are used to reduce sound transfer within and between **dwellings** and to reduce noise transmission from external noise sources.

ACCEPTABLE OUTCOMES

Acceptable Outcomes are likely to assist in satisfying the objectives but are not a comprehensive 'deemed-to-comply' list. In order to achieve the Element Objectives, proposals may require additional and/or alternative design solutions in response to the site conditions, streetscape and design approach.

A 4.7.1 **Dwellings** exceed the minimum requirements of the **NCC**, such as a rating under the *AAAC Guideline for Apartment and Townhouse Acoustic Rating* (or equivalent).

A 4.7.2 Potential noise sources such as garage doors, **driveways**, **service areas**, plant rooms, **building** services, mechanical equipment, active **communal open space** and refuse bins are not located adjacent to the external wall of **habitable rooms** or within 3m of a window to a bedroom.

A 4.7.3 Major openings to **habitable rooms** are oriented away or shielded from external noise sources.

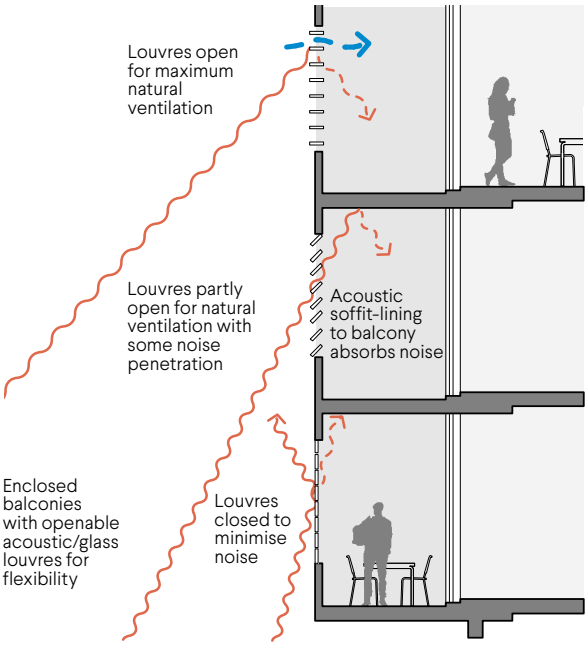


Figure 4.7b Enclosed balconies or 'wintergardens' can mitigate site noise impacts such as major road and rail corridors.

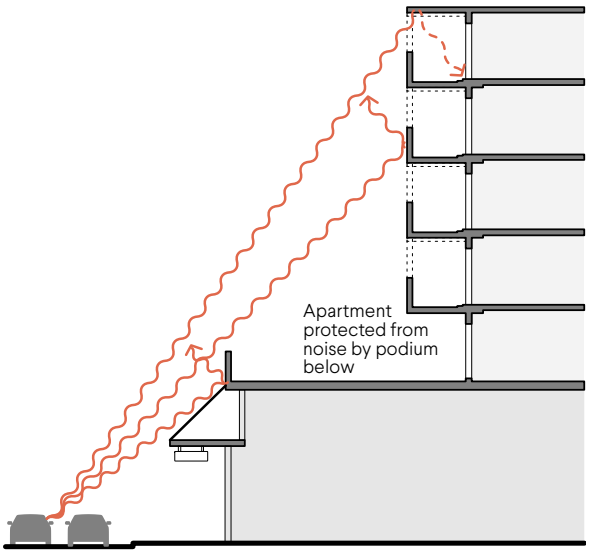


Figure 4.7c Setting back the residential component above a podium helps shield apartments from major noise. Balcony soffits can be treated with sound absorption to assist noise mitigation.

Photo 4.7a By considering noise sources in the orientation of the building and the design of façades and windows, good living conditions can be achieved even in close proximity to noise sources.

Photo 4.7b Development next to a freeway needs sufficient noise abatement measures such as those listed in DG 4.7.3. (See also Photo 4.7c, showing some of the noise reduction features in the same building).

Photo 4.7c Sliding sash glazing and louvre windows in this wintergarden enables modulation of enclosure and openness, at the same time reduces the impact of traffic noise from the adjacent freeway. Installation of special noise absorbing ceiling material also helps in noise reduction.

DESIGN GUIDANCE

Potential alternative solutions to satisfy the Element Objectives will be considered on a performance basis.

DG 4.7.1 Strategies to manage noise need to be balanced with requirements for **solar** and **daylight access**, **natural ventilation** and **streetscape** objectives. This might require compromise to optimise these various requirements. When considering possible solutions, the primary objective is to create high quality living environments that respond to the existing neighbourhood context or, in an area undergoing transformation, the planned character of the area. In busy urban areas, this will require design solutions that have regard for established noise sources to reduce conflict between future residents and existing land owners. The following strategies may assist in managing external noise impacts on the **development**:

- maximise the distance between significant external noise sources and **habitable rooms** and **private open space**
- orient residential uses away from or perpendicular to the noise source
- where practical, use non-residential **buildings** and lower floor commercial tenancies as an acoustic barrier, ideally sited parallel with the noise source or configured as a **podium** to shield residential uses and **open space** areas
- where solar access is taken from the same direction as the noise source, use double glazing to obtain winter solar access and daylight
- while trees and **landscaping** do not physically reduce sound transmission, they may reduce the perceived level of noise.

DG 4.7.2 The siting and orientation of **buildings** and activities within the **site** can make a major contribution to reducing sound transmission between **dwellings**. Consider:

- maximising the separation between buildings and activities on site and to neighbouring buildings/adjacent uses. The building separation requirements (refer 2.7) provide a starting point
- co-locating noisy areas within buildings (such as entries and corridors) and cluster quieter activity areas, such as locating bedrooms next to or above each other
- using doors to separate different noise zones within dwellings and the building
- locating **storage**, circulation areas and **non-habitable rooms** to buffer noise to **habitable rooms**
- treating wet areas as per habitable rooms in terms of acoustic insulation to prevent the transfer of noise from these areas to habitable rooms within the dwelling.
- locating living areas and bed rooms away from noise sources such as lifts, communal stairwells, mechanical equipment and communal bin stores
- designing active **communal open spaces** to project sound away from bedroom windows.

DG 4.7.3 In environments where managing the impacts of external noise is particularly challenging, (such as **development** adjacent to major roads, rail services, flight paths or entertainment venues) and spatial solutions are not effective, noise conflicts can be managed by more direct intervention such as:

- limiting the number and size of openings facing noise sources
- using acoustic glazing, double glazing and/or acoustic louvres and acoustic seals to doors and windows
- using materials with high sound reduction properties, with preference to high mass materials
- utilising sound-absorbing materials in **balconies** to reduce sound transmission into the **dwelling** and the amplification of sound from **private open space** into the development
- the use of **wintergardens** adjacent to the external noise source where some external aspect is required or desirable
- installing acoustic walling to boundaries.

Landscape design

Intent

Good **landscape** design integrates **apartment development** with the existing ecology, enhances natural systems and contributes to tree canopy and biodiversity in the locality. It should improve the **street** presence of the development and the **amenity** of pedestrians and **building** occupants, through the creation of attractive **open space**, connection to nature, opportunities for food production, provision of shade and micro-climate benefits. The inclusion of landscape elements is therefore an important aspect of apartment design even in highly-urbanised environments.

Landscape design incorporates the design of **deep soil areas,** other open space and planting areas located on structures such as **podiums**, **terraces**, walls and roofs. Developments that include landscape design of adjacent verges and open space should also consider the Objectives of this Element.

Related Elements

- *3.3 Tree canopy and deep soil areas*
- *3.4 Communal open space*
- *4.4 Private open space and balconies*
- *4.11 Roof design*
- *4.16 Water management and conservation*

Photo 4.12a Well considered landscape design can add significant amenity to communal areas. (PC)

Photo 4.12b Planting along internal courtyard walls can help create a shaded, attractive space.

4.12

ELEMENT OBJECTIVES

Development is to achieve the following Element Objectives:

O4.12.1 **Landscape** design enhances **streetscape** and pedestrian **amenity**; improves the visual appeal and comfort of **open space areas**; and provides an attractive outlook for **habitable rooms.**

O4.12.2 Plant selection is appropriate to the orientation, exposure and **site** conditions and is suitable for the adjoining uses.

O4.12.3 **Landscape** design includes water efficient irrigation systems and, where appropriate, incorporates water harvesting or water re-use technologies.

O4.12.4 **Landscape** design is integrated with the design intent of the architecture including its built form, materiality, key functional areas and **sustainability** strategies.

ACCEPTABLE OUTCOMES

Acceptable Outcomes are likely to assist in satisfying the objectives but are not a comprehensive 'deemed-to-comply' list. In order to achieve the Element Objectives, proposals may require additional and/or alternative design solutions in response to the site conditions, streetscape and design approach.

A4.12.1 Submission of a **landscape** plan prepared by a competent landscape designer. This is to include a species list and irrigation plan demonstrating achievement of Waterwise design principles.

A4.12.2 **Landscaped** areas are located and designed to support mature, shade-providing trees to **open space** and the public realm, and to improve the outlook and **amenity** to **habitable rooms** and open space areas.

A4.12.3 Planting on **building** structures meets the requirements of Table 4.12.

A4.12.4 **Building** services fixtures are integrated in the design of the **landscaping** and are not visually intrusive.

Table 4.12 Planting on structure: minimum soil standards for plant types and sizes

Plant type	Definition	Soil volume	Soil depth	Soil area
Large tree	Over 12m high, crown spread at maturity	76.8m³	1,200mm	64m² with minimum dimension 7m
Medium tree	8-12m high, crown spread at maturity	36m³	1,000mm	36m² with minimum dimension 5m
Small tree	4-8m high, crown spread at maturity	7.2m³	800mm	3m × 3m
Small ornamentals	3-4m high, crown spread at maturity	3.2m³	800mm	2m × 2m
Shrubs	--	--	500-600mm	--
Ground cover	--	--	300-450mm	--
Turf	--	--	200mm	--

Photo 4.12c Landscaping on structure creates useful open space. (PC)

Photo 4.12d Planting between dwellings and public footpath provides a soft and attractive interface.

Photo 4.12e Well established and well-maintained planters on structure make communal areas attractive and inviting.

Photo 4.12f Greening of blank walls can add attractiveness to a place.

Photo 4.12g Larger planting beds above an underground car park provide larger areas of greenery and creates a more lush landscaped environment.

Photo 4.12h The corner of this site is used to establish a well landscaped area which contributes to the streetscape amenity.

DESIGN GUIDANCE

Potential alternative solutions to satisfy the Element Objectives will be considered on a performance basis.

DG 4.12.1 As a general principle **landscape** design should respond to existing **site** and environmental conditions, taking advantage of views, topography, soil profiles and significant existing landscape features such as existing trees and drainage patterns.

DG 4.12.2 Planting should feature a mix of shade trees (refer Tables 3.3a and 3.3b and Table 4.12, hardy shrubs, ground covers/understorey and native and endemic species.

DG 4.12.3 **Landscape** design should be environmentally sustainable, considering local environmental conditions and constraints. Consider:

- diverse and appropriate plant selection, preferencing the use of native or endemic species or non-invasive, Waterwise plants
- minimising the use of turf unless sustainable water harvesting and reuse systems are used
- vegetated **stormwater** management systems and passively irrigated gardens
- space and equipment for composting
- use of sub-surface irrigation and irrigation systems with rain and soil moisture sensors
- opportunities to harvest and re-use **rainwater** collected and stored on-**site**
- maximising the use of **permeable surfaces** to allow infiltration of rainwater and irrigation
- eco-zoning and hydro-zoning to minimise irrigation needs
- providing water efficient garden beds for residents to plant vegetables and herbs. Food production areas can require specific micro-climate, soil and maintenance requirements, so ensure that the type of garden and species can grow in the given conditions.

DG 4.12.4 Where the local government supports verge greening, consider including a mix of trees and low native ground covers that provide both shade and soil cover without obscuring visibility for **street** users. While this approach should minimise the need for ongoing irrigation, consider irrigation needs to enable establishment and periodic watering to maintain plant health. Avoid the use of turf and other irrigation-intensive plants.

DG 4.12.5 **Landscape** design can play an important role in enhancing the micro-climate and improving the thermal performance of **buildings**. Strategies may include:

- designing the landscape to suit winter and summer sun positions, consider existing shading and the direction of prevailing winds
- providing a balance of evergreen and deciduous trees to provide shading in summer and **sunlight** access in winter
- **green roofs** or **green walls**/**façades** and other vertical greening strategies that shade and cool the **building**
- utilising materials with high reflectivity, low heat conductivity and capacity and high moisture capacity
- shade structures such as pergolas in **open space**
- closed system water features that can cool through evaporation.

DG 4.12.6 Planting on structures can be a viable **landscaping** alternative on constrained or highly urbanised **sites**. These constructed environments require particular technical expertise for their implementation and ongoing maintenance. When considering planting on structures, have regard for the following:

- planter requirements should be established early to ensure structures are reinforced to deal with additional saturated soil weight
- plant species should be selected with care to ensure they can survive and thrive in intended conditions. Major considerations may include:
  - selection for species for heat resistance, drought and wind tolerance
  - capability of withstanding seasonal changes in **solar access**
  - plant longevity
- appropriate soil profile and volume should be provided to facilitate good plant growth. Consider:
  - modifying depths and widths according to the planting mix and irrigation frequency
  - use of free draining soils
  - choose soils with a long life span
  - providing sufficient volume to enable tree anchorage
- account for irrigation and for drainage pathways to reduce staining and ongoing maintenance of the planting infrastructure and the **building** fabric.

DG 4.12.7 All gardens require maintenance. Allocate an area for this to be undertaken and allow the **storage** of gardening equipment.

Appendix D New South Wales SEPP 65 + Apartment Design Guide

Apartment Design Guide

Tools for improving the design of
residential apartment development

NSW GOVERNMENT Planning & Environment

3D Communal and public open space

Communal open space is an important environmental resource that provides outdoor recreation opportunities for residents, connection to the natural environment and valuable 'breathing space' between apartment buildings. It also contributes to the appeal of a development and the wellbeing of residents. Some communal open space is accessible and usable by the general public.

The size, location and design of communal or public open space will vary depending on the site context and the scale of development. The function of open space is to provide amenity in the form of:

- landscape character and design
- opportunities for group and individual recreation and activities
- opportunities for social interaction
- environmental and water cycle management
- opportunities to modify microclimate
- amenity and outlook for residents.

The useable part of the communal open space area may be supplemented by:

- additional landscape area, circulation space and areas for passive use and outlook
- public land used for open space and vested in or under the control of a public authority.

High quality open space is particularly important and beneficial in higher density developments (for private open space requirements see section 4E Private open space and balconies).

Figure 3D.1 Quality landscape design of communal spaces and pathways is particularly important for high density developments

Figure 3D.2 Communal open spaces can be located on the podium or roofs and should offer gathering areas to provide opportunity for social interaction amongst residents

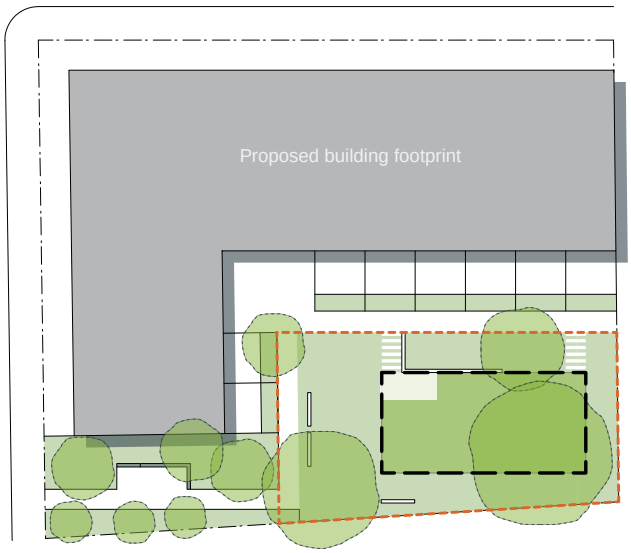


Figure 3D.3 The principal usable part of communal open spaces should be consolidated

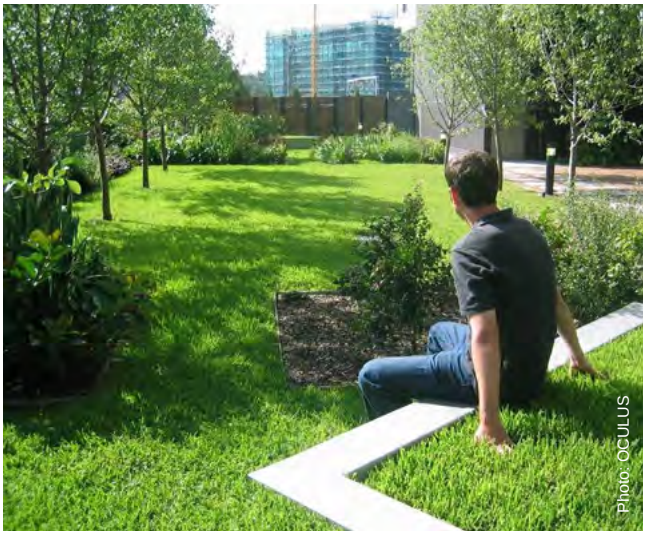


Figure 3D.4 Recreation areas such as the communal garden setting above allow residents to relax and connect to the natural environment

Objective 3D-1

An adequate area of communal open space is provided to enhance residential amenity and to provide opportunities for landscaping

Design criteria

1. Communal open space has a minimum area equal to 25% of the site (see figure 3D.3)
2. Developments achieve a minimum of 50% direct sunlight to the principal usable part of the communal open space for a minimum of 2 hours between 9 am and 3 pm on 21 June (mid winter)

Design guidance

Communal open space should be consolidated into a well designed, easily identified and usable area

Communal open space should have a minimum dimension of 3m, and larger developments should consider greater dimensions

Communal open space should be co-located with deep soil areas

Direct, equitable access should be provided to communal open space areas from common circulation areas, entries and lobbies

Where communal open space cannot be provided at ground level, it should be provided on a podium or roof

Where developments are unable to achieve the design criteria, such as on small lots, sites within business zones, or in a dense urban area, they should:

- provide communal spaces elsewhere such as a landscaped roof top terrace or a common room
- provide larger balconies or increased private open space for apartments
- demonstrate good proximity to public open space and facilities and/or provide contributions to public open space

3D Communal and public open space

Figure 3D.5 Well designed public and communal open spaces invite informal recreation and outdoor activities

Figure 3D.6 Play facilities and spaces should be safe, overlooked by development and provide shade areas for children to play

Figure 3D.7 The location and design of open space responds to microclimate and site conditions

Figure 3D.8 The public open space should be well connected with public streets along at least one edge

Figure 3D.9 Communal open space and public domain should be readily visible from habitable rooms and private open space areas while maintaining visual privacy

Figure 3D.10 Community gardens incorporated into residential developments foster interaction amongst residents of all ages

Objective 3D-2

Communal open space is designed to allow for a range of activities, respond to site conditions and be attractive and inviting

Design guidance

Facilities are provided within communal open spaces and common spaces for a range of age groups (see also 4F Common circulation and spaces), incorporating some of the following elements:

- seating for individuals or groups
- barbecue areas
- play equipment or play areas
- swimming pools, gyms, tennis courts or common rooms

The location of facilities responds to microclimate and site conditions with access to sun in winter, shade in summer and shelter from strong winds and down drafts

Visual impacts of services should be minimised, including location of ventilation duct outlets from basement car parks, electrical substations and detention tanks

Objective 3D-3

Communal open space is designed to maximise safety

Design guidance

Communal open space and the public domain should be readily visible from habitable rooms and private open space areas while maintaining visual privacy. Design solutions may include:

- bay windows
- corner windows
- balconies

Communal open space should be well lit

Where communal open space/facilities are provided for children and young people they are safe and contained

3D Communal and public open space

Figure 3D.11 Attractive and inviting communal open spaces with good solar access should be provided

Figure 3D.12 This communal courtyard provides gathering spaces, seating facilities, pergolas and barbecue facilities for residents

Figure 3D.13 This semi-public courtyard connects to the surrounding inner-city neighbourhood and offers a central water feature, seating and convenient pedestrian through-site links

Objective 3D-4

Public open space, where provided, is responsive to the existing pattern and uses of the neighbourhood

Design guidance

The public open space should be well connected with public streets along at least one edge

The public open space should be connected with nearby parks and other landscape elements

Public open space should be linked through view lines, pedestrian desire paths, termination points and the wider street grid

Solar access should be provided year round along with protection from strong winds

Opportunities for a range of recreational activities should be provided for people of all ages

A positive address and active frontages should be provided adjacent to public open space

Boundaries should be clearly defined between public open space and private areas

3E Deep soil zones

Deep soil zones are areas of soil not covered by buildings or structures within a development. They exclude basement car parks, services, swimming pools, tennis courts and impervious surfaces including car parks, driveways and roof areas.

Deep soil zones have important environmental benefits, such as allowing infiltration of rain water to the water table and reducing stormwater runoff, promoting healthy growth of large trees with large canopies and protecting existing mature trees which assist with temperature reduction in urban environments. Deep soil zones may be constrained by the size of the lot or the location of a proposed development. To provide shade and amenity for residents they can be co-located with communal open space.

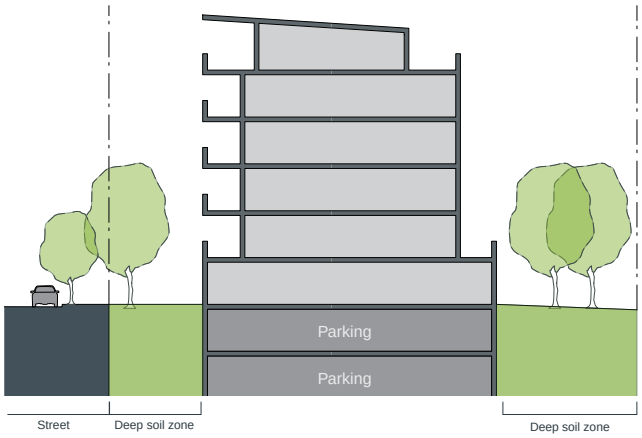


Figure 3E.1 Opportunities for deep soil zones are increased when parking levels are contained within the building footprint

Table 2 Suggested soil volumes on sites with sand, clay, alluvial, transition and disturbed soils

Tree size	Height	Spread	Soil volume
Large trees	13-18m	16m	80m^3
Medium tree	9-12m	8m	35m^3
Small tree	6-8m	4m	15m^3

Note: On sandy sites with reduced soil volumes, the number of trees planted is proportional to the available soil volume

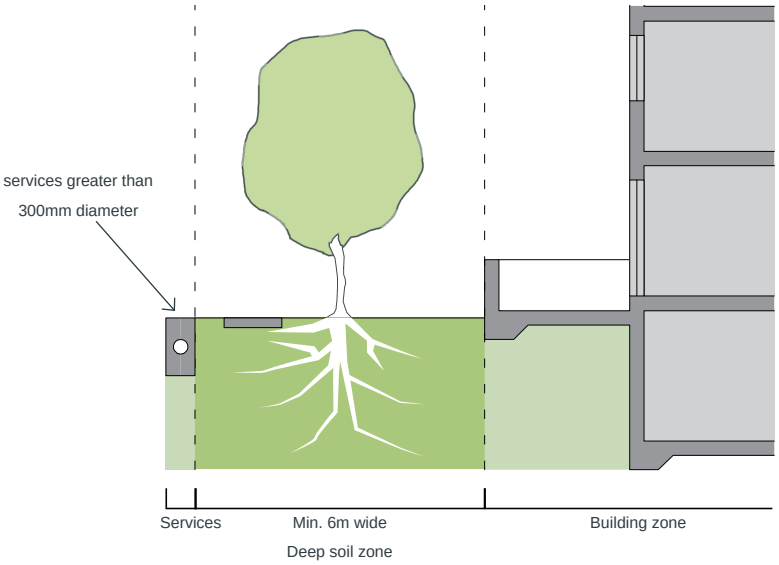


Figure 3E.2 Diagram showing the minimum dimension of deep soil zones for sites greater than 1,500m^2

Figure 3E.3 Deep soil zones promote the growth of larger trees which improve amenity and local microclimate

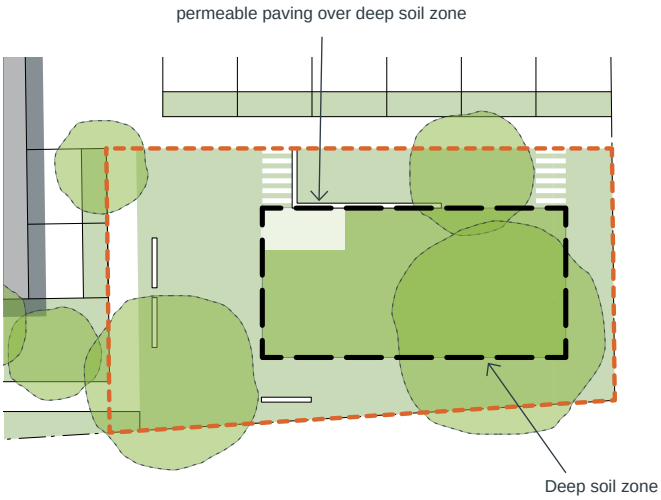


Figure 3E.4 Pedestrian pathways and paving which is specifically designed for tree root growth can occupy up to 10% of the deep soil zone

Objective 3E-1

Deep soil zones provide areas on the site that allow for and support healthy plant and tree growth. They improve residential amenity and promote management of water and air quality

Design criteria

1. Deep soil zones are to meet the following minimum requirements:

Site area	Minimum dimensions	Deep soil zone (% of site area)
less than 650m^2	-	7%
650m^2 - 1,500m^2	3m	
greater than 1,500m^2	6m	
greater than 1,500m^2 with significant existing tree cover	6m	

Design guidance

On some sites it may be possible to provide larger deep soil zones, depending on the site area and context:

- 10% of the site as deep soil on sites with an area of 650m^2 - 1,500m^2
- 15% of the site as deep soil on sites greater than 1,500m^2

Deep soil zones should be located to retain existing significant trees and to allow for the development of healthy root systems, providing anchorage and stability for mature trees. Design solutions may include:

- basement and sub basement car park design that is consolidated beneath building footprints
- use of increased front and side setbacks
- adequate clearance around trees to ensure long term health
- co-location with other deep soil areas on adjacent sites to create larger contiguous areas of deep soil

Achieving the design criteria may not be possible on some sites including where:

- the location and building typology have limited or no space for deep soil at ground level (e.g. central business district, constrained sites, high density areas, or in centres)
- there is 100% site coverage or non-residential uses at ground floor level

Where a proposal does not achieve deep soil requirements, acceptable stormwater management should be achieved and alternative forms of planting provided such as on structure

3F Visual privacy

Visual privacy allows residents within an apartment development and on adjacent properties to use their private spaces without being overlooked. It balances the need for views and outlook with the need for privacy. In higher density developments it also assists to increase overall amenity.

Visual privacy balances site and context specific design solutions with views, outlook, ventilation and solar access. The adjacent context, site configuration, topography, the scale of the development and the apartment layout all need to be considered.

Degrees of privacy are also influenced by a number of factors including the activities of each of the spaces where overlooking may occur, the times and frequency these spaces are being used, the expectations of occupants for privacy and their ability to control overlooking with screening devices.

Figure 3F.1 Visual privacy is an important factor for residential amenity. The siting of buildings needs to ensure adequate separation between apartments

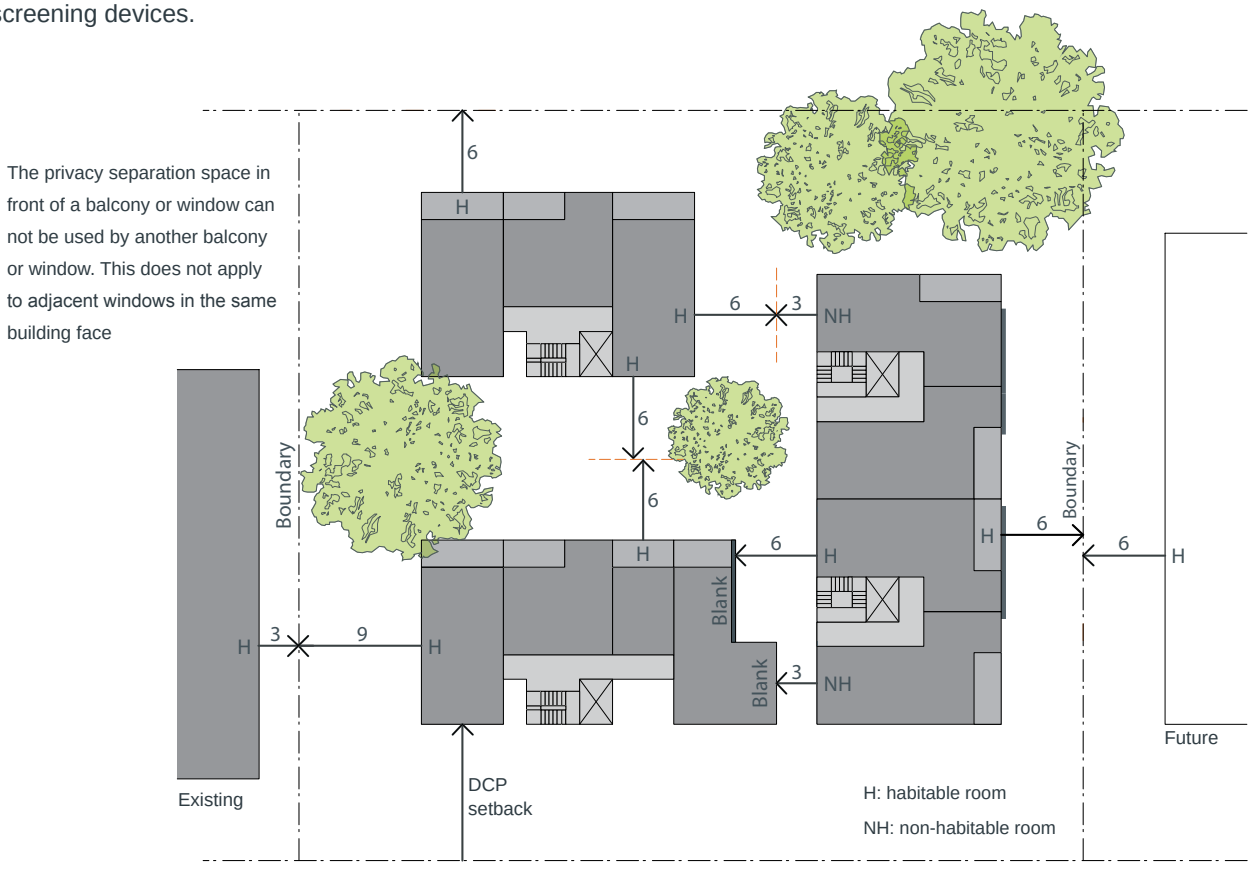


Figure 3F.2 Any one development will have a variety of visual privacy conditions to be accommodated. Section A (Figure 3F.4) shows separation distances between apartments within the same site

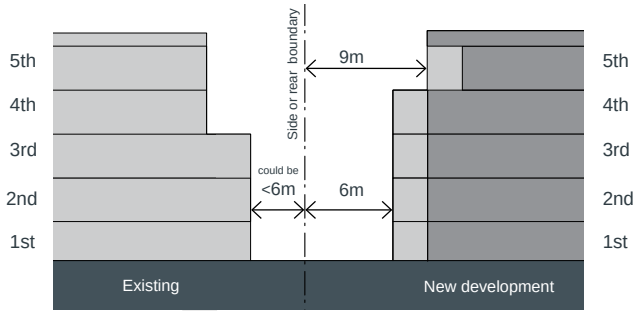


Figure 3F.3 New development adjacent to existing buildings should provide adequate separation distances to the boundary in accordance with the design criteria

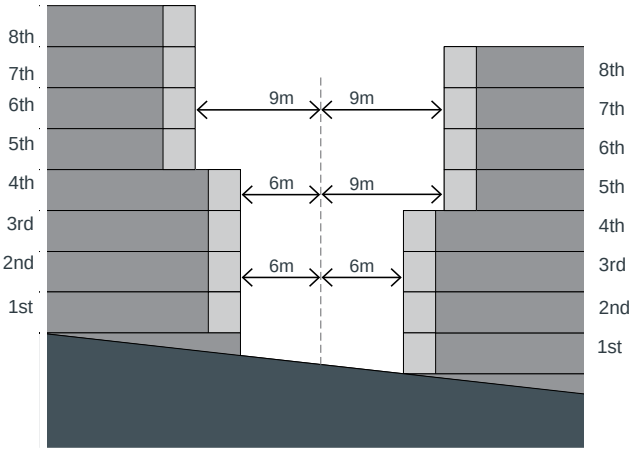


Figure 3F.4 Within the same site, minimum separation should be shared equitably between buildings. On sloping sites, appropriate separation distances ensure visual privacy for apartments on different levels

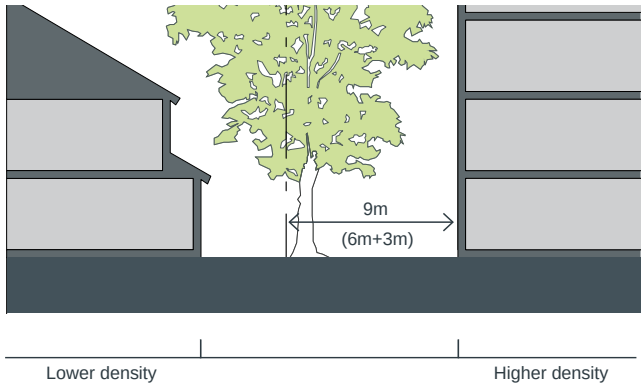


Figure 3F.5 To resolve amenity impacts, apartment buildings should increase the building separation distance (+3m) when adjacent to a different zone that permits lower density residential development

Objective 3F-1

Adequate building separation distances are shared equitably between neighbouring sites, to achieve reasonable levels of external and internal visual privacy

Design criteria

1. Separation between windows and balconies is provided to ensure visual privacy is achieved. Minimum required separation distances from buildings to the side and rear boundaries are as follows:

Building height	Habitable rooms and balconies	Non-habitable rooms
up to 12m (4 storeys)	6m	3m
up to 25m (5-8 storeys)	9m	4.5m
over 25m (9+ storeys)	12m	6m

Note: Separation distances between buildings on the same site should combine required building separations depending on the type of room (see figure 3F.2)

Gallery access circulation should be treated as habitable space when measuring privacy separation distances between neighbouring properties

Design guidance

Generally one step in the built form as the height increases due to building separations is desirable. Additional steps should be careful not to cause a 'ziggurat' appearance

For residential buildings next to commercial buildings, separation distances should be measured as follows:

- for retail, office spaces and commercial balconies use the habitable room distances
- for service and plant areas use the non-habitable room distances

New development should be located and oriented to maximise visual privacy between buildings on site and for neighbouring buildings. Design solutions include:

- site layout and building orientation to minimise privacy impacts (see also section 3B Orientation)
- on sloping sites, apartments on different levels have appropriate visual separation distances (see figure 3F.4)

Apartment buildings should have an increased separation distance of 3m (in addition to the requirements set out in design criteria 1) when adjacent to a different zone that permits lower density residential development to provide for a transition in scale and increased landscaping (figure 3F.5)

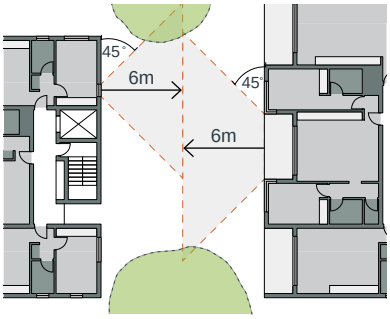
Direct lines of sight should be avoided for windows and balconies across corners

No separation is required between blank walls

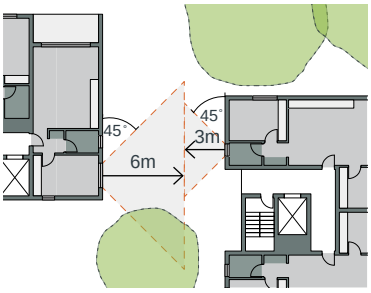
3F Visual privacy

Conditions within a development

Habitable to habitable rooms

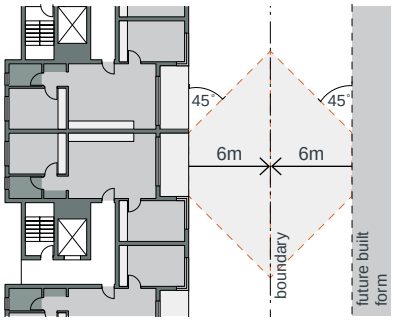


Habitable to non-habitable rooms

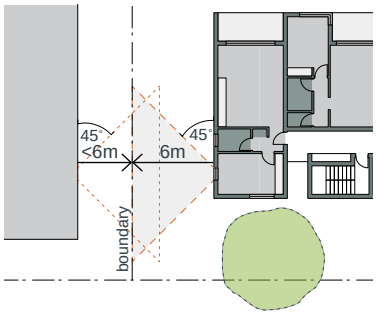


Boundary conditions

Habitable to habitable rooms

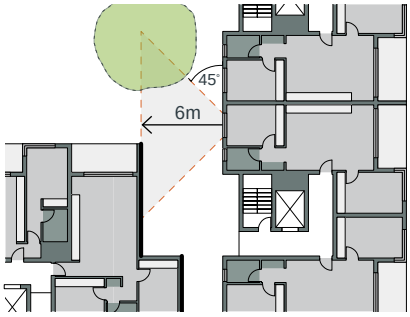


Habitable to non-compliant existing



Blank wall conditions

To habitable rooms



To non-habitable rooms

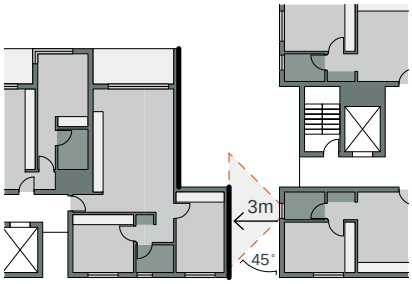
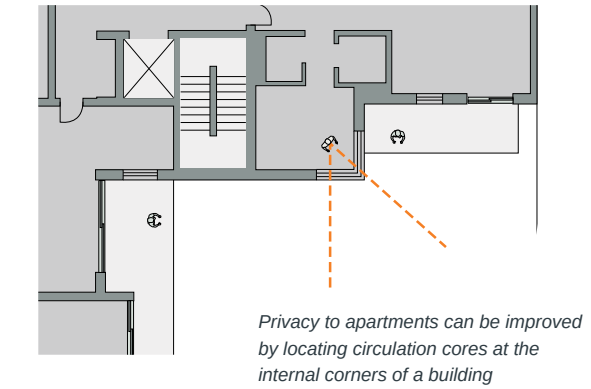


Figure 3F.6 Diagrams showing different privacy interface conditions

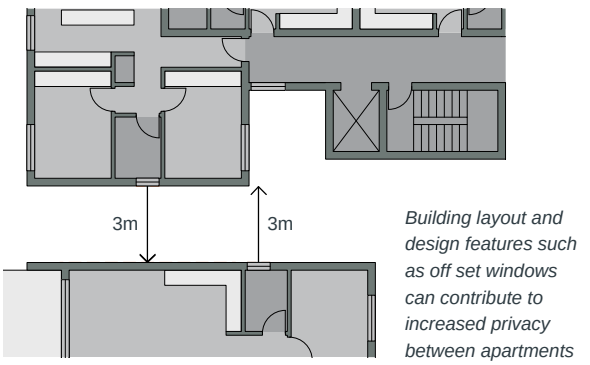
Figure 3F.7 Solid walls with non-habitable room windows are used for end elevations to manage privacy impacts between buildings. Solid balconies at lower levels provide better privacy from the street

Figure 3F.8 Well designed fences and balconies provide privacy to apartments when viewed from the public domain or adjacent apartment buildings

Figure 3F.9 Fencing of ground floor apartments should not be solid to allow for surveillance of common open space and the public domain



Privacy to apartments can be improved by locating circulation cores at the internal corners of a building



Building layout and design features such as off set windows can contribute to increased privacy between apartments

Figure 3F.10 Examples of solutions to increase privacy
Note: building separations are shown for up to 12m (4 storeys)

Objective 3F-2

Site and building design elements increase privacy without compromising access to light and air and balance outlook and views from habitable rooms and private open space

Design guidance

Communal open space, common areas and access paths should be separated from private open space and windows to apartments, particularly habitable room windows. Design solutions may include:

- setbacks
- solid or partially solid balustrades to balconies at lower levels
- fencing and/or trees and vegetation to separate spaces
- screening devices
- bay windows or pop out windows to provide privacy in one direction and outlook in another
- raising apartments/private open space above the public domain or communal open space
- planter boxes incorporated into walls and balustrades to increase visual separation
- pergolas or shading devices to limit overlooking of lower apartments or private open space
- on constrained sites where it can be demonstrated that building layout opportunities are limited, fixed louvres or screen panels to windows and/or balconies

Bedrooms, living spaces and other habitable rooms should be separated from gallery access and other open circulation space by the apartment's service areas

Balconies and private terraces should be located in front of living rooms to increase internal privacy

Windows should be offset from the windows of adjacent buildings

Recessed balconies and/or vertical fins should be used between adjacent balconies

3G Pedestrian access and entries

Good pedestrian access delivers high quality, equitable, safe and pleasant walking environments along the street, into the development and to individual apartments. Pedestrian access and entries must be priorities over vehicle access.

