Draft | September 2014

Apartment Design Guide

Tools for improving the design of residential flat development

DRAFT

NSW GOVERNMENT Planning & Environment

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September 2014

Apartment Design Guide

Tools for improving the design of residential flat development

NSW GOVERNMENT Planning & Environment

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Minister's foreword

Over the last decade, there has been a marked improvement in the design of apartments in NSW, and the beneficiaries are the growing numbers of people making apartments their housing choice.

Much of this transformation in apartment design can be attributed to a NSW Government policy called *State Environmental Planning Policy No. 65 - Design Quality of Residential Flat Buildings.*

When it was introduced in 2002, it established 10 clear principles to be applied to the design of residential flat buildings. The policy also stipulated for the first time that apartment buildings had to be designed by architects. It was accompanied by a Residential Flat Design Code which translated the design principles of the policy into practice. Together, they set a new benchmark for apartment design and they are clearly still relevant today. We know this from the outcomes of the comprehensive review of the policy and the code that has taken place over the last 18 months.

The results of the review are timely given over the next 20 years Sydney's residential population is projected to rise significantly. An additional 1.6 million people will be looking for an estimated 665,000 new homes. Other metropolitan areas and regional NSW are also expected to see additional population growth of 21 per cent and 11 per cent, respectively. Increasingly new residents will be considering to live in apartments.

Apartment design is not just an issue for the comfort, convenience and liveability of residents. Design can also play a big part in the way apartment buildings create a sense of community and help to revitalise our neighbourhoods, suburbs, and the towns in our regional centres.

Our engagement with industry professionals, local government and the community has helped us to understand the issues associated with the delivery of quality apartment buildings, and affordability. It has been a valuable exercise and we are grateful to those who shared their time and expertise.

As a result of this engagement, changes to the policy are being proposed that have the potential to improve apartment design further, and importantly, improve affordability. The changes introduce greater flexibility into the design process to encourage more innovation, and provide clarity and consistency in the way design issues are dealt with across the state.

The NSW Government is inviting comment on these changes and on the new Apartment Design Guide, which reflects a substantial update of the flat design code. I invite you to consider the proposals and let us know what you think.

The Hon. Pru Goward, MP

Minister for Planning
Minister for Women

About this guide

What is the Apartment Design Guide

This Apartment Design Guide is a resource to improve the planning and design of residential flat development in NSW. It updates and replaces the Residential Flat Design Code introduced in 2002.

The Apartment Design Guide is to be used in conjunction with State Environmental Planning Policy No.65 – Design Quality of Residential Flat Development (SEPP 65).

Towards better quality design

This Apartment Design Guide re-affirms better design and planning for residential flat development, providing benchmarks for designing and assessing these.
The Apartment Design Guide will:

- deliver better quality design through improved contextual design and guidance for councils in developing planning controls and master plans
- deliver buildings that respond appropriately to the character of the area, landscape setting and surrounding built form
- improve liveability through enhanced internal and external apartment amenity, including better layout, apartment depth and ceiling heights, solar access, natural ventilation and visual privacy
- deliver improved sustainability through better traffic and transport solutions, greater building adaptability and robustness, improved energy efficiency and water sensitive urban design
- improve the relationship of apartments to the public domain including streets, lanes and parks
- deliver design guidance and assist in the provision of housing mix and choice

In serving the public interest, good design practice responds to challenges, advances and innovations across social, economic, aesthetic, technical, environmental and sustainable development fields.

Statutory relationship to SEPP 65

There is a close and integrated relationship between the State Environmental Planning Policy No.65 – Design Quality of Residential Flat Development (SEPP 65) and this Apartment Design Guide.

SEPP 65 sets a consistent policy direction for residential flat development in NSW and provides a uniform state-wide framework for more detailed planning guidance. It has a statutory effect on development and as a consequence may modify or supplement the provisions of state environmental planning policies, local environmental plans (LEP) and development control plans (DCP).

Though this document is a guide, SEPP 65 refers to some parts of the Apartment Design Guide that must be applied when assessing development applications. Any part of the Apartment Design Guide referred to in SEPP 65 will prevail over any LEP or DCP control.

SEPP 65 establishes nine design quality principles to be applied in the design and assessment of residential flat development. This Apartment Design Guide amplifies the design quality principles and provides greater detail on how residential development proposals can meet the principles through good design and planning practice.

Residential flat development

SEPP 65 and the Apartment Design Guide apply to residential flat buildings, shop top housing and mixed use developments with a residential component. They apply to buildings that are three or more storeys and that have four or more dwellings where the development consists of the:

- erection of a new building;
- substantial redevelopment or refurbishment of an existing building; or
- conversion of an existing building to a residential flat building.

How to use this guide

Who is this Apartment Design Guide for

The Apartment Design Guide provides consistent planning and design standards for residential apartments across NSW. It has been prepared to:

- assist planning professionals in local and state government with strategic planning and in the preparation of local controls, design guidelines and the assessment of development proposals
- be a tool for developers, planners, urban designers, architects, landscape architects, builders and other professionals when designing apartments and preparing a development application
- inform the wider community and help interested parties to better understand apartment development processes and design standards

Structure of the Apartment Design Guide

The Apartment Design Guide addresses the design of residential flat development at the context, site and individual building scale. It includes the following parts:

Part 1 - Identifying the context

This part introduces generic apartment building types to inform appropriate site, block and building design responses at a strategic level. It also outlines the importance of understanding the context, setting, local character, size and configuration of a development site.

Part 2 - Developing the controls

This part provides tools to support the preparation of local development controls. It explains the application of building envelopes and primary controls including building height, floor space ratio, building depth, separation and setbacks.

Part 3 - Siting the development

This part provides guidance on the design and configuration of apartment development at a site scale. Performance criteria and acceptable solutions outline how to relate to the immediate context, consider the interface to neighbours and the public domain, achieve quality open spaces and maximise residential amenity.

Part 4 - Designing the building

This part addresses the design of apartment buildings in more detail. Performance criteria and acceptable solutions focus on building form, layout, functionality, landscape design, environmental performance and residential amenity.

Part 5 – Design review panels

This part explains the role of design review panels in the development assessment process, outlines administrative procedures and provides templates for the successful operation of a panel.

Appendices

This part includes checklists for information required at different stages in the planning process and provides example design schemes of the generic building types introduced in Part 1 of the guide.

Achieving the performance criteria

Parts 3 and 4 of the Apartment Design Guide provide performance based guidance for the siting, design and amenity of apartment development. Each topic area is structured to provide the user with:

1. A description of the topic and an explanation of its role and importance
2. Performance criteria that define what the resulting outcome should achieve
3. Acceptable solutions that provide possible design responses to achieve the performance criteria
4. Alternative solutions for selected topics that outline an alternative to the acceptable solutions, e.g. for adaptive reuse projects

The key to working with Part 3 and 4 is that a development needs to demonstrate how it meets the performance criteria. Applicants can use either the listed acceptable solution, the alternative solution (where available) or put forward a different design feature or method that achieves the relevant criteria.

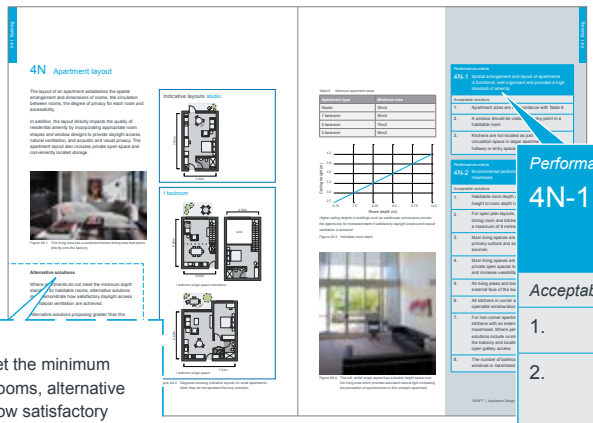
Development application and assessment

The Apartment Design Guide provides a resource for pre-development application (pre-DA) discussions between applicants and consent authorities. The guide advocates meetings early on in the design and planning process with a focus on overall built form configuration, siting and design response to context.

Appendix 2 of this guide provides recommendations and a list of suggested documents for pre-DA discussions.

Development application submission requirements for residential flat buildings are set within the Environmental Planning and Assessment Regulation 2000. Residential flat developments also need to meet the requirements set out in SEPP 65, which includes a suite of nine design quality principles (restated on the following pages).

The checklist in Appendix 3 of this guide elaborates on the required information for DA submissions and explains the purpose of each item in more detail.



Alternative solutions

alternative ways to achieve the performance criteria other than the acceptable solutions

Performance criteria

outcomes to be achieved by residential flat development

Performance criteria

4N-1 Spatial arrangement and layout of apartments is functional, well organised and provides a high standard of amenity

Acceptable solutions

1.	Apartment sizes are in accordance with Table 6
2.	A window should be visible from any point in a habitable room
3.	Kitchens are not located as part of the main circulation space in larger apartments (such as hallway or entry space)

Acceptable solutions

possible solutions on how the performance criteria can be achieved

How to use this guide

The SEPP 65 design quality principles act as an important nexus between the provisions of SEPP 65 and the more detailed design guidance contained in this Apartment Design Guide. The design quality principles are restated adjacent.

Design Quality Principles (SEPP 65)

Principle 1: Context and Neighbourhood Character

Good design responds and contributes to its context. Context is the key natural and built features of an area, their relationship and the character they create when combined. It also includes social, economic and environmental conditions.

Responding to context involves identifying the desirable elements of an area's existing or future character. Well designed buildings respond to and enhance the qualities and identity of the area including the adjacent sites, streetscape and neighbourhood. Consideration of local context is important for all sites, including sites in established areas, those undergoing change or identified for change.

Principle 2: Built Form and Scale

Good design achieves a scale, bulk and height appropriate to the existing or desired future character of the street and surrounding buildings.

Good design also achieves an appropriate built form for a site and the building's purpose in terms of building alignments, proportions, building type, articulation and the manipulation of building elements. Appropriate built form defines the public domain, contributes to the character of streetscapes and parks, including their views and vistas, and provides internal amenity and outlook.

Principle 3: Density

Good design achieves a high level of amenity for residents and each apartment, resulting in a density appropriate to the site and its context.

Appropriate densities are consistent with the area's existing or projected population. Appropriate densities can be sustained by existing or proposed infrastructure, public transport, access to jobs, community facilities and the environment.

Principle 4: Sustainability

Good design involves design features that provide positive environmental and social outcomes. Good sustainable design includes use of natural cross breezes and sunlight for the amenity and liveability of residents and passive thermal design for ventilation, heating and cooling reducing reliance on technology and operation costs. Other elements include recycling and reuse of materials and waste, use of sustainable materials, and deep soil zones for groundwater recharge and vegetation.

Principle 5: Landscape

Good design recognises that together landscape and buildings operate as an integrated and sustainable system, resulting in attractive developments with good amenity. A positive image and contextual fit of well designed developments is achieved by contributing to the landscape character of the streetscape and neighbourhood.

Good landscape design enhances the development's environmental performance by retaining positive natural features which contribute to the local context, co-ordinating water and soil management, solar access, micro-climate, tree canopy, habitat values, and preserving green networks. Good landscape design optimises usability, privacy and opportunities for social interaction, equitable access, respect for neighbours' amenity, provides for practical establishment and long term management.

Principle 6: Amenity

Good design positively influences internal amenity for residents and external amenity for neighbours. Achieving good amenity contributes to positive living environments and resident well being.

Good amenity combines appropriate room dimensions and shapes, access to sunlight, natural ventilation, outlook, visual and acoustic privacy, storage, indoor and outdoor space, efficient layouts and service areas, and ease of access for all age groups and degrees of mobility.

Principle 7: Safety

Good design optimises safety and security, within the development and the public domain. It provides for quality public and private spaces that are clearly defined and fit for purpose. Opportunities to maximise passive surveillance of public and communal areas promote safety.

A positive relationship between public and private spaces is achieved through clearly defined secure access points, well lit and visible areas that are easily maintained and appropriate to the location and purpose.

Principle 8: Housing Diversity and Social Interaction

Good design achieves a mix of apartment sizes, providing housing choice for different demographics, living needs and household budgets.

Well designed developments respond to social context by providing housing and facilities to suit the existing and future social mix. Good design involves practical and flexible features, including different types of communal spaces for a broad range of people, providing opportunities for social interaction amongst residents.

Principle 9: Architectural Expression

Good design achieves a built form that has good proportions and a balanced composition of elements, reflecting the internal layout and structure. Good design uses a variety of materials, colours and textures.

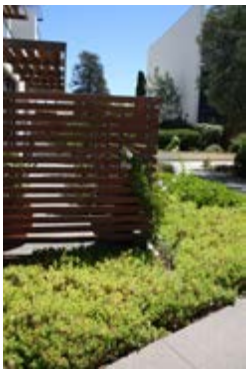
The visual appearance of well designed apartment buildings responds to the existing or future local context, particularly desirable elements and rhythms of the streetscape.

How to use this guide

Application of the design quality principles

The SEPP 65 design quality principles are to be considered by design professionals when designing residential flat development, and by planning authorities and design review panels when assessing such proposals.

The adjacent matrix is a guide that identifies key relationships and interaction between the SEPP 65 design quality principles and the sections in Part 3 and 4 of the Apartment Design Guide.



Relationship of SEPP 65 and the Apartment Design Guide

Level of interaction: ● low, ●● medium, ●●● high

Apartment Design Guide sections ⌄ / SEPP 65 Design Quality Principles »		Principle 1 Context & Neighbourhood Character	Principle 2 Built Form and Scale	Principle 3 Density	Principle 4 Sustainability	Principle 5 Landscape	Principle 6 Amenity	Principle 7 Safety	Principle 8 Housing Diversity & Social Interaction	Principle 9 Architectural Expression
3A	Site analysis	●●●	●●●	●●●	●●●	●●●	●●●	●●	●	●
3B	Orientation	●●●	●●●	●●●	●●●	●●●	●●●	●●●	●	●
3C	Public domain interface	●●●	●●●	●●	●●	●●●	●●	●●●	●●	●●
3D	Communal and public open space	●●	●●	●●	●●●	●●●	●●●	●●●	●●●	●
3E	Deep soil zones	●●	●●	●●	●●●	●●●	●●●	●	●●	●
3F	Visual privacy	●●●	●●●	●●●	●	●●	●●●	●	●●	●
3G	Pedestrian access and entries	●●●	●●●	●●	●●	●●●	●●●	●●●	●●●	●●
3H	Vehicle access	●●●	●●	●●	●●	●●	●●	●●●	●●	●●●
3J	Bicycle and car parking	●●	●●	●●●	●●●	●	●●	●●●	●●	●●
4A	Apartment mix	●●	●●	●●●	●●	●	●●	●	●●●	●●
4B	Ground floor apartments	●●●	●●●	●●	●●	●●	●●●	●●●	●●●	●●●
4C	Facades	●●●	●●	●	●●	●●	●●	●●●	●●	●●●
4D	Roof design	●●●	●●	●	●●	●●	●●	●	●●	●●●
4E	Landscape design	●●●	●●	●●	●●●	●●●	●●●	●●●	●●	●●
4F	Planting on structures	●	●	●	●●●	●●●	●●	●	●●	●●
4G	Universal design	●	●	●●	●●	●	●●●	●	●●●	●
4H	Adaptive reuse	●●●	●●●	●	●●	●●	●●	●	●●	●●●
4J	Mixed use	●●●	●●●	●●●	●●	●	●●●	●●●	●●	●●●
4K	Awnings and signage	●●●	●●●	●●	●	●	●	●●	●	●●●
4L	Solar and daylight access	●	●●●	●●	●●●	●●	●●●	●	●	●
4M	Common circulation and spaces	●●	●●	●●	●●	●●	●●	●●●	●●●	●●
4N	Apartment layout	●	●●	●●●	●●●	●	●●●	●●	●●	●●
4O	Ceiling heights	●	●●	●●	●●●	●	●●●	●	●	●●
4P	Private open space and balconies	●●	●●●	●●	●●	●●●	●●●	●●●	●●	●●●
4Q	Natural ventilation	●	●●●	●●	●●●	●	●●●	●	●	●
4R	Storage	●	●	●●	●	●	●●●	●	●●	●
4S	Acoustic privacy	●	●●	●●	●	●	●●●	●	●●	●
4T	Noise and pollution	●●	●●●	●●	●	●●	●●●	●●	●	●●
4U	Energy efficiency	●●	●	●	●●●	●●	●	●	●	●
4V	Water management and conservation	●●	●	●●	●●●	●●●	●	●	●	●
4W	Waste management	●●	●	●●	●●●	●●	●●	●	●	●
4X	Building maintenance	●●●	●●	●	●●	●●	●●	●●	●	●●●

Matrix showing the relationship between SEPP 65 and the sections of Part 3 and 4 of the Apartment Design Guide

Part 1

Identifying the context

1A Apartment building types

1B Local character and context

1C Precincts and individual sites

1A Apartment building types

Apartment development occurs in a variety of arrangements, configurations and types. Apartments can occupy different sized lots from large redevelopment areas to small infill sites, can consist of a mix of building types or uses and be situated in suburban, transitional or inner city locations.