Building entries provide a connection with the public space and an address for a building or group of buildings. The design of building entries and their integration with the building and landscape design contributes to the identity of the building and the character of the streetscape. Building entries may lead into a common entry or directly into the private space of an apartment.

Figure 3G.2 Breaks between buildings, colour and landscaping can be combined to help identify building entries

Figure 3G.3 The use of colour of this building entry contrasts with the facade and surrounding landscape setting

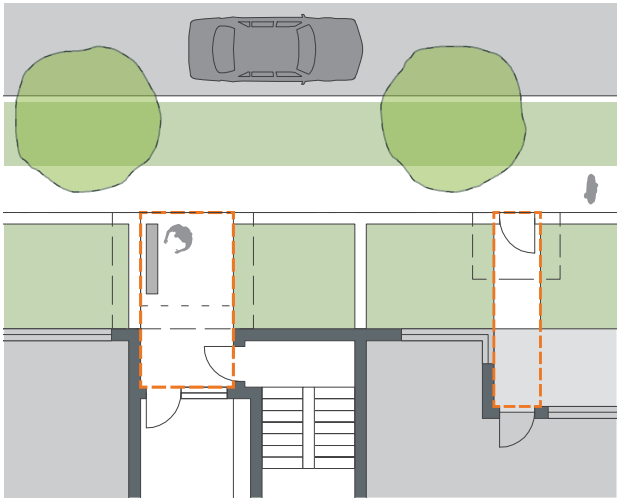


Figure 3G.1 Successful building entries define public and private space, are clearly identifiable and activate the street

Figure 3G.4 Features such as awnings, blade walls and signage contribute to building entries that are clearly identifiable from the street

Figure 3G.5 Pedestrian through-site links need to be direct with clear sight lines to each end

Figure 3G.6 Windows and balconies should overlook through-site connections to provide passive surveillance

Objective 3G-1

Building entries and pedestrian access connects to and addresses the public domain

Design guidance

Multiple entries (including communal building entries and individual ground floor entries) should be provided to activate the street edge

Entry locations relate to the street and subdivision pattern and the existing pedestrian network

Building entries should be clearly identifiable and communal entries should be clearly distinguishable from private entries

Where street frontage is limited and multiple buildings are located on the site, a primary street address should be provided with clear sight lines and pathways to secondary building entries

Objective 3G-2

Access, entries and pathways are accessible and easy to identify

Design guidance

Building access areas including lift lobbies, stairwells and hallways should be clearly visible from the public domain and communal spaces

The design of ground floors and underground car parks minimise level changes along pathways and entries

Steps and ramps should be integrated into the overall building and landscape design

For large developments 'way finding' maps should be provided to assist visitors and residents (see figure 4T.3)

For large developments electronic access and audio/video intercom should be provided to manage access

Objective 3G-3

Large sites provide pedestrian links for access to streets and connection to destinations

Design guidance

Pedestrian links through sites facilitate direct connections to open space, main streets, centres and public transport

Pedestrian links should be direct, have clear sight lines, be overlooked by habitable rooms or private open spaces of dwellings, be well lit and contain active uses, where appropriate

4A Solar and daylight access

Solar and daylight access are important for apartment buildings, reducing the reliance on artificial lighting and heating, improving energy efficiency and residential amenity through pleasant conditions to live and work.

Solar access is the ability of a building to receive direct sunlight without the obstruction from other buildings or impediments, not including trees. Sunlight is direct beam radiation from the sun. Daylight consists of sunlight and diffuse light from the sky. Daylight changes with the time of day, season and weather conditions.

Access to sunlight for habitable rooms and private open space is measured at mid winter (21 June) as this is when the sun is lowest in the sky, representing the 'worst case' scenario for solar access.

Figure 4A.1 The hours of sunlight that can be expected in mid winter are directly related to the orientation of the facade. This diagram shows the optimal orientation for habitable rooms and balconies
Note: An additional design and assessment tool is provided at Appendix 5 to assist in confirming the level of sunlight access to apartments

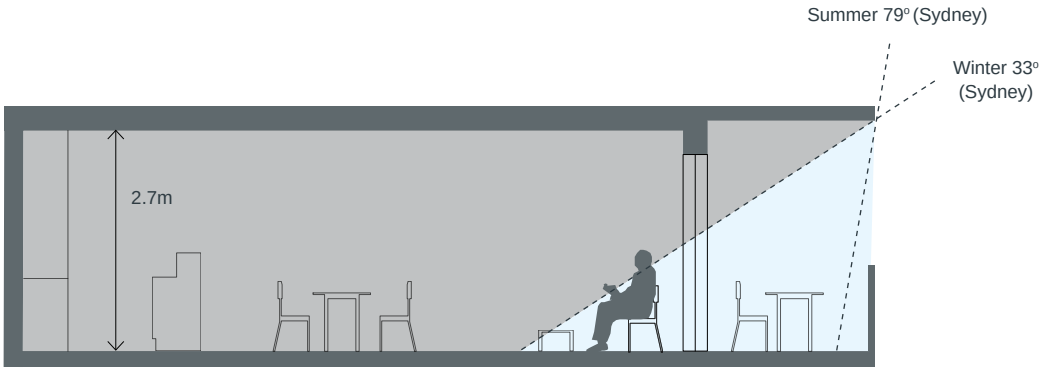


Figure 4A.2 Shading devices on balconies should shade summer sun and allow winter sun access to living areas

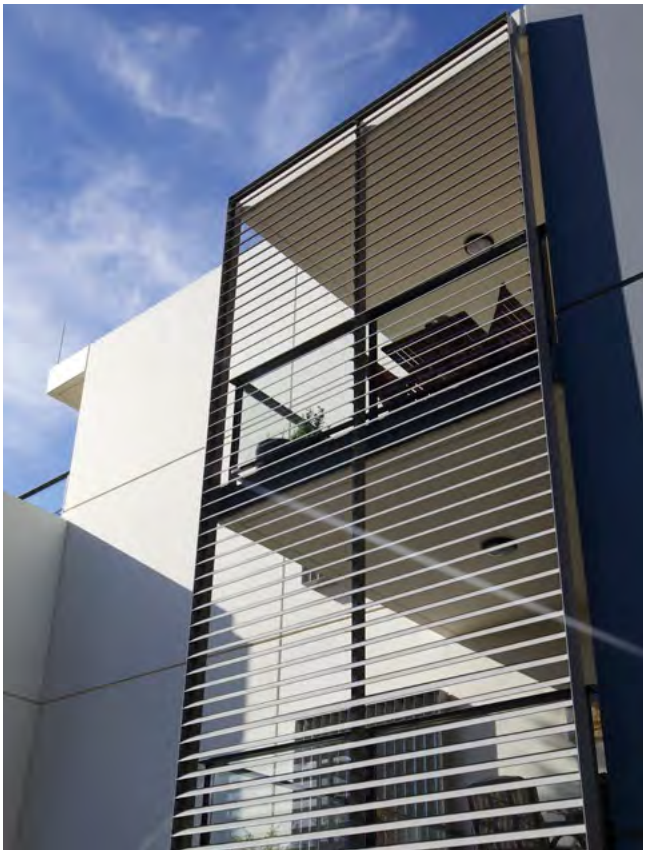


Figure 4A.3 Horizontal louvres are most effective on north facing elevations and achieve summer shade and winter sun access

Figure 4A.4 These operable screens can be adjusted by residents according to the season, weather conditions and time of day

Objective 4A-1

To optimise the number of apartments receiving sunlight to habitable rooms, primary windows and private open space

Design criteria

1. Living rooms and private open spaces of at least 70% of apartments in a building receive a minimum of 2 hours direct sunlight between 9 am and 3 pm at mid winter in the Sydney Metropolitan Area and in the Newcastle and Wollongong local government areas

2. In all other areas, living rooms and private open spaces of at least 70% of apartments in a building receive a minimum of 3 hours direct sunlight between 9 am and 3 pm at mid winter

3. A maximum of 15% of apartments in a building receive no direct sunlight between 9 am and 3 pm at mid winter

Design guidance

The design maximises north aspect and the number of single aspect south facing apartments is minimised

Single aspect, single storey apartments should have a northerly or easterly aspect

Living areas are best located to the north and service areas to the south and west of apartments

To optimise the direct sunlight to habitable rooms and balconies a number of the following design features are used:

- dual aspect apartments
- shallow apartment layouts
- two storey and mezzanine level apartments
- bay windows

To maximise the benefit to residents of direct sunlight within living rooms and private open spaces, a minimum of $1m^2$ of direct sunlight, measured at 1m above floor level, is achieved for at least 15 minutes

Achieving the design criteria may not be possible on some sites. This includes:

- where greater residential amenity can be achieved along a busy road or rail line by orientating the living rooms away from the noise source
- on south facing sloping sites
- where significant views are oriented away from the desired aspect for direct sunlight

Design drawings need to demonstrate how site constraints and orientation preclude meeting the design criteria and how the development meets the objective

Figure 4A.8 Trees help shade building facades. For east and west facing facades consider planting deciduous species

Figure 4A.9 Courtyards can provide for daylight access to common areas. For habitable rooms of apartments, they should only be used as a secondary light source

Objective 4A-2

Daylight access is maximised where sunlight is limited

Design guidance

Courtyards, skylights and high level windows (with sills of 1,500mm or greater) are used only as a secondary light source in habitable rooms

Where courtyards are used :

- use is restricted to kitchens, bathrooms and service areas
- building services are concealed with appropriate detailing and materials to visible walls
- courtyards are fully open to the sky
- access is provided to the light well from a communal area for cleaning and maintenance
- acoustic privacy, fire safety and minimum privacy separation distances (see section 3F Visual privacy) are achieved

Opportunities for reflected light into apartments are optimised through:

- reflective exterior surfaces on buildings opposite south facing windows
- positioning windows to face other buildings or surfaces (on neighbouring sites or within the site) that will reflect light
- integrating light shelves into the design
- light coloured internal finishes

Objective 4A-3

Design incorporates shading and glare control, particularly for warmer months

Design guidance

A number of the following design features are used:

- balconies or sun shading that extend far enough to shade summer sun, but allow winter sun to penetrate living areas
- shading devices such as eaves, awnings, balconies, pergolas, external louvres and planting
- horizontal shading to north facing windows
- vertical shading to east and particularly west facing windows
- operable shading to allow adjustment and choice
- high performance glass that minimises external glare off windows, with consideration given to reduced tint glass or glass with a reflectance level below 20% (reflective films are avoided)

4B Natural ventilation

Natural ventilation is the movement of sufficient volumes of fresh air through an apartment to create a comfortable indoor environment. Sustainable design practice incorporates natural ventilation by responding to the local climate and reduces the need for mechanical ventilation and air conditioning. To achieve adequate natural ventilation, apartment design must address the orientation of the building, the configuration of apartments and the external building envelope.

Natural cross ventilation is achieved by apartments having more than one aspect with direct exposure to the prevailing winds, or windows located in significantly different pressure regions, rather than relying on purely wind driven air. Apartment layout and building depth have a close relationship with the ability of an apartment to be naturally ventilated. Generally as the building gets deeper, effective airflow reduces.

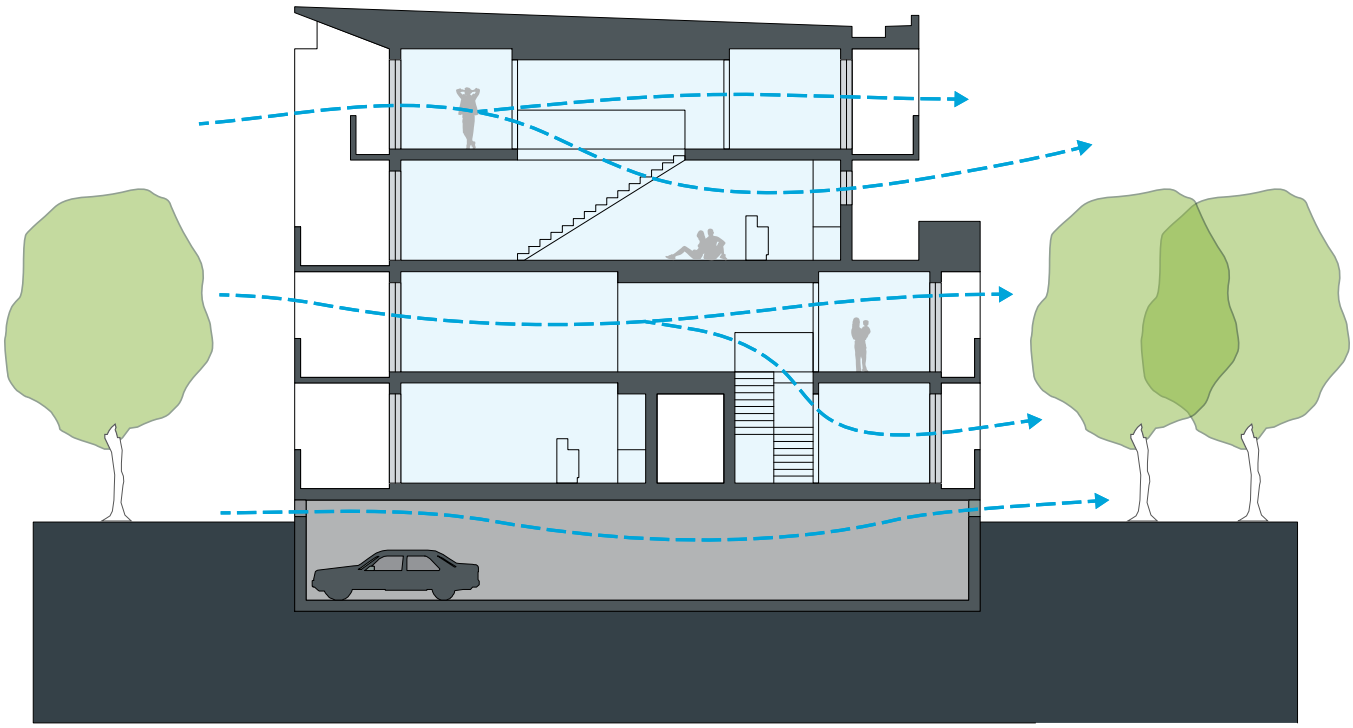


Figure 4B.1 Prevailing winds vary for different locations and depend on local conditions. For coastal areas in NSW, cooling sea breezes in summer tend to come from a north-easterly direction

Figure 4B.2 Operable balcony screens allow occupants to customise their environment and regulate access of natural light and ventilation

Objective 4B-1

All habitable rooms are naturally ventilated

Design guidance

The building's orientation maximises capture and use of prevailing breezes for natural ventilation in habitable rooms

Depths of habitable rooms support natural ventilation

The area of unobstructed window openings should be equal to at least 5% of the floor area served

Light wells are not the primary air source for habitable rooms

Doors and openable windows maximise natural ventilation opportunities by using the following design solutions:

- adjustable windows with large effective openable areas
- a variety of window types that provide safety and flexibility such as awnings and louvres
- windows which the occupants can reconfigure to funnel breezes into the apartment such as vertical louvres, casement windows and externally opening doors

Objective 4B-2

The layout and design of single aspect apartments maximises natural ventilation

Design guidance

Apartment depths are limited to maximise ventilation and airflow (see also figure 4D.3)

Natural ventilation to single aspect apartments is achieved with the following design solutions:

- primary windows are augmented with plenums and light wells (generally not suitable for cross ventilation)
- stack effect ventilation / solar chimneys or similar to naturally ventilate internal building areas or rooms such as bathrooms and laundries
- courtyards or building indentations have a width to depth ratio of 2:1 or 3:1 to ensure effective air circulation and avoid trapped smells

4B Natural ventilation

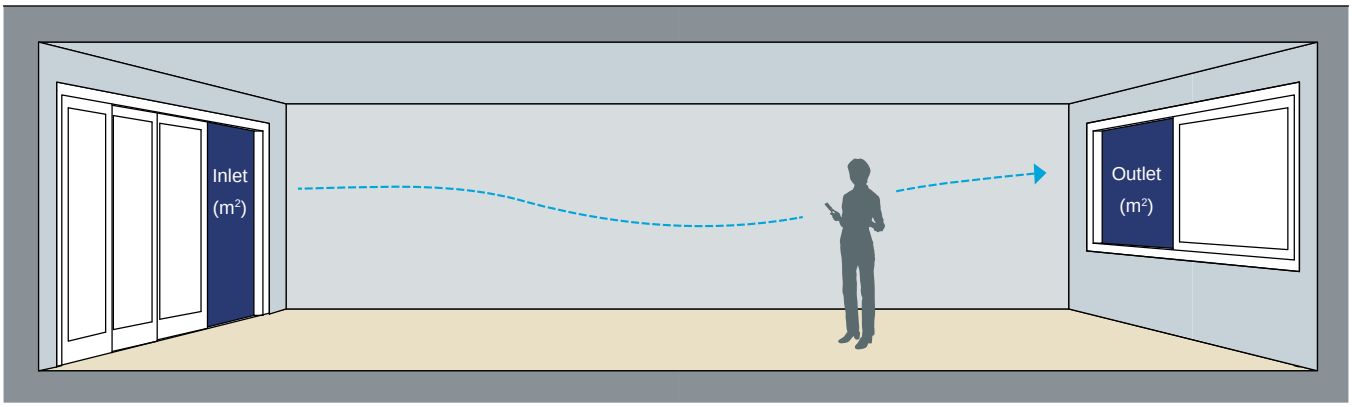


Figure 4B.3 Effective cross ventilation is achieved when the inlet and outlet have approximately the same area, allowing air to be drawn through the apartment using opposite air pressures on each side of the building

Figure 4B.4 Responding to the local climate reduces the need for mechanical ventilation and air conditioning

Figure 4B.5 Natural cross ventilation is facilitated by limited apartment depths and use of dual aspect apartments

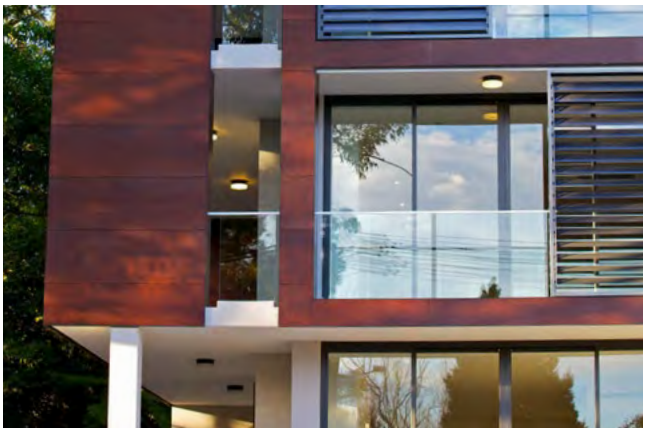


Figure 4B.6 Natural ventilation is further enhanced by using generous window and door openings

Figure 4B.7 Operable louvres allow residents to regulate natural ventilation

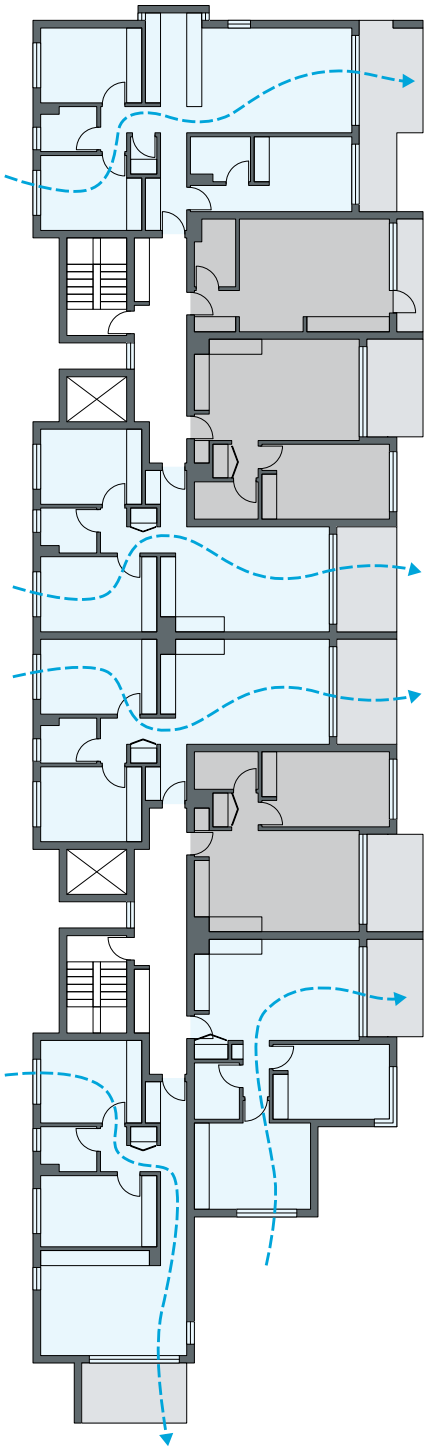


Figure 4B.8 The floor plan above demonstrates one approach for how five of a total of eight apartments achieve natural cross ventilation

Objective 4B-3

The number of apartments with natural cross ventilation is maximised to create a comfortable indoor environment for residents

Design criteria

1. At least 60% of apartments are naturally cross ventilated in the first nine storeys of the building. Apartments at ten storeys or greater are deemed to be cross ventilated only if any enclosure of the balconies at these levels allows adequate natural ventilation and cannot be fully enclosed

2. Overall depth of a cross-over or cross-through apartment does not exceed 18m, measured glass line to glass line

Design guidance

The building should include dual aspect apartments, cross through apartments and corner apartments and limit apartment depths

In cross-through apartments external window and door opening sizes/areas on one side of an apartment (inlet side) are approximately equal to the external window and door opening sizes/areas on the other side of the apartment (outlet side) (see figure 4B.4)

Apartments are designed to minimise the number of corners, doors and rooms that might obstruct airflow

Apartment depths, combined with appropriate ceiling heights, maximise cross ventilation and airflow

4C Ceiling heights

Ceiling height is measured internally from finished floor level to finished ceiling level. The height of a ceiling contributes to amenity within an apartment and the perception of space. Well designed and appropriately defined ceilings can create spatial interest and hierarchy in apartments.

Ceiling height is directly linked to achieving sufficient natural ventilation and daylight access to habitable rooms. The ground and first floor levels of mixed use apartment buildings should have increased ceiling heights to ensure their longer term adaptability for other uses.

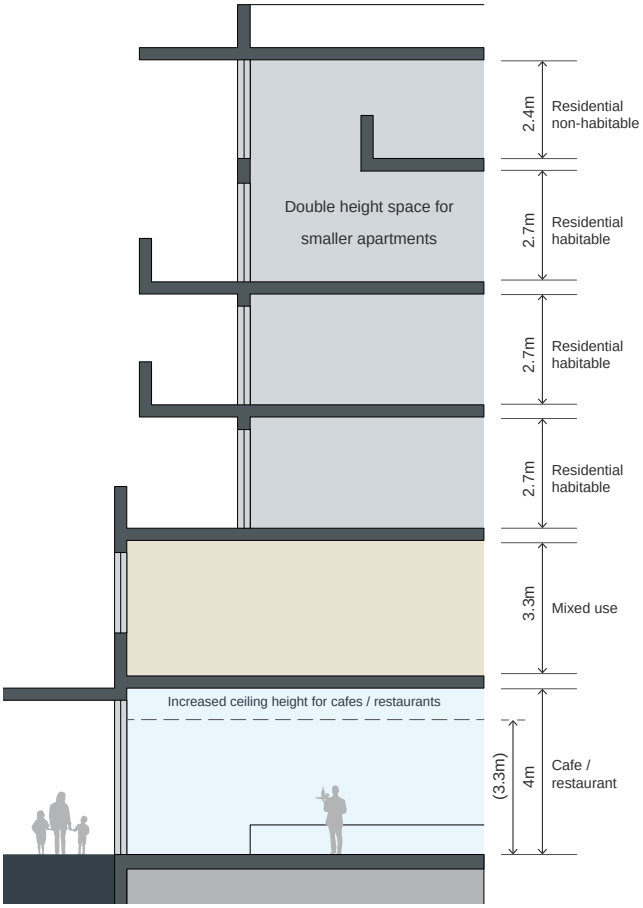


Figure 4C.1 Greater than minimum ceiling heights for retail and commercial floors of mixed use developments are encouraged to promote flexibility of use. Cafe and restaurant uses need greater minimum ceiling heights of 4m to allow for additional servicing needs

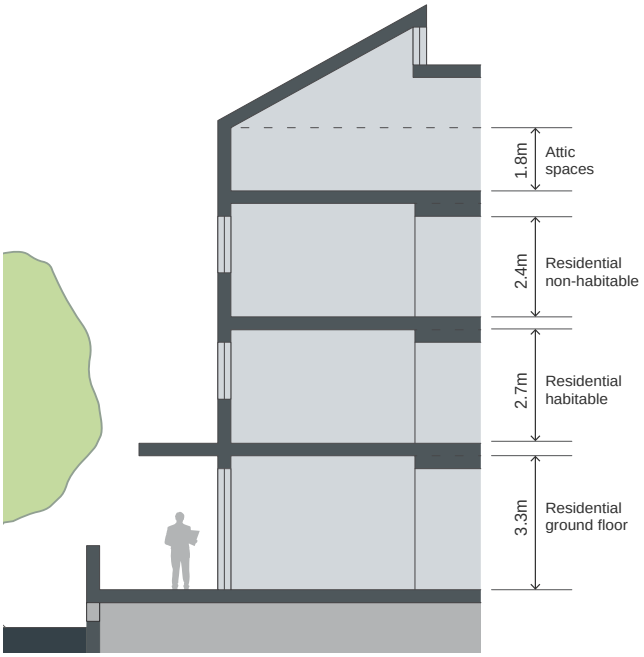


Figure 4C.2 Ceiling heights of minimum 2.7m help to achieve good daylight access and natural ventilation to residential apartments

Figure 4C.3 Ground floors often need to accommodate a range of uses such as retail, cafes and restaurants, and should provide increased ceiling heights to allow for maximum flexibility of use

Figure 4C.4 Differing ceiling heights are an opportunity to provide visual interest in the building facade

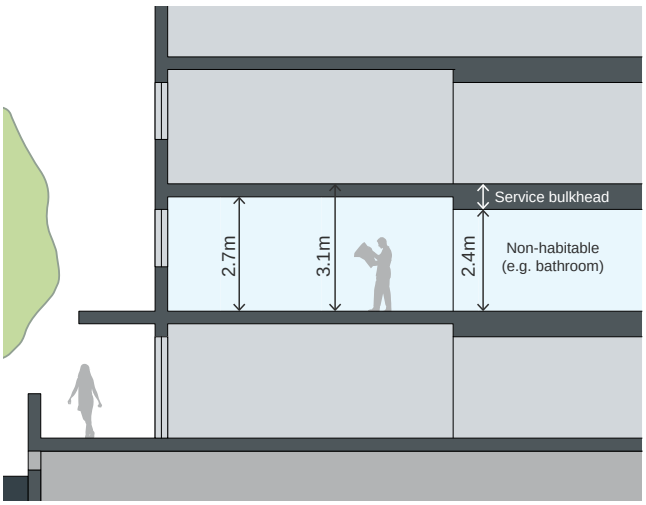


Figure 4C.5 Service bulkheads are wholly contained within non-habitable rooms and do not intrude into habitable spaces

Objective 4C-1

Ceiling height achieves sufficient natural ventilation and daylight access

Design criteria

1. Measured from finished floor level to finished ceiling level, minimum ceiling heights are:

Minimum ceiling height for apartment and mixed use buildings	
Habitable rooms	2.7m
Non-habitable	2.4m
For 2 storey apartments	2.7m for main living area floor 2.4m for second floor, where its area does not exceed 50% of the apartment area
Attic spaces	1.8m at edge of room with a 30 degree minimum ceiling slope
If located in mixed used areas	3.3m for ground and first floor to promote future flexibility of use

These minimums do not preclude higher ceilings if desired

Design guidance

Ceiling height can accommodate use of ceiling fans for cooling and heat distribution

Objective 4C-2

Ceiling height increases the sense of space in apartments and provides for well proportioned rooms

Design guidance

A number of the following design solutions can be used:

- the hierarchy of rooms in an apartment is defined using changes in ceiling heights and alternatives such as raked or curved ceilings, or double height spaces
- well proportioned rooms are provided, for example, smaller rooms feel larger and more spacious with higher ceilings
- ceiling heights are maximised in habitable rooms by ensuring that bulkheads do not intrude. The stacking of service rooms from floor to floor and coordination of bulkhead location above non-habitable areas, such as robes or storage, can assist

Objective 4C-3

Ceiling heights contribute to the flexibility of building use over the life of the building

Design guidance

Ceiling heights of lower level apartments in centres should be greater than the minimum required by the design criteria allowing flexibility and conversion to non-residential uses (see figure 4C.1)

4D Apartment size and layout

The layout of an apartment establishes the way rooms of different functions are arranged and located, the size of the rooms, the circulation between rooms and the degree of privacy for each room.

In addition, the layout directly impacts the quality of residential amenity by incorporating appropriate room shapes and window designs to deliver daylight and sunlight, natural ventilation, and acoustic and visual privacy. The apartment layout also includes private open space and conveniently located storage.

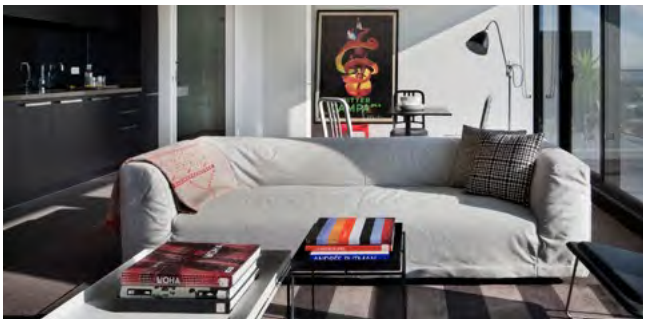


Figure 4D.1 This living area has a combined kitchen dining area that opens directly onto the balcony

Figure 4D.2 For open plan layouts, combining the living room, dining room and kitchen, the maximum room depth is 8 metres from a window

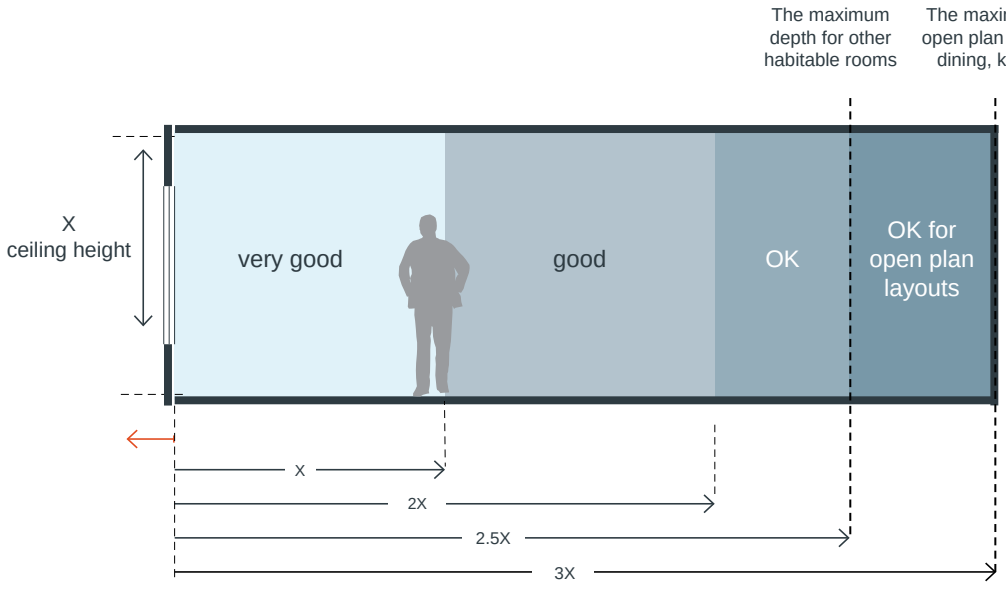
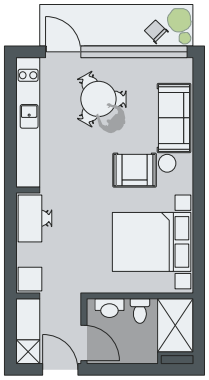


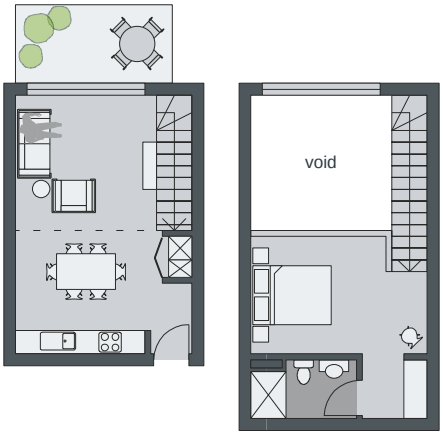
Figure 4D.3 The depth of a single aspect apartment relative to the ceiling height directly influences the quality of natural ventilation and daylight access. The maximum depth of open plan layouts that combine living, dining and kitchen spaces is 8 metres

Indicative layouts

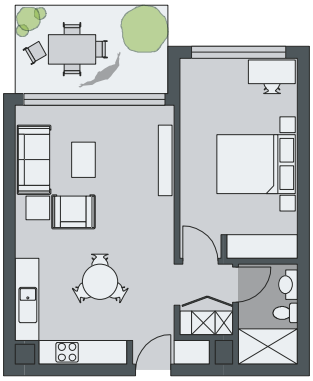
studio



1 bedroom



1 bedroom single aspect mezzanine



1 bedroom single aspect

Figure 4D.4 Diagrams showing indicative layouts for small apartments
Note: these do not represent the only solutions

Objective 4D-1

The layout of rooms within an apartment is functional, well organised and provides a high standard of amenity

Design criteria

1. Apartments are required to have the following minimum internal areas:

Apartment type	Minimum internal area
Studio	35m²
1 bedroom	50m²
2 bedroom	70m²
3 bedroom	90m²

The minimum internal areas include only one bathroom. Additional bathrooms increase the minimum internal area by 5m² each

A fourth bedroom and further additional bedrooms increase the minimum internal area by 12m² each

2. Every habitable room must have a window in an external wall with a total minimum glass area of not less than 10% of the floor area of the room. Daylight and air may not be borrowed from other rooms

Design guidance

Kitchens should not be located as part of the main circulation space in larger apartments (such as hallway or entry space)

A window should be visible from any point in a habitable room

Where minimum areas or room dimensions are not met apartments need to demonstrate that they are well designed and demonstrate the usability and functionality of the space with realistically scaled furniture layouts and circulation areas. These circumstances would be assessed on their merits

Objective 4D-2

Environmental performance of the apartment is maximised

Design criteria

1. Habitable room depths are limited to a maximum of 2.5 x the ceiling height

2. In open plan layouts (where the living, dining and kitchen are combined) the maximum habitable room depth is 8m from a window

Design guidance

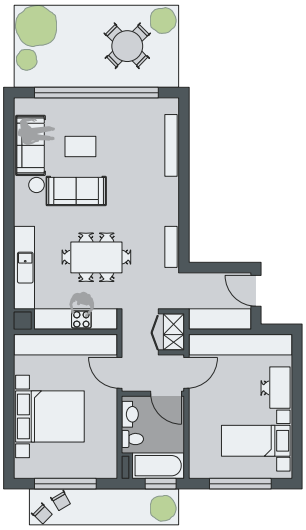
Greater than minimum ceiling heights can allow for proportional increases in room depth up to the permitted maximum depths

All living areas and bedrooms should be located on the external face of the building

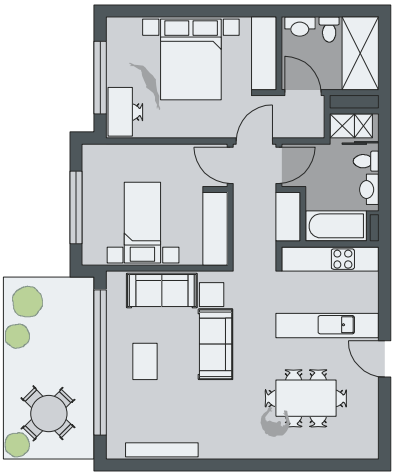
4D Apartment size and layout

Indicative layouts

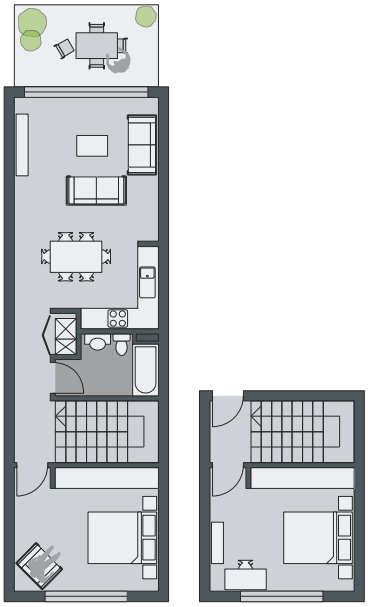
2 bedroom



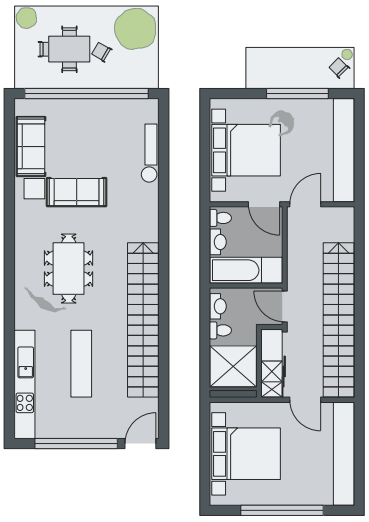
2 bedroom “L” dual aspect apartment



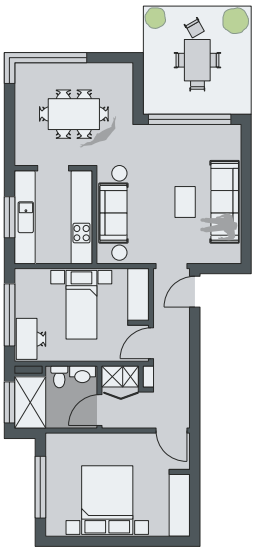
2 bedroom mid-floor plate single aspect



2 bedroom mid-floor plate cross-over



2 bedroom mid-floor plate 2 storey gallery access

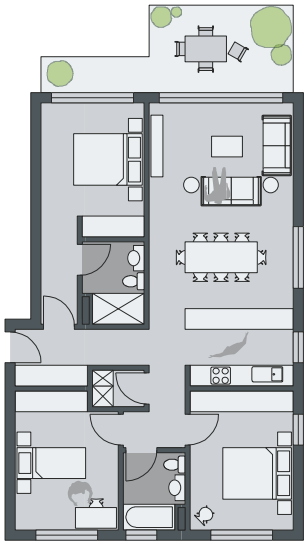


2 bedroom corner apartment

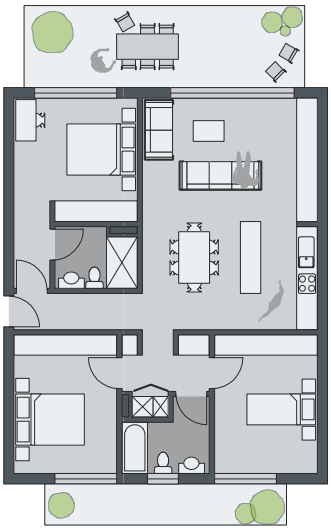
Figure 4D.5 Diagrams showing indicative layouts for 2 bedroom apartments
Note: these do not represent the only solutions

Indicative layouts

3 bedroom



3 bedroom corner apartment



3 bedroom mid-floor plate cross-through apartment

Figure 4D.6 Diagrams showing indicative layouts for 3 bedroom apartments
Note: these do not represent the only solutions

Where possible:

- bathrooms and laundries should have an external openable window
- main living spaces should be oriented toward the primary outlook and aspect and away from noise sources

Objective 4D-3

Apartment layouts are designed to accommodate a variety of household activities and needs

Design criteria

1. Master bedrooms have a minimum area of 10m^2 and other bedrooms 9m^2 (excluding wardrobe space)
2. Bedrooms have a minimum dimension of 3m (excluding wardrobe space)
3. Living rooms or combined living/dining rooms have a minimum width of:
   - 3.6m for studio and 1 bedroom apartments
   - 4m for 2 and 3 bedroom apartments
4. The width of cross-over or cross-through apartments are at least 4m internally to avoid deep narrow apartment layouts

Design guidance

Access to bedrooms, bathrooms and laundries is separated from living areas minimising direct openings between living and service areas

All bedrooms allow a minimum length of 1.5m for robes

The main bedroom of an apartment or a studio apartment should be provided with a wardrobe of a minimum 1.8m long, 0.6m deep and 2.1m high

Apartment layouts allow flexibility over time, design solutions may include:

- dimensions that facilitate a variety of furniture arrangements and removal
- spaces for a range of activities and privacy levels between different spaces within the apartment
- dual master apartments
- dual key apartments
  Note: dual key apartments which are separate but on the same title are regarded as two sole occupancy units for the purposes of the Building Code of Australia and for calculating the mix of apartments
- room sizes and proportions or open plans (rectangular spaces (2:3) are more easily furnished than square spaces (1:1))
- efficient planning of circulation by stairs, corridors and through rooms to maximise the amount of usable floor space in rooms

4E Private open space and balconies

Private open spaces are outdoor spaces of the apartment, including balconies, courtyards and terraces, which enhance the amenity and indoor/outdoor lifestyle of residents. They capitalise on New South Wales' temperate climate, providing an area for external activities and an extension of living spaces.

Balconies that are safe and appropriately designed can provide space for children to play outdoors, and the opportunity for pet ownership.

Private open spaces are also important architectural elements on the outside of an apartment building, contributing to the form and articulation of the building with fences, balustrades and screens.

Figure 4E.1 Balconies, courtyards and terraces enhance the amenity and indoor/outdoor lifestyle of residents

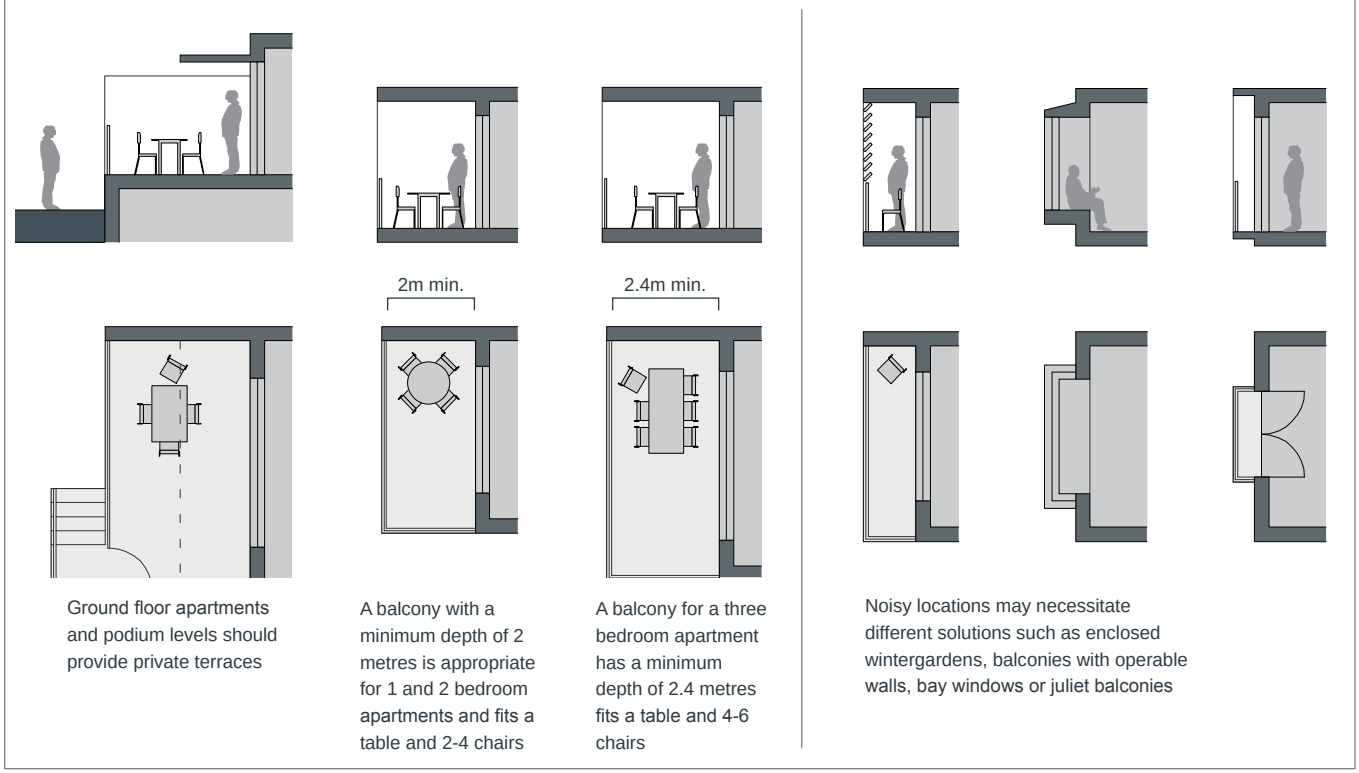


Figure 4E.2 Diagrams illustrating minimum balcony depth and options for noise treatment

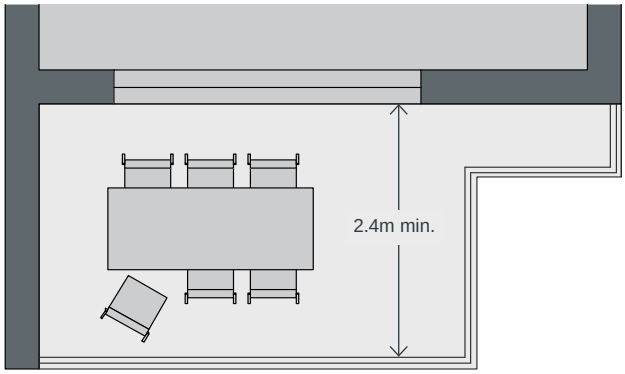


Figure 4E.3 Minimum balcony depths ensure that the balcony area is useable and can be easily accessed

Figure 4E.4 Building layout should maximise balcony use by allowing access from the main living area and a bedroom (where possible). Secondary balconies provide further amenity to apartment living and are best accessed off kitchens and laundries

Figure 4E.5 Primary balconies provide outdoor living, articulate the building facade and contribute to the safety of the public domain through increased surveillance opportunities

Objective 4E-1

Apartments provide appropriately sized private open space and balconies to enhance residential amenity

Design criteria

1. All apartments are required to have primary balconies as follows:

Dwelling type	Minimum area	Minimum depth
Studio apartments	4m^2	-
1 bedroom apartments	8m^2	2m
2 bedroom apartments	10m^2	2m
3+ bedroom apartments	12m^2	2.4m

The minimum balcony depth to be counted as contributing to the balcony area is 1m

2. For apartments at ground level or on a podium or similar structure, a private open space is provided instead of a balcony. It must have a minimum area of 15m^2 and a minimum depth of 3m

Design guidance

Increased communal open space should be provided where the number or size of balconies are reduced

Storage areas on balconies is additional to the minimum balcony size

Balcony use may be limited in some proposals by:

- consistently high wind speeds at 10 storeys and above
- close proximity to road, rail or other noise sources
- exposure to significant levels of aircraft noise
- heritage and adaptive reuse of existing buildings

In these situations, juliet balconies, operable walls, enclosed wintergardens or bay windows may be appropriate, and other amenity benefits for occupants should also be provided in the apartments or in the development or both. Natural ventilation also needs to be demonstrated

Objective 4E-2

Primary private open space and balconies are appropriately located to enhance liveability for residents

Design guidance

Primary open space and balconies should be located adjacent to the living room, dining room or kitchen to extend the living space

Private open spaces and balconies predominantly face north, east or west

Primary open space and balconies should be orientated with the longer side facing outwards or be open to the sky to optimise daylight access into adjacent rooms

4E Private open space and balconies

Figure 4E.6 For one and two bedroom apartments, balconies should be at least 2m deep to allow enough space for a small table

Figure 4E.7 Balconies should be designed to be safe outdoor spaces for children

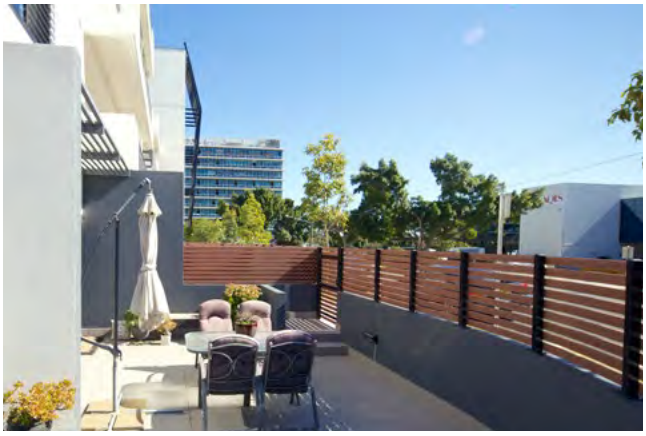


Figure 4E.8 Partially solid fences and balustrades allow views and passive surveillance of the street while maintaining visual privacy to ground level apartments

Figure 4E.9 A combination of solid and transparent materials balances the need for privacy with surveillance of the public domain

Figure 4E.10 Viewed from the inside, screening increases privacy and allows for storage and external clothes drying

Figure 4E.11 Setting the balustrade back from the building edge allows for landscaping towards the street for increased privacy

Figure 4E.12 Soffits and undersides of balconies should be well detailed as they are visible from the street

Objective 4E-3

Private open space and balcony design is integrated into and contributes to the overall architectural form and detail of the building

Design guidance

Solid, partially solid or transparent fences and balustrades are selected to respond to the location. They are designed to allow views and passive surveillance of the street while maintaining visual privacy and allowing for a range of uses on the balcony. Solid and partially solid balustrades are preferred

Full width full height glass balustrades alone are generally not desirable

Projecting balconies should be integrated into the building design and the design of soffits considered

Operable screens, shutters, hoods and pergolas are used to control sunlight and wind

Balustrades are set back from the building or balcony edge where overlooking or safety is an issue

Downpipes and balcony drainage are integrated with the overall facade and building design

Air-conditioning units should be located on roofs, in basements, or fully integrated into the building design

Where clothes drying, storage or air conditioning units are located on balconies, they should be screened and integrated in the building design

Ceilings of apartments below terraces should be insulated to avoid heat loss

Water and gas outlets should be provided for primary balconies and private open space

Objective 4E-4

Private open space and balcony design maximises safety

Design guidance

Changes in ground levels or landscaping are minimised

Design and detailing of balconies avoids opportunities for climbing and falls

4F Common circulation and spaces

Common circulation and spaces within a building are shared communally by residents. They include lobbies, internal corridors and external galleries, vertical circulation such as lifts and stairs, as well as community rooms and other spaces.

Common circulation spaces provide opportunities for casual social interaction among residents and can assist with social recognition. Important design considerations include safety, amenity and durability. In addition, the choice of common circulation types has a direct influence on the apartment types provided, building form, articulation and the building's relationship to the street.

Figure 4F.1 The maximum number of apartments sharing a circulation core is eight

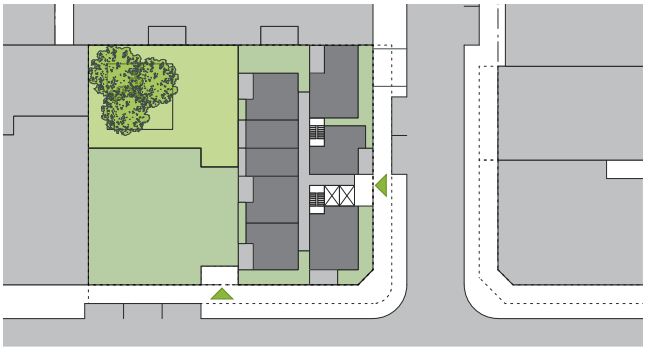


Figure 4F.2 The total number of apartments accessed off one circulation core should be eight or fewer

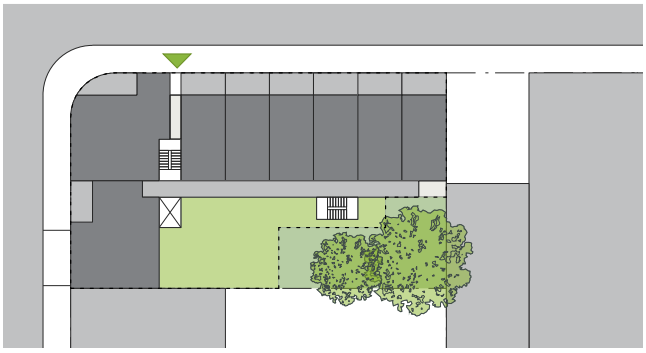


Figure 4F.3 External gallery access can be useful to maximise a desirable aspect for apartments or as a buffer to a noise source

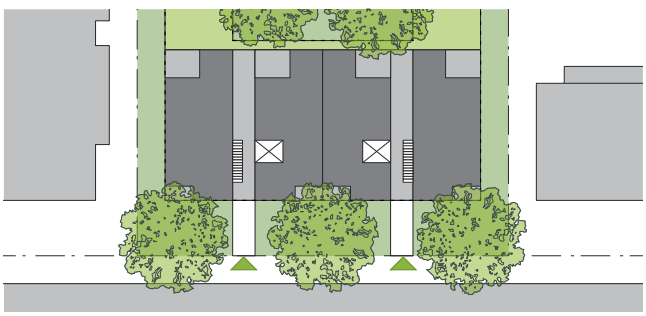


Figure 4F.4 Multiple cores improve natural cross ventilation and provide more entries along the street, increasing activity and passive surveillance

Figure 4F.5 Mixed use buildings may have a range of circulation spaces including multiple cores, gallery access and double-loaded corridors with cross-over apartments

Figure 4F.6 Common areas should be provided in larger developments

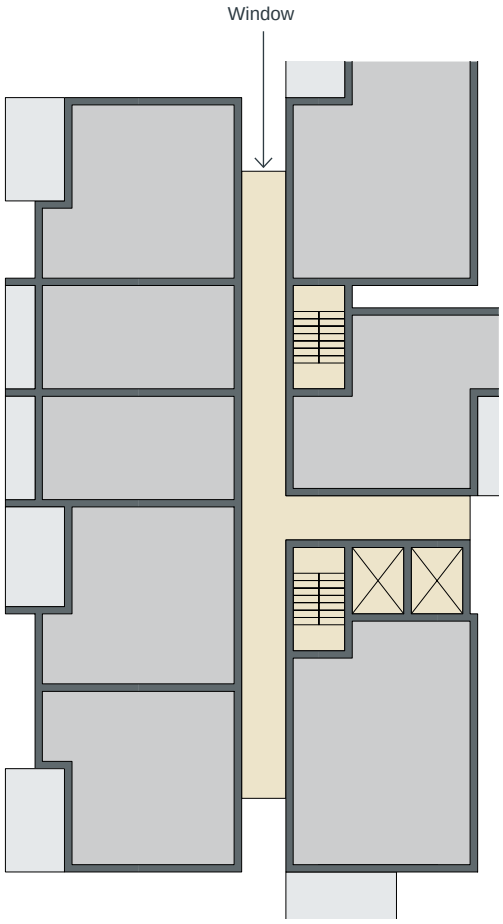


Figure 4F.7 Windows provide daylight and natural ventilation to common circulation spaces

Objective 4F-1

Common circulation spaces achieve good amenity and properly service the number of apartments

Design criteria

1. The maximum number of apartments off a circulation core on a single level is eight

2. For buildings of 10 storeys and over, the maximum number of apartments sharing a single lift is 40

Design guidance

Greater than minimum requirements for corridor widths and/or ceiling heights allow comfortable movement and access particularly in entry lobbies, outside lifts and at apartment entry doors

Daylight and natural ventilation should be provided to all common circulation spaces that are above ground

Windows should be provided in common circulation spaces and should be adjacent to the stair or lift core or at the ends of corridors

Longer corridors greater than 12m in length from the lift core should be articulated. Design solutions may include:

- a series of foyer areas with windows and spaces for seating
- wider areas at apartment entry doors and varied ceiling heights

Design common circulation spaces to maximise opportunities for dual aspect apartments, including multiple core apartment buildings and cross over apartments

Achieving the design criteria for the number of apartments off a circulation core may not be possible. Where a development is unable to achieve the design criteria, a high level of amenity for common lobbies, corridors and apartments should be demonstrated, including:

- sunlight and natural cross ventilation in apartments
- access to ample daylight and natural ventilation in common circulation spaces
- common areas for seating and gathering
- generous corridors with greater than minimum ceiling heights
- other innovative design solutions that provide high levels of amenity

Where design criteria 1 is not achieved, no more than 12 apartments should be provided off a circulation core on a single level

Primary living room or bedroom windows should not open directly onto common circulation spaces, whether open or enclosed. Visual and acoustic privacy from common circulation spaces to any other rooms should be carefully controlled

4F Common circulation and spaces

Figure 4F.8 Incidental spaces can be used to provide seating opportunities for residents

Figure 4F.9 Natural daylight improves the amenity of common circulation areas and increases the likelihood of social interaction between residents

Figure 4F.10 Common circulation spaces should provide short sight lines and be well lit at night

Figure 4F.11 Space for seating in common circulation spaces promotes opportunities for social interaction

Objective 4F-2

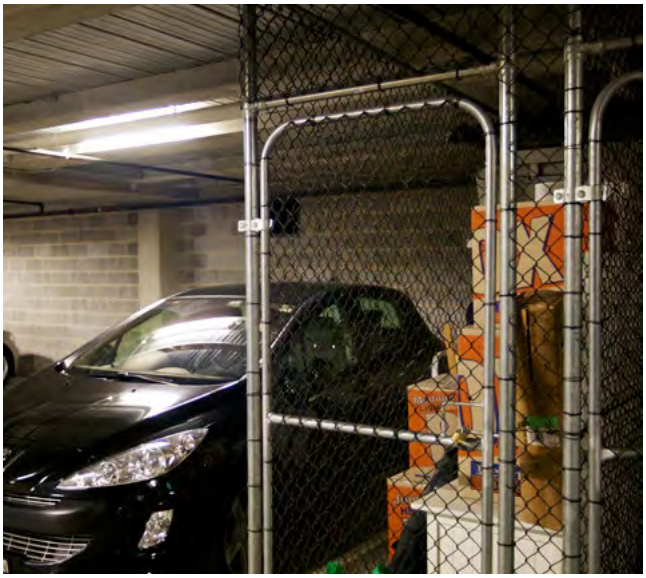
Common circulation spaces promote safety and provide for social interaction between residents

Design guidance

Direct and legible access should be provided between vertical circulation points and apartment entries by minimising corridor or gallery length to give short, straight, clear sight lines
Tight corners and spaces are avoided
Circulation spaces should be well lit at night
Legible signage should be provided for apartment numbers, common areas and general wayfinding
Incidental spaces, for example space for seating in a corridor, at a stair landing, or near a window are provided
In larger developments, community rooms for activities such as owners corporation meetings or resident use should be provided and are ideally co-located with communal open space
Where external galleries are provided, they are more open than closed above the balustrade along their length

4G Storage

Adequate storage is an important component of apartment design. It is calculated by volume as opposed to floor area and should be provided proportionally to the size of the apartment.



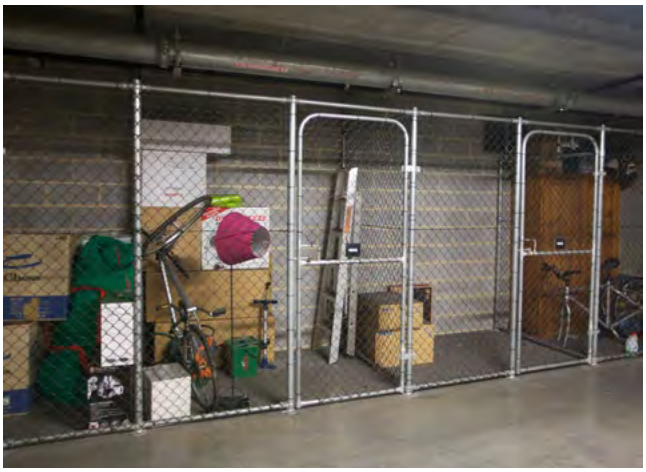


Figure 4G.1 Areas in car parks provide an opportunity to incorporate secure and convenient storage facilities for residents

Figure 4G.2 Storage within an apartment needs to be convenient and accessible from circulation or living areas

Figure 4G.3 Storage located on private balconies or within courtyards should be fully integrated and screened from view

Objective 4G-1

Adequate, well designed storage is provided in each apartment

Design criteria

1. In addition to storage in kitchens, bathrooms and bedrooms, the following storage is provided:

Dwelling type	Storage size volume
Studio apartments	4m^3
1 bedroom apartments	6m^3
2 bedroom apartments	8m^3
3+ bedroom apartments	10m^3

At least 50% of the required storage is to be located within the apartment

Design guidance

Storage is accessible from either circulation or living areas

Storage provided on balconies (in addition to the minimum balcony size) is integrated into the balcony design, weather proof and screened from view from the street

Left over space such as under stairs is used for storage

Objective 4G-2

Additional storage is conveniently located, accessible and nominated for individual apartments

Design guidance

Storage not located in apartments is secure and clearly allocated to specific apartments

Storage is provided for larger and less frequently accessed items

Storage space in internal or basement car parks is provided at the rear or side of car spaces or in cages so that allocated car parking remains accessible

If communal storage rooms are provided they should be accessible from common circulation areas of the building

Storage not located in an apartment is integrated into the overall building design and is not visible from the public domain

4O Landscape design

Successful landscape design complements the existing natural and cultural features of a site and contributes to the building's setting. Landscape design includes the planning, design, construction and maintenance of all external spaces.

Incorporating landscape design early in the design process provides optimal outcomes for residential apartments. It needs to be coordinated with other disciplines to ensure the building design and service locations complement the landscape and public domain.

Figure 4O.2 Landscape design should include plants endemic to the region, enhancing biodiversity and providing habitat for native wildlife

Figure 4O.1 Existing landscape features such as significant trees contribute to the overall quality of residential developments

Figure 4O.3 Landscape design should respond to the local context by using complementary materials and planting schemes

Table 4 Recommended tree planting in deep soil zones

Site area	Recommended tree planting
Up to 850m^2	1 medium tree per 50m^2 of deep soil zone
Between 850 - 1,500m^2	1 large tree or 2 medium trees per 90m^2 of deep soil zone
Greater than 1,500m^2	1 large tree or 2 medium trees per 80m^2 of deep soil zone

Figure 4O.4 Shading trees improve the microclimate and are particularly effective along the eastern and western elevations of buildings

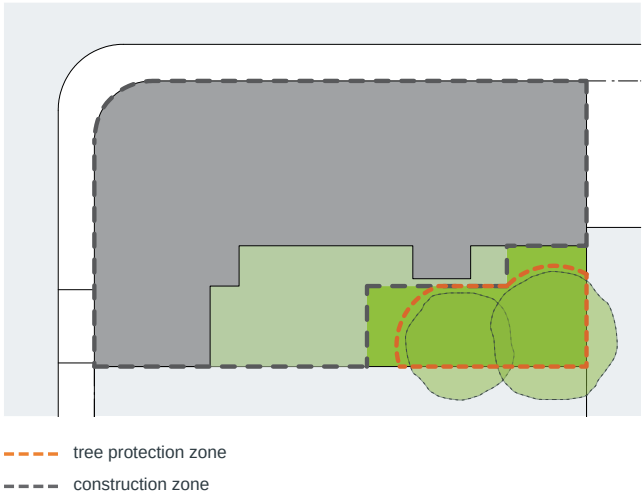


Figure 4O.5 Where trees are retained, tree protection zones need to be established during construction to protect the canopy and roots

Objective 4O-1

Landscape design is viable and sustainable

Design guidance

Landscape design should be environmentally sustainable and can enhance environmental performance by incorporating:

- diverse and appropriate planting
- bio-filtration gardens
- appropriately planted shading trees
- areas for residents to plant vegetables and herbs
- composting
- green roofs or walls

Ongoing maintenance plans should be prepared

Microclimate is enhanced by:

- appropriately scaled trees near the eastern and western elevations for shade
- a balance of evergreen and deciduous trees to provide shading in summer and sunlight access in winter
- shade structures such as pergolas for balconies and courtyards

Tree and shrub selection considers size at maturity and the potential for roots to compete (see Table 4)

Objective 4O-2

Landscape design contributes to the streetscape and amenity

Design guidance

Landscape design responds to the existing site conditions including:

- changes of levels
- views
- significant landscape features including trees and rock outcrops

Significant landscape features should be protected by:

- tree protection zones (see figure 4O.5)
- appropriate signage and fencing during construction

Plants selected should be endemic to the region and reflect the local ecology

Appendix E A Design Guide for Older Women's Housing

A Design Guide For Older Women's Housing

LORD MAYOR'S CHARITABLE FOUNDATION

SCHORED

MONASH University

XYXLAB GENDER+PLACE

Components

FIGURE 1: OUTSIDE SPACE: COURTYARD

1. The size of outside space matters for older women; as a minimum, there should be enough space to sit with another person, an area for one or two pot plants, or enough area to hang clothes on a rack to dry. Ideally, outside space should accommodate children's or grandchildren's activities and pets.

2. Time spent outside benefits older women's health and sense of wellbeing. Provide built-in outdoor furniture where possible, integrated with the landscape design. Construct furniture with appropriate materials and durable finishes.

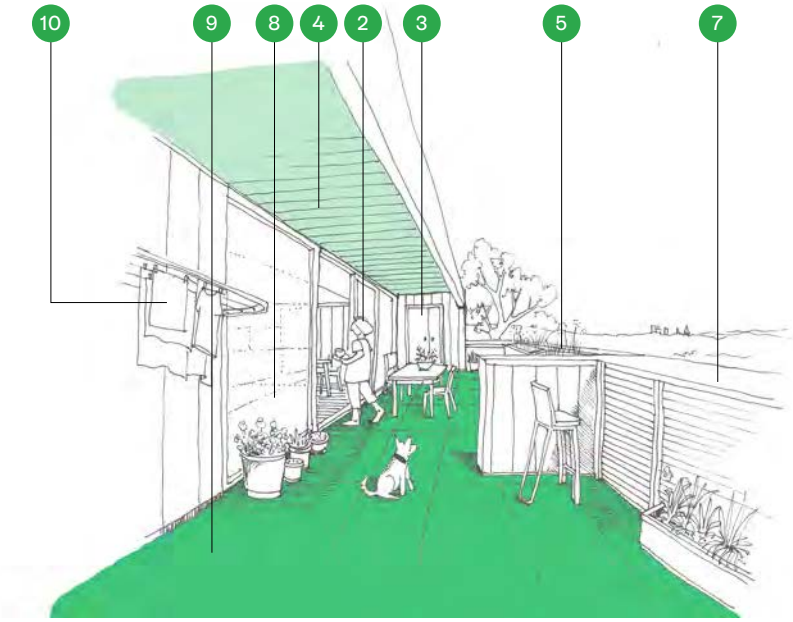
3. Integrate storage of equipment, potting mix, and gloves into the courtyard or garden space. Older women who are active gardeners will own various equipment that needs storage that can be easily accessed.

4. Fixed, operable shading or trees provide good protection for outside space if well located. Access to natural light is beneficial for older women's wellbeing and physical and mental health, but most Australian gardens require some protection in the summer months.

5. Raised garden beds minimise bending and assist in ease of garden maintenance for older women. They should be structurally stable, well-drained, and provide good edges for resting on.

6. Provide access to water with easy tap turners or quarter-turn taps for older women's hands.

FIGURE 2: OUTSIDE SPACE: BALCONY



7 Permeable front fencing provides safety for older women and a visual connection to the street. The balance between solid and void and the height of fencing are essential considerations for security and privacy. Side and rear fencing should be solid.

8 Older women can better manage and enjoy time outdoors when they have safe and easy access between indoor and outdoor areas. Provide step-free connections and good contrast between doorways and walls to ensure easy navigation for those with low vision and access issues.

9 Provide safe, well-lit, flat and even surfaces that connect outdoor spaces. Outside surfaces need good drainage and should be easy to maintain.

10 Clotheslines require good lighting, so older women feel safe hanging laundry after dark. Provide accessible height hanging space to assist women of all heights and abilities. Locate the clothesline where maximum sunlight and ventilation can assist clothes drying.

11 Older women need privacy in their homes; this includes their outdoor space. Considered screening provides additional privacy where there is a level change between adjacent premises. Different screening types provide benefits such as landscape potential and shading.

12 Safety is one of the most important qualities needed in older women's housing. To ensure a sense of safety for older women residents, provide quality security gates, easy to operate locks for outside areas, and good lighting at entry points.

Strategies

ACTION

Good visual and physical connections
Older women need a sense of safety and control at points of access in their homes. Design considered connections between internal and external areas that provide clear sightlines and simple circulation between spaces. Integrate quality windows and doors to enable older women to easily move between indoor and outdoor spaces.

Planting choices
Some women are active gardeners; some are passive. Allow for both types by providing planter beds for more high-maintenance planting and sustainable, low-maintenance planting in general areas. Raised planter beds reduce the need for bending or kneeling, important for older women.

Considered orientation
Older women are more likely to feel cold than younger generations and may benefit from regular access to sunlight. Seasonal changes will vary the need for sun or shading in different garden areas, and well-designed planting and enclosures protect the garden from wind.

Shading choices
Provision of pergolas, shade sails, or mobile screens helps control direct sunlight in the hotter months and reduces heat load in adjacent indoor spaces. These give older women the ability to manage their internal and external spaces by providing choices between levels of protection. They also promote a sense of containment and order to the garden areas and encourage older women to use these areas as outdoor 'rooms'. For older women living in a small unit, these external areas are a significant and safe extension of their living space.

Garden storage and utilities
Good storage for garden equipment like spades, potting mix, and watering equipment can be integrated into fixed seating or in an accessible area for older women. The location of taps needs careful planning for ease of access and operation. For many older women, having a well-kept garden space increases the sense of homeliness.

AVOID

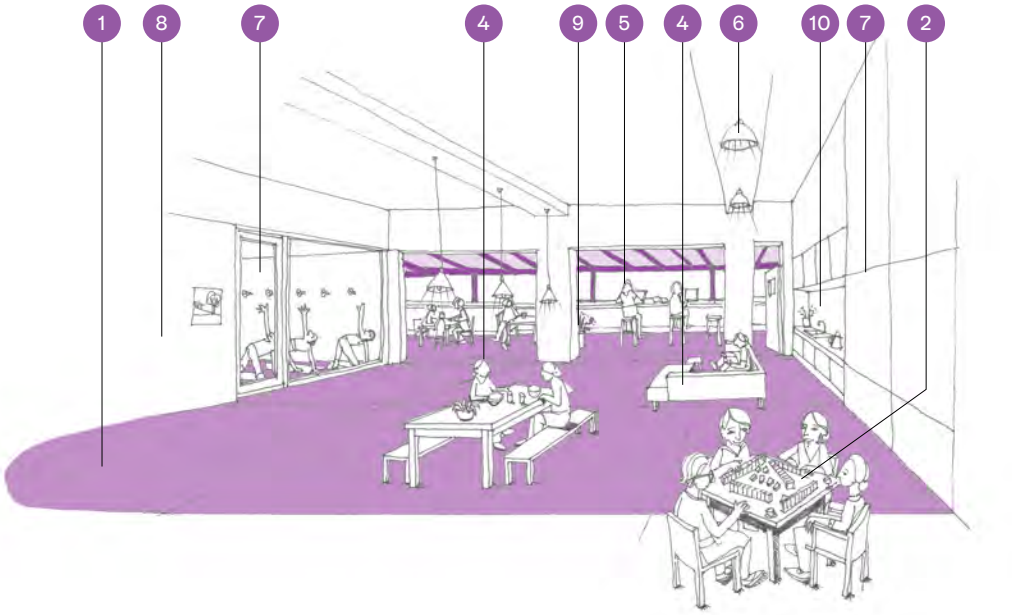
High maintenance surfaces
Older women lead busy lives; some care for children or pets, some are employed, and some are studying for future employment. Avoid specifying outdoor paving or surfaces that are hard to maintain. Choose slip-resistant paving, step-free pathways, and avoid the addition of lawn where possible, or substitute with a native grass that does not require constant maintenance.

Screening plants that require constant maintenance
When selecting plants for screening purposes, be careful that rapid plant growth will not inhibit movement or cause undue pressure to prune and control. In some housing examples, older women cited problems caused by the rampant growth of their jasmine or bougainvillea plants. Many had removed the planting altogether in preference for a low maintenance outdoor space.

Lack of choice in planting types
Where possible, allow for some active decision-making about plant types by older women who will be living with the plants. Assumptions about their preference for vegetable patches or native heritage may discourage them from using the garden to its full potential.

Components

FIGURE 3: COMMUNAL SPACE: INDOOR



1. The size of communal space matters for older women; many older women are more likely to meet and catch up in communal areas in smaller developments (under 30 dwellings) where it is easier to foster an onsite community.

2. The communal space areas need to be large enough to accommodate groups of older women sitting comfortably, with generous circulation space for access and egress.

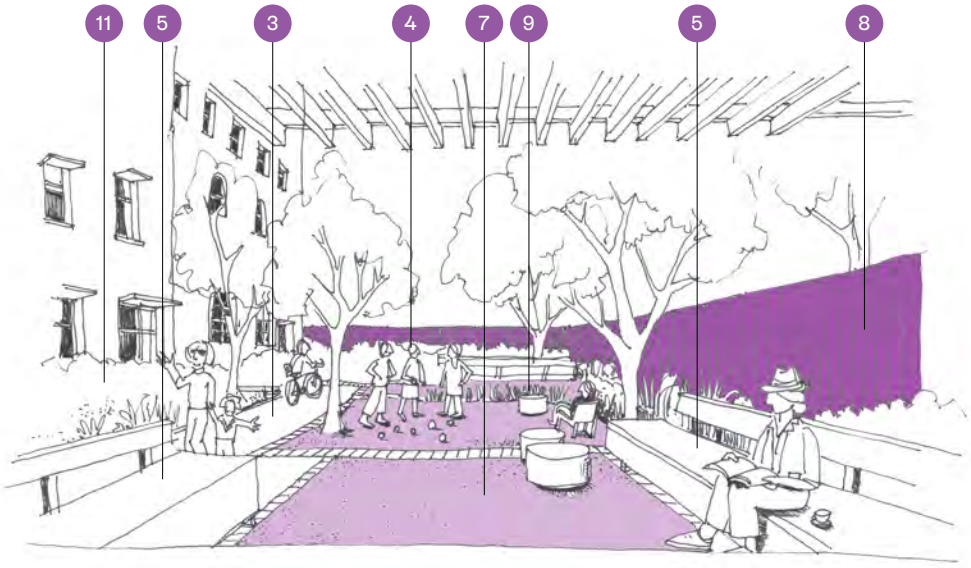
3. Communal spaces for older women should be located centrally within a development and accessible to all older women, not just a few who live adjacent to the space. A central and easily accessible communal space can avoid a sense of ownership.

4. Older women may form different social groups within a development. Provide multiple and different seating options for different group sizes and activities to encourage active engagement of older women.

5. Furniture and seating can be built-in and provide a dual purpose, such as storage, or they can be free-standing. The developer should provide furniture in these spaces rather than leave it to older women to provide their own.

6. Older women will use communal spaces differently and at different times of the day and night. Provide good natural and artificial lighting options to ensure well-lit spaces so older women avoid trip hazards or obstacles.

FIGURE 4: COMMUNAL SPACE: OUTDOOR



7 Centrally located, communal spaces should be located away from or be acoustically separated from private dwellings to avoid noise pollution in older women's private homes and to protect those using the space.

8 Communal spaces must be private within a development, secured behind lockable doors and gates and only accessible to older women and their guests.

9 Landscape can be incorporated into indoor and outdoor communal spaces and used to soften the space and to create semi-private zones within a larger area for smaller groups of older women to meet.

10 Kitchenette facilities would encourage older women to use the space and make the space more comfortable for groups of older women to use for more extended periods.

11 Communal landscapes provide older women with opportunities to actively participate or appreciate gardens. Clearly defined communal gardening areas need access to tools, materials and water.

Strategies

ACTION

On-site community gathering
Good examples of shared spaces balance organised programmed spaces for older women's activities and other free-form, flexible areas for unstructured activities or meetings. Housing providers should supply furniture for use in communal areas.

Diverse types and scales
Design for diverse types and scales of communal gathering. Consider cultural and socio-economic needs of older women. Design for a range of scales; integrate smaller and larger areas, or design larger areas that accommodate smaller ones for different activities.

Ease of access
Visual and physical access to communal spaces is essential. The ability to see others using the space can help older women decide whether to enter or not. Wide and step-free paths encourage active and safe use.

Define boundaries
Design clear boundaries of communal space through fencing, landscaping, partitions, and walls between communal space and the private homes of older women, to avoid confusion between the two and potential encroachment.

Amenity
Well designed communal spaces with amenities such as furniture, storage, landscaping, and kitchen facilities will be most welcoming to older women. Including good amenity in communal space design will encourage frequent use by older women. Regular upkeep and maintenance by building owners is encouraged to keep amenity conditions high.

AVOID

Perceived ownership
Locations of communal areas should be central and not designed to be associated with one or two residents. Poor locations lend themselves to underuse or encourage some older women to take 'ownership' of the area and exclude the rest of the on-site community.

Poor amenity
Older women will not use empty, cold or poorly lit communal areas. Uneven floor surfaces or unmaintained areas are also discouraged.

Components

FIGURE 5: ENTRY: BUILDING

1. Older women insist on feeling secure in their homes, sometimes based on past experiences of trauma. Front doors of dwellings must be solid and securely lockable with deadlock hardware.

2. A visual element such as a spy hole or small glass panel allows older women to see who is on the other side and gives them a choice about allowing them in.

3. Door closers ensure doors reliably shut every time they are opened.

4. Intercoms provide freedom to older women so they can choose who arrives at their front door and who does not.

5. Good natural and artificial lighting assist older women in navigating, leaving and arriving home. Manually operated lights can be left on if desired. Sensors take away that level of control and should be avoided for dwellings or have a manual override option.

6. Sensors to outdoor lighting can be appropriate for building entries and assist older women in navigating paths and doors at night.

7. Clear sightlines to entries assist older women in assessing any potential risk at their dwelling and building front doors.

FIGURE 6: ENTRY: INDIVIDUAL UNIT

8 The front door is where older women prepare for leaving their home and organise themselves when they arrive home. An entry with a space large enough to hang coats and place keys and bags is highly valued and provides a sense of home.

9 Dwelling entry doors should be acoustically sealed to help older women reduce noise ingress into their homes.

10 Secondary entry points include gates into garden spaces. Older women need all entry points within their building or site complex to be solid, lockable, and secure.

11 Security cameras can help increase the feeling of safety for older women in their homes. Prominent locations such as building front façades provide the most impact.

12 Dwellings with a front door to the outdoors benefit from a lockable security screen, an additional line of defence for older women, with the added function of secure ventilation.

Strategies

ACTION

Security Devices
Older women want to feel very secure in their homes. Often the need to feel safe is amplified because of past traumatic events in their lives. Entries to buildings and dwellings are the obvious secure point for a home. Security devices such as deadlocks, door closers, lockable security screens, and good artificial lighting contribute to safe entry points.

Choice
Older women want the freedom to choose who can approach their dwelling entry and whom they can decline entry to. Hardware options such as security cameras, intercoms and spy holes allow them to say yes to a welcome visitor and no to an unwanted approach.

Clear approach
Older women value clear sightlines to entries and good artificial lighting at entries. Building entries should be seen from the street and not hidden behind walls, building forms or landscaping. When coming home in the evening, older women value higher-level lighting to see paths and locks easily.