The generic apartment building types in this section share common 3-dimensional and organisational characteristics and provide a high-level overview of apartment development. They can be used during the strategic planning phase to:

- determine the appropriate scale of future built form,
- communicate the desired character of an area
- assist when testing envelope and development controls to achieve high amenity and environmental performance of future buildings

Building types can be adapted to fit specific urban contexts. A particular site configuration may be suited to accommodate a mix of types or uses. In larger developments multiple building types may apply and provide more housing choice and design variety.

The apartment building types in this section include:

- narrow infill apartments
- row apartments
- shop top apartments
- courtyard apartments
- perimeter block apartments
- tower apartments, and
- hybrid developments

A series of examples representing these building types in more detail is provided in Appendix 4 of this guide.

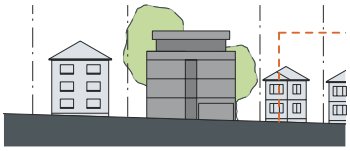
Narrow infill apartments

Narrow infill apartment types are suited to narrow, deep lots. Design needs to consider privacy impacts on neighbours

Narrow infill apartments are typically two to three storey walk-up apartments (stairs only) or buildings with three to five levels and a lift. They are a response to the dimension of traditional residential lot sizes in suburban areas in Australia which are narrow and deep, and are often surrounded by a combination of detached houses and flat buildings from previous eras.

Privacy impacts along side and rear boundaries to neighbouring properties need to be carefully managed as achieving minimum building separation can be a challenge. This building type is best used when:

- a narrow lot width or frontage results in a building envelope oriented perpendicular to the street frontage
- amalgamation opportunities of properties in the area are constrained

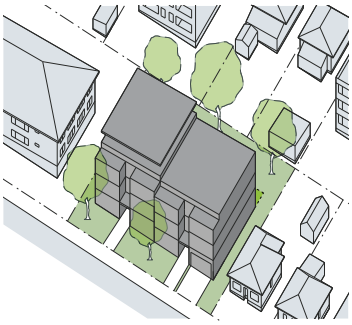


Row apartments

Row apartments are a modular building type, highly adaptable and able to respond well to sloping sites

Row apartments are generally well suited to both urban and suburban contexts. They are characterised by a limited number of units arranged around an access core and can be single buildings or a series of building modules. This building type is best used when:

- smaller building footprints are desirable
- live work apartments or commercial/ retail uses are encouraged at the ground floor level
- continuation of the street edge is desirable
- a vertical rhythm reinforcing existing subdivision or building patterns is desirable
- rear landscape areas are desired including keeping existing significant trees
- built form needs to step down the street to respond to a slope

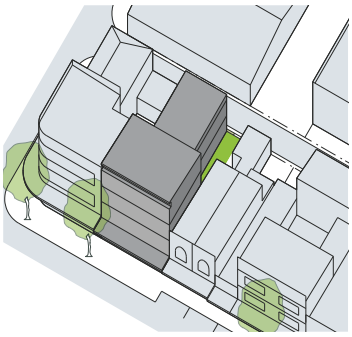


Shop top apartments

Shop top apartments are best suited to main streets and centres that require active retail or commercial frontages

Shop top apartments are mixed use residential buildings often located in established centres, along main streets or close to public transport hubs. They can be small infill or larger developments where the ground floor is occupied by retail or commercial uses. Shop top apartments typically range between two and six storeys and are best used when:

- increased residential uses are desired in established retail and commercial areas
- the context is a traditional main street
- zero setbacks to side boundary walls are possible or desired
- active frontages such as retail tenancies are desired at street level
- pedestrian activity on the street is desired
- rear lane access is available



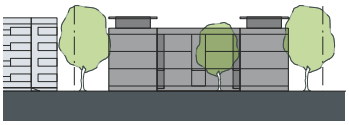
1A Apartment building types

Courtyard apartments

Courtyard apartments are able to fit and respond to a wide range of lot sizes, slopes, orientations and contexts

Courtyard apartments provide a centralised open space area, generally range between three and six storeys in height and are suitable in both urban and suburban settings. Their configuration depends on the context and site orientation. Courtyard apartments are a highly adaptable building type and best used when:

- located on corner sites or sites with two or more public frontages
- located on sloping sites
- a landscaped street character is desired (by orienting the courtyard to the street)
- an urban character to the street is desired (by creating a street wall edge and orienting the courtyard to the rear)
- there is a predominant aspect or outlook



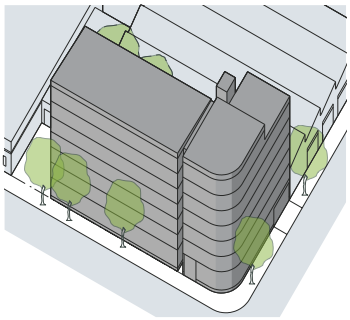
Perimeter block apartments

Perimeter block apartments define the street edge and achieve comparably high urban densities

Perimeter block apartments are suited to urban areas and are often integrated into street blocks. This building type is a key component of most European cities and its compact form achieves comparably high urban densities.

Typically, perimeter block apartments have elongated plans and apartments are generally arranged along a corridor, with a single or multiple cores depending on the building length. They range from four to nine storeys and are best used when:

- an increase in residential density is desired
- a clear definition and continuous street wall edge is desired
- active frontages with commercial and/or retail uses are encouraged at lower levels (see shop top apartment building type)
- towers and tall buildings are not desired

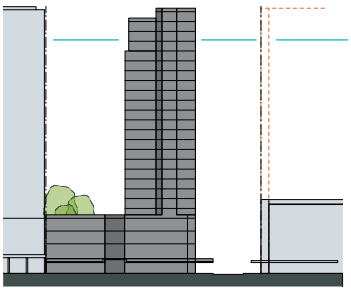


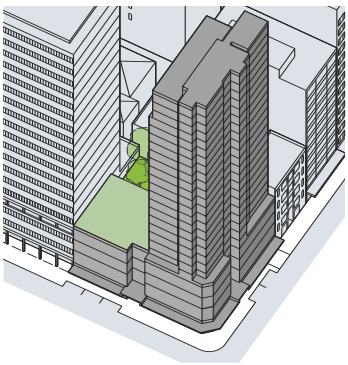
Tower apartments

In commercial centres, tower apartment types are often combined with a podium of four to eight storeys

Towers are suited to central business districts, major centres and urban renewal areas. This building type is widely used in North American cities and can be freestanding or combined with block developments (podiums). The location and siting needs to reflect environmental considerations such as wind, overshadowing and visual impacts on surrounding properties and the public domain. Tower apartments are typically more than nine storeys and best used when:

- located in dense urban areas
- other towers exist in the surrounding context
- an area requires greater density than can be delivered by perimeter block buildings
- a strong vertical form or landmark is desired





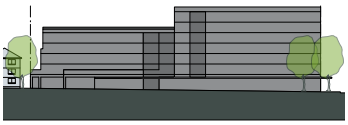
Hybrid developments

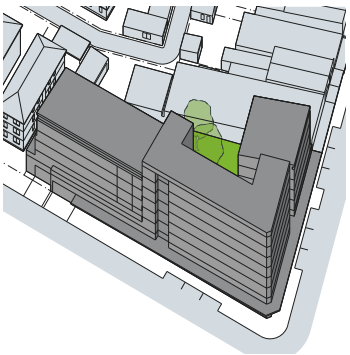
Hybrid development types can respond to varying site conditions and achieve interface and future character outcomes

Hybrid developments combine different uses or building types in one development. They can incorporate community facilities and larger commercial or retail components, such as offices or a supermarket.