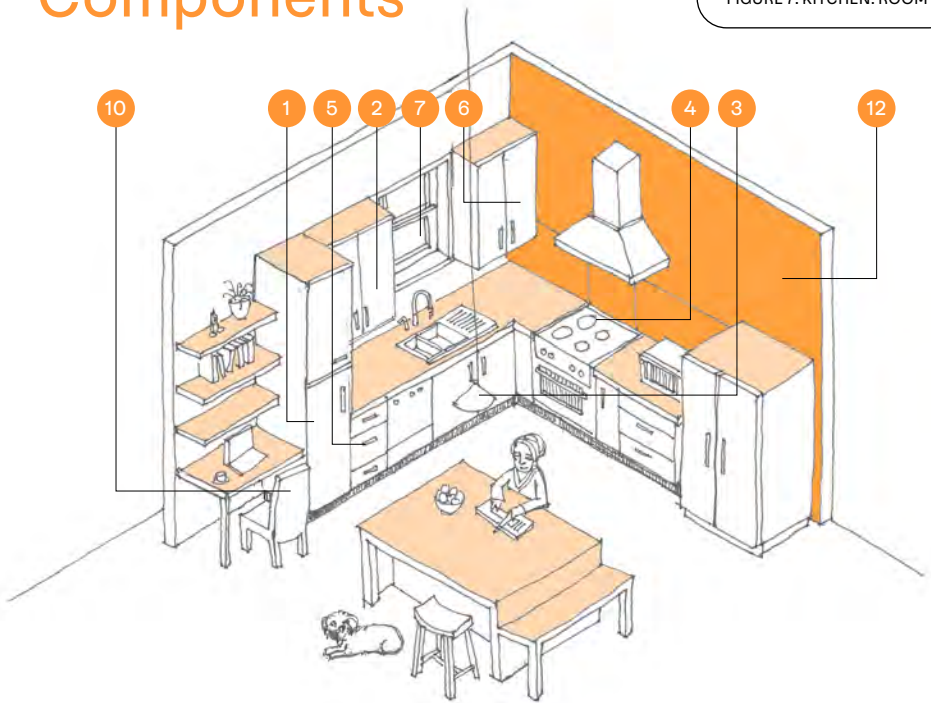
AVOID

Lightweight construction
Heavy-duty doors and door hardware make older women feel secure — lightweight doors with flimsy hardware that do not close properly are not adequate for entry points.

Visual Obstructions
Do not obscure entries behind corners or walls or where the building creates hidden nooks. Landscaping must be kept low and maintained to keep entry sightlines clear. Dim artificial lighting and non-existent artificial lighting is discouraged.

Components

FIGURE 7: KITCHEN: ROOM



1. Well-designed kitchen storage is important for older women. Provide a dedicated pull-out pantry, adjustable shelving and generous drawers and cupboards that can contain dry goods, kitchen implements, and appliances to ensure clear working space.

2. Consider older women's stature and reach. Overhead cupboards and high-level shelving need careful attention—design joinery for universal access and to enable women to age in situ.

3. Good lighting is vital in kitchens for older women, particularly those with low vision and those who wear glasses. More light is not always better if it produces glare. Provide task lighting for working areas, like benchtops, in addition to overhead lighting.

4. Provide quality kitchen appliances that are easy to use and maintain for older women. Good quality appliances ensure sustainable energy and water consumption, necessary for affordable living. Simple, how-to-use instructions for kitchen appliances in several languages will help older women use their kitchens well.

5. Older women prefer handles on cupboards and drawers. Well placed handles help women with declining fine motor skills or arthritis.

6. Provide a lockable cupboard option for women who care for young children.

FIGURE 8: KITCHEN: OPEN PLAN

7 Direct natural light in cooking, eating, and living areas increases overall light quality and connection to the outdoors for older women. Provide controlled shading to protect these spaces in the warmer months.

8 Easy-to-operate windows and openings provide natural ventilation and help reduce the cost of heating and cooling for older women. With well-located windows, older women can easily control the natural circulation of air through their living spaces.

9 Many older women care for young children in their homes. Ensure living and dining spaces are child-friendly, with space for games and indoor activities and access for highchairs and removable gates where needed.

10 Some older women will appreciate suggested layouts for furniture in living areas to maximise the use of their home.

11 Consider the potential to link eating and living rooms to outdoor areas so that older women can enjoy warm weather.

12 Prevent noise transmission from the kitchen and living areas of the house to other units. Older women reported that acoustic privacy was one of the most neglected areas of their housing.

13 Provide a dedicated area in the kitchen that stores general rubbish, compost and recycling bins, preferably concealed within a cupboard or under-bench and close to the sink area.

Strategies

ACTION

Generous storage for diverse items
A home where “everything has its place” provides older women with a sense of order and creates a calm environment in which to live and work. Careful planning, location, and accessibility of cupboards, drawers, and shelves ensure older women’s safety and comfort. Ensure all spaces are uncluttered by integrating clever storage solutions and shelving for personal items.

Ability to share meals with others
Eating together helps older women feel connected and creates social relations that benefit their health and wellbeing. Having space to share meals with others gives older women a sense of dignity — design flexible dining options to expand and contract when needed.

Small footprint furniture
The selection of smaller sofas, dining tables, cabinets, and wall-mounted shelving will declutter space available for circulation without loss of comfort. Provide simple spatial layout guides to help older women choose furniture and fittings to maximise their space.

Fitouts for cultural diversity
Many older women come from diverse cultural backgrounds, and their cooking, eating, and living practices require different spatial configurations. Older women may prefer to sit on the floor to eat meals and socialise. Some prefer to cook in a room with a door that can be closed, others prefer to cook outdoors, or to cook in an open space with others. Allow for adaptable interiors at the planning stage.

Good quality appliances and surfaces
Older women appreciate kitchens that are easy to use and maintain. The selection of quality materials and appliances can be more cost-effective in the long term for housing providers and contributes a sense of dignity to residents.

Universally designed
Kitchens that are accessible ensure independence and the ability to age in place for all older women. Universal design principles require attention to openings and circulation, door mechanisms, adaptable benchtops, and good lighting.

AVOID

Difficult storage solutions
Corner cupboards, high-level shelving or tall overhead cupboards are often difficult to access for older women. Design generous and accessible storage to create a sense of order. Avoid storage that requires over-reach or awkward access.

Open-plan kitchens are not always the best option
The assumption that open-plan kitchens and living areas are best is not always the case for older women. Some women prefer to separate working from living areas for reasons like looking after children or heating living areas more efficiently in winter. Provide options for separating zones with sliding screens or internal walls.

Components

FIGURE 9: BEDROOM: ROOM

1. A generous-sized bedroom is important for older women. Bedrooms are highly valued spaces in their homes.

2. Older women like to personalise their bedrooms with curtains. Providing pelmets above windows encourages their installation and performance.

3. Older women like to personalise their bedrooms with free standing furniture. The size and dimension of the bedroom must be large enough to accommodate beds, bedside tables, storage furniture, chairs and ample circulation around the furniture.

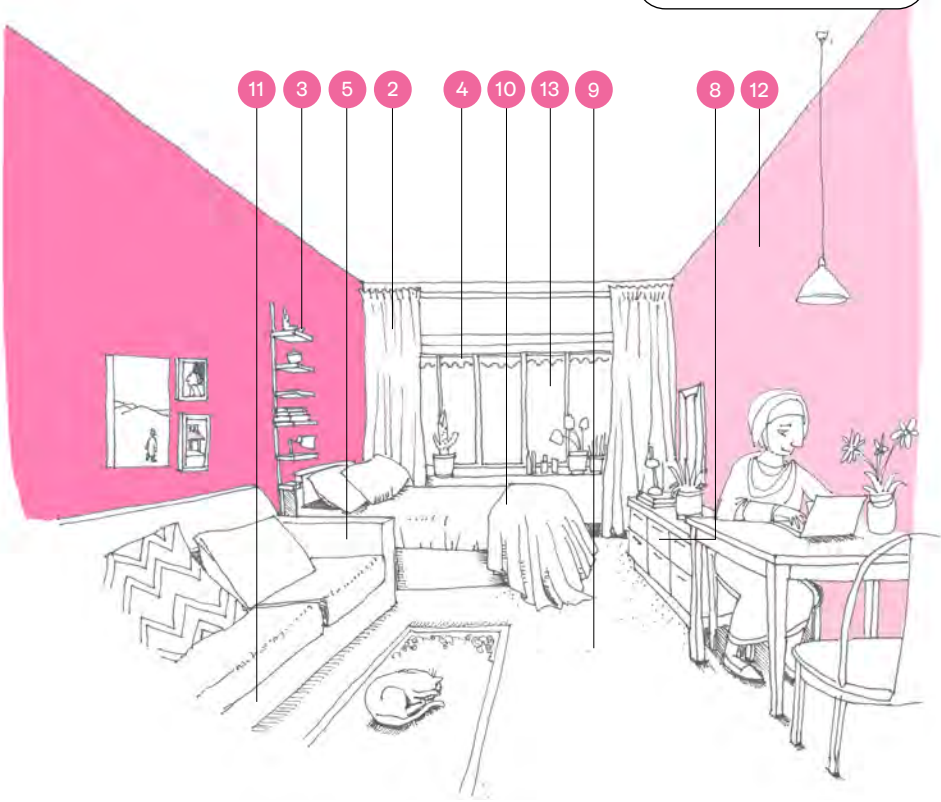
4. Direct natural light in a bedroom creates a haven for older women. Consider how to control the ingress of sunlight in the warmer months.

5. Older women's bedrooms should be easily made comfortable and homely. A warm material palette is encouraged.

6. Wardrobe doors should not be a mirror finish. Older women do not want to wake up looking at themselves.

7. Wardrobe interior fit-out to be reachable. Older women need hanging rods and shelving to be within reach when standing on the floor.

FIGURE 10: BEDROOM: STUDIO



8 Wardrobe area and size matter to older women. Include spaces for accumulated items; include drawers, hanging rods, and shelving to make storage options available to older women.

9 Carpeted floors in bedrooms are best for older women.

10 Older women require climate control in their bedrooms. The heating or cooling required to make the space comfortable will depend on the dwelling's location in Australia and the orientation of the bedroom.

11 To increase storage solutions for older women, look for opportunities to provide compact built-in storage solutions in the bedroom such as under the bed, window seats, or multiple wardrobes.

12 Noise from the neighbours or the neighbourhood can easily disrupt the sleep of older women. Acoustically treated walls will minimise noise ingress into the bedroom.

13 Windows should be operable for natural ventilation but also lockable, so older women feel safe and secure.

Strategies

ACTION

Generous sized bedrooms
Older women often feel their bedroom is their favourite room in the homes. It is full of personal effects and easily personalised with furniture, curtains, and bedding — the size matters. Be generous with the dimensions and area of bedrooms to easily accommodate furniture and comfortable circulation.

Thermal comfort
Thermal comfort is achieved passively through operable windows and mechanically through heating and cooling systems. Older women value comfortable bedrooms. Locate operable windows to let sunlight in. Provide appropriate heating and cooling systems depending on the dwelling's location in Australia and the orientation of the bedroom.

Personalisation
Older women have the experience and confidence to personalise their spaces, particularly the bedroom. The room's floor, walls, and ceiling should provide a warm palette as a backdrop. Pelmets provide opportunities for curtains to decorate the space and increase thermal performance. Carpets soften the room visually, have an acoustic value, and offer fall protection for older women.

Generous Storage
Provide generous amounts of storage for older women who have sometimes accumulated a lifetime of clothes, shoes and possessions. Built-in wardrobes are essential. Wardrobe area and size matter to older women. Include drawers, hanging rods, and shelving in the design of wardrobes, so storage options for older women are available. Consider other built-in storage where possible.

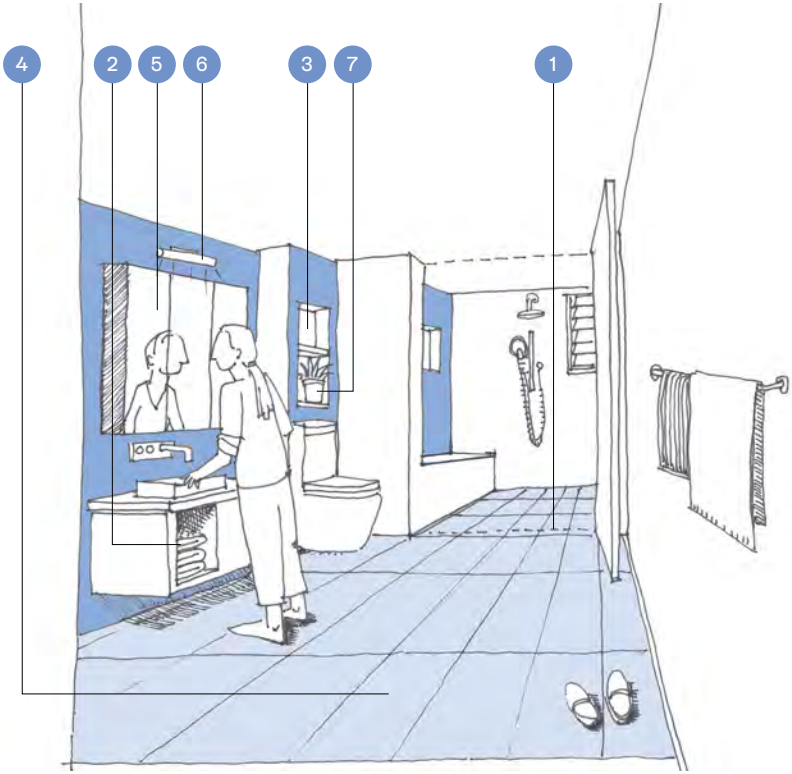
AVOID

Cool palettes
Cool material and colour palettes are challenging to make comfortable and homely. These are discouraged for older women.

In-board bedrooms
Inboard or 'borrowed light' bedrooms without windows and no direct access to fresh air or daylight are discouraged for older women and are prohibited in some states and territories.

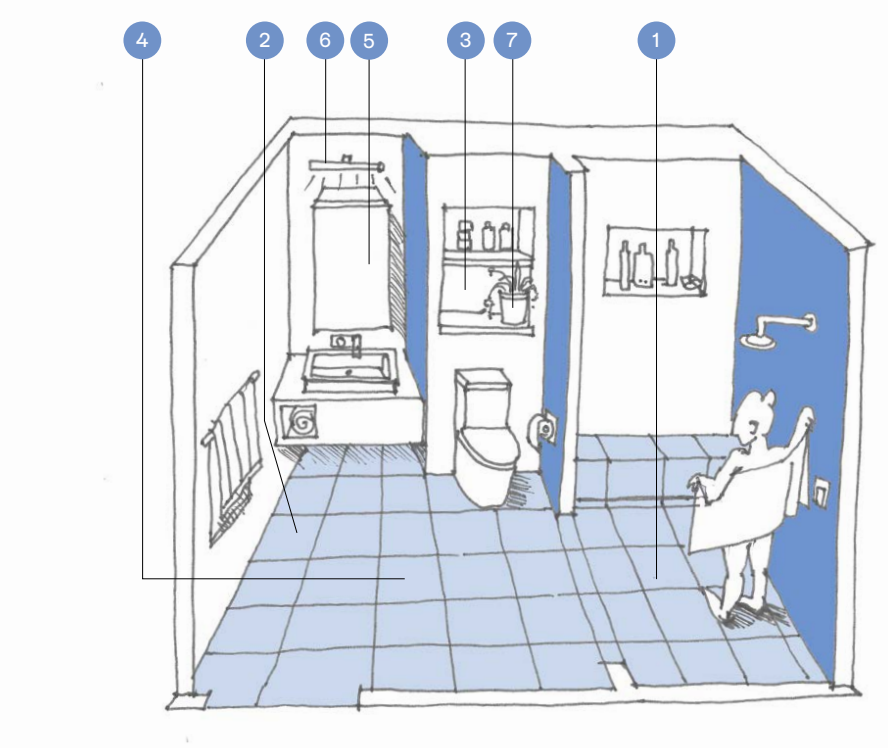
Components

FIGURE 13: BATHROOM: ROOM



1. Design for universal access — openings, step-free thresholds and taps should be easily accessible for older women.
2. Provide ample storage that is easy to access and ensures items have a logical place. Consider older women's stature — do not install cupboards, mirrors or tiling beyond standing reach.
3. Provide good ventilation and natural lighting to reduce the need for older women to manage mould, damp and built-up deposits. Windows in bathrooms need to be easy for older women to reach and operate without losing privacy.
4. Flooring in bathrooms must be non-slip and step-free to ensure older women's safety.

FIGURE 14: BATHROOM: LAYOUT



5 Install shelving above the counter for frequently used items to maintain a sense of order and easy access. Older women appreciate locations for things that make them feel special in the bathroom, like perfume or quality soap.

6 Install vanity lighting that makes using the bathroom a pleasure for older women.

7 Provide space for an indoor pot plant. Plants bring a sense of luxury and wellbeing into indoor rooms for older women. The benefits of biophilia are well known and easy to integrate.

Strategies

ACTION

Design to silver standards
Silver standard guidelines are designed to create accessible living spaces and features such as step-free entry, step-free showers, ground-level accessible toilets, and doorways and transitional spaces to allow ease of movement. These are now mandated for many developments and improve older women's housing accessibility. Silver standard should be the minimum requirement design to and where possible gold or platinum should be achieved.

Privacy
Privacy is vital for older women's sense of safety and control in their housing. As the most private domain in the house, bathrooms must provide the safety of lockable entry doors and opaque glazing in external openings and include ample storage for personal grooming items.

Future rails and supports
Provision for future rails and supports can be integrated during the construction stage, reducing the cost of upgrades later on to help older women maintain their independence in the bathroom.

Appropriate tapware
As women age, their hands' functioning gradually changes, which can significantly impact their ability to use taps. Provide lever taps or similar for easy operation.

Accessible showers
Older women may prefer to sit in the shower if they experience reduced mobility. Consider integrating a seat at the design stage to provide a simple, safe ledge for sitting on. Detachable shower heads are ideal for washing while sitting down and ideal for when carers need to aid showering.

Visual contrast
Assist older women with lower vision by contrasting finishes and tones of adjacent surfaces — contrast wall tones with installed vanity units or benchtops and doorways. Define edges of the shower unit with a tonal difference where appropriate.

Locate towel rails and robe hooks
Consider older women's stature and reach when locating towel rails and robe hooks in the shower area. Minimise over-reach or potential slip hazards by installing rails or hooks in easily accessed locations.

AVOID

Inboard ensuites
Older women need ample circulation space in the bathroom. Without direct access to daylight and natural ventilation, inboard ensuites are not ideal for long-term accommodation. At a minimum, provide a skylight to ensure good quality lighting and ventilation.

Floor mats or rugs
Avoid floor coverings that create trip hazards for older women in the bathroom.

Components

FIGURE 11: ADDITIONAL SPACE: INDOOR

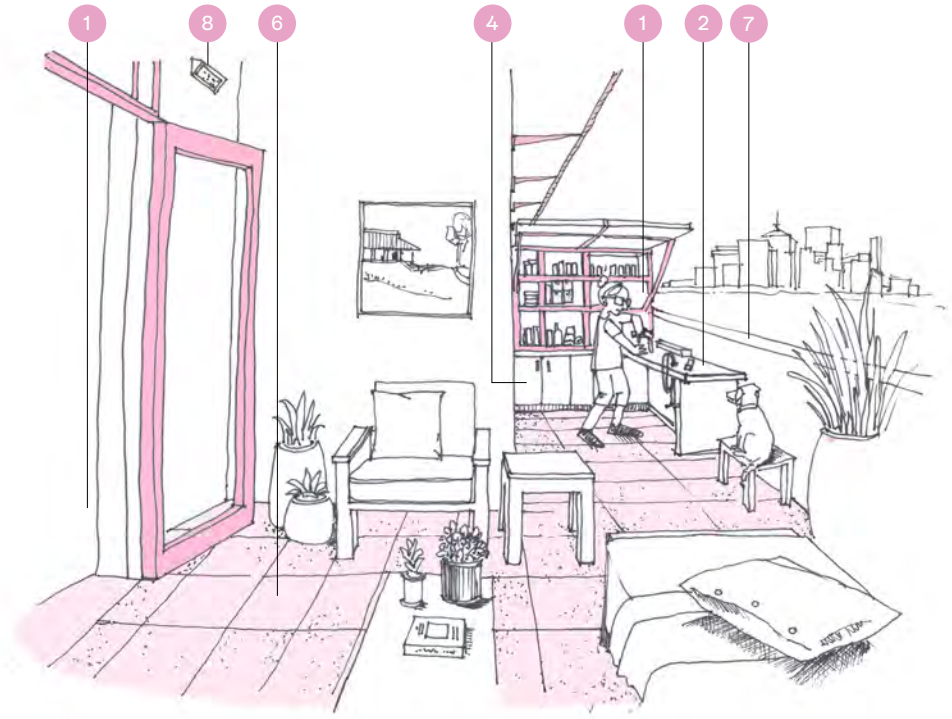
1. Consider the relationship of the additional space to the living areas. Alcoves can provide study space with a desk and chair. A private nook with a screen can provide a sleeping area for visitors. These solutions help older women maintain a sense of order and flexibility in their home.

2. Provide operable, built-in-furniture where possible to maximise space. Solutions might include fold-out beds or desks. Ensure mechanisms are easy and safe for older women to operate.

3. To provide a place for sleepovers for family or friends, an older woman can have privacy and separation between the bedroom or living area and additional space with a screen or sliding door.

4. Dedicate ample storage in additional space for items and equipment to enable older women to study, exercise or make things.

FIGURE 12: ADDITIONAL SPACE: OUTDOOR



5 Prevent noise transmission from outside or inside the space using acoustic rated materials for boundary walls. Older women who are working, meditating or studying need acoustic privacy.

6 Consider how older women can adapt the flooring finish to suit various activities. Workshop or making requires an easy to clean, solid surface, whereas exercise or meditation requires a warmer material.

7 Natural lighting and ventilation improve the amenity of additional space for older women working or studying at home, but these might be borrowed from openings in adjacent rooms if necessary.

8 Task lighting can be integrated for desks/ workbenches to improve lighting levels for older women at desk or workbench height.

Strategies

ACTION

Good storage solutions
Well-considered storage will maximise available space for activities. Older women benefit from a sense of order and easy maintenance for additional spaces. Provide various storage options — open shelving, cupboards with adjustable shelves, or hanging devices where appropriate.

Additional balcony space
Where additional internal space is not possible, increased external space via larger balconies or verandas can provide older women with additional quality areas for activities. Although this might not be ideal in wet or cold weather, this type of area can be designed to suit many uses and has additional benefits of access to fresh air and daylight.

The importance of third places
When an older woman's housing does not include additional space, consider community centres, cafes, local libraries and public parks. These 'third places' are important for building an older woman's sense of belonging and independence. They are an extension of the first place (home) and second place (work), and they help build community networks through the use of available physical space.

Shared additional area for developments
Integrate additional space that can be accessed by all residents using a booking system in developments. Older women may benefit from occasional access to additional space if their units do not provide the area.

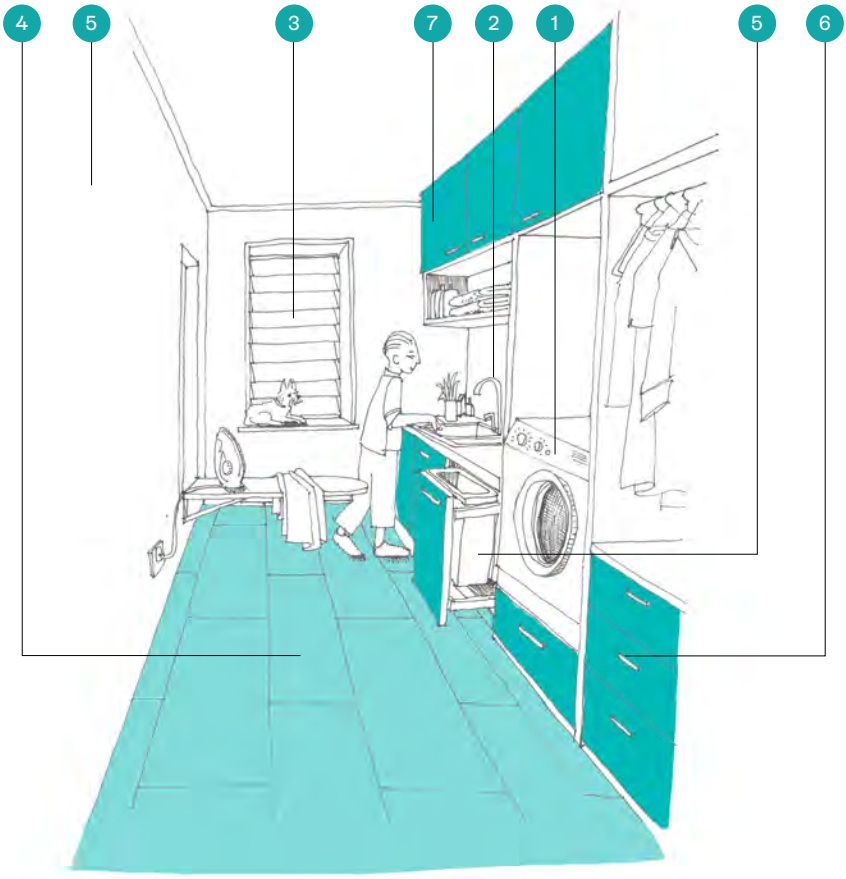
Acoustic privacy
Older women stated a need for better noise control between units.
Provide acoustic separation between additional space and boundary walls to provide older women with acoustic privacy when using machinery or musical instruments.

AVOID

Controlling temperature and comfort
Additional space needs good thermal comfort control to ensure comfort and a healthy environment for older women. Depending on the time of day or season, variations in temperature, humidity, and daylight will affect the space. Mediate these effects through good design of openings and insulation.

Components

FIGURE 15: LAUNDRY: ROOM



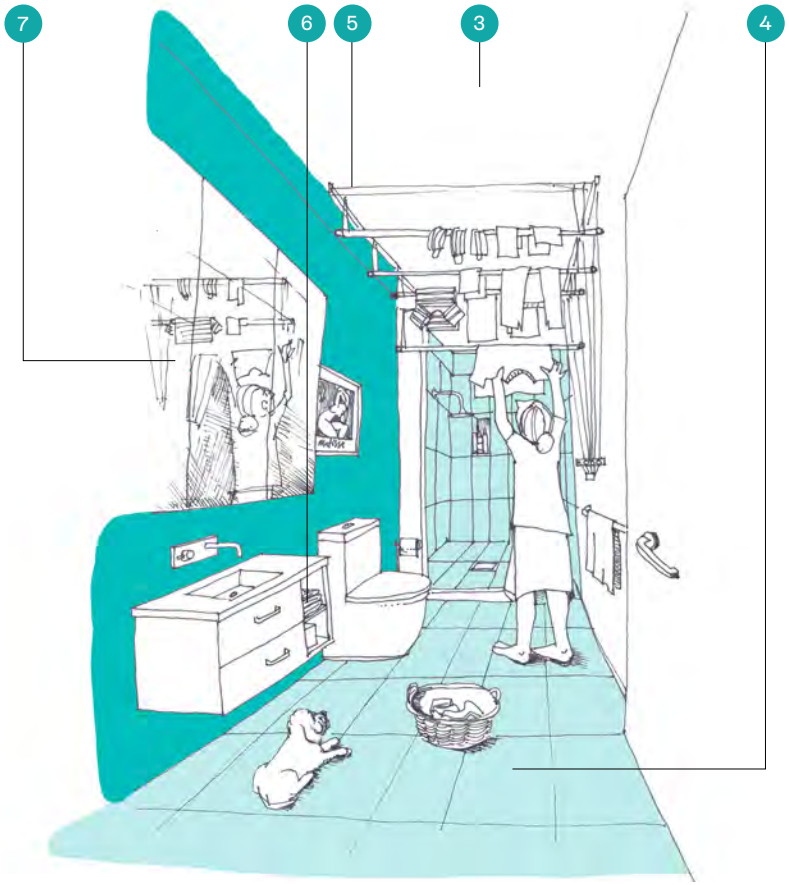
1. For some women, access to front-loading washing machines becomes difficult in older age. Install a raised plinth to raise the machine to an appropriate height for easier access.

2. Access to a washing machine and laundry tub taps can be improved with lever taps at an appropriate height for older women to reach them.

3. Washing clothes requires a well-lit space, with good artificial lighting to supplement natural light.

4. Provide non-slip flooring with integrated drainage to prevent accidents.

FIGURE 16: LAUNDRY: HANGING SPACE



5 Older women noted a common lack of dedicated storage for difficult items — vacuum cleaners, mops, buckets, and brooms. Provide adjustable storage within the laundry for these items not allocated elsewhere within the housing,

6 Likewise, integrated cupboards for linen, towels, and sheets in the laundry area create accessible storage for clean washing.

7 Older women who regularly look after young children need to make sure poisons and cleaning products are kept safely, preferably in a lockable cupboard in the laundry.

Strategies

ACTION

Proximity to the clothes drying area
Older women who can access outside drying space will regularly transport washing to the clothesline. Ensure the circulation between the laundry and drying areas is clear and well lit.

Visual privacy for the clothesline
To maintain older women's privacy and dignity, clothes drying areas require screening from the street and neighbours. Provide landscaping or appropriate fence screening for outdoor drying areas. Maintain privacy for drying racks placed on the balcony by ensuring balustrades are not transparent.

Acoustic separation
Locate the laundry in a service space to prevent reverberation and machine noise from disturbing other areas older women use for resting or working.

Rails and ironing boards
Provide hanging space to assist air-drying clothes on hangers, ready for ironing if needed. Install a fold-out ironing board or a space to store a free-standing board with access to a power outlet.

A place for dirty laundry
Provide under-bench slide-out laundry bins to store dirty laundry. Strong plastic bins can be washed out easily and are lightweight and easy for women to manage.

Storage for cleaning products
Older women will often care for children or grandchildren in their homes. Provide safe storage options for cleaning products that are not accessible for children, but are easily reached by women when required.

AVOID

Oversized appliances
Older women generally do not have family-sized loads of washing. Select appropriately sized appliances to economise on space and cost of operation.

Poor ventilation
For laundries located in a cupboard, install a ventilation system to reduce the risk of mould and condensation created by machines and wet laundry. Poor ventilation increases the risk of asthma, skin and lung conditions.

Standard installation of machines
Older women need front loaders and dryers installed at an appropriate height to reduce bending and leaning to access. Install a plinth to locate machines at a good height for women.

Appendix F Future Homes Victoria

Building Future Homes

Adaptation guide

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VICTORIA
State Government

2 Responsive to need

A Future Homes development is designed to respond to the needs of its residents.

2.1 Apartment diversity

Rationale

Future Homes seeks to increase housing density and diversity, to respond to the state's population growth. For this reason, Future Homes exemplar designs deliver 14–17 apartments on two consolidated lots with a total site area of about 1,200 square metres. However, a lesser number of apartments are acceptable for design adaptations that cater for larger households and a greater number of apartments may be acceptable for larger sites or adaptations with different apartment type needs and mix.

Future Homes provides housing options for various households, inlcuding families with children, who have typically relied on single, detached dwellings in suburban locations. The outcome should be that households of all compositions can choose to live in an apartment and not be restricted to detached homes and townhouses to have their needs met.

Principles

A. The development supports a greater density than that of a typical suburban townhouse project.

B. The development comprises a range of apartment sizes and types, to cater for a range of households.

C. Apartments suit a range of age groups and households including singles, couples, elderly people and families.

Alignment with VPP: Standard B3 Dwelling diversity (55.02-3)

Performance targets

1. The development should provide a range of apartment sizes and types including family-sized apartments, as Table 1.4 shows.

Table 1.4: Minimum apartment sizes

Apartment type	Minimum size
Studio	35 sqm
1 bedroom	50 sqm
2 bedrooms	75 sqm
3 bedrooms	87 sqm
4 bedrooms	105 sqm
5 bedrooms	125 sqm

Note: For the purposes of calculating the minimum apartment size, net saleable area (NSA) is used. NSA is the total floor area of a building measured from the external face of external walls (façades) and/or the centreline of all inter-tenancy walls, to the face of any structural walls, where adjacent to a common lift, common service risers and common stair shaft. This includes the corridor face of all corridor walls and all engaged columns, internal stairs and mullions to glazed façades. Balconies should be measured separately to internal areas.

2. All apartments should have generous bench space beside the stove and sufficient fridge and pantry space.
3. Apartments with two or more bedrooms must include family-friendly features such as:
    - a bathtub separate to a shower recess; a shower above a bathtub may be acceptable if there is a second shower elsewhere in the dwelling
    - a laundry trough.

Design considerations

1. Where possible, locate larger apartments at ground level and/or with convenient access to open and green space.
2. For three-bedroom apartments, consider including an additional toilet separate from the main bathroom. A separate toilet is not required if there are two full bathrooms.
3. To support family-friendly living, use the spatial requirements in Table 1.5 as a guide when designing a kitchen.

Table 1.5: Kitchen spatial requirements

Type	Furniture and fittings to be accommodated
One bedroom	• Minimum single bowl sink and cupboard • Adequate clear benchtop of 600 mm minimum depth (including sink area) ranging from 2.5 m to 3.9 m in length, including cupboards with drawers • Pantry face dimension with 450 mm to 600 mm minimum width • Cooking appliances with 400 mm minimum length adjoining bench space on both sides • Minimum 1.2 m wide circulation space between bench tops • Provide space for refrigerator 900 mm wide • The recommended minimum width of a kitchen should be 2.7 m
Two or more bedrooms	• As above, with clear benchtop increased to 2.8 m to 4.2 m in length • The recommended minimum width of a kitchen should be 2.7 m

2.2 Garden area

Rationale

The green, open garden character is an appealing amenity aspect of Victoria's suburbs. A Future Homes adapted design will provide a high-quality garden area and landscaping, contributing to the liveability of the development and the wellbeing of residents and their neighbours.

Principles

A. The development is green, leafy and has an open-garden character that also contributes to the street.

Mandatory requirement

1. A development must provide a minimum garden area equivalent to at least 35 percent of the total site area. This does not apply if:
    - a schedule to the General Residential Zone exempts a development from the garden area requirements
    - the site is designated as a medium-density housing site in an approved:
        - precinct structure plan
        - equivalent strategic plan
        - development plan
    - the site is designated as medium-density housing in an incorporated plan.

For additional guidance on landscaping, refer to Appendix 3: Landscape.

Performance targets

There are no performance targets for this planning element.

Design considerations

There are no design considerations for this planning element.

2.3 Parking: cars

Rationale

Car parking is a significant determinant of the layout, built form and viability of a development. At the same time, transport options and preferences are changing, particularly to more sustainable transport options and more active transport.

A Future Homes adapted design is a good neighbour and will accommodate residents' cars on site. The adapted design will consider changes to resident's transport preferences over time. It will not allow car parking to dominate the appearance or amenity of the site.

Principles

A. The development provides sufficient, convenient car parking on-site for residents.

B. The development supports the short- and long-term adaptation of car parking areas for more sustainable transport options.

C. The development supports sustainable transport alternatives to fossil-fuel-based cars.

3 Liveable

A Future Homes development has desirable homes with high-quality interior amenity, social spaces, natural light and a good outlook.

3.1 Site and building layout

Rationale

The site layout and orientation of a development are elements fundamental to the amenity of residents. They largely determine solar access, by maximising useful solar penetration in winter and mitigating direct solar penetration in summer, as well as views, safety and security. Ease of movement through the development and relationships with the street and existing neighbours are also determined by site layout and orientation.

A Future Homes adapted design will ensure the development is oriented so the built form, open spaces and adjoining developments have good solar access, visual privacy and amenity.

Principles

A. The building and site layout promotes the safe, functional, accessible and efficient movement of residents.

B. The building and site layout promotes passive surveillance and contributes to a positive interface between the private and public realms.

C. Designs are adapted to respond to the site's orientation to optimise solar access, views and natural landscapes and to provide a sense of communal security.

D. Solar access is maximised in winter and unwanted solar penetration is minimised in summer.

E. The site layout ensures each apartment receives adequate sunlight during the day and mitigates the impact on solar access of neighbouring dwellings and their private open space.

F. Buildings and private open spaces are oriented to maximise views, without compromising visual privacy.

G. The development and apartments are provided with their own sense of entry and identity.

H. The development provides for the safety and security of the residents and their property.

I. The site layout creates a convenient pattern of pedestrian movement within the site and connects seamlessly to external movement networks.

J. Built form and open space are designed harmoniously and as a whole.

Mandatory requirements

1. Common corridors and passageways providing access to apartment entries must be at least 1.2 metres wide.
2. Entries to apartments and buildings must:
   - be visible and easily identifiable from the street and internal accessways
   - provide shelter, a sense of personal address and a transitional space around the entry.
3. The layout and design of buildings must:
   - clearly distinguish entrances to residential and non-residential areas
   - provide windows to building entrances and lift areas where enclosed, to encourage passive surveillance
   - provide visible, safe and attractive stairs from the entry level, to encourage use by residents
   - provide common areas and corridors that:
     - include at least one source of natural light and natural ventilation
     - avoid obstruction from building services
     - maintain clear sight lines.
4. Habitable rooms must have a window in an external wall of the building.
5. A window may provide daylight to a bedroom from a smaller, secondary area within the bedroom where the window is clear to the sky. The secondary area must:
   - be at least 1.2 metres wide
   - have a maximum depth of 1.5 times the width, measured from the external surface of the window.

Alignment with VPP: Standard B12 Safety (55.03-7), Standard B19 Daylight to existing windows (55.04-3), Standard B42 Accessibility (55.07-8) & Standard B48 Windows (55.07-14)

Performance targets

1. Planting that creates unsafe spaces along streets and accessways should be avoided.
2. Developments should be designed to provide good lighting, visibility and surveillance of car parks and internal accessways.
3. Private spaces within developments should be protected from inappropriate use as public thoroughfares.
4. A window in a habitable room should be located to face:

   a. an outdoor space clear to the sky, or a light court with an area of at least 3 square metres and a minimum dimension of 1 metre clear to the sky, not including land on an abutting lot or

   b. a verandah provided it is open for at least one-third of its perimeter or a carport or circulation space provided it has two or more open sides and is open for at least one-third of its perimeter.

Alignment with VPP: Standard B27 Daylight to new windows (55.05-3)

Design considerations

1. Increase opportunities for movement and circulation between the development and surrounding areas.
2. Consider opportunities for glazing at entries, within doors and adjacent to entry spaces, to enable light and surveillance.
3. Maximise north-facing living spaces and north-facing glazing generally while minimising south-facing living rooms and balconies, unless there is a clear benefit. Generally, bedrooms should be located to the south, east or west to allow living spaces to be located to the north.
4. Provide operable shading to all east- and west-facing glazing, and minimise the extent of the glazing where possible.
5. Where provided, fixed shading should account for a range of sun positions at different times of day and in summer.
6. Avoid heavily tinted glazing to provide solar control- it may compromise the useful daylight performance of the space.

3.2 Private open space

Rationale

Private open space is a 'must have' for most homeowners, but apartments have less open space than a traditional detached dwelling. Maximising the amenity of the open space that is provided is very important.

All apartments within the Exemplar designs contain private open space which must be retained throughout the adaptation process. Future Homes adapted design will carefully integrate an apartment's private open space with its internal layout and provide access to an attractive outdoor area.

Principles

A. Adequate private open space or a suitable alternative is provided for each apartment, for the reasonable recreation and service needs of its residents.

B. The amenity for private open space is maximised through its location, integration with the apartment, landscape elements and optimised solar access.

Performance targets

1. An apartment should have private open space consisting of at least one of the following:
    - an area at the ground level of at least 25 square metres, with a minimum dimension of 3 metres and convenient access from a living room
    - a balcony with at least the area and dimension shown in Table 1.8 and convenient access from a living room; if a cooling or heating unit is located on the balcony, the minimum balcony area shown in Table 1.8 should be increased by at least 1.5 square metres
    - an area on a podium or other similar base of at least 15 square metres, with a minimum dimension of 3 metres and convenient access from a living room
    - an area on a roof of at least 10 square metres, with a minimum dimension of 2 metres and convenient access from a living room.

Alignment with VPP: Standard B43 Private open space (55.07-9) & Standard B29 Solar access to open space (55.05-5)

2. The private open space should be located on the north side of the apartment or residential building, when possible.
3. The southern boundary of any ground-level secluded private open space should be set back from any wall on the north of the space at least 2 metres plus 0.9 times the height of the wall.

Table 1.8: Balcony size

Apartment orientation	Apartment type	Minimum balcony area	Minimum balcony dimension
North (between north 20 degrees west to north 30 degrees east)	All	8 sqm	1.7 m
South (between south 30 degrees west to south 20 degrees east)	All	8 sqm	1.2 m
Any other orientation	Studio or one bedroom	8 sqm	1.8 m
	Two bedrooms	8 sqm	2 m
	Three or more bedrooms	12 sqm	2.4 m

Design considerations

1. Consider visual privacy and acoustic separation when locating and designing private open space.
2. Manage visual privacy without using excessive screening.
3. Orient balconies for northern light as a priority.
4. South-facing balconies may be appropriate where balconies have good east and west aspects and if being good neighbours is prioritised through softening the built form.
5. Manage internal overlooking into and from private open spaces through site layout and other design techniques which do not affect internal amenity. Excessive screening should be avoided.
6. Encourage views from private open space into communal open space areas, to foster a sense of community interaction.
7. Fences enclosing private open space within the front setback should be no higher than 1.5 metres and set back from the title boundary, to enable meaningful planting in front of any fencing.

3.3 Circulation and communal open space

Rationale

In denser apartment developments, residents particularly want and need high-quality communal open space, shared facilities and circulation spaces. Common areas including circulation spaces and shared facilities enable residents to meet with neighbours, space for children to play, and opportunities to build social connections.

A Future Homes adapted design will provide high-quality communal open space, shared facilities and communal circulation spaces that are integrated with the rest of the development.

Principles

1. Social gathering spaces for residents and their visitors are provided in internal and/or external areas.
2. Communal open space is integrated with the rest of the development, enhances amenity for residents and meets their recreation needs.
3. Communal open space has good solar access and provides opportunities for landscaping, particularly with canopy trees in deep soil.
4. Communal open space is accessible, functional, easily maintained and strategically located, to ensure access and views from as many apartments as possible.
5. Shared facilities are provided, to improve the amenity and enjoyment of the development and to foster a sense of community. Shared facilities include recreational areas, indoor or outdoor multi-use spaces, clothes drying, communal gardens, barbecue areas, tables and chairs.
6. Communal circulation spaces are provided, and they have adequate access to daylight and natural ventilation.
7. Landscape schemes support multiple purposes including neighbourhood greening, biodiversity, climate change adaptation and shade.

Mandatory requirements

1. A development of ten or more apartments must provide a minimum area of communal outdoor open space of 30 square metres.
2. A development of 13 or more apartments must also provide an additional minimum area of communal open space of 2.5 square metres per apartment, or 220 square metres, whichever is the lesser. This additional area may be indoors or outdoors and may consist of multiple separate areas of communal open space.
3. Each area of communal open space must be:
    - accessible to all residents
    - a useable size, shape and dimension
    - capable of efficient management
    - located to:
        - provide passive surveillance, where appropriate
        - provide outlooks for as many apartments as practicable
        - limit overlooking into the habitable rooms and private open spaces of new dwellings
        - minimise noise impacts on new and existing dwellings.

Alignment with VPP: Standard B36 Communal open space (55.07-2) & Standard B37 Solar access to communal open space (55.07-3)

4. Any area of outdoor communal outdoor open space must be landscaped and where possible include canopy cover and trees.
5. At least 50 percent or 125 square metres — whichever is the lesser — of the primary communal outdoor open space should receive a minimum of two hours of sunlight between 9 am and 3 pm on 21 June.

Performance target

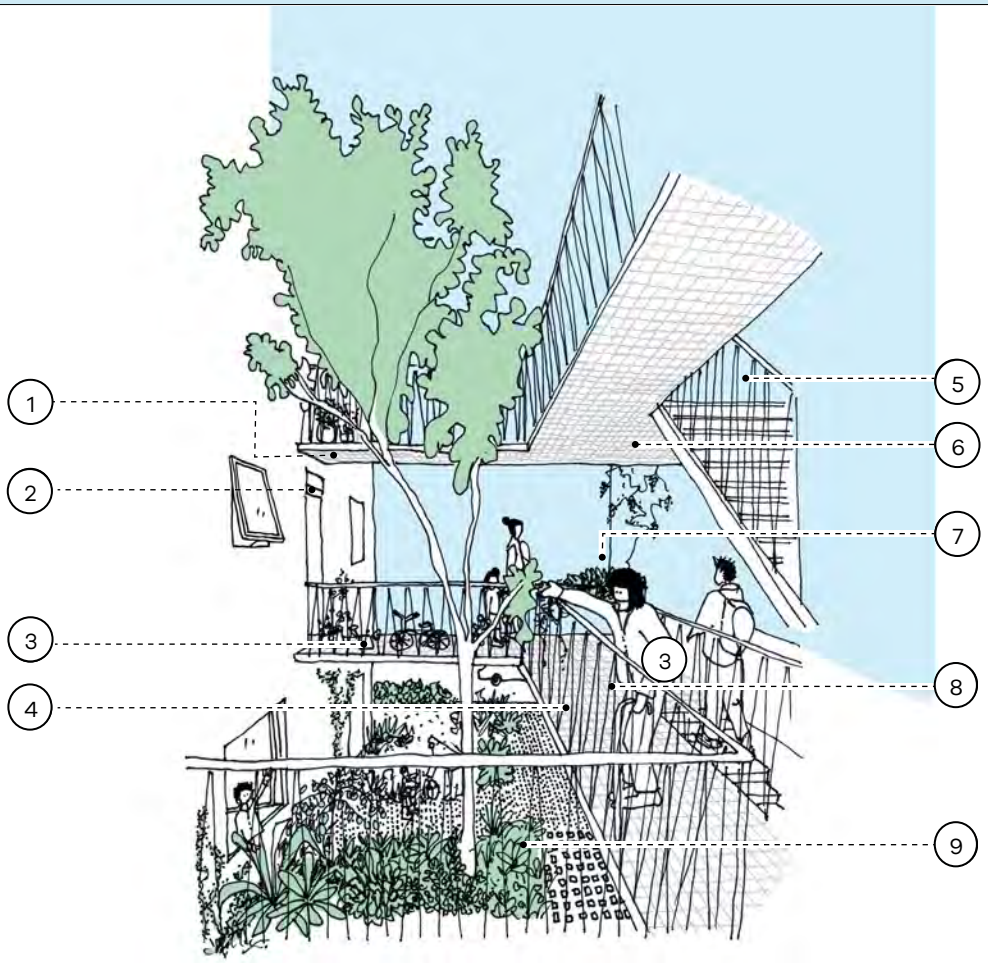
There are no performance targets for this planning element.

Design considerations

1. Open corridors and passageways improve natural ventilation and access to light. If corridors are fully or partially open, weather protection measures should be provided, particularly at the entrances to apartments.
2. Communal corridors and walkways should:
    - have direct access to daylight
    - allow people to socially distance where passing each other
    - include informal breakout and gathering spaces
    - provide protection from the prevailing wind direction.
3. Encourage the use of communal staircases, through generous dimensions and locations which support intuitive use and the movement of large items, rather than lifts being a default option.
4. Communal open space should:
    - be appropriately located and designed to manage noise and privacy, particularly considering the location of bedrooms
    - include canopy trees, consolidated areas for gardens and landscaping
    - be separated from cars, to enable children to play safely
    - provide areas with access to sunlight, particularly in the early morning and evening during winter
    - be sized and designed as flexible spaces that can serve diverse functions and provide opportunities for residents to interact, gather, relax and play such as space to grow fresh fruit and vegetables, long tables and chairs for gatherings of small groups or households, and canopy trees combined with seating facilities, and clothes drying.
5. If communal open space is provided in multiple locations, connections between these spaces should be clear, accessible and integrated with the development's wider circulation network to encourage residents to use and enjoy them.
6. Options for the extent and location of communal open spaces should consider cost and maintenance implications, particularly for spaces on upper-level terraces and roof areas.
7. Communal areas at roof level should consider the use of paving pedestals to allow for the easy collection of surface run-off and cleaning.
8. The development should include meaningful, consolidated areas for gardens and landscaping.

Figure 1.4 and Figure 1.5 illustrate examples of design treatments for shared spaces.

Figure 1.4: Example design treatments for shared spaces



1 - Entry covered by a walkway above

2 - Fly screen and window above entry door for light, air and privacy

3 - Space for belongings and individualisation

4 – Robust and durable materials

5 – External stairs with generous dimensions and a central location supports intuitive use, rather than defaulting to lifts

6 – Accessways at upper levels can be pulled away from the façade line to create private, separated entries and increased solar access to habitable entries

7 – Planters create opportunities for upper-level greening

8 – Accessways are wide enough to accommodate residents passing and stopping to socialise

9 – The void creates an area suitable for deep-root-zone planting. Within the zone, vegetation and small trees should be deployed as a visual privacy buffer between habitable rooms and communal access

Figure 1.5: Example design treatments for shared spaces

1 - Passive surveillance over communal space from balconies

2 - Planted climbers on a metal mesh frame reduce heat island effect

3 - Inbuilt planters reduce need for screens

4 – Deep façade reveals create occupiable space for reading and relaxing

5 – Extensive communal planting supports resident care, ownership and collaboration

6 – Planter boxes create opportunities for productive gardens

7 – Built-in seating and tables for communal meal sharing and activities to encourage interaction and connection

8 – Covered, planted communal walkways create weather protected spaces for mingling and quick catchups

9 – Voids create areas suitable for deep soil planting. Within this zone, small trees can be planted to create a privacy buffer between habitable rooms and communal zones

3.4 Comfortable living

Rationale

Apartments can offer an alternative to detached dwellings as a common form of housing in the suburbs. When they are designed well, they can offer similar levels of amenity, internal flexibility and comfortable living to accommodate a diversity of lifestyles.

A Future Homes adapted design will address the storage, dining, living space, bedroom and noise mitigation needs of tomorrow's apartment dwellers.

Principles

A. Apartments provide functional areas that meet residents' needs.

B. The development provides adequate storage for each apartment.

C. Dining and living spaces are large enough for a dining table and sofa commensurate with the number of bedrooms in the apartment.

D. Bedrooms are large enough for a bed, furniture and storage space.

E. Bedrooms receive direct access to daylight and natural ventilation.

F. Single-aspect habitable rooms receive adequate daylight.

G. The development contains its noise and protects residents and neighbours from external noise sources, now and in the future.

Mandatory requirements

Alignment with VPP: Standard B47 Room depth (55.07-13), Standard B46 Functional layout (55.07-12), Standard B44 Storage (55.07-10)

1. A bedroom must:
   - have an external window
   - meet the minimum internal room dimensions shown in Table 1.9
   - provide an area in addition to the minimum internal room dimensions, to accommodate a 600 mm deep built-in robe.

Table 1.9: Bedroom dimensions

Bedroom type	Minimum width	Minimum depth
Main bedroom	3 m	3.4 m
All other bedrooms	3 m	3 m

2. A living area (excluding a dining and kitchen area) must meet the minimum internal room width and area shown in Table 1.10.

Table 1.10: Living area minimum width and area

Apartment type	Minimum width	Minimum area
Studio and one bedroom	3.3 m	10 sqm
Two or more bedrooms	3.6 m	12 sqm

3. A single-aspect habitable room must not exceed a room depth of 2.5 times the ceiling height.
4. The depth of a single-aspect, open-plan, habitable room may be increased to 9 metres if **all of** the following requirements are met:
   - the room combines the living area, dining area and kitchen, **and**
   - the kitchen is located furthest from the window, **and**
   - the ceiling is at least 2.7 metres high, measured from the finished floor level to the finished ceiling level; this excludes where services are provided above the kitchen.

   The room depth should be measured from the external surface of the habitable room window to the rear wall of the room.
5. Each apartment must have convenient access to usable and secure storage space.

6. The total minimum storage space (including kitchen, bathroom and bedroom storage) must meet the requirements shown in Table 1.11.

Table 1.11: Storage requirements

Apartment type	Total minimum storage volume	Minimum storage volume within the apartment
Studio	8 m3	5 m3
One bedroom	10 m3	6 m3
Two bedrooms	14 m3	9 m3
Three bedrooms or more	18 m3	12 m3

7. All apartments with three or more bedrooms must have access to adequately sized external storage.

Performance targets

Alignment with VPP: Standard B41 Noise impacts (55.07-7)

1. Adaptations should mitigate noise and other pollution associated with mechanical services when these are located next to habitable rooms.
2. Buildings within a noise influence area shown in Table 1.12 should be designed and constructed to achieve the noise levels:
   - not greater than 35 dB(A) for bedrooms, assessed as LAeq,8h from 10 pm to 6 am
   - not greater than 40 dB(A) for living areas, assessed as LAeq,16h from 6 am to 10 pm.
3. Buildings or parts of a building screened from a noise source by an existing solid structure or the natural topography of the land do not need to meet the noise level requirements in Table 1.1.

   Noise levels should be assessed in unfurnished rooms with a finished floor and the windows closed.

Table 1.12: Noise influence area

Noise source	Noise influence area
Zone interface	
Industry	300 m from the Industrial 1, 2 and 3 Zone boundary
Roads	
Freeways, tollways and other roads carrying 40,000 annual average daily traffic volume	300 m from the nearest trafficable lane
Railway	
Railway servicing passengers in Victoria	80 m from the centre of the nearest track
Railway servicing freight outside metropolitan Melbourne	80 m from the centre of the nearest track
Railway servicing freight in metropolitan Melbourne	135 m from the centre of the nearest track

Note: The noise influence area should be measured from the closest part of the building to the noise source.

Design considerations

1. A bedroom or living room should not rely on borrowed light or borrowed ventilation.
2. Manage views from a bedroom by the placement of windows or fixed structures rather than by the excessive use of highlight windows, screening or obscured glass.
3. Where a bedroom has an outlook to a void, consider screening the void so the bedroom can have a full-sized window for light and air.
4. The dining area in a one-bedroom apartment should be large enough for a table for two to four people.
5. The dining area in a two-bedroom apartment should be large enough for a table for four to six people.
6. The dining area in an apartment with three or more bedrooms should be large enough for a table for six or more people.
7. Where external storage is not provided, consider the need to store bulky items within apartments.

5 Enduring

A Future Homes development has apartments that are of a high-quality built standard, accepted by the community, adaptable to change, resilient, safe and family-friendly.

5.1 Adaptability and flexibility

Rationale

How and where people live changes with time. Households shrink and expand; the balance between home, schooling and work-life shifts; and the need for space — and different spaces — changes over an apartment's lifetime.

A Future Homes adapted design will ensure apartments are easy to adapt to changing needs and circumstances, particularly to one or more people working from home.

Principles

A. Apartments can be adapted to suit different household compositions over time.

B. Apartments have flexible spaces such as spaces for play, work, study or storage that households can adapt to best suit their needs.

Performance target

1. Apartments should have the ability to have one or more spaces for work or study from home.

Design considerations

1. Consider apartment structures and the location of services that would allow smaller apartments to be merged to create larger apartments.
2. Generous, well-lit spaces are the most adaptable spaces to accommodate multiple uses such as relaxing, working or studying.
3. Flexible furniture such as a retractable bed or sliding walls can provide additional flexibility, so the same space can be used differently at different times of the day and night.
4. Avoid load-bearing walls within apartments where possible, to enable future adaptation with the exception being for wet areas.

Further guidance on adaptability can be found within **Part 2 Adapting an exemplar apartment design.**

5.2 Greening

Rationale

Landscaped spaces should surround the developments with healthy planted species to improve health and wellbeing and contribute to environmental performance.

Principles

A. The development is green and leafy. It contributes to the garden character of Melbourne's suburbs and increases the net tree canopy.

B. The development improves its suburban microclimate and environment, and it supports amenity and cooling.

C. Water sensitive urban design (WSUD) principles are integral to the landscape and civil drainage design, making landscapes more resilient, improving the quality of stormwater and reusing water.

D. The development retains and protects existing canopy trees, and it provides for the planting of new trees and canopy cover if established and mature trees cannot be retained.

Mandatory requirement

1. The development must:
   - provide the canopy cover and deep soil areas shown in Table 1.14; existing trees can be used to meet the canopy cover requirements in the table
   - provide canopy cover through canopy trees that are:
     - located in areas of deep soil shown in Table 1.15; if deep soil cannot be provided, trees should be provided in planters as shown in the table
     - consistent with the canopy diameters and heights at maturity shown in Table 1.16
     - located in communal outdoor open space, common areas or street frontages
   - be supported by an irrigation system that uses alternative water sources such as rainwater, stormwater or recycled water
   - take into account the soil type and drainage patterns of the site.

When calculating mandatory deep soil areas, structures with permeable finishes and surfaces (below and above ground) including decking, boardwalks and fences, that have no continuous footings may encroach into the deep soil calculation.

Alignment with VPP: Standard B38 Landscaping (55.07-4)

Table 1.14: Canopy cover and deep-soil requirements

Site area	Canopy cover	Deep soil
1,000 sqm or less	• 5% of the site area • Include at least one Type A tree	• 5% of the site area or 12 sqm, whichever is greater
1,001–1,500 sqm	• 50 sqm plus 20% of the site area above 1,000 sqm • Include at least one Type B tree	• 7.5% of the site area
1,501–2,500 sqm	• 150 sqm plus 20% of the site area above 1,500 sqm • Include at least two Type B trees or one Type C tree	• 10% of the site area
2,500 sqm or more	• 350 sqm plus 20% of the site area above 2,500 sqm • Include at least two Type B trees or one Type C tree	• 15% of the site area

Table 1.15: Soil requirements for trees

Tree type	Tree in deep soil	Tree in planter	
	Area of deep soil	**Volume of planter soil**	**Depth of planter soil**
A	12 sqm (min. plan dimension 2.5 m)	12 m3 (min. plan dimension of 2.5 m)	800 mm
B	49 sqm (min. plan dimension 4.5 m)	28 m3 (min. plan dimension of 4.5 m)	1 m
C	121 sqm (min. plan dimension 6.5 m)	64 m3 (min. plan dimension of 6.5 m)	1.5 m

Table 1.16: Tree types

Tree type	Minimum canopy diameter at maturity	Minimum height at maturity
A	4 m	6 m
B	8 m	8 m
C	12 m	12 m

Performance targets

1. At least 20 percent of the site should be covered in permeable surfaces. To calculate permeability, only garden beds are included and permeable paving is not. A garden bed planted on a roof top, terrace or basement must have a soil depth of at least 600 mm (excluding drainage material) to count towards permeability.
2. The development should retain existing trees and canopy cover.
3. The development should provide for the replacement of any significant trees that were removed in the 12 months before the application was made.
4. The development should:
    - utilise established or mature trees at the time of planting
    - comprise smaller trees, shrubs and ground cover including flowering native species
    - include landscaping such as climbing plants or smaller plants in planters along the street frontage and in outdoor areas including communal outdoor open space
    - shade outdoor areas exposed to summer sun with landscaping or shade structures and use paving and surface materials that lower surface temperatures and reduce heat absorption
    - protect any predominant landscape features of the area
    - provide a safe, attractive and functional environment for residents
    - specify landscape themes, the location and species of vegetation, irrigation systems, paving and lighting.

Alignment with VPP: Standard B9 Permeability and stormwater management (55.03-4) and B38 Landscaping (55.07-4)

Design considerations

1. When calculating mandatory deep soil areas, structures with permeable finishes and surfaces (below and above ground) including decking, boardwalks and fences, that have no continuous footings may encroach into the deep soil calculation.
2. The landscape scheme should be integrated with the development by:
    - providing high-quality front gardens and green spaces with canopy trees to create a strong landscaped street presence
    - utilising spacing between buildings to provide visual and physical relief for residents and existing neighbours
    - providing for a rear corridor of landscaping including tree planting.
3. Landscaping materials should be durable, resilient, safe and fire-resistant. They should be easy to maintain and be consistent with the Future Homes materials schedule included in the exemplar design package.
4. Public, communal and private landscape spaces should be interconnected, to promote a sense of community. These spaces should incorporate productive gardens, good access to light and comfortable benches and seating, to encourage use and social interaction.
5. Deep soil planting should be preferred to the excessive use of planter boxes.
6. The development should provide green surfaces and support biodiversity with a diverse landscape structure including green walls, a shrub storey, groundcover and planting that thrives under the site conditions.

For additional guidance on landscaping, refer to Appendix 3: Landscape

7. Landscaping should be resilient, climate change adaptive, drought-tolerant, functional and reduce urban heat by:
    - avoiding excessive use of hard surfaces at ground level, to the detriment of landscape and permeability
    - planting canopy trees in deep soil and communal areas, to support their longevity and avoid the excessive use of planter boxes
    - providing automatic irrigation systems to all communal landscapes except vegetable gardens, to ensure plants establish properly and are drought-tolerant
    - retaining stormwater, to provide water for irrigation and so minimise the use of potable water
    - using grass areas that are appropriately sized and designed for children to play, people to relax and socialise, and for similar purposes, rather than just for visual amenity
    - managing sun-exposed areas by using landscaping, shade structures, light-coloured roofs and paving materials that lower surface temperatures.
8. Provide infrastructure to support gardening such as space for a tool shed, a potting bench, compost facilities and external taps.
9. Provide an outdoor tap and drainage for each apartment, to allow for irrigation for gardening and for maintaining planting.
10. Landscaping materials should be durable, resilient, designed for safety, fire-resistant and easy to maintain; and they should be consistent with the Future Homes materials schedule included in the exemplar design package.

Climbers and cascading plants

11. A climber or cascading planter fixed to an external wall, pergola, balcony or verandah should be of a species that retains its leaves and remains green year-round. Where used, a performance solution with respect to combustibility and fire safety will be required.
12. Climbers should be grown from a deep-soil area where possible. If grown in a planter box, the box should be at least 500 mm wide and 700 mm depth excluding drainage materials.
13. Easy access should be provided to climbers and planters, for maintenance.
14. Balconies with planters should be designed so people can't use them to climb over the balustrade, as the National Construction Code requires.
15. Planters on balconies should avoid a heavy load on the edge of the cantilever that could deflect the floor and result in poor drainage.

5.3 Integrated landscape

Rationale

The site layout and architectural planning should integrate landscape to create high-quality, usable spaces that complement the architectural design and create good growing conditions for plants.

Principles

A. The siting and landscape approaches are integrated in the overall design strategy.

B. Views into communal open space and the public realm are encouraged, to increase passive surveillance.

C. The landscape design is coordinated with site services to optimise conditions for tree canopy and planting. WSUD, services infrastructure and trenching are designed to avoid compromising deep soil areas.

Performance target

There are no performance targets for this planning elements.

Design considerations

1. Landscaping should be provided in outdoor communal areas and private gardens.

2. Public, communal and private landscape spaces should be interconnected, to promote a sense of community. These spaces should incorporate productive gardens, good access to light and comfortable benches and seating, to encourage use and social interaction.

6 Sustainable

A Future Homes development demonstrates how apartment living can exceed current sustainability requirements and be zero-carbon ready.

6.1 Environmentally sustainable design

Rationale

Victoria is moving strongly to mitigate climate change and adapt to its impacts including through the Climate Change Act 2017[3] and Victoria's Climate Change Strategy[4].

A Future Homes adapted design will produce a development that is energy-efficient, uses less fossil fuel, makes good use of sunlight, is thermally efficient and is resilient to climate change impacts.

The sustainability of the exemplar designs is assessed through the mandarory and non-mandatory requirements in the **Environmentally Sustainable Design (ESD)** checklist in **Appendix 6**. The requirements achieve a minimum Built Environment Sustainability Scoreboard (BESS) overall score of 70 percent (Excellence) or an equivalent score using an equivalent ESD assessment tool such as Green Star (minimum certified, 4 Star). A consultant must prepare a report to demonstrate that a proposal achieves the equivalent of a 70 percent (Excellence) BESS score, the report must be signed and demonstrate how each criterion is met based on the design and specifications as submitted for planning approval.

Principles

A. The development achieves excellent sustainability outcomes.

B. The development's buildings and apartments are energy-efficient.

C. The development protects, where feasible, the photovoltaic (PV) systems of existing dwellings.

D. The development's orientation and layout reduce the use of fossil-fuel energy and make good use of daylight and solar energy.

E. Apartments have adequate thermal efficiency.

F. The development is highly resilient to climate change impacts, particularly extreme heat events.

G. The development optimises on-site renewable energy generation and is ready for net-zero- operation by excluding all fossil fuels on site.

Mandatory requirements

1. The development must be oriented to make appropriate use of solar energy.

[3] https://www.legislation.vic.gov.au/in-force/acts/climate-change-act-2017/005

[4]. https://www.climatechange.vic.gov.au//__data/assets/pdf_file/0025/522169/Victorian-Climate-Change-Strategy-Accessible.pdf

2. The development must at a minimum:
    - achieve a 7.5 star NatHERS average rating — area-weighted across all apartments — with no individual apartment less than 6.5 stars
    - achieve a minimum BESS overall score of 70 percent (Excellence) or an equivalent score using an equivalent ESD assessment tool such as Green Star (minimum certified, 4 Star). Where a consultant prepares a report to demonstrate that a proposal achieves the equivalent of a 70 percent (Excellence) BESS score, the report must be signed and demonstrate how each criterion is met based on the design and specifications as submitted for planning approval.
    - achieve a 100 percent Stormwater Treatment Objective - Relative Measure (STORM) rating for the site.

Performance targets

1. The development should:
    - meet the annual cooling energy limits shown in Table 1.18
    - be sited and designed so the energy efficiency of existing dwellings on adjoining lots is not unreasonably reduced
    - sited and designed so the performance of rooftop solar energy systems on existing dwellings on adjoining lots in a General Residential Zone, Neighbourhood Residential Zone and Township Zone is not unreasonably reduced. The existing rooftop solar energy system must exist at the date the application is lodged.
2. Living areas and private open space should face north, if practical. If being good neighbours (by reducing visual bulk and providing visual relief) is prioritised, south-facing private open space can be acceptable if the apartment will have good solar access.
3. The development should be designed so solar access to north-facing windows is optimised through appropriate window size, shading and location.

Alignment with VPP: Standard B35 Energy efficiency (55.07-1)

Table 1.18: Cooling load

NatHERS climate zone	NatHERS maximum cooling load (MJ/M2 per annum)
Climate zone 21 Melbourne	30
Climate zone 22 East Sale	22
Climate zone 27 Mildura	69
Climate zone 60 Tullamarine	22
Climate zone 62 Moorabbin	21
Climate zone 63 Warrnambool	21
Climate zone 64 Cape Otway	19
Climate zone 66 Ballarat	23

Note: Refer to NatHERS zone map, Nationwide House Energy Rating Scheme (Commonwealth Department of Environment and Energy)

Design considerations

There are no design considerations for this planning element.

Appendix 6: Environmentally sustainable design sets out requirements and provides background information about how the exemplar designs meet the performance targets. Appendix 6 and the accompanying technical report(s) outline specific requirements, outcomes of modelling and guidance about when the provided data is applicable.

6.2 Energy efficiency: passive systems

Rationale

Good design makes homes comfortable throughout the year passively, which reduces the need for active systems: active systems can be costly and can contribute to greenhouse gases.

A Future Homes adapted design will use best practice passive design.

Principles

A. The building's envelope provides comfortable internal conditions and minimises the use of active systems.

B. The development uses best practice passive design.

Performance target

1. The building should:
    - use high-performance window frames — thermally broken, timber or uPVC — as standard, even if it is not required to meet the NatHERS target
    - be as airtight as possible.

Design considerations

There are no design considerations for this planning element.

6.3 Energy efficiency: active systems

Rationale

To mitigate climate change and its impacts, active systems in all new developments will be highly efficient and minimise carbon emissions.

A Future Homes adapted design will generate its energy rather than only use fossil fuels, and its active systems will be highly efficient.

Principles

A. The development does not have plant or equipment that can only operate on fossil fuels.

B. The development should generate renewable energy on site and distribute it throughout the building(s).

C. The development's active systems are highly efficient.

D. The development's active systems are integrated into the design, and there is adequate space for them.

Performance target

1. Locate and set out equipment to reduce the length of refrigerant pipe runs and loading, and support the use of refrigerants with low Global Warming Potential.
2. Split system Energy Star ratings should be within one Star of the best available for the given capacity in heating mode.

Design considerations

There are no design considerations for this planning element.

6.4 Natural ventilation

Rationale

Natural ventilation increases oxygen levels and flushes out unwanted humidity, carbon dioxide and other pollutants. It also provides cleaner and healthier air for the wellbeing and health of residents.

A Future Homes adapted design will include an effective ventilation strategy for apartments.

Alignment with VPP: Standard B49 Natural ventilation (55.07-15)

Principles

A. All apartments have effective natural ventilation.

B. Residents can effectively manage the natural ventilation of their apartments.

C. If an apartment does not have effective natural ventilation or there is a strong argument (in terms of feasibility or better outcomes) to support doing so, apartments may have mechanical ventilation with heat/energy recovery.

Mandatory requirements

1. The design and layout of apartments must maximise openable windows, doors or other ventilation opportunities in external walls.
2. 100 percent of apartments must provide effective natural ventilation as per the definition in Appendix 6 – ESD. Key requirements for effective natural ventilation include, but are not limited to:
    - for cross-ventilation:
        - a maximum breeze path of 18 metres between ventilation openings, with a minimum distance of 5 metres
        - ventilation openings located either in opposite or adjacent (perpendicular) external walls or an external wall and an operable skylight
        - no more than one doorway or opening of less than 2 square metres between the ventilation openings
    - for single-sided ventilation, a maximum permissible room depth of 5 metres.

For additional guidance on mechanically asisted natural ventilation, refer to Appendix 6: Environmentally Sustainable Design

Performance targets

There are no performance targets for this planning element.

Design considerations

There are no design considerations for this planning element.

6.5 Heat island effect

Rationale

The heat island effect is the localised heating of open space, suburbs and cities due to heat absorption and radiation by thermally massive concrete or other heavy materials.

A Future Homes adapted design will mitigate the heat island effect by its choices of external materials and with planting and shading.

Principles

A. The development includes measures to minimise the impact of the heat island effect, and it provides places of refuge during extreme heat events.

B. The building, shading and roof are generally a light colour.

Performance targets

There are no performance targets for this planning element.

Design considerations

There are no design considerations for this planning element.

6.6 Water management

Rationale

In recent years, Victoria has moved from the traditional drainage-engineering approach to stormwater management to WSUD approaches that help create and maintain urban landscapes that use water efficiently; are green, cool, pleasant places for people; and have healthy waterways, wetlands and coasts.

A Future Homes adapted design will adopt best practice for stormwater management, making good use of precious water resources and minimising the impact of run-off and its associated harms. It will also minimise the use of potable water with storage, distribution facilities and efficient fixtures.

Principles

A. Minimise the on-site use of potable water through fixtures, fittings, appliances, landscaping and by providing on-site storage for rainwater for use in toilets and irrigation.

B. Minimise the site's impact on downstream stormwater infrastructure and contribute to replenishing the water table such as by providing permeable surfaces, rainwater tanks or raingardens.

C. Encourage the use of alternative water sources such as rainwater, stormwater and recycled water.

D. Facilitate the collection, use and infiltration of stormwater within the development.

E. Reduce the impact of stormwater run-off on the drainage system, and filter sediment and waste from stormwater before it is discharged from the site.

Alignment with VPP: Standard B39 Integrated water and stormwater management (55.07-5)

Performance targets

1. Buildings should be designed to collect rainwater for non-drinking purposes such as for use in toilets, laundry appliances and gardens.
2. Buildings should be connected to a non-potable dual-pipe reticulated water supply, where the relevant water authority provides one.

3. The stormwater management system should be designed to:
    - meet the best practice performance objectives for stormwater quality set out in the *1999 Urban Stormwater Best Practice Environmental Management Guidelines*[5]
    - maximise the infiltration of stormwater, water and drainage of residual flows into permeable surfaces, tree pits and treatment areas.

Design considerations

1. The rainwater tank should be sized and located in line with council requirements.
2. Tanks should be located in an area that is unobtrusive but which minimises the pumping needed to get the water to where it is used.
3. External ramps and stairs should have trench grating.
4. Retaining walls should be built with passive drainage methods that can be cleaned regularly. Weep holes at the bases of retaining walls should be adequately drained away from the wall.
5. Encourage discussing the proposal with the relevant water utility provider for advice on any new initiatives for onsite water savings and reuse.

[5]https://www.publish.csiro.au/ebook/download/pdf/2190

7 Adaptable

A Future Homes development is adaptable and replicable on typical suburban lots in Victoria, meeting or exceeding current planning, policy and environmental objectives.

7.1 Buildability

Rationale

Good design and considered construction methods can make building apartments more efficient and cost-effective by reducing labour costs and material waste and by maximising space and build quality.

Future Homes make high-quality, well-designed apartments available to more people. Future Homes exemplar designs have been designed to a competitive construction rate commensurate with similar products on the market.

A Future Homes adapted design will strike a balance between conventional approaches to construction and new ways of building such as prefabrication, modularisation and off-site construction.

There is further information about construction cost rates in Appendix 7.

Principles

A. The development is adaptable for changes in use over time.

B. The development's design addresses whole-of-life-cycle costs such as for energy, maintenance, user comfort and environmental outcomes.

Performance target

There are no performance targets for this planning element.

Design considerations

1. Use efficient construction approaches and explore opportunities for prefabrication.
2. Align façade finishes and joints, consistent with industry-recognised modules and accounting for construction joints.
3. When detailing wall construction, avoid a build-up of multiple layers or finishes.
4. Reduce the extent of structural transfer, structural-level changes and complex service runs. Doing so can reduce the need for bulkheads and simplify the design of the framing.
5. Use efficient grids and typical modules to simplify framing design. Standardisation, repetition and prefabrication of framing can reduce material waste and on-site labour and streamline fabrication and transportation.
6. Align wet areas to simplify and reduce plumbing reticulation and infrastructure.
7. The sizes and layout of windows, doors, bathrooms, kitchens, laundries, robes and other components should be grouped into types that can be repeated across apartments and in different combinations.

7.2 Operations

Rationale

The ongoing costs of operating and maintaining a completed building over time are considerations for apartment owners.

A Future Homes adapted design will contribute to the affordability of the development's apartments over time by using systems and materials that need less ongoing care and maintenance to keep them in good order.

Principles

A. Systems and materials require minimal ongoing maintenance to keep them in good order.

B. There is an integrated approach to architecture, landscape, services and structure incorporating active and passive systems for energy reduction.

Performance targets

There are no performance targets for this planning element.

Design considerations

1. Consider whole-of-life costs including energy consumption, user comfort, longevity and safe replacement when choosing fittings and fixtures.
2. Locate services where they are accessible from common areas.