Hybrid developments are particularly relevant for larger sites that need to respond to a change in building form and scale within the adjacent context. This approach is best used when:

- located on large and/or irregular shaped sites
- a combination of uses is desired to support active urban areas or centres
- greater diversity of apartment types is desired
- a development needs to address two or more streets with different scales and/or characters





1B Local character and context

Figure 1B.1 Photographs help to communicate the desired future character or future 'look and feel' of an area or development

Good design responds and contributes to its context. Context is everything that has a bearing on an area and comprises its key natural and built features. Context also includes social, economic and environmental factors.

Understanding the context means understanding how the inter-relationships between all these factors, including between the local area and the region, will have an impact on the area over time.

The process of defining the context's setting and scale has direct implications for design quality of apartments. It establishes the parameters for individual development and how new buildings should respond to and enhance the quality and identity of an area.

Desired future character

The desired future character can vary from preserving the existing look and feel of an area to establishing a completely new character based on different uses, street patterns, subdivisions, densities and typologies.

Establishing the desired future character is determined through the strategic planning process in consultation with the community, industry and other key stakeholders. Understanding the context during this process is crucial to support change and determine appropriate building types and planning controls.

Common settings

The planning process establishes the appropriate location for residential flat buildings by determining land use and density in proximity to transport, employment, services, land form and environmental features. Within this framework, the specific characteristics of a place or its setting will inform design decisions. Common settings for residential flat buildings include:

1. Strategic centres
2. Local centres
3. Urban neighbourhoods
4. Suburban neighbourhoods

1. Strategic centres

Strategic centres are characterised by an established commercial core with a full range of services, taller buildings and a network of retail and commercial streets with active frontages.

Considerations for residential flat buildings in strategic centres include complex relationships with adjacent buildings, impact of taller building types, privacy between commercial and residential uses, parking demand, high site coverage, limited deep soil, reliance on quality public streets and places and overshadowing.

2. Local centres

Local centres are typically characterised by an established main street. In larger local centres, such as town centres, retail and commercial uses are distributed around the main street or across a small network of streets defining the core. In smaller local centres, such as villages and neighbourhood centres, the main street or shopping strip is surrounded by residential uses.

Considerations for residential flat buildings in local centres include shop top housing, high site coverage, narrow site frontages, heritage, relationship with adjacent low density residential uses and multiple small lot land ownership requiring amalgamation to support changing use and density.

3. Urban neighbourhoods

Urban neighbourhoods are often located within walking distance of centres. Established urban neighbourhoods may be characterised by existing residential flat buildings ranging from three storey walk-ups to eight storey perimeter blocks or towers. Other urban neighbourhoods may be transitioning from low density residential and/or a mix of larger format commercial and light industrial use.

Considerations for residential flat buildings in these settings include overshadowing, amenity and privacy impacts between existing and future buildings, open space patterns, existing vegetation, demand for new public domain elements, variety of lot sizes and shapes and changing streetscape and scale.

Figure 1B.2 The location of residential flat buildings is determined by factors such as neighbourhood character, accessibility to transport, jobs and services and environmental considerations

4. Suburban neighbourhoods

Suburban neighbourhoods tend to be located beyond the walking catchment of centres and are typically characterised by detached housing in a landscaped setting. Where suburban areas are in close proximity to transport and services, it may be appropriate to increase residential density.

Considerations for residential flat buildings in suburban neighbourhood settings include relationships and interface with existing houses, appropriateness of apartment buildings compared to other forms of medium density housing (such as terraces or townhouses), landscape setting, existing significant trees and the pattern of front and rear gardens.

1B Local character and context

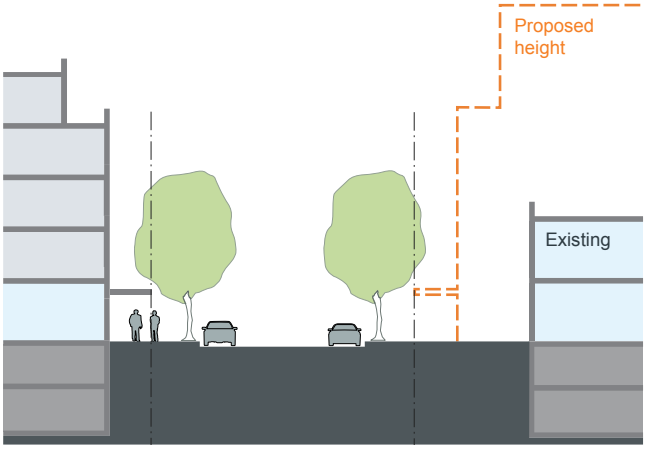


Figure 1B.3 Section showing the building envelope and scale of the proposed development in relation to the street

The range of scales

Apartment development needs to consider a range of scales during the planning and design phase.

1. Wider scale: The wider scale includes the urban structure, landscape setting and broader land use patterns of the wider context and identifies the development site's proximity to centres, transport and major public open spaces. It should also illustrate the future density and proposed change of the area (if known or applicable) and highlight important civic and social uses such as major hospitals, schools and education facilities. Addressing this scale is important for larger precincts and redevelopment sites in particular. As a guide, a radius of 1 to 5 kilometres around the development site should be considered.

2. Neighbourhood scale: The neighbourhood scale outlines the urban structure including streets and open spaces. It should also include topography contours, drainage and vegetation patterns, services and future infrastructure requirements (if known), land use zones, cadastre boundaries and identification of heritage items and other local landmarks. It is appropriate to address this scale when planning for individual or small groups of apartment building sites. A radius of 400 metres to 1 kilometre should be considered.

3. Streetscape scale: The streetscape scale deals with the character of the street(s) that the proposed development addresses, and illustrates its spatial enclosure by buildings or landscape elements. It should outline surrounding building uses and heights, front setbacks, pedestrian access, awnings, vehicle driveways and public domain elements including street trees, verges and footpaths. It is appropriate that all proposals for apartment buildings address this scale.

4. Site scale: The site scale involves detailed consideration of the individual development site relative to neighbouring properties, buildings across the street and the public domain. It addresses surrounding and proposed deep soil zones and open spaces, existing vegetation and trees, fences, retaining walls, overshadowing impacts and privacy considerations. This scale should also highlight any site specific constraints such as orientation, slope, geology, infrastructure or access easements and stormwater management.

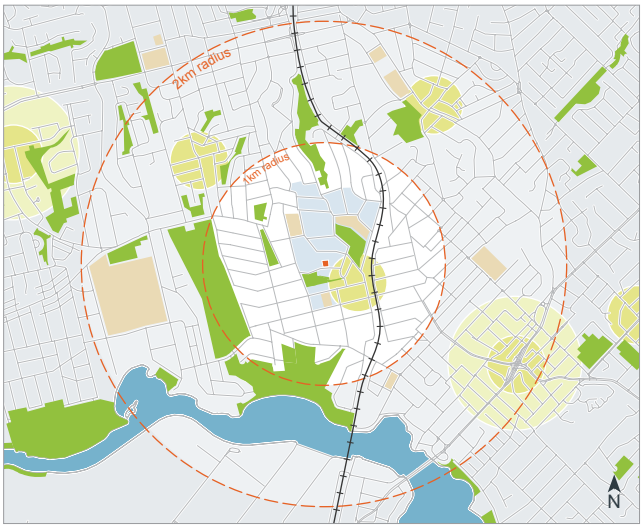


Figure 1B.4 The wider scale should analyse the urban structure and broader landscape setting and identify the site's proximity to centres, transport and major public open spaces

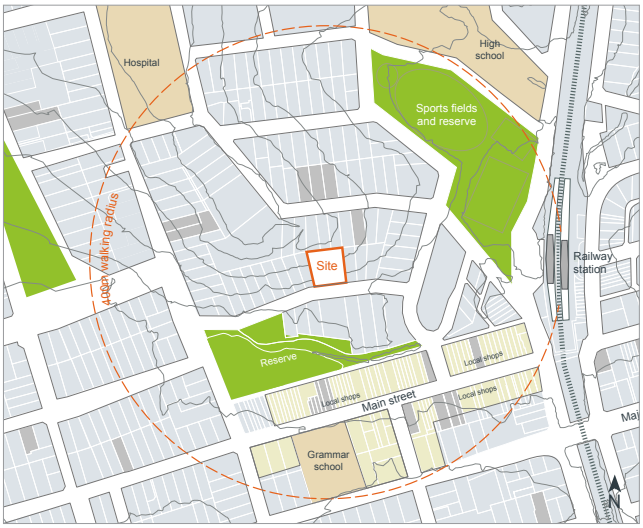


Figure 1B.5 The neighbourhood scale outlines the urban grid and block structure including streets and open spaces, significant topography, heritage and civic and community uses

Figure 1B.6 The streetscape scale helps understand the impact of proposed development on streetscape quality and should show heights, setbacks, driveways and existing street trees

Figure 1B.7 The site scale is a detailed analysis of the development's immediate context and should include the site itself, the street it addresses and surrounding properties

1C Precincts and individual sites

Figure 1C.1 Individual site: this development comprises two apartment buildings with a shared communal open space and mediates between low density housing and a local centre to the north

Residential flat buildings are generally developed on individual sites or within precincts.

Individual sites

An individual site is a single lot or an amalgamation of several lots that can support an individual or a group of residential flat buildings.

The size, shape and orientation of individual sites directly inform the possible building types and development capacity. The generic building types in section 1A of this guide can assist in testing individual sites to determine the planning controls and supporting guidelines, such as deep soil zones, communal open spaces, privacy, solar access and natural ventilation.

Where an area is planned to change, new development needs to address the desired future character at both the neighbourhood and street scales. In established areas new development should carefully respond to neighbouring development.

Incremental change typically occurs lot by lot in established areas and can be constrained by existing development adjacent to the site. Planning and design considerations for managing this change include:

- site amalgamation requirements may be appropriate and expressed as minimum site frontages or site specific amalgamation patterns in development control plans*
- corner sites and sites with multiple frontages can be more efficient for development yield than mid-block sites with a single frontage
- the development potential of the adjacent site is retained where zoning permits this
- avoiding left over and isolated sites, that are unable to realise the planned development form and potential

* *It is important to note that parking rates can be a significant driver for amalgamation. On sites with good public transport accessibility and limited opportunities for amalgamation, a reduction in parking rates should be considered*

Precincts

Precincts are characterised by large land parcels or a group of larger sites undergoing extensive change. These sites often need to be restructured to support a change of land use mix, building height and density.

Precinct plans typically incorporate new streets and infrastructure, through-site links and public open spaces that relate in scale, location and character to the local context. The subdivision of large land parcels into smaller ones assists in creating a finer urban grain and achieving greater diversity in building design. It can also assist with the staging of redevelopment.

Precinct plans provide a number of opportunities including:

- reconnecting parts of the city or town that have previously been isolated
- improving the public domain network and increasing the provision of public open space
- incorporating a mix of uses to support more vibrant renewal areas
- integrating heritage and important views within the site or surrounding context
- providing greater housing diversity
- providing opportunities for new community facilities such as recreational centres, libraries and childcare centres
- leveraging efficiencies of scale to deliver more effective environmental measures such as on site energy production, integrated stormwater management and waste water recycling
- supporting greater flexibility in site layout to provide greater amenity to individual apartments and open spaces

Precinct plans establish building envelopes and inform the controls within a local environmental plan and development control plan, against which future development applications are assessed. Indicative plans at both ground and upper levels can assist to describe the expectations of future development types within the envelope providing more certainty for local goverment, applicants and the community.

Figure 1C.2 Precinct: this precinct plan for the redevelopment provides a clear structure of new streets, public parklands, adaptive re-use of former tram sheds and mid block shared communal open spaces

When determining the floor space of a precinct plan, the net floor space is based on the whole site area including streets and open spaces. This will be significantly lower than the net floor space of individual parcels within the precinct plan.

Through the precinct plan design process and the testing of proposed building envelopes against the site constraints, alternative solutions to some of the Apartment Design Guide performance criteria may be appropriate.

Some performance criteria of this guide are best applied to the entire precinct area or to stages within the site, for example deep soil and communal open space may be best consolidated and accessed by a number of buildings.

Other performance criteria associated with the amenity of individual apartments, such as visual privacy, daylight access and ventilation, are typically applied to each building within the precinct plan.

Part 2
Developing the controls

2A Primary controls
2B Building envelopes
2C Building height
2D Floor space ratio
2E Building depth
2F Building separation
2G Street setbacks
2H Side and rear setbacks

2A Primary controls

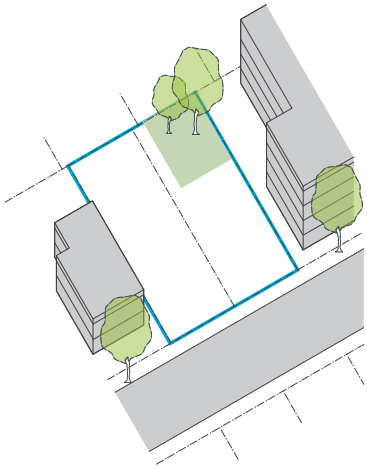
Primary development controls are the key planning tool used to manage the scale of development so that it relates to the future desired character of an area and manages impacts on surrounding development.

Primary development controls include building height, floor space ratio, building depth, building separation and setbacks (refer to sections 2C - 2H). When applied together, the primary development controls create a building envelope, which forms the three dimensional volume where development should occur.

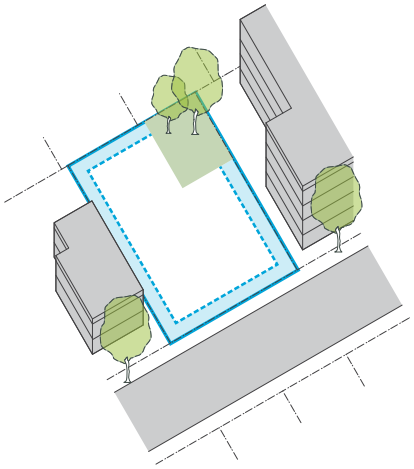
Setting and testing the controls

Primary controls should be developed taking into account solar and daylight access, orientation and overshadowing, natural ventilation, visual and acoustic privacy, communal open space and deep soil zones.

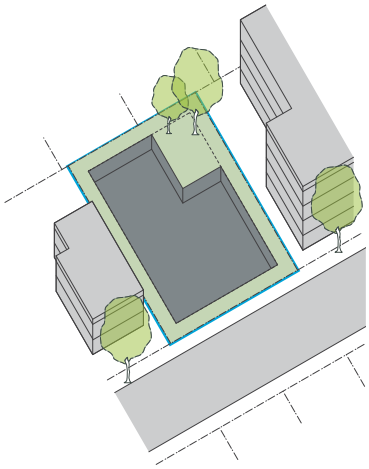
The controls must be carefully tested to ensure that the desired built form outcome is achievable and be coordinated with each other to ensure the desired density and massing can be accommodated within the building height and setback controls.