Appendix G London Housing Design Standards

MAYOR OF LONDON

London Plan Guidance

Housing Design Standards

June 2023

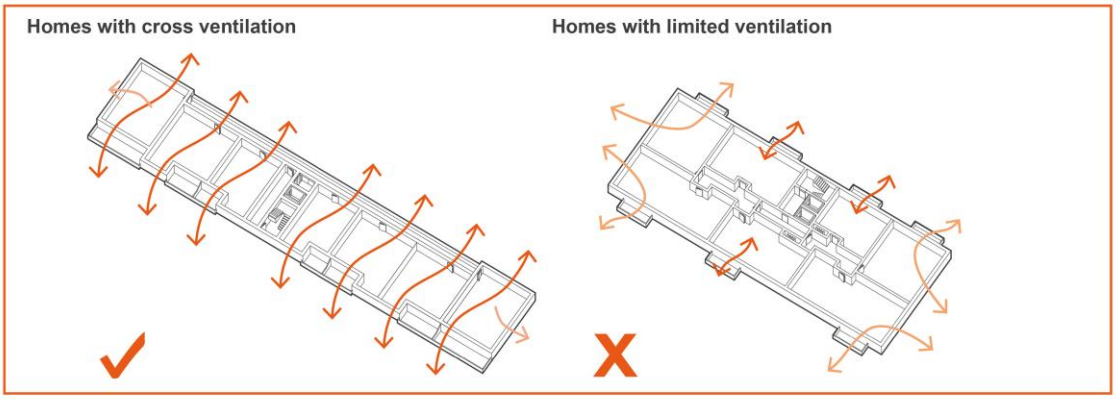
B	Shared and ancillary spaces	Policy
B1	**Approach routes and entrances**	
B1.1	Private and communal entrances should be visible and clearly identifiable from the public realm. **[NB, CoU]** *Note: Canopies or recesses can be used to make the main entrance more visible and provide shelter. This can aid those who are neurodiverse or partially sighted.*	D3 D6
B1.2	Ground-floor apartments and maisonettes should have 'own door' access from the street where possible. **[All]**	D3 D6
B1.3	Where a core provides access to one or more M4(3) dwellings, all parts of the internal and external circulation network should be designed to meet the approach requirements of M4(3) (as defined by Approved Document M, Volume 1*)* to ensure that all residents have equal access to all the shared parts of the building and any associated open space or facilities intended for their use. **[NB]**	D5 D6 D7
B1.4	The entrance lobby should be safe, welcoming, durable, well-lit and at least partially glazed; and, where appropriate, should include glazing manifestations. It should also include signage to aid wayfinding and any necessary instructional signage relating to fire safety. Where an access core serves four or more dwellings, an access control system with audio-visual verification in all dwellings should be linked to a main front door with electronic lock release. **[All]** *Note: Glazing manifestations are visible designs on glass to prevent people colliding with it.*	D3 D5 D6 D12
B1.5	Lifts and stairs should be within sight of the entrance area or clearly signposted. Floor and flat numbers should be clearly marked on each landing within the stairways of high-rise buildings; and be visible in both normal conditions, and poor-light or smoky conditions. The stairs should be prominent and attractive to encourage healthy lifestyle choices. **[NB, CoU]**	D5 D6 D12
B1.6	Establish whether a concierge is envisaged at the outset; but ensure that the building (or buildings) could function safely and effectively without one if the management regime were to change over time. **[NB, CoU]**	D3 D6
B1.7	Ensure that, and demonstrate how, post and deliveries can be safely received, stored and collected by, or delivered to, residents. **[All]** *Note: For Major development, this should be demonstrated with a management plan.*	D6
B1.8	**Best practice:** Where basements are provided, offer step-free private-storage facilities at basement level for residents to store bulky or occasionally used items, in addition to storage within the home. **[All]**	D6

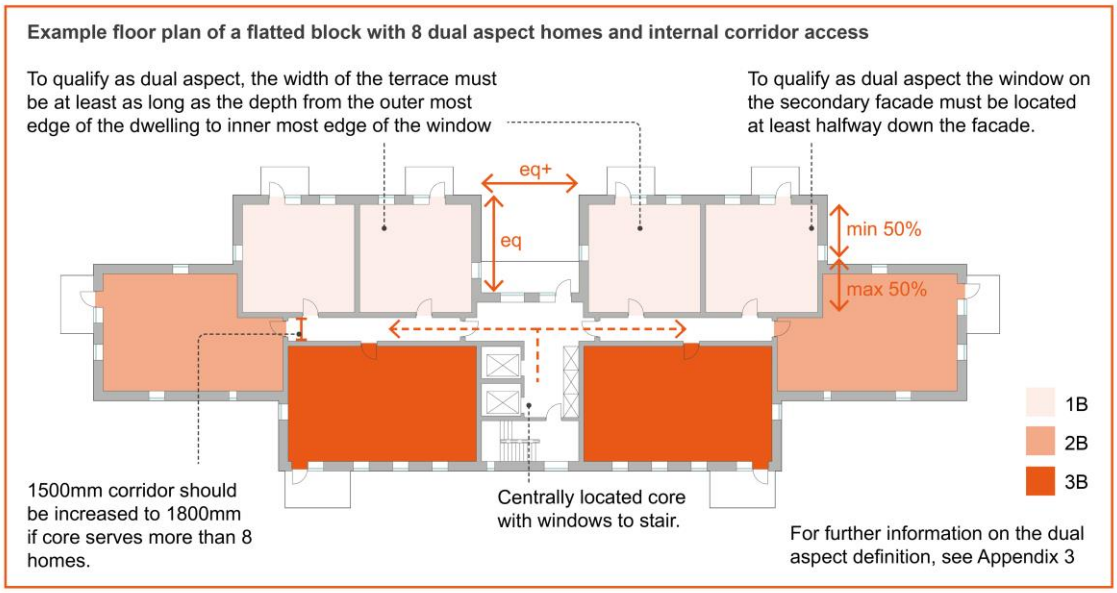
B2	**Internal circulation and dwellings per core**	
B2.1	Communal circulation spaces such as corridors should be at least 1500mm wide. Consider additional width within and adjacent to cores to allow wheelchair users to turn and/or pass each other more easily. **[NB, CoU]**	**D5** **D6**
B2.2	Internal corridors, particularly 'double-banked' corridors (those that serve flats on both sides), should be kept short and receive daylight and natural ventilation. (This standard is not directly applicable to specialist older persons housing.) **[NB, CoU]**	**D6**
B2.3	**Best practice:** Provide access galleries (or 'decks') that facilitate dual aspect homes as an alternative to internal corridors. **[NB]** *Note: Access galleries are unlikely to be appropriate in the upper floors of tall buildings.*	**D6**
B2.4	In lift-served buildings, at least one lift (more if indicated by a capacity assessment) should be a fire evacuation lift suitable for people who require level access to evacuate from the building. Protected lobbies in front of lift entrances need to be provided to ensure the safety of those that need to evacuate along with clear signage, lighting and pictograms of the evacuation route to the safe area/evacuation lift. **[All]** *Note: This requirement for evacuation lifts is in addition to any requirement to provide fire-fighters lifts under the building regulations.*	**D5** **D12**
B2.5	The number of homes accessed by a core should not exceed eight per floor. Deviation (by exception) from this standard will need to be justified and mitigated by increasing the corridor widths to 1800mm, locating homes on both sides of the core and introducing intermediate doors to create sub-clusters. (This standard is not directly applicable to specialist older persons housing.) **[NB, CoU]**	**D5** **D6**
B3	**Storage of bicycles, mobility scooters and wheelchairs**	
B3.1	Secure, step-free, long-stay cycle storage should be provided in accordance with the London Plan and the guidance set out in the London Cycling Design Standards. Storage should be in easily accessible locations and feel safe. Provision should be made for: • one space per studio or one-person, one-bedroom dwelling • 1.5 cycle spaces per two-person, one-bedroom dwelling • two cycle spaces for every dwelling with three or more bedspaces Two additional short-stay visitor spaces are required for developments with 5-40 dwellings, and thereafter one additional space per 40 dwellings. (This standard is not directly applicable to specialist older persons housing.) **[All]** *Note: See section C10.5 for cycle storage requirements in private gardens.*	**T5**

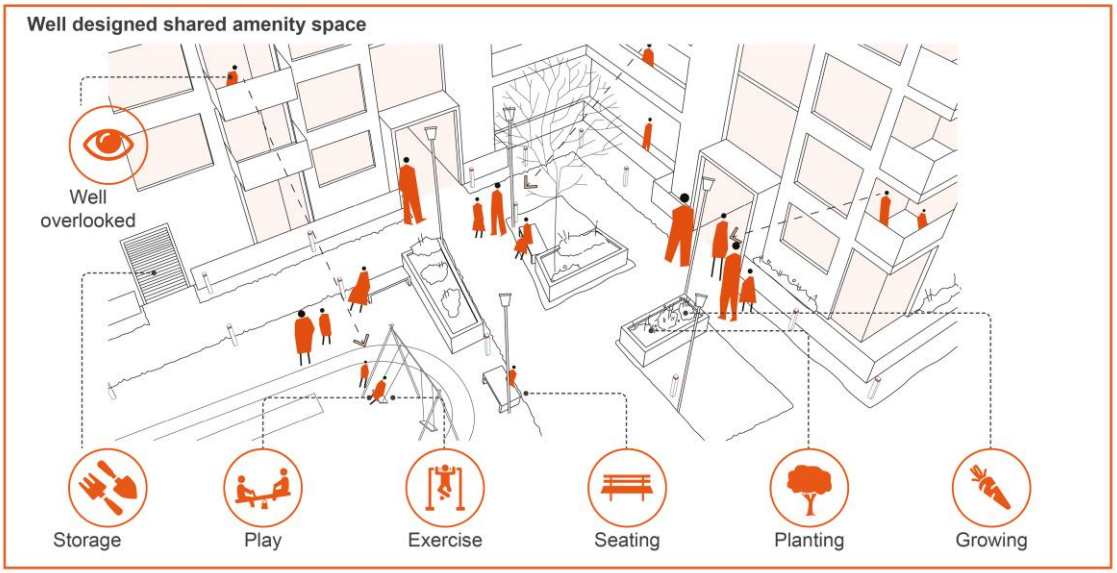
B3.2	All apartment buildings should provide secure and convenient storage and charging facilitates for micro-mobility devices, mobility scooters and wheelchairs. Fire protection between the storage and any escape route must be provided. Access to the storage from the core and/or the courtyard (where one exists) is preferable to access from the street. (A higher level of provision will be required in specialist older persons housing.) **[All]** *Note: This includes buildings that do not have any M4(3) homes to ensure that visiting wheelchair users are catered for.*	**D5** **D6**
B4	**Car parking**	
B4.1	Car parking is not permitted in the Central Activities Zone; Inner London Opportunity Areas; Metropolitan and Major Town Centres; locations with a PTAL of 5 or 6; or Inner London locations with a PTAL of 4. In other locations, proposals must not exceed the maximum residential parking standards set out in Table 10.3 of Policy T6.1 of the London Plan. **[All]** *Note: This standard does not apply to disabled persons parking spaces.*	**T6.1**
B4.2	Ensure that the location and organisation of resident car parking does not impede walking, cycling and public transport use; or negatively affect the use or appearance of the public realm and open spaces. **[All]**	**D3** **D6**
B5	**Access for emergency and service vehicles and fire safety**	
B5.1	Demonstrate how the design proposal achieves the highest standards of fire safety. Ensure that every apartment building has a safe and convenient means of escape, and an associated evacuation strategy for all building users. **[All]** *Note: Development will need to meet the latest fire safety requirements, including those for a second staircase.*	**D12**
B5.2	Provide a dedicated, unobstructed, suitably sized and located external space with a connection to a sufficient water supply from which a fire appliance can operate. **[All]**	**D12**
B6	**Dealing with waste and recycling**	
B6.1	Ensure that the proposed arrangements for dealing with waste and recycling conform to the local authorities' storage and collection strategies and requirements. Separate collection of dry recyclables, food waste and other waste should be considered in the early design stages to help improve recycling rates; reduce smell and vehicle movements; protect the street scene and community safety; and prioritise active frontages. **[All]**	**D3** **D6**
B6.2	Communal refuse and recycling facilities should be accessible to, and useable by, all residents including children and wheelchair users. They should be located on a hard level surface; be well lit and ventilated; and have a floor gulley to facilitate cleaning. **[All]**	**D3** **D6**

B6.3	When located within the footprint of a residential building, the waste and recycling room should be designed and positioned to minimise the impact of noise and smell on the occupants. **[All]** *Note: The distance between the entrance to a flat and the communal bin store should not exceed 30m as set out in Approved Document H.*	**D3** **D6**
B7	**Supplying energy efficiently (being clean)**	
B7.1	Use local energy resources (such as secondary heat and local heat networks), and supply energy efficiently and cleanly by connecting to district heating networks. **[All]**	**SI2** **SI3**
B7.2	Appraise and optimise network efficiency by minimising distribution heat losses, and by locating vertical risers within buildings in positions that reduce horizontal pipe runs to a practical minimum. **[NB, CoU]**	**SI2** **SI3**
B8	**On-site renewables (being green)**	
B8.1	Developments should be designed to maximise renewable energy by producing, storing and using it onsite through the use of, for example, photovoltaics and heat pumps. Keep parapets low, while maintaining safety for maintenance personnel; and where possible, locate plant and lift overruns to the north to minimise overshadowing. **[All]** *Note: South-facing and flat roofs are the most beneficial for solar photovoltaics.*	**SI2**
B9	**Shared outside amenity space**	
B9.1	Apartment buildings should generally offer at least one secure, communal outside green space, as a ground-level courtyard, a raised podium or a roof terrace. These spaces should be overlooked by residents; and be available and accessible to all occupants, including wheelchair users, regardless of tenure, and accessed via the cores. **[All]**	**D6**
B9.2	Communal outside spaces should be: multifunctional; designed for socialising, play, relaxation, exercise and, where appropriate, food growing. They should be green and biodiverse, and afford year-round visual interest when viewed from the surrounding dwellings. **[See Making London Child-Friendly Guidance]** **[NB, CoU]**	**S4** **G1** **G5** **G8**
B9.3	Ground and podium-level amenity spaces should include play spaces that are overlooked by nearby homes. Where a development is likely to accommodate 10 or more children/young people, provide at least 10m^2 of play space per child (accessible to all, regardless of tenure) that is appropriate for a range of different age groups**. [All]**	**S4**
B9.4	**Best practice:** Provide space and facilities for community gardening that include food-growing and composting. **[All]**	**G8**

B9.5	Maximise the quality and availability of daylight and sunlight in communal outside spaces, particularly in winter. It is particularly important that spaces designed for frequent use (including sitting and play spaces) receive direct sunlight through the day, particularly at times they are most likely to be used. **[NB, CoU]**	**D6**
B9.6	The design of raised podia (typically located over underground or undercroft parking) should reflect the limited light levels and soil depth typically associated with these spaces. Grass should be avoided in favour of drought-tolerant planting, and innovative approaches are encouraged. These include trees and climbing shrubs planted at ground level and allowed to grow through voids in the podium. **[NB]**	**G1** **G5**
B9.7	Proposals should consider lighting; sustainable watering solutions; tool storage; food growing and composting; and how future residents can be involved in the design and ongoing maintenance of shared outside spaces. **[All]**	**D3** **D6** **SI13**
B9.8	**Best practice:** Provide a separate, secure access route from the street to every outside space to avoid taking mowers and other large maintenance equipment through the building. **[NB, CoU]** *Note: Access routes should be wide enough to accommodate machinery that is likely to be used.*	**D3** **D6**
B10	**Management and maintenance**	
B10.1	Communal indoor and outside spaces should be designed to: minimise the amount of management and maintenance needed throughout the lifetime of the building; and facilitate safe access to the relevant parts of each management system. **[All]**	**D3** **D6**
B10.2	Major developments must submit energy performance data to the GLA's 'Be Seen' monitoring portal. **[See 'Be Seen' Energy Monitoring LPG]** **[All]**	**SI2**







1. Access galleries create dual aspect homes and encourage neighbourly interaction (B.2.3)
2. An example floorplan layout that provides a centrally located core with 100 per cent dual aspect homes (B2.1, B2.2, B2.5)
3. Well-designed communal outside areas for all residents to use throughout the year (B9.1, B9.2, B9.3, B9.4, B9.7, B9.8)

C	Homes and private outside space	Policy
C1	**Inclusion and accessibility**	
C1.1	Development should meet the detailed requirements for the 90 per cent of dwellings that are required to meet M4(2) and the 10 per cent required to meet M4(3) set out in Approved Document M, Volume 1 (ADM). All require step-free access from the street (or parking/drop-off area) to the main private entrance. **[NB]** *Note 1: Accessible housing should be clearly identified in the planning application. M4(3) homes should be identified as either M4(3)(2)(a) 'wheelchair-adaptable' (and the default option), or (M4(3)(2)(b) 'wheelchair-accessible', as set out in ADM.* *Note 2: The principal bedroom should provide a clear access zone of at least 750 mm to both sides and foot of the bed (or a minimum of 1,000mm in M4(3) homes).* *Note 3: See Policy D7 for development where flexibility should be applied. Where this is the case, exceptions must be justified, and the affected dwellings described as M4(1).*	D7 H2
C1.2	**Best practice:** Dwellings that cannot provide step-free access from the street [described as M4(1)], should be designed to meet all other M4(2) requirements including step-free access to private outside space. **[All]**	D5 D6
C1.3	When an M4(3)(2)(a) wheelchair-adaptable home is proposed, drawings submitted at the planning application stage should clearly show how the layout can be adapted to meet the requirements for a wheelchair-accessible home in the future. **[All]**	D7
C1.4	When undertaking community engagement, identify any specific cultural requirements within the local community that need to be addressed in the design. **[NB, CoU]** *Note: This standard should be applied as part of standard A5.6. Examples include a preference for the kitchen to be separated from the living and dining spaces; and the need for larger kitchens to accommodate specific cooking and/or eating conventions.*	D5 D6
C1.5	**Best practice:** Family homes with three or more bedrooms should predominantly be located on the lower floors of buildings (and not above the fifth floor) so that they provide safe, convenient access to, and overlooking of, outside play and amenity spaces. **[NB, CoU]**	D6
C2	**Internal space standards**	
C2.1	All new dwellings must meet the minimum space standard in Policy D6 Part F(1-8) and Table 3.1 of the London Plan. **[All]** *Note 1: These space standards should be exceeded for M4(3) homes, which will need to be considerably larger to meet the minimum spatial requirements set out in Approved Document M, Volume 1.* *Note 2: This standard aligns with the NDSS, except for ceiling height, and is shown in Table A1.1 in Appendix 1 of this document.*	D6
C2.2	**Best practice:** New dwellings should meet the best practice space standard in Table A1.1 detailed in Appendix 1. **[All]**	D6

<table>
<tr><td>C2.3</td><td>A minimum ceiling height of 2.5m is required for at least 75 per cent of the gross internal area (GIA) of each dwelling to enhance the spatial quality; improve daylight penetration and ventilation; and assist with cooling. Any reduction (from 2.5m) in floor-to-ceiling heights should only be for essential equipment in the ceiling voids above kitchens and bathrooms. [NB, CoU]</td><td>D6</td></tr>
<tr><td>C2.4</td><td>Best practice: The floor-to-floor height of ground-floor dwellings should be at least 3.5m in order to promote flexibility and greater daylight; and allow for easier conversion to non-residential uses if required. [NB]</td><td>D6</td></tr>
<tr><td>C2.5</td><td>The following combined floor areas for living/kitchen/dining space should be met or exceeded: [NB, CoU]
<table>
<tr><th>Designed level of occupancy</th><th>Minimum combined floor area of living, dining and kitchen spaces</th></tr>
<tr><td>One person</td><td>21 sqm</td></tr>
<tr><td>One bed, two persons</td><td>23 sqm</td></tr>
<tr><td>One bed, three persons</td><td>25 sqm</td></tr>
<tr><td>Two bed, four persons</td><td>27 sqm</td></tr>
<tr><td>Three bed, five persons</td><td>29 sqm</td></tr>
<tr><td>Four bed, six persons</td><td>31 sqm</td></tr>
</table>
Note 1: In open-plan layouts, the floor area measured should be clearly identified. It should not include the space immediately inside the front door, or any circulation space needed to access other rooms.

Note 2: This applies to (M4(2) homes; M4(3) homes will typically exceeds these areas. See standard C2.12 and Approved Document M, Volume 1 for details.</td><td>D6</td></tr>
<tr><td>C2.6</td><td>The main sitting space in a home for up to two people should be at least 3m wide, and increased to 3.5m wide in homes with three or more bedspaces to achieve a functional layout. [All]</td><td>D6</td></tr>
<tr><td>C2.7</td><td>Best practice: Exceed the minimum built-in storage requirements by 0.5m^2 and increase the capacity of kitchen waste and recycling bins. [All]</td><td>D6</td></tr>
<tr><td>C2.8</td><td>Best practice: Provide at least two built-in storage cupboards in every home and at least one on every floor. Ensure that at least 50 per cent of the storage provided is located within circulation spaces. [All]</td><td>D6</td></tr>
<tr><td>C2.9</td><td>Best practice: Provide a WC on every floor that includes a bedroom. [All]</td><td>D3
D6</td></tr>
<tr><td>C2.10</td><td>Best practice: Provide an additional bathroom or shower room in homes for six or more people. [All]

Note: Approved Document M, Volume 1 has specific requirements for bath and shower provision in M4(3) homes.</td><td>D6</td></tr>
<tr><td>C2.11</td><td>Best practice: Provide a utility room in dwellings with two or more bedrooms. Where part of the utility room is contributing to the general storage requirement, the area claimed should be clearly identified. [All]</td><td>D3
D6</td></tr>
</table>

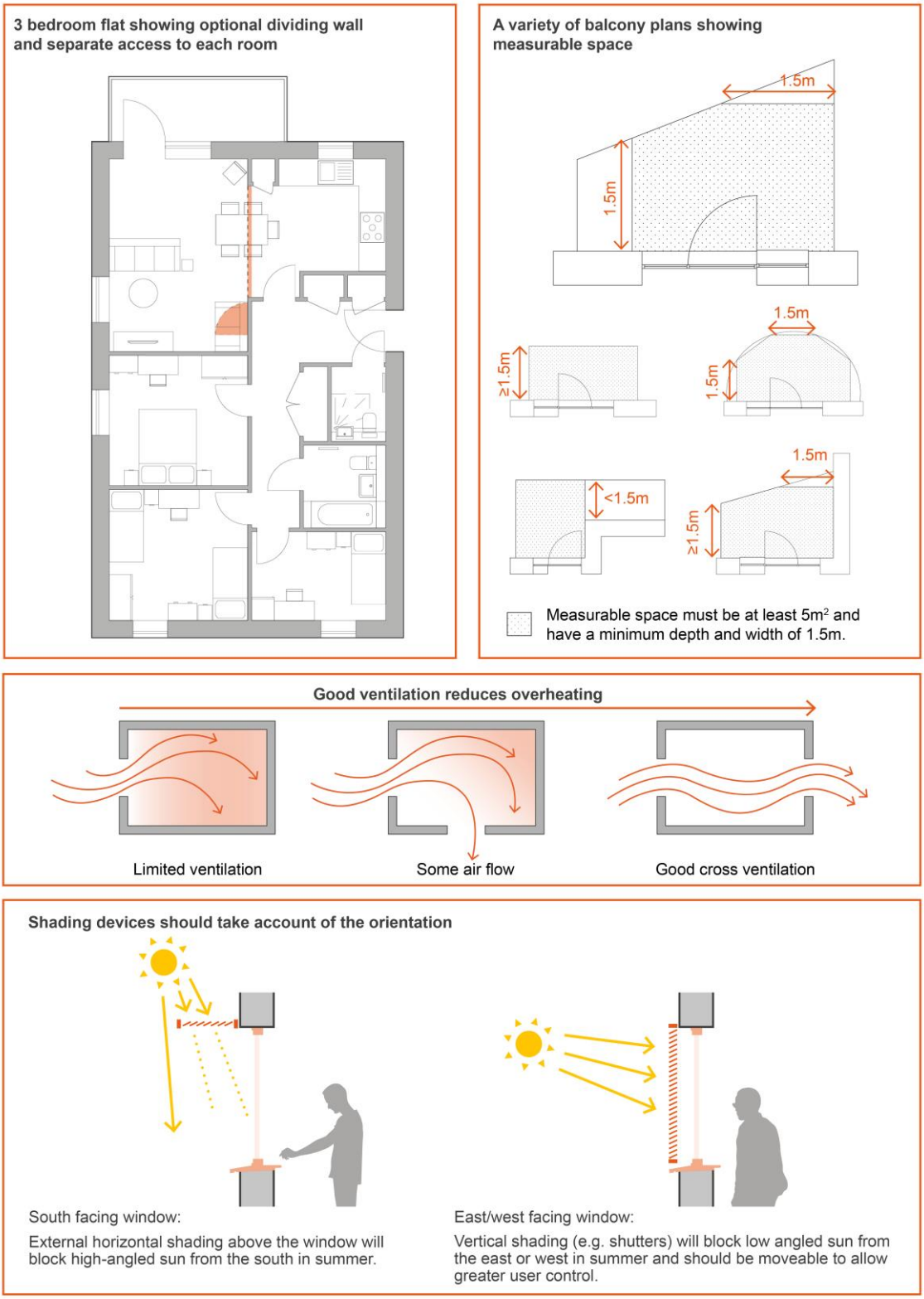
C2.12	Fully furnished internal floorplans should be submitted for every dwelling type proposed, at a scale of at least 1:100 to enable assessment of the layout and ensure it is functional and fit for purpose. **[All]** *Note 1: For convenience, the written and drawn furniture schedules that set out the required items for fully furnished floorplans are contained within Appendix 1 of this document. These are taken from Approved Document M, Volume 1 (ADM). Layouts that cannot comfortably accommodate all of the prescribed furniture for the dwelling type in question (including kitchen units and appliances) will not be considered acceptable.* *Note 2: The overall length of kitchen units should be measured at the mid-line of the worktop in accordance with the guidance for M4(3) homes set out in ADM. Where the washing machine is located out of the kitchen, the overall minimum worktop length may be reduced by 630mm. Note that kitchen requirements for M4(3) homes differ from those for M(4)2 – see ADM for details.* *Note 3: The internal layout drawings should include the overall GIA; the floor area; the width and depth of every habitable room; a north point; and the accessibility category of each dwelling. They should also demonstrate compliance with ADM.* *Note 4: Homes with five or more bedspaces and all dwellings with two or more storeys should provide at least two WCs. (Note: an additional 3m^2 is allowed for in the NDSS, for this purpose; and ADM requires a second WC in M4(3) homes with four or more bedspaces.)* *Note 5: Segregated bins for the short-term separation and storage of waste and recycling should be provided in kitchens or utility rooms as set out in the furniture schedule. The space used for this should not be counted towards the general storage requirement.*	**D6** **D7**
C3	**Choice and flexibility**	
C3.1	**Best practice:** Where open-plan living arrangements are proposed, ensure adequate separation between the kitchen and sitting space. In homes with three or more bedrooms, proposals should demonstrate how the space could be easily modified to provide two separate living spaces (preferably a living room and a kitchen/dining room), each with an openable window. A direct connection between the rooms is useful but not required. Conversely, where two spaces are provided from the start, it should be possible to remove the dividing wall without significant structural implications. **[All]** *Note: This approach is strongly encouraged in smaller homes.*	**D3** **D6**
C3.2	**Best practice:** Avoid load-bearing walls within the home to allow for future flexibility of the internal layout. Locate structural columns on external or party walls where possible. **[NB]**	**D3**
C3.3	**Best practice:** Avoid layouts in which the living space and other habitable rooms are only accessible via the kitchen. **[All]**	**D6**
C3.4	**Best practice:** Provide a dedicated study room in dwellings with three or more bedrooms. **[All]** *Note: To avoid being counted as a bedroom under the NDSS, the floor area should be less than 7.5m^2.*	**D3** **D6**

C4	**Aspect, orientation, daylight and sunlight**	
C4.1	New homes should be dual aspect unless exceptional circumstances make this impractical or undesirable; for example, when one side of the dwelling would be subjected to excessive noise or outside air pollution. Where single aspect dwellings are proposed, by exception, they should be restricted to homes with one or two bedspaces; should not face north; and must demonstrate that the units will: have adequate passive ventilation, daylight and privacy; and not overheat (particularly relevant for south or west-facing single aspect units). **[All]** *Note: See Appendix 3 for definition of dual aspect.*	**D3** **D6** **SI4**
C4.2	The location of the main living and eating spaces, and the main private outside space, should be optimised to make the most of the best views and the orientation. These spaces should receive direct sunlight (south-facing is preferable, provided that appropriate shading devices are incorporated) and enjoy reasonable privacy through the careful placement of windows, balcony design or other measures. **[NB]**	**D6**
C4.3	All homes should allow for direct sunlight in conjunction with solar shading. As a minimum, at least one habitable room should receive direct sunlight – preferably the living area and/or the kitchen and dining space. **[NB, CoU]**	**D6**
C4.4	Avoid placing bedrooms and bathrooms on street-facing facades at ground level or where they face onto a busy courtyard or podium. **[All]**	**D3** **D6**
C4.5	The primary window of a habitable room should not be located on an access deck. Where possible, avoid locating windows close to the internal corners of courtyards or L-shaped blocks. **[NB]**	**D3** **D6**
C4.6	Avoid large wide full-height windows to habitable rooms (particularly in bedrooms) where the risk of being overlooked and/or overheating is high. **[NB, CoU]**	**D6** **SI4**
C4.7	All habitable rooms (including a kitchen/dining room) should receive natural light and have at least one openable window that provides a view out when seated. **[All]**	**D6**
C4.8	**Best practice:** Bathrooms should receive natural light through openable window/s. **[All]**	**D6**
C5	**Air quality, external noise and soundproofing**	
C5.1	Where possible, locate habitable rooms away from busy roads, railways or existing buildings that generate excessive noise and/or poor air quality. **[All]** *Note 1: This applies to locations where there is a noisy or vibrant soundscape, particularly at night.*	**D14** **SI4**

C5.2	Where necessary, adopt sound-attenuation measures to reduce the external noise experienced within the home to an acceptable level. **[All]**	**D14**
C5.2	**Best practice:** Avoid locating bedrooms and living rooms adjacent to corridors; lifts; stairs; bin and cycle stores; wheelchair and mobility scooter stores; plant rooms; and other noise-generating ancillary spaces. **[All]**	**D6** **D14**
C5.3	Provide high levels of soundproofing between rooms, as well as between dwellings, to provide privacy and allow different activities (including work and study) to take part simultaneously throughout the home. In particular, party walls should achieve internal airborne sound-insulation values that are at least 5dB above Approved Document E; and impact sound insulation values that are at least 5dB lower. **[All]**	**D6** **D14**
C5.4	Where equipment such as mechanical ventilation heating with heat recovery (MVHR) is installed, ensure the Acoustics Ventilation and Overheating: Residential Design Guide for internal noise levels is followed. Where possible, locate the MVHR in a circulation space, not a habitable room, and as close as possible to an external wall to minimise distribution losses – ideally within 2m. **[All]**	**D14** **SI4**
C6	**Thermal comfort**	
C6.1	Reduce the risk of overheating, through orientation; dwelling layout; the natural cross-ventilation afforded by dual-aspect; window design; and shading devices (preferably external to the facade). Major development should demonstrate this through an energy strategy in accordance with the cooling hierarchy. **[All]** *Note 1: Specialist older persons housing should be subject to a heatwave strategy. Including active cooling in one or more of the communal spaces can safeguard vulnerable residents during extreme hot weather events.* *Note 2: Solar-controlled glazing can be used to radiate and reflect away much of the sun's heat.*	**SI4** **D6**
C6.2	Daylight and overheating assessments should be analysed together to determine the optimal balance. South and west-facing facades are most at risk to overheating, and the use of shading should be used to prevent direct sunlight from entering the home during at-risk periods. **[All]**	**SI4** **D6**
C6.3	Maximise the benefit of passive ventilation by providing a variety of window opening options that allow controlled ventilation through smaller openings and purge ventilation through larger windows and/or doors. **[All]** *Note: Window grilles and secure openers can be utilised so windows can be safety left open. Types of ventilation that allow air in whilst reducing noise infiltration are encouraged.*	**SI4** **D6**
C7	**Water usage**	
C7.1	Water fittings and appliances should be designed to minimise consumption to no more than 105 litres per person, per day (plus up to five litres for external use). **[All]**	**SI5**

C8	**Digital connectivity**	
C8.1	Provide sufficient ducting space for full-fibre connectivity infrastructure to all end-users unless an affordable alternative 1GB/s-capable connection is available. **[All]**	**SI6**
C9	**Fire safety**	
C9.1	Seek advice from building control at the earliest opportunity and, where possible, also from the local fire service to ensure that the proposed location of the wheelchair and mobility scooter storage and charging space in every M4(3) home is acceptable. **[All]** *Note: The preferred location for wheelchair transfer/storage is close to the main entrance of the dwelling.*	**D12**
C9.2	**Best practice:** Install sprinklers in all homes that are entered at or above first floor level. **[All]**	**D12**
C10	**Private outside space**	
C10.1	Provide a minimum of one 5m^2 of step-free private outside space for homes with one or two bedspaces, with a minimum depth and width of 1.5m. An extra 1m^2 should be provided for every additional bedspace. **[All]** *Note 1: For functional and accessible reasons, the minimum area must be a polygon with at least four sides. Triangular and irregular-shaped balconies will need to be larger than the minimum area to achieve this requirement.* *Note 2: Where inset balconies are provided, the depth should be less than the external facing side to ensure the space is experienced as outside space and that adequate daylight and sunlight can reach the room behind.*	**D6**
C10.2	**Best practice:** Exceed the minimum area of private outside space and increase the minimum depth and width to at least 2.5m to extend its use generally, enable wheelchair users to manoeuvre and turn more easily, and increase opportunities for planting; growing food; storing light gardening equipment; and drying clothes. **[All]**	**D5** **D6**
C10.3	Balconies should be accessed via the main sitting area or kitchen/dining room unless the specific circumstances make this impractical. Consider the need for privacy and/or shade on balconies (ideally adjustable sliding screens or retractable awnings). **[All]**	**D6**
C10.4	Enclosing balconies as glazed, ventilated winter gardens is appropriate in some circumstances. These are where dwellings will be exposed to high levels of noise and/or strong wind, particularly at a high level. Winter gardens should be usable as outside space, thermally separated from the interior, and the floor should be 'drainable' to avoid standing water. Care should be taken to be avoid overheating. **[All]**	**D6**

C10.5	Homes with private rear gardens should accommodate bicycles, mobility scooters and bins, providing that the garden can be accessed directly from the street. Where this is not possible, secure, bespoke covered storage should be provided in front gardens; this should be designed and located to avoid obstructing ground-floor windows. **[All]**	**T5** **D6**
C10.6	**Best practice:** A future management plan should be put in place for proposed buildings. Ensure that windows can be cleaned from the inside unless they can be safely accessed from outside, or where cleaning is the responsibility of the management company. **[All]**	**D3** **D6**



1 2
3
4

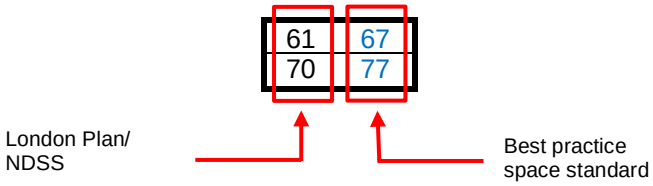
1. Three-bedroom apartment with options to separate or combine living areas (C2.2, C2.4, C3.1, C4.2)
2. Private outside space should be at least 1.5m deep and wide (C10.1, C10.3)
3. Natural ventilation approach to mitigate overheating (C4.1, C6.1)
4. Orientation of windows with shading devices (C6.1)

Appendix 1 Minimum and best practice space standards

A1.1.1 Table A1.1 shows both the minimum internal space standards, as set in Table 3.1 of the London Plan, and the best practice space standard, set out in standard C2.2. The best practice space standard provides additional space, over and above the minimum space standard, to ensure new homes are fit for purpose and of the highest residential quality. They specifically require more storage and better provision for home working.

Table A1.1 Minimum and best practice internal space standards for new dwellings^

Type of dwelling		Minimum gross internal floor areas (GIA)+ and storage (sqm)								Best practice extra space
Number of bedrooms	Number of bedspaces	1-storey dwellings		2-storey dwellings		3-storey dwellings		Built-in storage		
1b	1p	39/37	43/41*					1.0	1.5	+4
	2p	50	55	58	63			1.5	2.0	+5
2b	3p	61	67	70	76			2.0	2.5	+6
	4p	70	77	79	86					+7
3b	4p	74	84	84	94	90	100	2.5	3.0	+10
	5p	86	97	93	104	99	110			+11
	6p	95	107	102	114	108	120			+12
4b	5p	90	101	97	108	103	114	3.0	3.5	+11
	6p	99	111	106	118	112	124			+12
	7p	108	121	115	128	121	134			+13
	8p	117	131	124	138	130	144			+14
5b	6p	103	115	110	122	116	128	3.5	4.0	+12
	7p	112	125	119	132	125	138			+13
	8p	121	135	128	142	134	148			+14
6b	7p	116	129	123	136	129	142	4.0	4.5	+13
	8p	125	139	132	146	138	152			+14



Key

b: bedrooms

p: persons

^ New dwelling in this context includes new-build, conversions and change of use.

* Where a one-single-bedroom, one-person dwelling has a shower room instead of a bathroom, the floor area may be reduced from 39/43 sqm to 37/41 sqm, as shown.

Best practice space standard - example layouts

A1.1.2 The layouts below illustrate how a one-, two- and three-bedroom flat can accommodate the additional space specified in the best practice space standard.[1] While it is up to the discretion of the applicant or designer to plan how this additional space should be used, it is recommended that the additional space contributes to one or more of the best practice standards in Part C of this document.

A1.1.3 Examples of flat plans that meet the best practice space standard and some of the other best practice standards

One-bedroom, two-person flat

Additional features facilitated by the best practice space standard:

- extra 1.2 m^2 storage (total 2.7 m^2)*
- generous entrance area
- services cupboard with option to include washing machine
- extra armchair and desk with larger storage unit
- larger dining table
- larger kitchen (more storage and recycling space)
- extra desk or storage in bedroom
- space for larger wardrobe

* allowance for 0.5 sqm within services cupboard as stated in NDSS

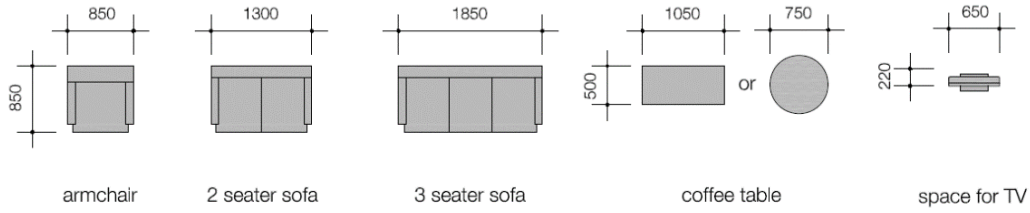
[1] These example layouts are based on a layout located on an access gallery or desk that provides cross-ventilation.

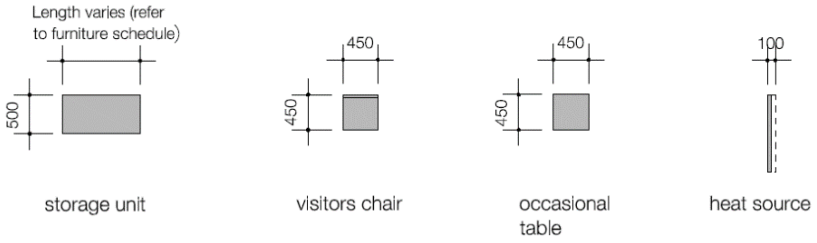
Appendix 2 Furniture schedule

A2.1.1 This drawn schedule should be read in conjunction with the minimum space standard (standard C2.1) and written schedule in Table A2.1. The relevant furniture for each M4(2) dwelling type should be shown on dwelling plans in accordance with standard C2.12. For M4(3) dwelling plans refer to Approved Document M, Volume 1. For dwellings that meet the best practice space standard (standard C2.2), the number of items provided should be beyond those specified in the written schedule.