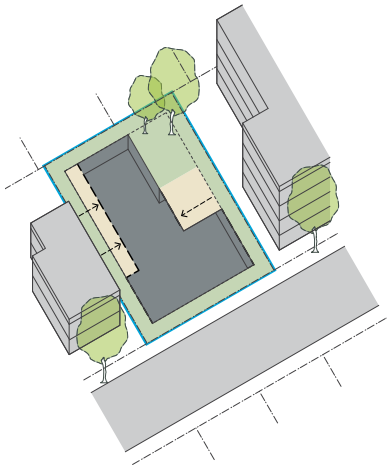
1. Retention of trees



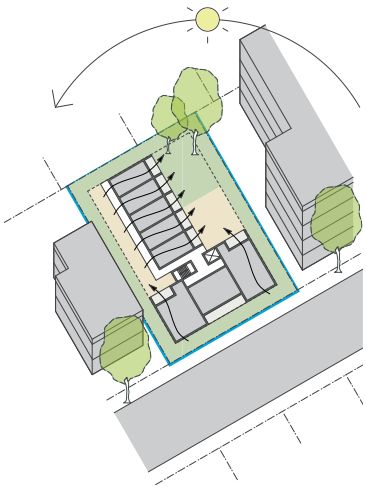
2. Minimum setbacks



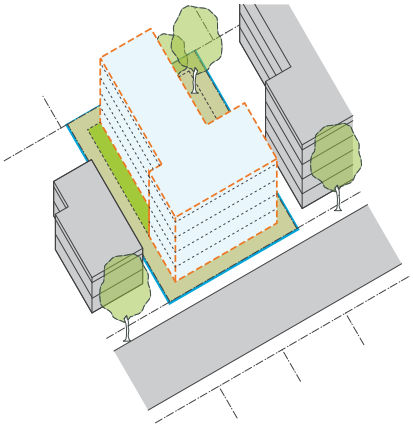
3. Deep soil zones and basement levels



4. Building separation and depth



5. Building performance and orientation



6. Three-dimensional building envelope

Figure 2A.1 Key considerations when testing development controls and establishing a three-dimensional building envelope

2B Building envelopes

A building envelope is a three dimensional volume that defines the outermost extent of a building.

Building envelopes set the appropriate scale of future development in terms of bulk and height relative to the streetscape, public and private open spaces, and block and lot sizes in a particular location. Envelopes are appropriate when determining and controlling the desired urban form in town centres, brownfield sites, precinct plan sites and special sites such as those with extreme topography.

A building envelope should be at least 25-30% greater than the achievable floor area (see section 2D Floor Space Ratio) to allow for building components that do not count as floor space but contribute to building design and articulation, such as lifts, stairs and balconies.

Building envelopes help to:

- define the three dimensional form of buildings
- inform decisions about appropriate density for a site and its context
- define open spaces and landscape areas
- test the other primary controls to ensure they are coordinated and achieve the desired outcome

Figure 2B.1 Perspective of a proposed building design within the building envelope

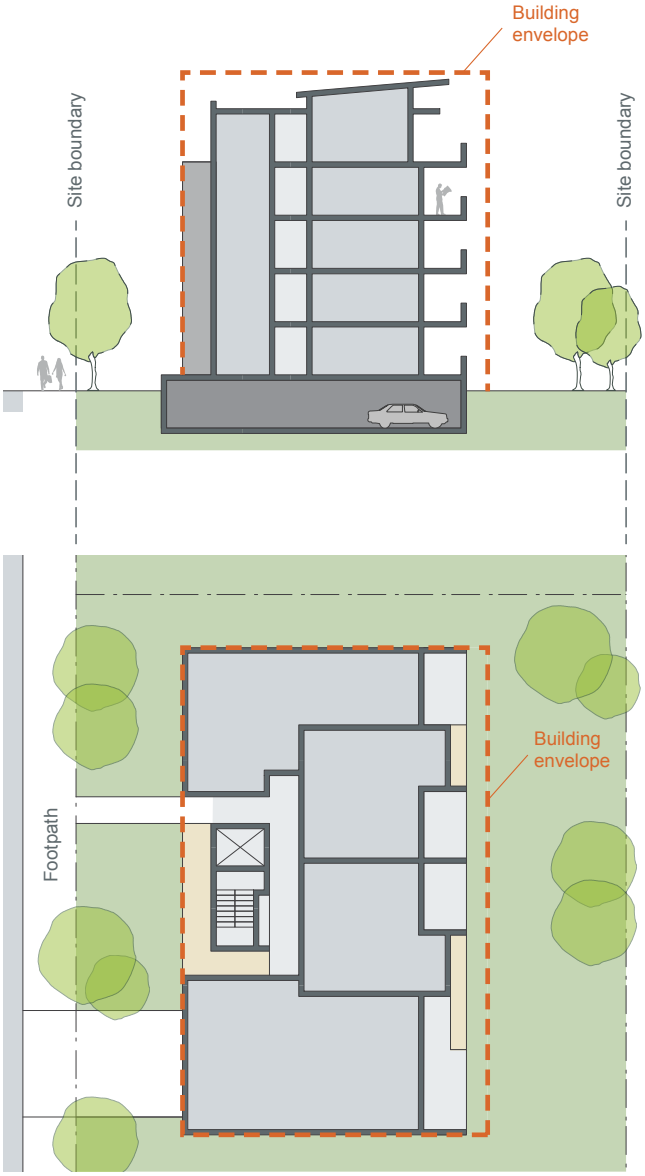


Figure 2B.2 Building envelopes define the 'container' within which a building is designed. They are a useful tool to gain an understanding of the future urban form and scale of an area, however they do not represent buildings and are typically 25-30% larger than the final built form

2C Building height

Building height helps shape the desired future character of a place relative to its setting and topography. It defines the enclosure and scale of streets and public spaces and has a relationship to the physical and visual amenity of both the public and private realms.

Initial height controls should be further refined by decisions about daylight and solar access, roof design and use, wind protection, residential amenity and in response to landform and heritage. The rationale for height controls needs to be explained to the community, planners and applicants.

Objectives

- Building height controls ensure development responds to the desired future scale and character of the street and local area
- Adequate daylight and solar access is facilitated to apartments, common open space, adjoining properties and the public domain
- Changes in landform are accommodated
- Building height controls promote articulated roof design and roof top communal open spaces, where appropriate

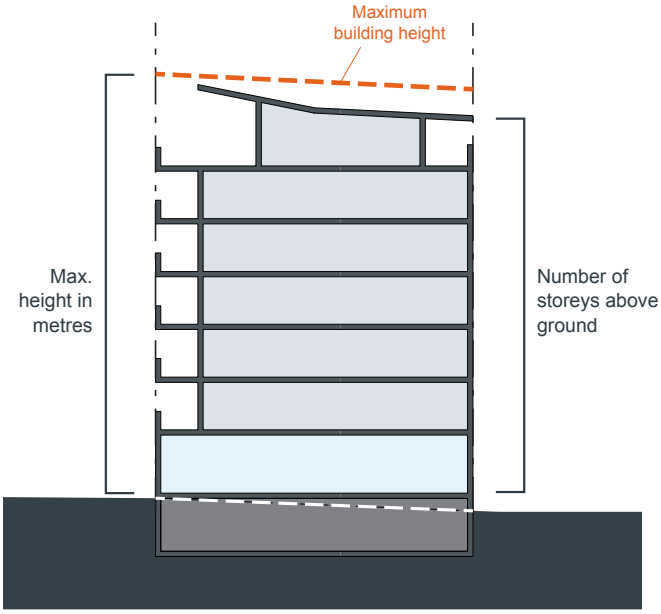


Figure 2C.1 The total height of a building informs the number of storeys possible in a development. Floor to ceiling heights vary depending on the use, i.e. shops and offices are typically higher than residential apartments

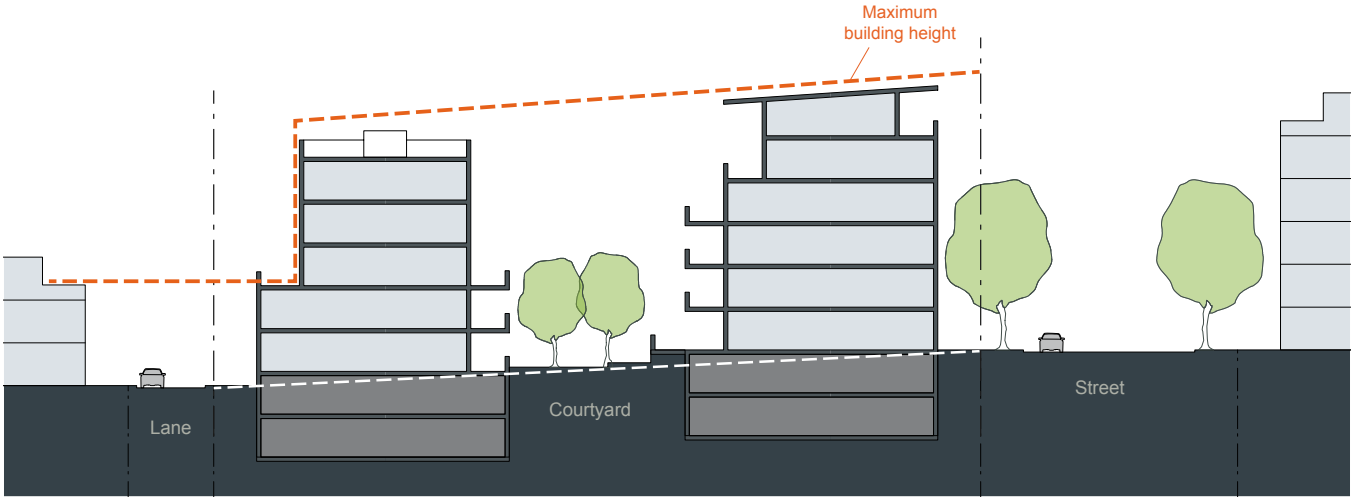


Figure 2C.2 Building height should reflect the existing or desired future character of an area. Height controls may need to step or change within a site. This diagram shows how the height of proposed buildings responds to the lower and higher densities along each street frontage