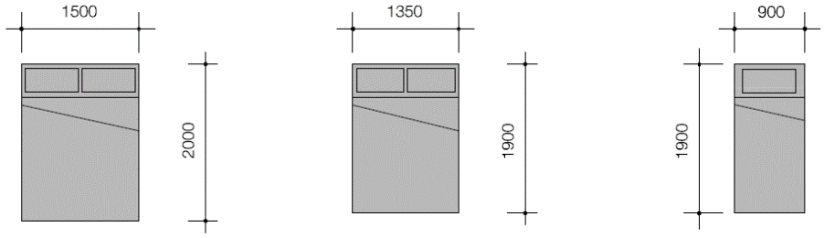
A2.1.2 Furniture schedule

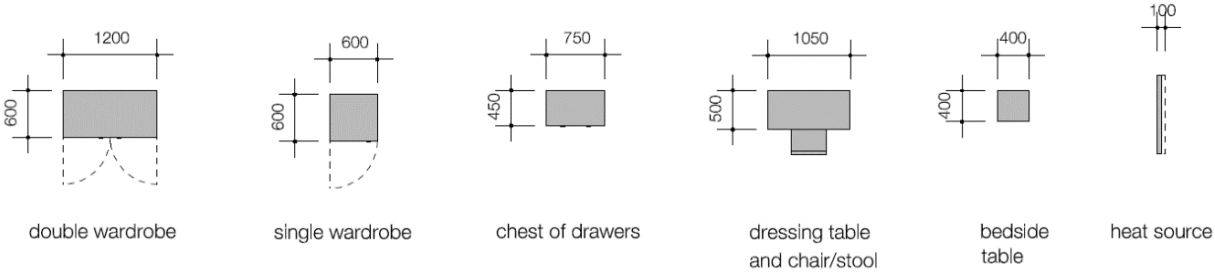
Living space furniture



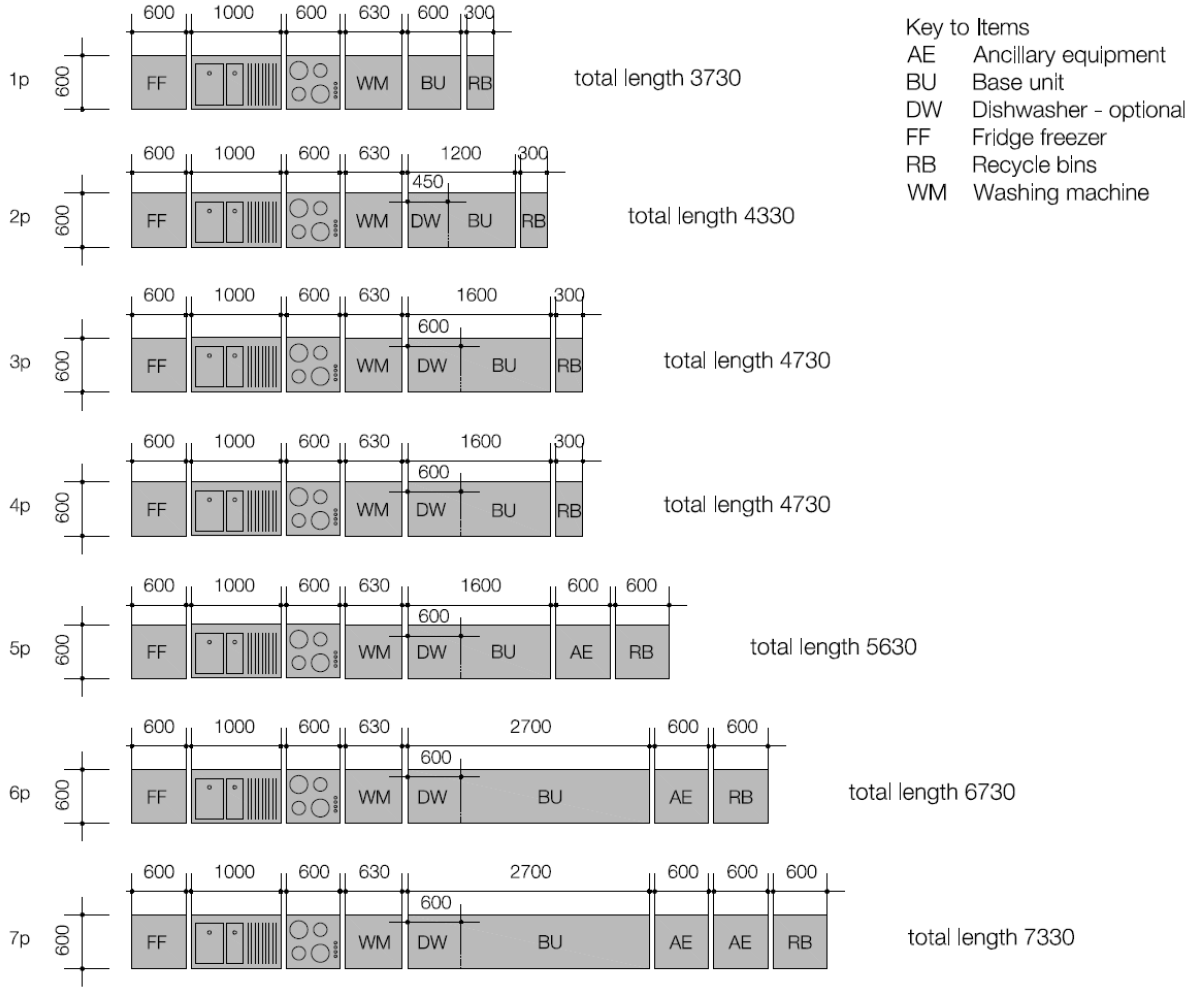


Bedroom space furniture





Kitchen furniture



Dining space furniture

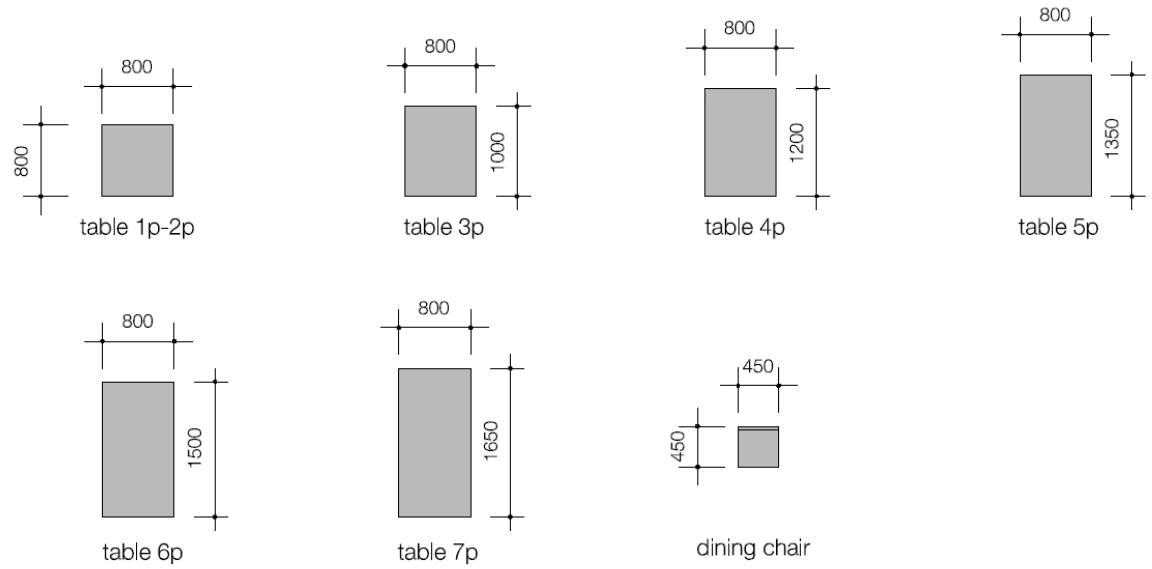


Table A2.1: Written schedule

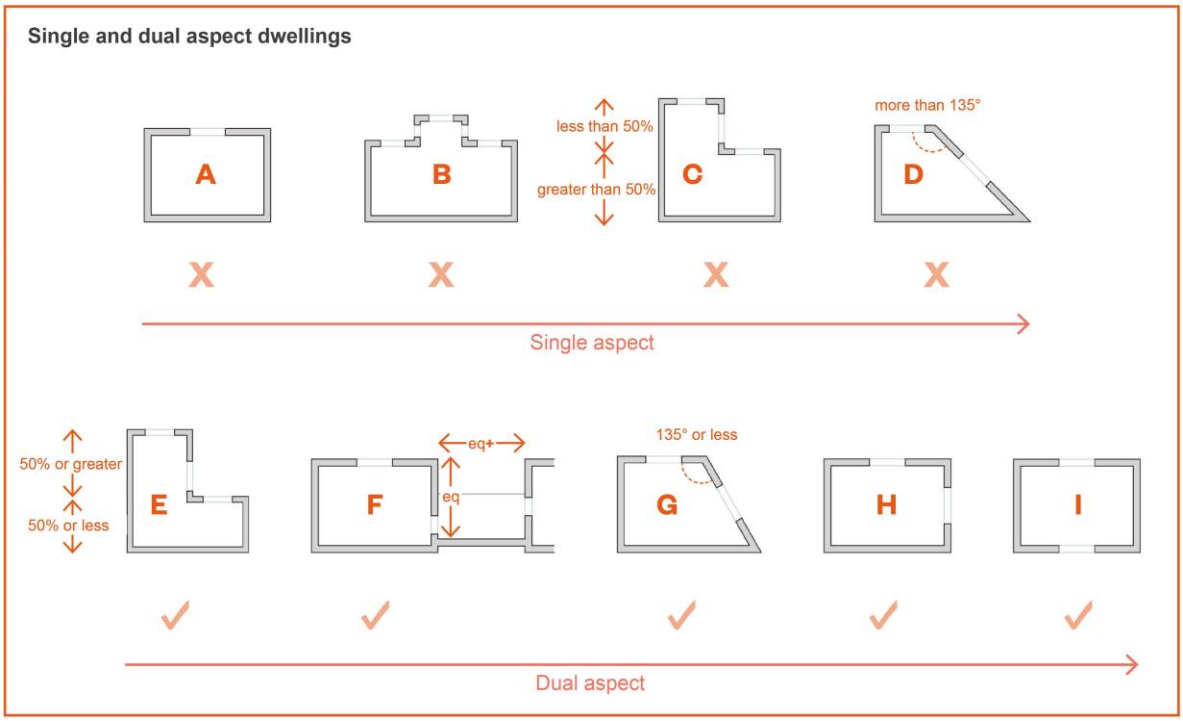
Type of space	Furniture required in each room	Furniture size (mm)	Number of items required (by bedspace)							
			1p	2p	3p	4p	5p	6p	7p	+
Living space	Armchair (or 'sofa seat' in addition to sofa where required below)	850 x 850	2	2	3	1	2	3	4	+
	Settee – two-seater (optional, as above)	850 x 1300	(item optional)							
	Settee – three-seater (optional, as above)	850 x 1850				1	1	1	1	1
	TV	220 x 650	1	1	1	1	1	1	1	1
	Coffee table	500 x 1050 (or 750 diameter)	1	1	1	1	1	1	1	1
	Occasional table	450 x 450					1	1	1	1
	Storage units	500 x length shown	1000	1000	1000	1500	2000	2000	2000	+
Dining space	Dining chair	450 x 450	2	2	3	4	5	6	7	+
	Dining table	800 x length shown	800	800	1000	1200	1350	1500	1650	+
Double bedroom	Double bed in principal bedroom	2000 x 1500		1	1	1	1	1	1	1
	Double bed in other double bedroom	1350 x 1900		1	1	1	1	1	1	1
	Bedside table	400 x 400		2	2	2	2	2	2	2
	Desk and chair	500 x 1050 (+ chair)		1	1	1	1	1	1	1
	Chest of drawers	450 x 750		1	1	1	1	1	1	1
	Double wardrobe	600 x 1200		1	1	1	1	1	1	1
Twin bedroom	Single bed	1900 x 900				2	2	2	2	2
	Bedside table	400 x 400				2	2	2	2	2
	Chest of drawers	450 x 750				1	1	1	1	1
	Desk and chair	500 x 1050 (+ chair)				1	1	1	1	1
	Double wardrobe	600 x 1200				1	1	1	1	1
Single bedroom	Single bed	1900 x 900	1		1	1	1	1	1	1
	Bedside table	400 x 400	1		1	1	1	1	1	1
	Chest of drawers	450 x 750	1		1	1	1	1	1	1
	Desk and chair	500 x 1050 (+ chair)	1		1	1	1	1	1	1
	Single wardrobe	600 x 600	1		1	1	1	1	1	1
Kitchen			length in mm							
	(1) Sink top with drainer	600 x 1000	1000	1000	1000	1000	1000	1000	1000	1000
	(2) Cooker (or oven + hob) space	600 x 600	600	600	600	600	600	600	600	600
	(3) Washing machine position/ worktop	600 x 630	630	630	630	630	630	630	630	630
	(4) Other base units	600 x length shown	600	1200	1600	1600	1600	2700	2700	+
	(4a) Dishwasher/worktop (included in 4)	600 x length chosen	(item optional)							
	(5) Ancillary equipment space	600 x length shown					600	600	1200	1200
	(6) Fridge/freezer space	600 x 600	600	600	600	600	600	600	600	600
	(7) Recycling bins space	600 x length shown	300	300	300	300	600	600	600	600
	(8) Total length of fitments (items 1 to 7)		3730	4330	4730	4730	5630	6730	7330	+
	(9) Wall cupboards	300 x maximum available length								
	Note: Items 3,5,7 may be in other rooms or spaces but should be close to the kitchen									
Bathroom	WC + cistern	500 x 700	1	1	1	1	1	1	1	1
	Bath	700 x 1700	1	1	1	1	1	1	1	1
	Hand wash basin	450 x 600	1	1	1	1	1	1	1	1
	Shower tray	750 x 750	(item optional)							
WC/ cloakroom	WC + cistern	500 x 700	(where required)							
	Hand rinse basin	250 x 350	(where required)							

Appendix 3 Dual aspect definition

A dual aspect dwelling is one with opening windows on two external walls, which may be on opposite sides of a dwelling (see illustration 'I' below) or on adjacent sides of a dwelling (F, H) where the external walls of a dwelling wrap around the corner of a building. One aspect may be towards an external access deck or courtyard (F), although the layout of the dwelling needs to be carefully considered in these cases to maintain privacy. The design of the dual aspect dwelling must enable passive/natural ventilation across the whole dwelling. The provision of bay windows, stepped frontage, shallow recesses, or projecting facades does not constitute dual aspect (B, C).

Dwellings that have opening windows on two adjacent sides can only be defined as dual aspect if the window opening/s are situated at least halfway down the depth of the dwelling (E, F, G, H). Where an aspect is facing a neighbouring wall, this aspect can only contribute towards being dual aspect if the separation distance between this aspect and a neighbouring wall is the same or greater than the distance from the outer corner of the wall to the inner most edge of the window (F). Where the two aspects of a dwelling are not at right angles, to contribute towards being dual aspect the internal angle between these aspects must not be greater than 135 degrees (D, G). This angle is the midpoint between 90 degrees (a dual aspect dwelling with right angled sides – see H) and 180 degrees (a single aspect dwelling – see A).

A3.1.1 Single and dual aspect dwellings[2]



[2] These illustrations represent entire dwellings (not an individual room) and the 'aspects' that contribute to a home being defined as single or dual aspect. Openings are located on the images to show the direction of an aspect, but not the exact number and location of windows in a dwelling.

Appendix H City of Vancouver Housing Design and Technical Guidelines

Housing Design and Technical Guidelines

Community Services - Housing Delivery and Operations
Community Services - Affordable Housing Projects
Real Estate and Facilities Management - Facility Planning and Development
Issue Date: September 2, 2021
Version 10

VBBL.

i. Where possible, consider balconies. Balconies that could support a variety of outdoor activities are preferred over "Juliet" balconies.

3.2 BUILDING SIZE (Follow BCH)

4 BUILDING COMMON AREAS

Note: Common areas including, but not limited to hallways / corridors, balconies, elevators, mechanical / electrical rooms are to comply with the requirements, exclusions and exemptions as set out in the Vancouver Zoning By-law.

4.1 GENERAL (Follow BCH)

4.2 INDOOR AMENITY, PROGRAM AND OFFICE SPACES (Additional Requirements)

.1 General (Add to BCH Requirements)

a. For projects with less than 26 units, provide a minimum amenity space of 37 sq.m. (398 sq.ft.).
b. A minimum of 15 square feet of amenity space is required per unit.
c. In larger buildings with more than 90 units, consider a second amenity space for other activity uses (minimum size of 37 sq.m).
d. Provide access to natural daylight in all amenity spaces.
e. Provide access to an amenity space for all occupants.
f. Indoor amenity space to be directly linked to at-grade, rooftop or podium outdoor amenity space as a priority, where possible. Refer to the High-Density Housing for Families with Children Guidelines and Urban Agriculture Design Guidelines for the Private Realm policies.
g. Clear ceiling heights to be a minimum of 2438 mm (8'-0").
h. Provision to accommodate smudging at indoor amenity spaces as required.
   - Refer to City of Vancouver Facilities Standard Manual details on smudging.
   - Provide appropriate mechanical ventilation and fire alarm interface.

.2 Family Housing and Independent Seniors Housing (Add to BCH Requirements)

a. Revise BCH Guidelines requirements for amenity kitchenette to include:
   - 1828 mm (6 feet) minimum length of millwork lower cabinets with drawers and a double bowl stainless steel sink.
   - Refrigerator.
   - A microwave and shelf.
b. Provide one storage closet for the storage of stacking chairs and folding tables. The amount of storage closet space would conform to the size of the amenity room.
c. Provide a furniture layout with table and chairs, drawn to scale. Provide furnishings in accordance with this layout, or cash allowance for the operator to purchase.
d. Housing with common dining and meal preparation, replace BCH Guidelines with:
   - If a larger community style kitchen is provided, confirm cooking types expected. (Class 1 - 5 as per bulletin). Exhaust and equipment to be provided per the City of

Vancouver's current Kitchen Ventilation Systems bulletin requirements. http://former.vancouver.ca/commsvcs/LICANDINSP/bulletins/2007/2007-005.pdf

e. For buildings with less than 25 units, provide a project office of approximately 9.29 sq. m. (100 sq. ft.). In buildings with more than 25 units, provide an office of a minimum of 24.52 sq. m. (264 sq. ft.) that will include:
   - A 12.08 sq. m. (130 sq. ft.) lockable office including provision of a desk with a return, task chair, across desk seating for 2 guests as well as a minimum of a 30" long, 3-drawer-high filing cabinet, or cash allowance for the operator to purchase.
   - A small area for reception and for accompanying guest and/or children to wait and play. A window may be required to view the reception area.
   - A LAN closet - approximately 610mm x 610 mm (2'- 0" x 2'-0") minimum.
f. An additional minimum 3048 mm x 3048 mm (10 '- 0" x 10'-0" sq. ft.) office may be required if building maintenance and management is handled on site.

.6 Common Laundry

Requirements will be determined by the Operator. In lieu of an Operator, the following guidelines shall apply:

a. Shared washers and dryers to be provided at one set for every 10 units in common laundry rooms. This may be reviewed by Housing and Facilities when there is a higher ratio of in-suite laundry units provided and based on unit mix.
b. The common laundry room(s) shall be part of a programmed space (i.e., with access to natural daylight, beside amenity room or outdoor space if possible. Provide a seating area adjacent to the laundry area.
c. The common laundry room to contain, a minimum of 1500 mm (5'0" long) long sorting table/counter and a central floor drain.
d. Floor drains required.
e. In the laundry room provide leased or owned card-operated appliances with necessary infrastructure, to be determined by the City in consultation with the Operator. Fee amount, if any, to be decided by the City and the Operator.
   - A unit in the laundry room to allow tenants to reload credit onto their laundry cards will be required. This will necessitate phone or internet connectivity and power to be sourced for the card machine.
   - If the Operator's preference is for equipment to be leased from a supplier, in lieu of purchasing equipment to be owned by the operator, a cash allowance for the same cost of the purchase of the agreed appliances will be established. The total value of the appliances is to be based on quotes from 2-3 acceptable sources. The cash allowance will be used to prepay a multi-year laundry equipment lease and service contract with a reputable company.

4.3 SERVICE AREAS

.1 Underground / Enclosed Parking (Additional requirements)

a. Parking ratio (including visitor, car share and loading) to be determined according to Vancouver Parking Bylaw, building location, proximity to public transit and unit mix.

Family units may require additional parking.

b. Provide handicapped accessible spaces to the minimum Vancouver Parking Bylaw 4.1.1.5 Calculation of Disability Parking Spaces. The needs of the particular building may require more stalls than the minimum required. Location to suit operator and traffic requirements.
c. Drop off spaces may include a maximum of one handicapped accessible space, location to suit area and traffic requirements.
d. Parking ramp slope not to exceed 12 percent grade.
e. Provide "Car Share" requirements as per VBBL 2.2.5.

.2 Bicycle Parking (Additional requirements)

a. Consider ease of access to bicycle storage locating at grade and near the lobby entrance where possible.
b. Provide bicycle parking as per VBBL 2.2.5.

.3 Garbage / Recycling Rooms (Additional requirements)

a. As a part of the City's Greenest City Strategy, The City of Vancouver requires all buildings to provide adequate storage for garbage and recycling. These storage areas must meet all building code regulations, and all zoning and development bylaws.
b. Refer to the City of Vancouver's Garbage and Recycling Storage Facility Design Supplement to design garbage and recycling storage facilities for both new and retrofit buildings. https://bylaws.vancouver.ca/bulletin/G003.pdf
c. Ensure that waste facilities align with both the recycling and organic collection programs. https://vancouver.ca/home-property-development/food-scraps.aspx
d. Review each building for acceptable garbage and recycling strategies: location and access, container size, type and collection schedule.
e. Recycling, as part of the City's Green Initiative Strategy, is a requirement for all city facilities, both in individual units and for common collection, as a guideline, the suggested interior space per LEED® under Prerequisite 1, "Materials and Resources" for a commercial building of up to 465 square meters in size is 7.6 square meters.
f. Confirm expected recycling volume for each building with Operator.

.5 Equipment Storage and Maintenance (Additional requirements)

a. Operator storage to be provided for seasonal-use items and other large items, like collapsible and stackable tables and chairs, or room dividers. Exclusions to be decided by Housing, Facilities and the Operator.
b. Approximately 1.858 sq. m. (20 sq. ft.) of space for exterior landscaping supplies must be provided.
c. Provide excess material storage space including provisions for storage of builder's/developer's warranty period materials. Room to be sized according to the anticipated amount of warranty materials expected for the particular project.

.7 Janitor Closets (Additional requirements)

a. Provide a separate lockable janitor room with floor sink, space for storing bucket, mops, brooms, vacuum, ladder, supplies for cleaning, shelves for paper products, light bulbs,

etc., appropriately size to adequately meet the needs of the building.

.11 Mechanical and Electrical Rooms (Additional requirements)

a. Provide separate, lockable mechanical and electrical rooms to safely accommodate items such as hot water tanks, electrical panels, data lines, telephone and security equipment panels, gas, water or hydro meters and any other mechanical or electrical equipment that need to be accommodated within the building.

.12 Heat Treatment Room (Additional requirements)

a. Provide a heat treatment (bedbug treatment) room within the building if required by housing and the Operator. The ideal location is situated in an area where a new occupant would enter the premise with their belongings. The preferred location is within the parking garage or off the main lobby of the facility. The location is to be determined in discussion with the Operator and/or Housing.
b. Ensure the heat treatment room reaches and maintains the required temperature of 60 degrees Celsius evenly, throughout the entire room for two or more hours.

Refer to Section 4 - Construction Standards, Division 13 20 00 Heat Treatment Room

Retrofit of Existing Buildings:

c. The heat treatment room located as noted above is preferred.
d. If space is limited, utilize an existing room (such as a Janitors closet) and retrofit in accordance with the above noted specifications. Location is to be discussed with the Operator and/or Housing.
e. The portable heaters should only be considered in situations of building retrofits where a heat treatment room or space to retrofit a janitor's closet is not available.

4.4 CIRCULATION AND ACCESS

.1 Entrance Lobby (Additional requirements)

a. Provide auto door operator at main entry.
b. Mailboxes are preferred close to the entry.
c. Provide a counter-height shelf adjacent to the mailboxes of a suitable depth for handheld articles.
d. Notice boards to be provided as corkboard complete with trim, or pre-approved alternate.
e. Provide a seating area, with furniture layout drawn to scale. Provide furnishings in accordance with this layout, or cash allowance for the operator to purchase.
f. Provision to accommodate smudging at main lobby area if required.
    - Refer to City of Vancouver Facilities Standard Manual details on smudging.
    - Provide appropriate mechanical ventilation and fire alarm interface.

.2 Corridors (Additional Requirements)

a. Provide access to natural light where possible.

b. Provide wheelchair accessible thresholds for all exterior doors.
c. Minimum ceiling heights to be 2438mm, (8'-0").

4.5 OUTDOOR SPACES

.1 Site Drainage (Additional requirements)

a. Grades to provide positive drainage of all lawns, paved areas and others. Ponding is not acceptable.
b. Allow no drainage of surface water towards buildings, across sidewalks or onto neighbouring properties. Drainage must be away from building entrances.

.3 Outdoor Recreation Area (Additional Requirements)

a. Follow the Urban Agriculture Guidelines for the Private Realm (UAGPR) as per Section 1.2.i.
b. Follow the High Density Housing Guidelines for Families with Children (HDGFC) where family units are included in the development as per Section 1.2.j

5 DWELLING UNIT DESIGN

5.1 GENERAL

City-Wide (Additional requirements)

The following are intended for self-contained dwelling units in multi-unit residential buildings.

The unit mix will be determined by the size, location and nature of the building development and the community that it is to be part of and approved through consultation with the General Manager of Community Services. As a general guide the following to apply:

- 20% Studio
- 30% 1 bedroom
- 30% 2 bedrooms
- 20% 3 bedrooms

Fully integrate specialized units, such as those for persons with physical disabilities, into the community structure of the building(s). These units are to be integrated into the floor layout.

Provision to be made for smudging within dwelling units if required.

- Refer to City of Vancouver Facilities Standard Manual details on smudging.
- Provide appropriate mechanical ventilation and fire alarm interface.

Downtown Eastside (Additional requirements)

For unit mixes within the Downtown Eastside Sub-Areas, refer to Chapter 9, Housing of the Downtown Eastside Local Area Plan, for policy objectives within Sub-areas.
http://vancouver.ca/files/cov/downtown-eastside-plan.pdf

5.2 DWELLING UNIT FLOOR AREAS (Replace BCH Guidelines with the following)

Minimum finished narrow unit dimension not to be less than 3.66m (12ft).

Net Unit Area, the measurement of the dwelling unit size, shall be calculated using the **inside face of the walls**. Interior partitions, within the dwelling unit, are to be included in the measurement. Further, any bulk storage, excluded from FSR Calculations, shall **NOT** be included in the measurement of the dwelling unit floor area. Provide dimensions for living areas, including bedrooms.

Social housing unit information (including unit number, unit type, accessible units, family childcare units, unit floor area, and corresponding level) to be included in the project statistics sheet in chart form when submitting drawings. The social housing units/City's Air Space Parcel (including parking, elevators, lobby, recycling/garbage and electrical/mechanical rooms, and any other City ASP areas) are to be highlighted in the floor plans using a different colour.

Minimum net unit size guidelines, ***excluding storage*** are as follows:

UNIT TYPE	BEDROOMS	SQ. METRES	SQ. FEET
Row/Stacked			
	2	90	970
	3	112	1200
	4	125	1350
Apartment			
	Bachelor/Studio	29.7- 37.2	320 - 400 *
	1	46	500
	2	66	700
	3	84	900
	4	105-117	1125-1250
	2 bedroom in home family daycare unit	107 - 112	1150-1200
	3 bedroom in-home family daycare unit	130 - 139	1400 -1500

Unit sizes may be revised to respond to Operator preferences or specific programming needs on the recommendation of Housing Policy and Projects.
Net Unit areas may be increased to provide for accessibility.

* The Director of Planning may permit a floor area no less than, 29.7 m2 (320 sq. ft.) as per Section 11.10 of the Zoning and Development Bylaw.

.3 DOWNTOWN EASTSIDE (Additional Requirement)

New, self-contained, secured rental Micro-dwelling units to a minimum of 23.23 m^2 (250 square feet), (subject to ensuring the design adheres to guidelines and policies to ensure livability) as per Section 11 of the Zoning and Development Bylaw MAY be considered, in the Downtown Eastside only, as described in the Micro Dwelling Policies and Guidelines: http://former.vancouver.ca/commsvcs/guidelines/D015.pdf

Also, refer to Polices and Guidelines for the Upgrade of Rooms Designated under the Single Room Accommodation (SRA) By LAW (NO.8733)
http://former.vancouver.ca/commsvcs/guidelines/D016.pdf

Refer to the Rezoning Policy for the Downtown Eastside for development directions as they pertain to the Downtown Eastside:
http://former.vancouver.ca/commsvcs/guidelines/D017.pdf

5.3 LIVING-DINING AREAS

Provide a furniture layout to scale, to ensure functionality and accessibility.

.1 Suite Entrance (Follow BCH Guidelines)

a. Provide closet near suite entrance.

.2 Living Area (Additional requirements)

a. Localized drops for mechanical to be minimized and preferred not to be located in main living space.
b. Clear ceiling heights to be a minimum of 2438 mm (8'0").
c. The minimum acceptable ceiling height below a localized mechanical drop is 2134 mm (7'-0)
d. Sprinkler heads and light fixtures in ceiling drops to be recessed or flush mounted.
e. Allow 12'-0" clear dimensions where possible.

5.4 BEDROOMS (Follow BCH)

a. Provide bedroom dimensions.
b. Provide closets in all bedrooms.

5.5 IN-SUITE STORAGE (Replace BCH Guidelines with the following)

.1 General Storage

a. Interior: one 3.7 m^2 (40 sq. ft.) of storage per unit.
b. Unit storage to be located in the unit.

5.6 IN-SUITE LAUNDRY (Additional requirements)

Requirements will be determined by the Operator. In lieu of an Operator, the following guidelines shall apply:

a. The requirement of in-suite washers and dryers maybe be required and will be determined by Housing and the Operator.
b. Electrical, plumbing and exhaust hook-ups for side-by-side appliances to be included in every unit that is 2 bedrooms or more and in every accessible unit.
c. Preference is for the provision of side-by-side appliances. An exception may be granted for the provision of stacking units in 2-bedroom non-wheelchair accessible suites. Hook-ups to be in a 6'0" wide by 3'6'' deep minimum dedicated closet for side-by-side units. Hook-ups to be in a 3'0" wide by 3'6'' deep minimum dedicated closet for stacked units.
d. Confirm hookup requirement for studio and one-bedroom units with Housing, Facilities and the Operator.

5.7 TWO AND THREE BEDROOM "IN-HOME" FAMILY CHILDCARE UNIT DESIGN where "In-Home" Family Childcare Units are included within the housing development (Additional Requirements)

a. Provide all "In-Home" family childcare units at ground level with living and kitchen space that is visibly and physically accessible to an outdoor balcony or patio area. If not situated at ground level, consider locating in close proximity to the outdoor amenity space within the building.
b. The outdoor space shall receive a minimum of two hours of sunlight in total during the hours of 9:30 am - 11:30 am and/or 1:30 pm - 4:30 pm at winter solstice.
c. The suite layout is to contain:
    1. One 3-piece bathroom with a 914 mm x 1524 mm (30" x 60") tub.
    2. One 3-piece bathroom with a shower that includes a hand-held shower unit in three-bedroom unit.
    3. An expanded countertop for diaper changing in the second bathroom or powder room and larger sink.
    4. An open concept kitchen/dining/living area for use by the children.
    5. The preferred kitchen layout would have a central island with eating bar and an open view of the play area and outdoor space.
    6. Stroller storage at the entrance.
    7. A large entry closet for the storage of children's belongings.
d. Provide adequate short-term drop-off parking for parents on the site. The drop off stall is to be provided as close as possible to the In-Home family units and no more than 100 m from the entry.
e. Refer to Section 3 of this guideline for materials and finishes and technical requirements.
f. Refer to the City of Vancouver Childcare Design Guidelines for comprehensive details on site orientation, access, design consideration and landscaping with non-toxic plant materials. http://vancouver.ca/docs/planning/childcare-design-guideline-1993-February-4.pdf
g. For more information on licenced family daycare refer to http://www.health.gov.bc.ca/ccf/child_care.html

5.8 BALCONIES

Provision of private outdoor space for all residential units is typically sought for social housing. Alternative approaches on social housing projects which are targeting Passive House certification may be considered. At a minimum, balconies are to be provided for all accessible units and family units (2 and 3-bedroom) in accordance with the *High-Density Housing for Families with Children Guidelines*.

Juliet balconies for studio and one-bedroom units may be considered, provided an enhanced common outdoor space is also provided. It is recommended to explore enclosed balconies for units facing the SkyTrain guideway, or a major arterial. No balcony projections are permitted into SRWs, side yards or minimum rear yard setbacks. Juliet balcony projections may be considered through further design review.

Appendix I New Zealand National Medium Density Design Guide

Ngā tohutohu hoahoa ā-motu mō te wharenoho mātoru-waenga

National medium density design guide

Ministry for the Environment
Manatū Mō Te Taiao

Te Kāwanatanga o Aotearoa
New Zealand Government

1. The site:
A part of the community

Good design contributes to the shared environment and community. It helps achieve outcomes that respond to and enhance the natural and cultural environment, people's living experiences, and the unique qualities of a site. Understanding whenua (land) is central to the physical and conceptual design of a development. This means having an early, big picture understanding of how the development will fit into your neighbourhood, immediate surroundings, and the site; and how these may change in the future.

A

Check for important landscape features or sites of cultural significance nearby, such as unique landforms, waterways, or heritage features. This could help you select a development site or reveal opportunities to add value to the development. It could also identify potential constraints to resolve through the design process, such as managing the response to neighbouring activities or natural hazard risks. These build on whakapapa by understanding the unique relationships and layers of people and place.

B

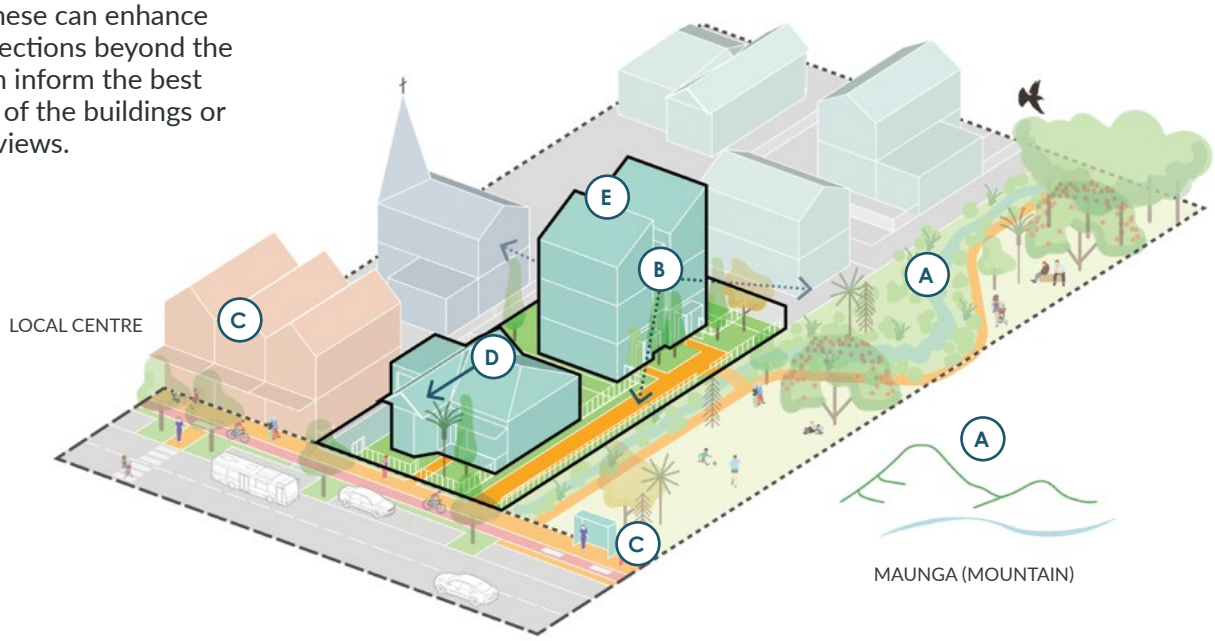
Consider near and distant views to prominent natural and built features. These can enhance visual connections beyond the site and can inform the best orientation of the buildings or framing of views.

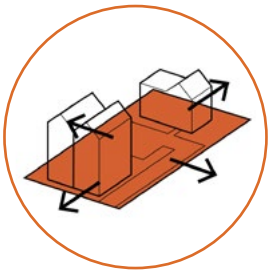
C

How close the development is to local centres, public transport services, and cycling infrastructure can help to determine site accessibility requirements. Identifying current or proposed non-residential activities nearby may also influence how the development responds, for example, maximising frontages to parks or minimising noise impacts of commercial activities and sites near main roads and railways.

D

When keeping an existing house on the site, moving the house forward or back can create a better relationship between existing and new houses and the spaces around them. Opportunities to establish shared spaces can add value to both. Maintaining the liveability of the existing house(s) for the occupants should be an important consideration as part of the design process.





E

If the site is on a corner, the building and landscape features could be designed more distinctively from other houses to assist navigation around the neighbourhood. Remember that at least two sides of the development will be visible and accessible to the community.

F

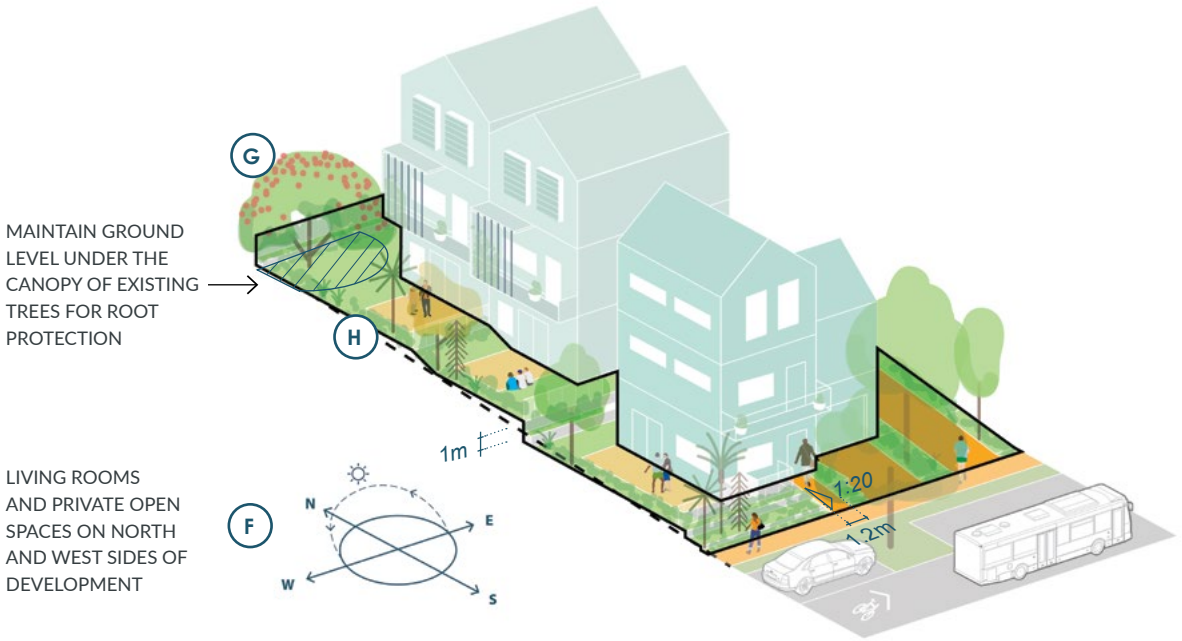
Consider the local climatic conditions, such as prevailing winds and sun aspect. This can improve residents' comfort and help save energy.

G

Aim to keep any existing larger trees or established planting, particularly if they are native species. This can help retain a sense of maturity for a new development, and provide a more liveable environment for new residents supporting the notion of kaitiakitanga. Where it is necessary to remove trees and planting, consider relocating or replanting elsewhere on the site.

H

Work with the natural characteristics of sloping sites to reduce the amount of cut and fill required; or integrate into the building design. If external level changes are needed, try to use smaller slopes, lower terracing or use planting to soften or hide retaining walls.



RULE OF THUMB
Establish retaining walls less than 1m.
Design entrance footpath ramps shallower than 1:20.
Provide entrance footpaths at 1.2m wide with no steps for greater accessibility.

2. In the front:
A welcoming address

There are places in a development where those in the neighbourhood regularly pass by. This is mostly along the street or a park edge. It can also be alongside common areas within the development, such as communal open spaces, accessways, and car parking areas. A well-designed house frontage can collectively benefit the public, visitors, and residents through improving public safety, providing convenient access, and a place to welcome visitors. A good first impression enhances whanaungatanga (relationships) with manuhiri (visitors), creating comfortable, social, and safe interactions that can help build enduring community connections.

A

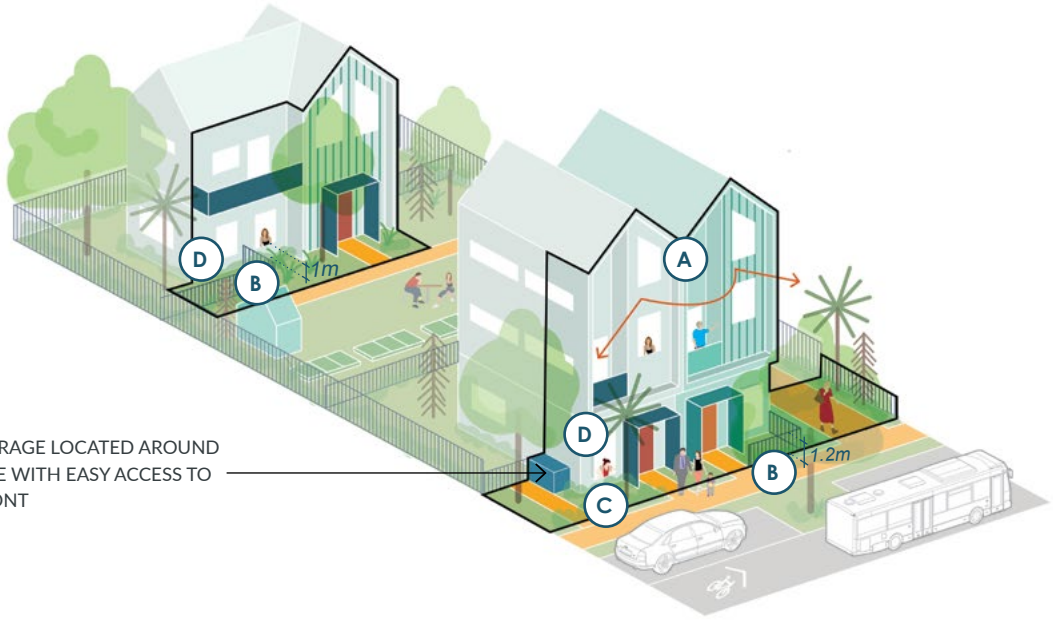
Houses that front onto a street or park provide good opportunities to use the public space for access and views, without having to provide them on-site. This could free up other parts of the development for enhanced residential uses, such as larger outdoor living spaces.

B

Use low planting or visually-open fencing within the front yard. This creates an important buffer between the street or accessway and the private home that can enhance the safety and comfort of residents. It also creates a connection with the community by allowing informal interactions between residents and the public through windows and entrances.

C

Subtle variations through planting, paving, fencing, and front doors can allow front yards to feel more personalised and provide a unique identity to each home, improving the sense of ownership for residents and variety for the community.



F BIN STORAGE LOCATED AROUND THE SIDE WITH EASY ACCESS TO THE FRONT

RULE OF THUMB
Maintain good sight lines with 1m low planting.
Design front fences below 1.2m.

D

The frontage does not stop at the front yard: it extends into the house itself. If carefully designed, house frontages can provide a good outlook for residents, sense of community, and 'eyes on the street' for community safety. This is best achieved through generous windows facing the street or accessway, and locating regularly used rooms, such as kitchens or living rooms, at ground level. Rooms which need greater privacy, such as bedrooms, can be on upper levels.

E

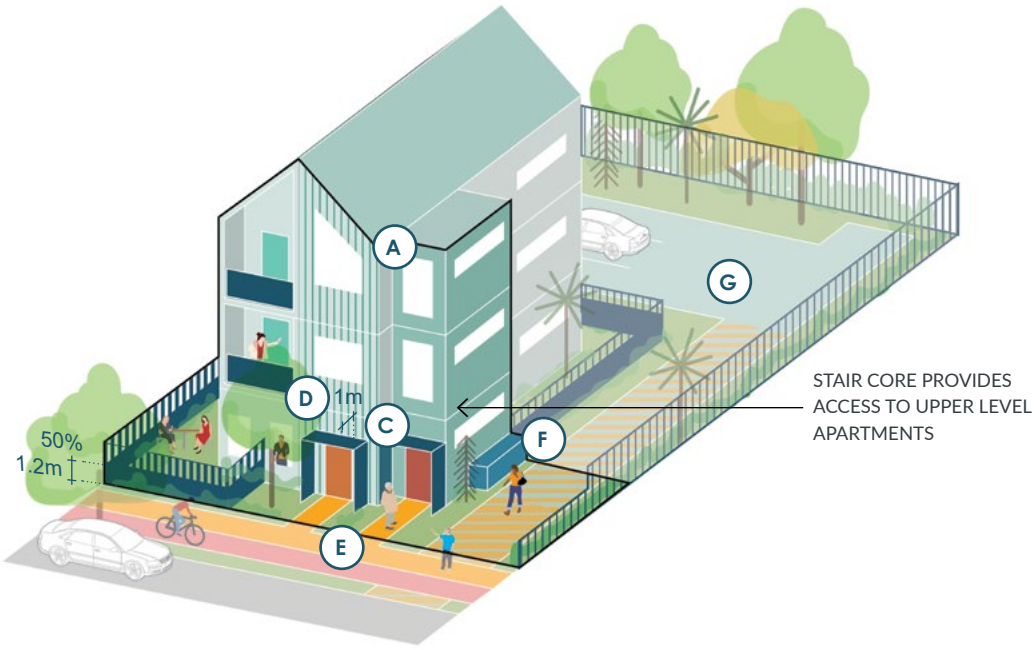
Having clear and direct access from the street to the front door helps visitors understand where to go and enhances community safety. Use of targeted lighting can improve night-time arrival. When designing the front entrance, consider providing a porch with protection from the sun, wind, and rain.