Figure 2C.3 Building height in renewal areas need to reflect the desired future character of the streetscape

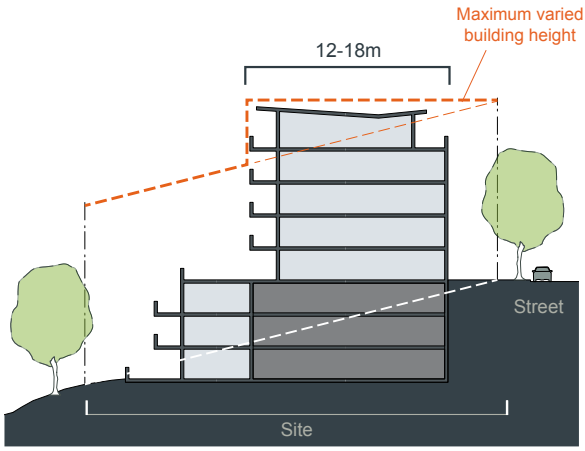


Figure 2C.4 On steep slopes across sites, a varied height control can be applied that steps down towards the lower level of the site and helps create useful residential floor plates (12-18m) addressing the street

Considerations in setting height controls

1. Ensure that building height controls respond to the desired number of storeys, the minimum ceiling heights required for future building uses and include generous ground floor heights

2. Ensure permissible building height allows for articulated roof planes and building services or that architectural roof features are enabled by the local environmental plan

3. Where a floor space ratio control is defined, test height controls against the FSR to ensure a good fit

4. Develop site-specific building envelopes and heights for complex sites such as those on steep slopes or with changing topography

5. It may be appropriate to determine heights by relating them to site-specific features such as cliff lines or heritage items . This may include:
   - defining an overall height or street wall heights to key datum lines, such as eaves, parapets, cornices or spires
   - aligning floor to floor heights of new development with existing built form

6. Where rooftop communal open space is desired, ensure adequate overall height is provided and consider secondary height controls for lift/stair access and shade structures

7. Consider secondary height controls to transition built form, for example:
   - a street wall height to define the scale and enclosure of the street
   - a step down in building height at the boundary between two height zones

8. The Building Code of Australia requires fire sprinklers on buildings that exceed 25m in height. When setting height controls around 25m, consider this threshold as it can have an impact on the feasibility of a development. Applicants should be able to design a building to the maximum height while achieving an economically viable development.

2D Floor space ratio

Floor space ratio (FSR) is the relationship of the total gross floor area (GFA) of a building relative to the total site area it is built on, providing an indication of the intended density. FSR is a widely used method for estimating the development potential of a site.

However, it is important to note that FSR controls set the *theoretical maximum* capacity. It may not always be possible to reach the maximum allowable floor space due to other development controls or constraints specific to the site such as lot size or shape, existing landscape features, neighbouring properties or heritage considerations.

FSR is not a measure of the maximum capacity of the building envelope. The envelope provides an overall parameter for the design of the development and allowable floor space should only 'fill' approximately 70% of the building envelope (see section 2B Building envelopes). In a new urban area or where an existing neighbourhood is undergoing change, building envelopes should be tested prior to setting FSR controls.

Objectives

- Ensure that development aligns with the optimum capacity of the site and the desired density of the local area
- Provide opportunities for building articulation and creativity within a building envelope by carefully setting the allowable floor space

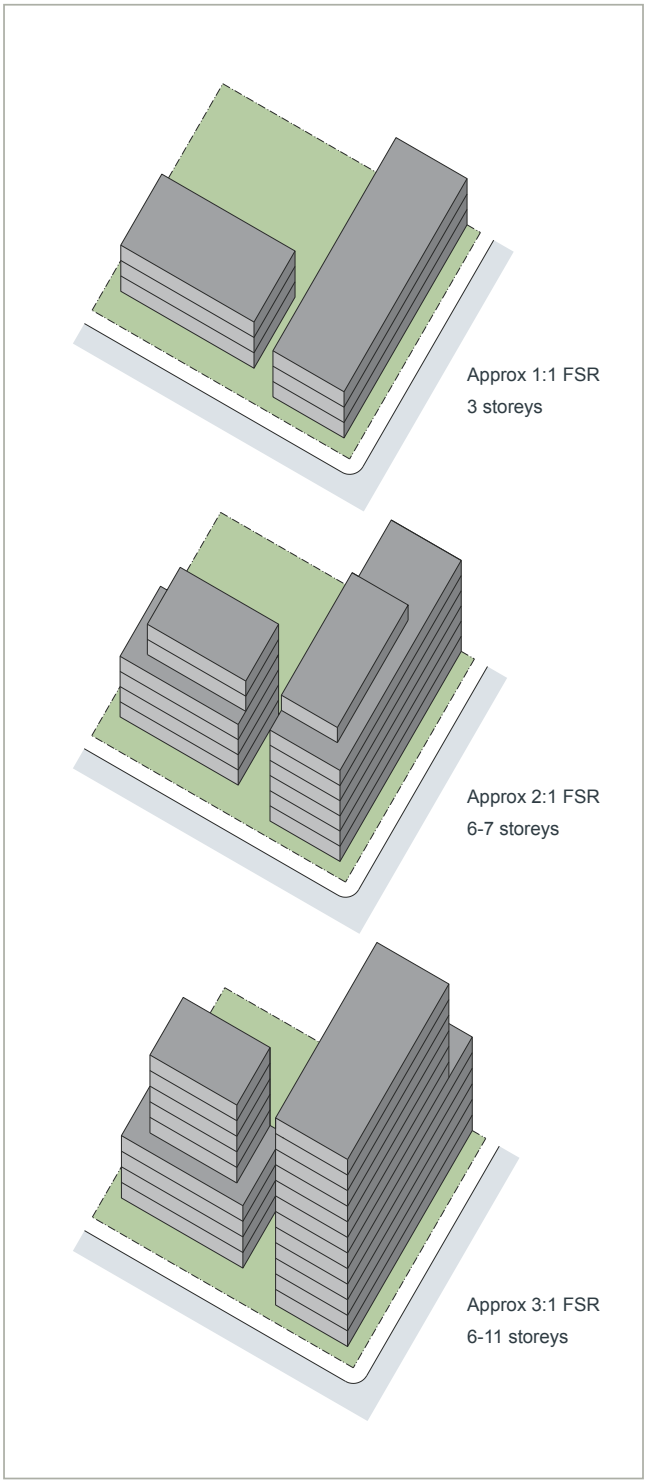


Figure 2D.1 Indicative built form massing for different FSR ratios

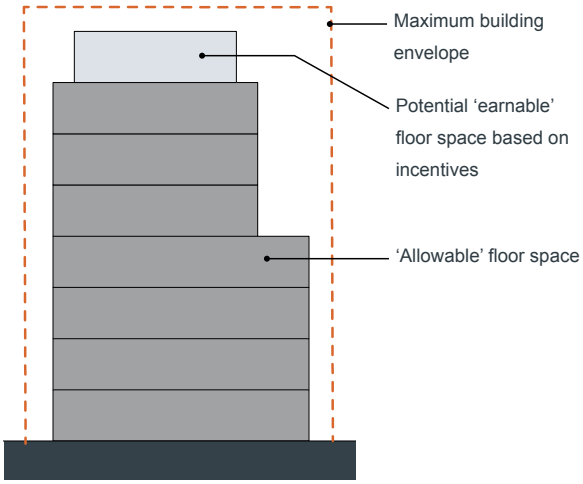
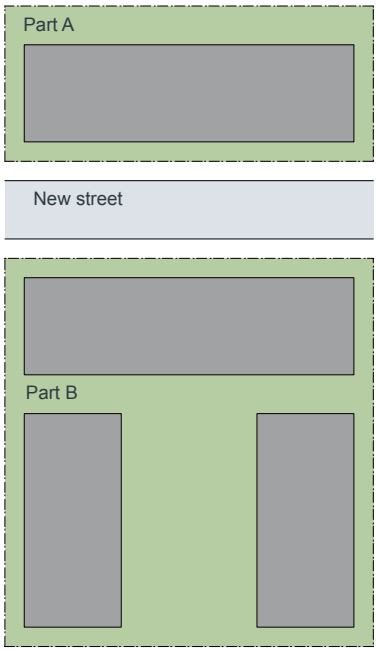