F

Any front yard services, such as bin storage, need to be balanced with the quality of visitors' experience and consideration of tapu (prohibited) and noa (common) through separation and screening. Service functions are generally best located in the side or back yard if there is good access.

G

If car parking is provided on-site, consider locating it away from the front yard, while still providing good access to the street. When necessary in the front, separate the driveway from pedestrian paths and locate any garages back from the main building edge to minimise the dominance of large doors. The distance between the building and the street boundary or accessway will need to be narrow enough to discourage vehicle parking across accessways or wide enough to fully accommodate a parked vehicle.



RULE OF THUMB
Balance street interaction and outdoor living area privacy with 50% visually open fencing above 1.2m.
Extend an entrance porch shelter 1m deep for shelter.

3. On the side:
A good neighbour

The design and use of the space between residents and neighbours, including those within the development, requires careful consideration. This is important when increasing the number of houses on smaller sites. Careful design can achieve good views and privacy and minimise the need to adapt buildings and spaces later. Well-planned use of site boundaries and open space can improve sunlight access to neighbours and provide for efficient pedestrian and vehicle access. High quality design also retains opportunities for future redevelopment of adjacent sites in ways that can be mutually respectful and improve outcomes for both parties.

A

Orientating buildings to the street or open spaces within the development is a good way to redirect or extend views, manage privacy, and access more sunlight for residents and neighbours.

B

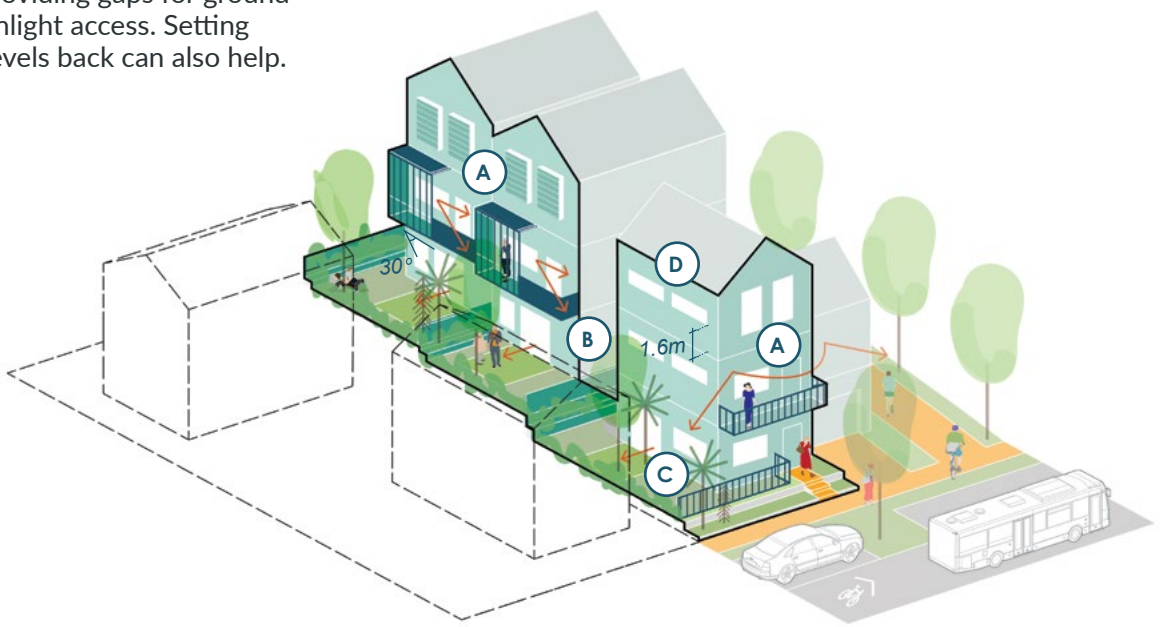
Increasing separation between neighbours can be achieved by positioning outdoor living spaces, accessways, and courtyard car parking in between buildings. Landscaping can also provide screening between sites. This enhances privacy and outlook while providing gaps for ground-level sunlight access. Setting upper levels back can also help.

C

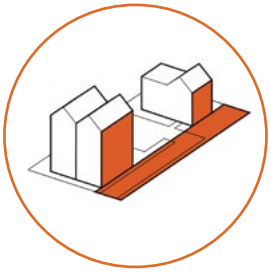
Carefully locating key rooms can improve the outlook from indoor and outdoor spaces while balancing privacy needs. Living rooms can be placed at ground level to benefit from the outlook onto outdoor living spaces and screening from trees and fence lines. This is also an efficient way to incorporate the outlook space required.

D

Varying the size and position of upper-level windows or balconies within the development reduces the chance of neighbours directly facing each other and adds variety to the house designs. Check the location of existing neighbouring building windows and outdoor living spaces as a starting point. Other building features can improve privacy by helping to shorten or redirect views, such as vertical fins, louvres, screens, strip windows, or opaque glass on balcony balustrades.



RULE OF THUMB
Manage privacy with strip windows above 1.6m.
Screen direct views with louvres at 30°.



E

If car parking is provided on-site, it is best located deeper into the site away from the street and screened by buildings. A common accessway is a good solution to reduce the number of footpath crossings and the extent of paving needed. If positioned along the southern or eastern boundary, this can move buildings more centrally into the site, away from the neighbours' best aspects. If accessways are shared by people and cars, ensure they are designed for slow speeds through their width, paving, and planting. This can create a more comfortable environment for residents and neighbours.

F

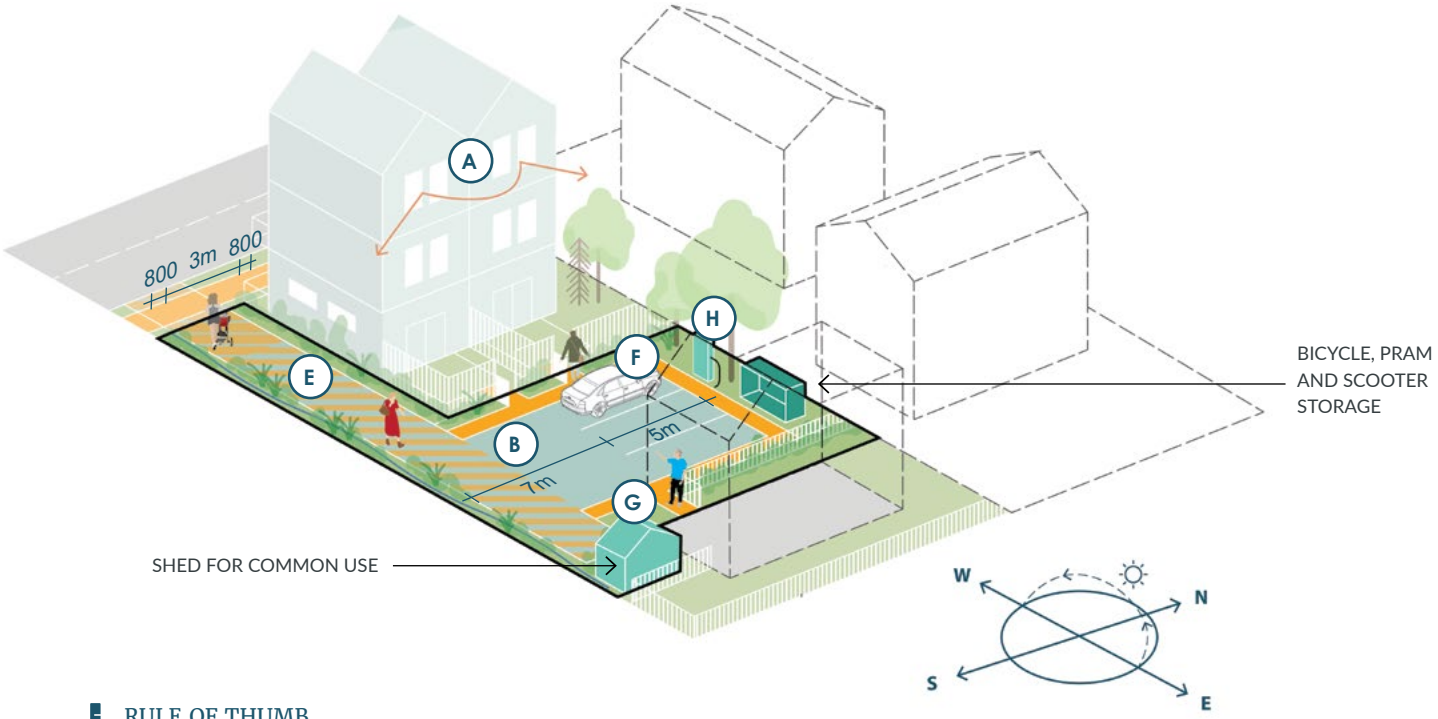
Similarly, consider a common location for any car parking with clear visibility. The number of spaces could be further reduced through shared vehicles or drop-off areas. This enables the site to be used efficiently, including providing more accessible ground level spaces for residents where garages would otherwise be. It also minimises the size of buildings within the development, allowing a greater sense of space for residents and neighbours.

G

Aim to keep pedestrian access between the street and each front door as direct as possible. Providing convenient access to bike, scooter, and pram storage close to each house also encourages these to be used more.

H

Future proofing for electric vehicle and bike charging points or building in charging stations at the start of a development means they will not look like an after-thought or obstruct pedestrian movement later, particularly for the visually impaired.



RULE OF THUMB
Design for safe car manoeuvrability with 7m aisle and 5m car park depth for forward direction entry/exit.
Provide a 3m shared accessway with at least 800mm planting buffer each side.
(Confirm exact dimensions with the local district plan.)

4. The house:
A well-configured building

As the number and size of buildings on a site increase, their presence can become more noticeable. A more comfortable experience can be created by ensuring the development is more compatible with existing houses, such as by providing smaller clusters of attached houses. This can provide functional benefits by helping residents identify their individual homes, access sunlight, and improve privacy. The whare (house) concept considers multi-generational living, catering to needs of kaumātua (elderly), mātua (parents), and tamariki/mokopuna (children/grandchildren).

A

Once houses have been clustered into smaller groups, stepping back or projecting building features forward - while keeping the overall building form simple - can create visual relief by breaking up larger expanses of wall. These may only need be deep enough to cast a small shadow. The best use of this approach is to clearly identify individual houses or their key functional parts in a way that is logical and recognisable for visitors and residents.

B

Pitched roofs can be used to reduce the perceived height of buildings and provide visual relief, while allowing opportunities for built-in living and storage spaces. They can also accommodate solar panels and reduce long-term maintenance that can affect flatter roofs.

C

Well composed building elements can provide further visual relief and interest, while serving important functions. For instance, porches, balconies, and screens can offer weather protection, sun shading, help identify front doors, provide private open space, enhance community safety, and protect privacy. Careful stacking and grouping of windows and their associated outlook can benefit the perception of the building while managing privacy.

RULE OF THUMB
Angle solar panels at 30° pitch on a north facing roof.

D

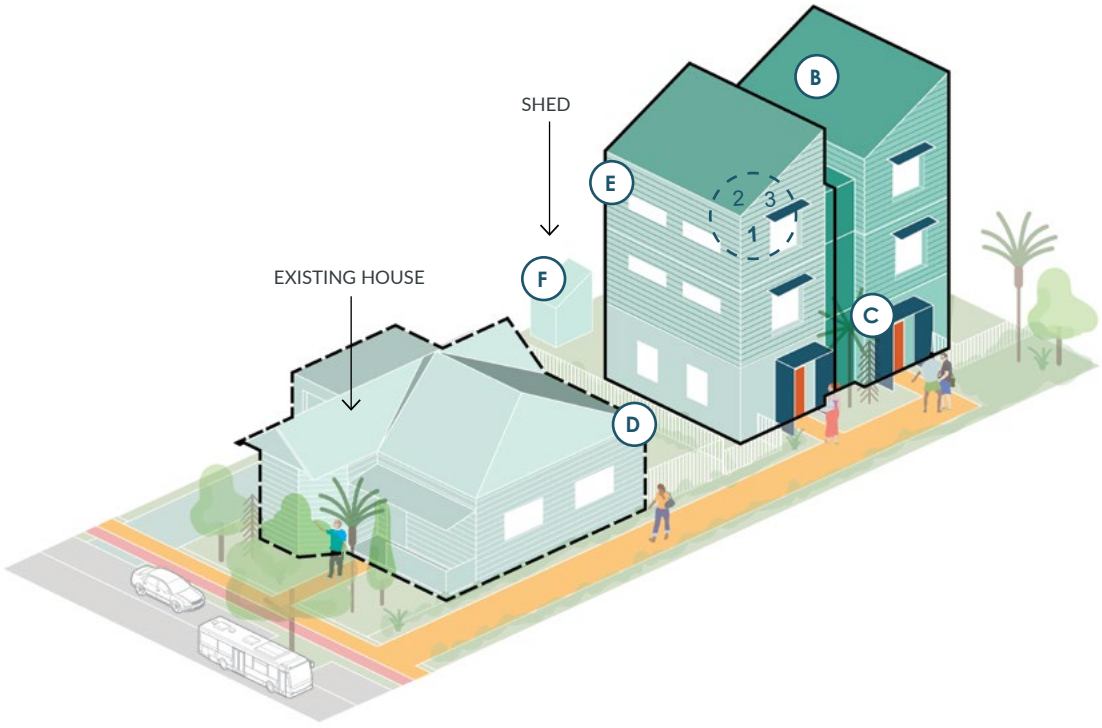
Have a look at the surrounding houses and try to use sympathetic or complementary colours and materials, including those that are locally sourced. Subtle differences in colours and materials can be used to distinguish individual houses and create a sense of identity for residents. Cultural and local narratives may also provide opportunities for unique design identity (see Kaupapa Māori guidance in the references and resources section of this guide).

E

The materials you use are key to the long-term carbon impact of the building. Once built, it is hard to change. Use of low-maintenance details and robust materials can maintain their appearance and integrity and be more cost-effective and sustainable over time. Use sustainably sourced or recycled materials where possible.

F

Varying forms, features, and materials is not just limited to buildings. This could apply to other larger-scale features, such as fences, storage sheds, and bin stores.



RULE OF THUMB
Simplify material palette with 1 main material and 2–3 supporting materials.

5. Around the house:
An integrated landscape

Once you step off the public street, multi-unit developments typically provide residents common landscape areas and a mix of communal and private open spaces. Not all developments provide communal spaces, but a proportion of the site could be set aside for shared facilities for multi-generational living or smaller private spaces, such as balconies. Larger outdoor spaces can provide wider environmental benefits by retaining larger trees and vegetation areas for biodiversity through to stormwater management.

A

Hard landscaping typically provides access to houses, car parking, and service areas. Consolidating shared surfaces increases the potential for soft landscaping and can reduce heat absorption to keep the site cooler in summer.

B

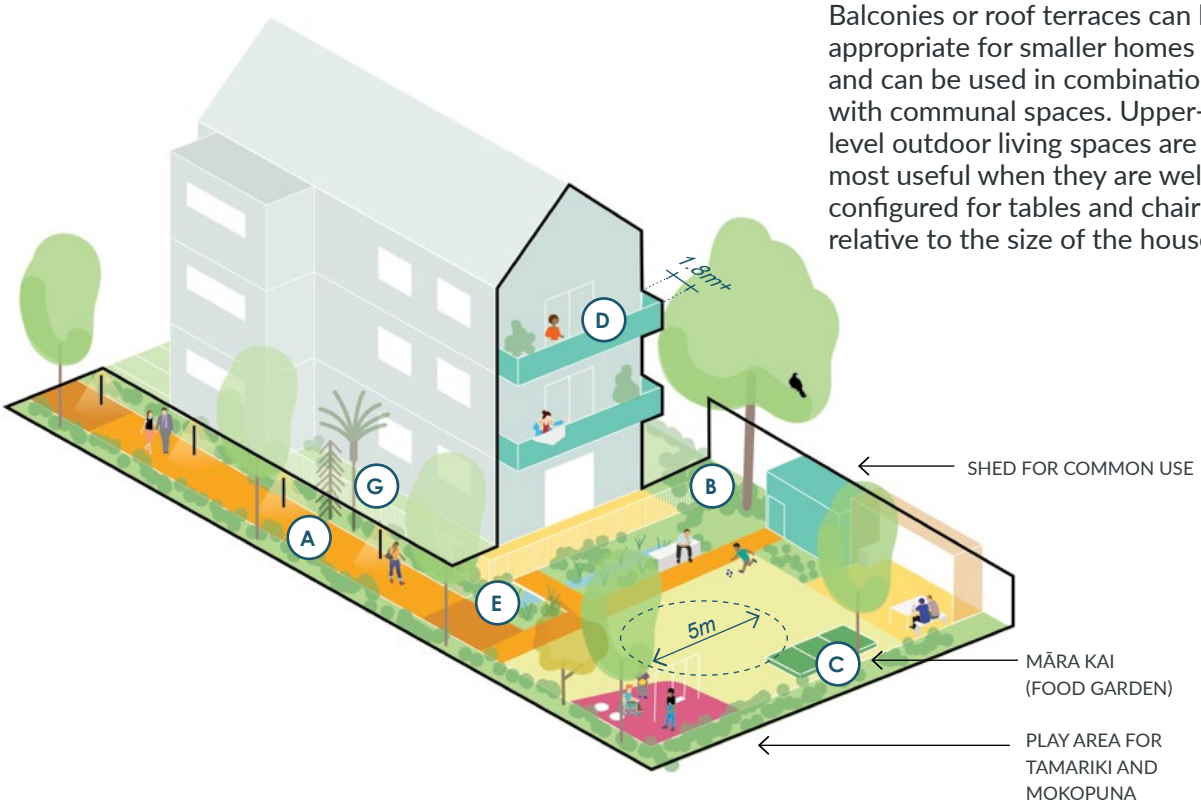
Softer planting in common areas can provide buffers around houses and screen private outdoor living spaces and boundary fences. Planting could even replace fencing to blend boundaries for more communal outdoor living opportunities. Some consolidation of landscape areas can be helpful to keep existing trees and support new ones.

C

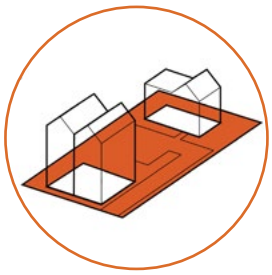
Providing communal spaces, such as māra kai (food gardens), can help support more diverse communities. If well located, designed, and managed, residents can comfortably interact and play safely within the site. To provide maximum benefit for residents, make these easily accessed and widely visible from houses. This can also enhance on-site sustainability and support food resilience.

D

Balconies or roof terraces can be appropriate for smaller homes and can be used in combination with communal spaces. Upper-level outdoor living spaces are most useful when they are well-configured for tables and chairs relative to the size of the house.



RULE OF THUMB
Design useable communal space greater than 5m in diameter.
Extend balconies for tables and chairs between 1.8m – 2.4m deep.



E

Reducing stormwater run-off can prevent flooding, erosion, and pollution of waterways. This is best managed at the source by collecting rainwater from the roof for irrigation, using permeable paving, and integrating swales or raingardens into the landscape design.

F

Low maintenance plant species are likely to stay looking good for longer, consume less water, and survive drought conditions. These will often be plants that are native to the area. Mana whenua may have taonga (treasure) species which could be used or encouraged by appropriate planting or retention of existing trees. Recognise that nature and people of the place are one, linked by whakapapa.

G

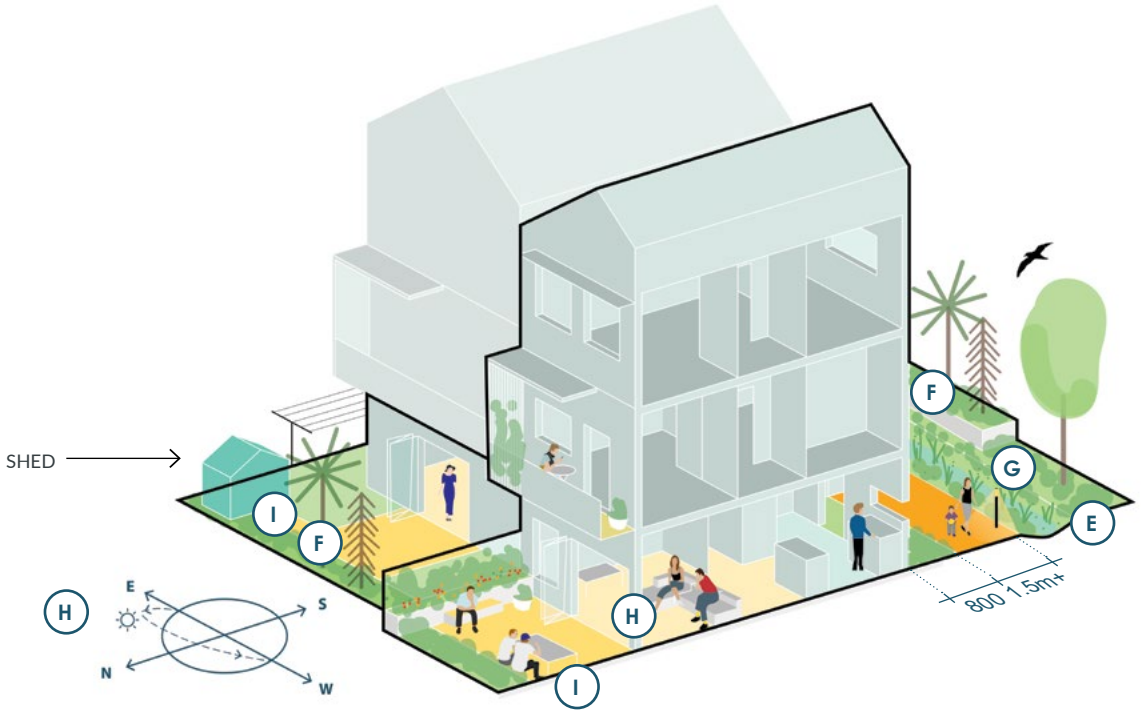
External lighting enhances wayfinding and community safety. However, manage light spill to minimise impacts on neighbours, te taiao (natural environment) habitats, and visibility of the night sky.

H

For outdoor living spaces, directing access to well-used internal areas can make the outdoor space an extension of the home. Ideally, these spaces have a northerly or westerly orientation for maximum sunlight and are sheltered from prevailing winds.

I

Ground-level outdoor living spaces allow flexibility to configure private space for outdoor furniture, raised gardens, or other uses. When planning outdoor living space, leave sufficient utility space, such as clothes lines and garden sheds, while also considering the concepts of tapu and noa.



RULE OF THUMB
Buffer planting between windows and communal pathways 800mm minimum.
Provide accessible common area footpaths between 1.5m – 1.8m.

6. In the house:
A liveable home

Designing high performing and accessible compact buildings is fundamental to a healthy and comfortable home. A higher performing home can be achieved for little or no additional cost. Even simple approaches that allow buildings to receive heat from the sun during winter and cool naturally during summer can result in considerable cost savings for residents and a reduction in greenhouse gas emissions. Incorporating universal design principles can make homes accessible to all people of all abilities at any stage of life. Further industry guidance can be found in the references and resources section of this guide.

A

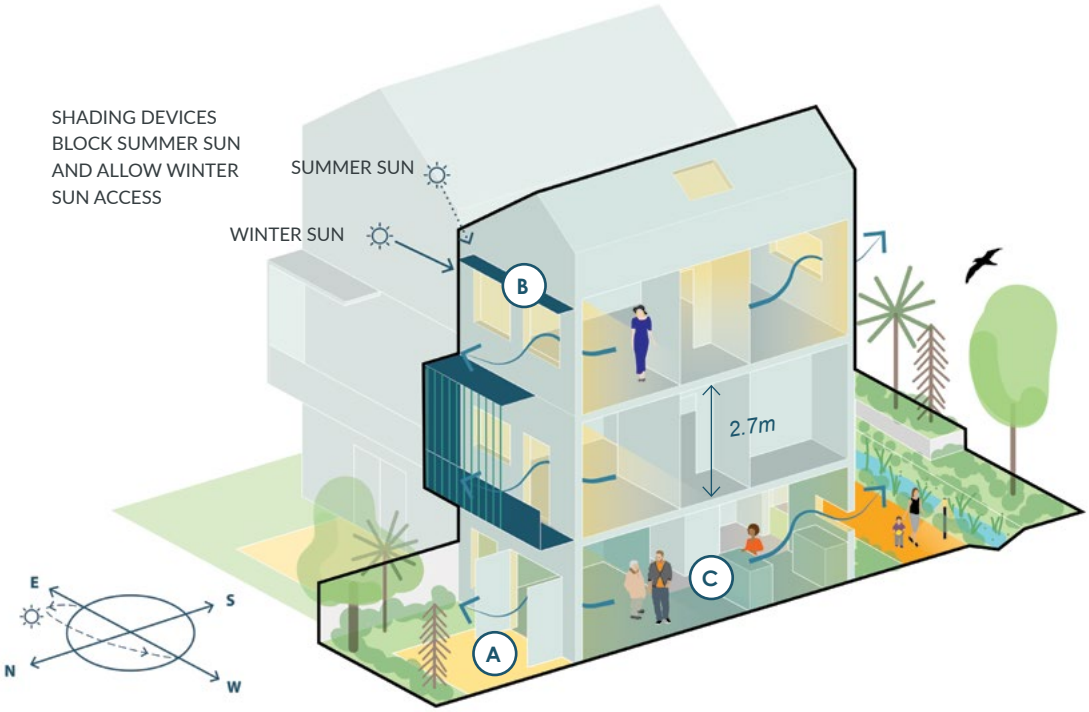
Orientating the house and key rooms for sunlight and warmth can improve energy efficiency. This is best achieved by aligning longer facades to maximise the benefits of the sun, placing main living areas on the north or west side, and providing generous ceiling heights. Skylights, atriums, or light wells enable sunlight to penetrate deeper into internal spaces.

B

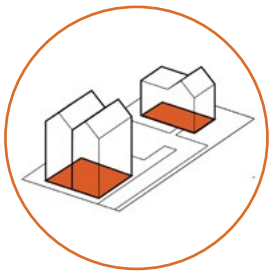
Shading devices, such as deeper eaves, louvres, and balconies, help maintain indoor comfort in the summer, while still allowing sunlight to heat rooms in the winter. This reduces the need for heaters and air conditioners.

C

Consider the placement of living areas and bedrooms with large opening windows on either side of the house for effective cross ventilation and passive cooling to reduce energy consumption and greenhouse gas emissions.
If mechanical systems are provided, like heat pumps or extractors, place these where their noise does not disturb residents or neighbours.



RULE OF THUMB
Provide good sunlight assess and natural ventilation with 2.7m minimum ceiling height.



D

Designing for an aging population, young children, and disabled people (universal design) makes a whare future-proofed. Accessible and inclusive design means providing level access, wider doorway, and ground-level living, or provision for stair lifts. Recognising these opportunities helps support the wellbeing of residents. Consider Lifemark Design Standards for all ground floor units.

E

Think about how the design and layout can allow rooms to be used or configured in different ways. The location of load bearing walls can provide the opportunity to divide or merge rooms and buildings in the future to cater for changing needs. This will assist in the spatial arrangement and flexibility of open and enclosed spaces.

F

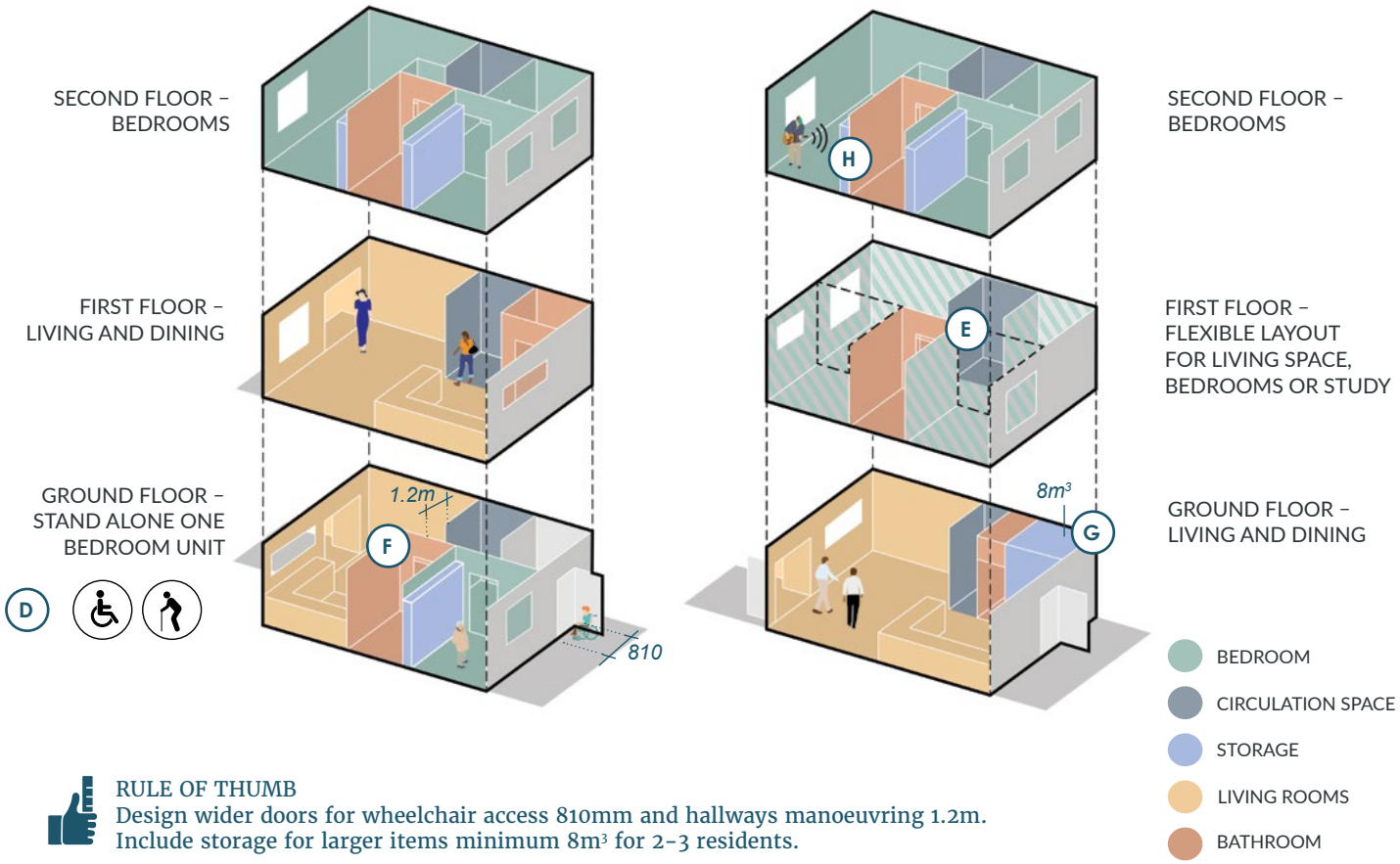
Cultural suitability and practices should be considered in the interior layout that relate to the concepts of tapu and noa. Spaces associated with food should be separated from bathrooms, toilets, and laundries. For guidance see Ki Te Hau Kāinga.

G

Provide sufficient storage to accommodate larger items, recreational equipment, and other items, such as prams. This can increase the efficient use of indoor space and avoid larger items spilling out onto outdoor living spaces.

H

For more peaceful living, consider designing interiors with good acoustic separation from external and internal noise sources. Similar household activities can be placed either side of a common wall between houses, matching noisy areas and quiet areas side-by-side. Bathrooms, storage areas, and wardrobes can be used as noise buffers within houses.



RULE OF THUMB
Design wider doors for wheelchair access 810mm and hallways manoeuvring 1.2m.
Include storage for larger items minimum 8m³ for 2–3 residents.

7. Better together:
Perimeter block development

Collaborating with neighbours or developing multiple adjacent sites offers great advantages to both the community and private residents. 'Perimeter block development' means buildings are placed at the front of each site, either touching or close to each other. This creates a ring of buildings around the outer edge of an urban block, with most outdoor space located in the centre. It works well for medium density development and, if taken up collectively, the benefits can be shared with neighbours. Agreement between neighbours on one or more sides allows homes to be built closer together (see additional information section on permitted boundary activities). This can increase the vibrancy of the neighbourhood and contribute to a sense of community. Combining outdoor spaces across site boundaries, and away from the street front creates opportunities to take a holistic approach to providing communal living options and common utility areas for residents.

A

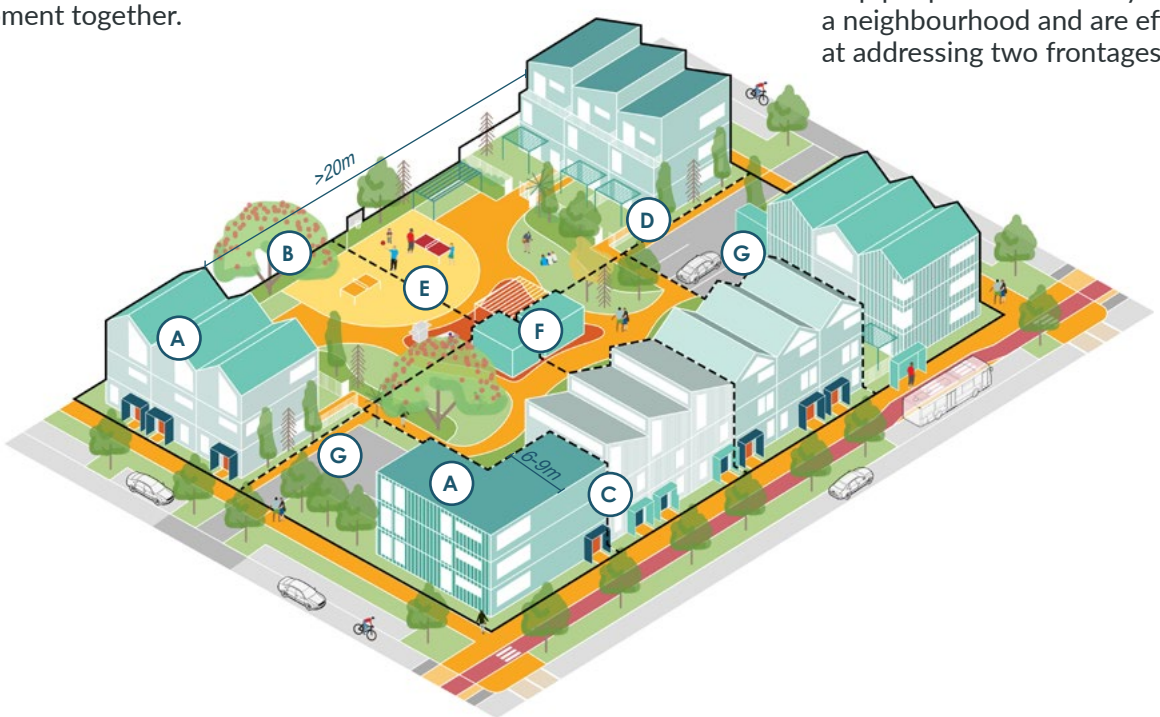
Sites well-suited for perimeter block development are those that can comfortably accommodate an apartment block or multiple houses across their frontage. The best outcomes are achieved when building walls adjoin each other or internal site boundaries. By not creating side yards, space efficiencies can be gained and new opportunities are created by combining land at the back of sites. Ideally, two or more neighbours will design the development together.

B

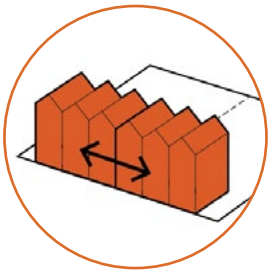
Sites that are best suited for perimeter block development have good sunlight orientation for outdoor spaces, sufficient site depth to provide privacy and outlook between homes, and opportunities to retain existing features that connect with the wider landscape, such as larger trees, native vegetation, and streams.

C

The fronts of houses are strongly aligned to create a consistent building edge along streets and public open spaces. Subtle variations in building forms, rooflines, materials, and colours help break up the appearance of longer frontages, identifying individual homes and managing the relationships between smaller neighbouring buildings as the urban block changes over time. Distinctive corner buildings can help people find their way around a neighbourhood and are effective at addressing two frontages.



RULE OF THUMB
Design dual aspect corner apartments at 6–9m deep with windows on two or more sides of the building.
Design back-to-back distances between adjacent buildings at 20m or greater for privacy and outlook.



D

When backyards are combined to create larger communal areas, these are best when located with a sunny and sheltered aspect; convenient and accessible routes are provided from houses to the communal space; and public access is safely managed. Private open spaces at the back of individual houses can provide a buffer to the larger, open communal space that is typically placed at the rear or centrally between adjoining sites and accessed by all.

E

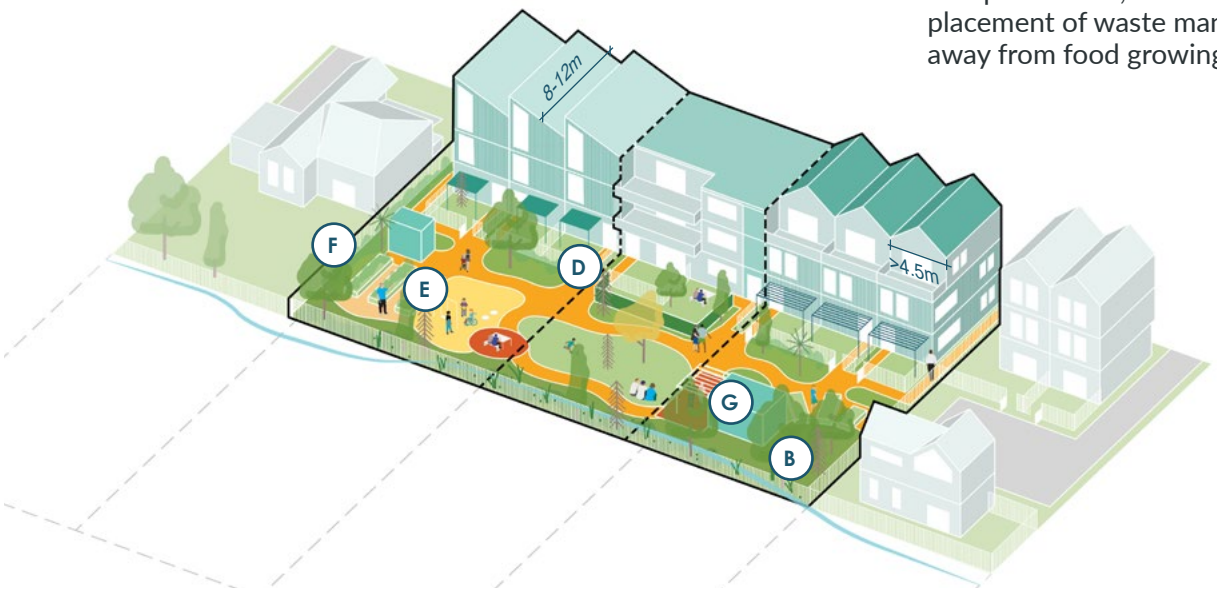
Consider the type of households in the development, and the spaces that are needed to support the comfort, social interactions, and food-growing opportunities for all residents. Design the size and proportions of communal spaces to accommodate outdoor furniture and landscape elements, such as barbeque areas, play spaces, and ball courts. Look around the neighbourhood to see what public amenities and open spaces offer. Consider providing different activities and features in the perimeter block communal open space to offer more choice.

F

Communal areas can accommodate small, shared buildings, providing kitchens, lounges, laundry, or guest accommodation more affordably and efficiently than providing them in each house. Importantly, they can help build stronger connections between residents and multi-generational whānau to foster a greater sense of community and manaakitanga. Some small ancillary buildings may not need a resource consent but always check with your local council.

G

Common spaces for vehicle parking, bicycle parking, pram storage, and other utilities such as waste management and energy hubs, can be consolidated and discreetly located in parts of sites where they can be efficiently managed and do not visually dominate buildings and open spaces. Consider where these are placed to maintain the concepts of tapu and noa, including placement of waste management away from food growing areas.



RULE OF THUMB
Ensure a minimum terraced house or apartment unit width greater than 4.5m.
Design dual aspect terraced houses or apartments between 8m – 12m deep with windows on two or more sides of the building.