Figure 2D.2 When determining floor space ratio controls, maximum building envelopes can be used to test the FSR, including any potential incentives and bonuses



Whole site:
2:1 FSR (gross)

Part A:
2.5:1 FSR (net)
Part B:
2.3:1 FSR (net)

Figure 2D.3 On sites with subdivision and public domain dedication (e.g. a new street), the overall gross FSR is lower than the net FSR for each individual development parcel

Considerations in setting FSR controls	
1.	Test the desired built form outcome against the proposed FSR to ensure consistency with the building envelope, height, setback and open space requirements
2.	The gross floor area (GFA) should be approximately 70-75% of the building envelope to account for floor space that is not included in GFA definition and to allow for building articulation
3.	Ensure controls are coordinated so that building height, depth, setbacks and floor space ratio combined result in the desired built form outcome
4.	Consider how floor space is implemented across larger sites as a single floor space ratio may result in under or over development. For example, in an area with a consistent height control: • corner, mid-block or wide shallow sites tend to have different floor space capacities • small sites with a single building may have greater floor space capacity than larger sites with multiple buildings • large sites with multiple buildings require greater space between buildings and may have less floor space capacity
5.	On precinct plan sites with new streets and/or open spaces, both the gross FSR for the whole site and the net FSR for individual development parcels need to be defined. The net FSR may be significantly higher than the gross FSR
6.	Where both residential and non-residential uses such as retail or commercial offices are permitted, develop FSR controls for each use. Note that residential FSR tends to be lower compared with commercial or retail ratios. This is because residential buildings are typically less deep than commercial buildings and need to adhere to stricter performance criteria (as outlined in this guide).
7.	Consider opportunities to achieve public benefits such as community facilities and public domain improvements, such as new streets, through-site links and open spaces

2E Building depth

Building depth is an important tool for determining the development capacity of a site. It is the overall cross section dimension of a building envelope. Building depth dimensions typically include articulation such as projecting balconies, gallery access, eaves, overhangs, sun hoods, blades and other architectural features.

Building depth affects building circulation and organisation and has a direct relationship to internal residential amenity by determining room depths, which in turn influences access to light and air. For residential development in general, narrower buildings of 10-14m depth have a greater potential to achieve optimal natural ventilation and daylight access than deeper floor plates of up to 18m.

Objectives

- Ensure building depths support apartment layouts that meet the performance criteria and acceptable solutions within the Apartment Design Guide
- Ensure that the bulk of the development is in scale with the existing or desired future context

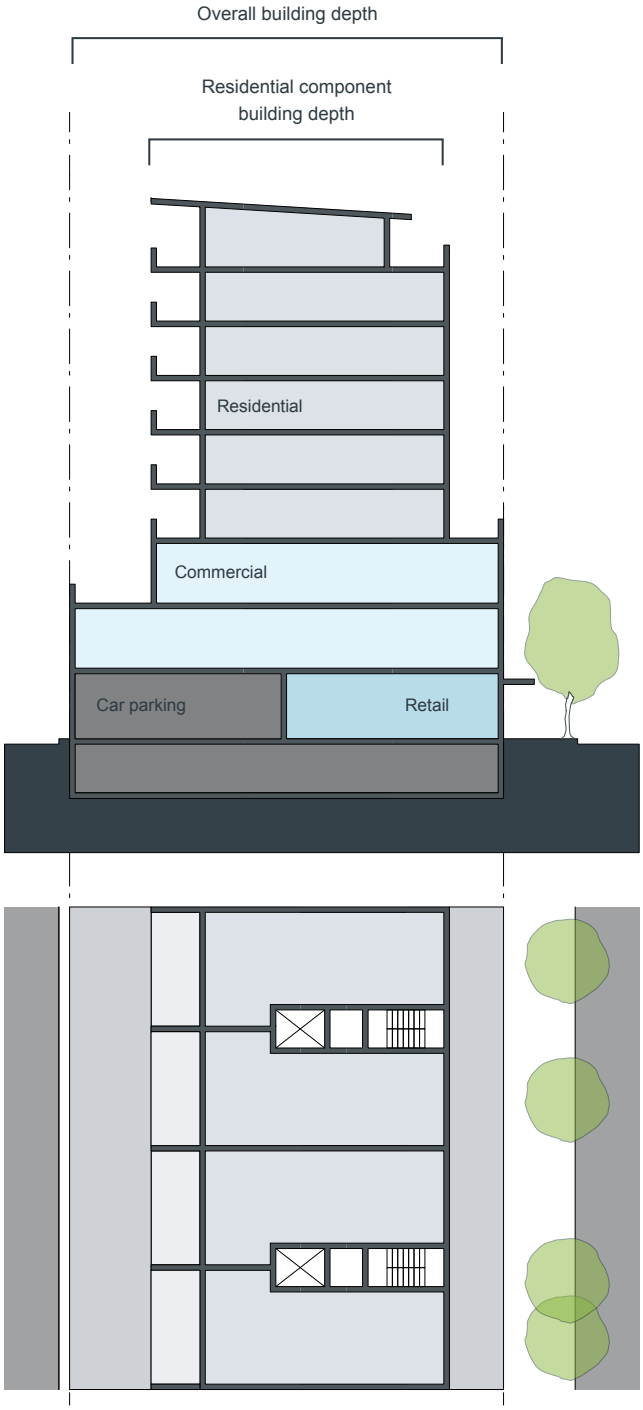


Figure 2E.1 A mixed used building showing the transition of building depth: deeper floors on lower levels dedicated to retail/commercial use to narrower residential apartments on upper levels

Figure 2E.2 These examples show how to measure building depth for different apartment building shapes

Figure 2E.3 Building depth dimensions should include articulation such as projecting balconies, gallery access, overhangs, blades and other architectural features

Considerations in setting building depth controls	
1.	Use maximum apartment building depths of 12-18m when precinct planning and testing development controls to help ensure apartments receive adequate daylight and natural ventilation and optimise natural cross ventilation
2.	Test building depths against indicative floor plate and apartment layouts to ensure they can meet natural ventilation and sunlight requirements
3.	Site constraints may require varied building depths to achieve good levels of residential amenity for residents and neighbours
4.	Consider varying building depth relative to orientation. For example, buildings facing east-west capture sun from both aspects and may be up to 18m wide, while buildings facing north-south should be narrower to reduce the number of south facing apartments that have limited or no direct sunlight access (see section 4L Solar and daylight access)
5.	Where greater depths are proposed, demonstrate that indicative layouts can achieve acceptable amenity with room and apartment depths. This may require significant building articulation and increased perimeter wall length
6.	Coordinate building height and building depth: • buildings that have smaller depths over a greater height deliver better residential amenity than those with greater depth and a lower height • greater building depths may be possible where higher ceiling heights are provided
7.	For mixed use buildings, align building depth to the intended use. For example, transition deeper commercial or retail podium levels to a narrower residential tower above. If the intended building use changes, the building depth needs to change accordingly
8.	Set the depth control in metres. The building depth includes the internal floor plate, external walls, balconies, external circulation and articulation such as recesses and steps in plan and section

2F Building separation

Building separation is the distance measured between building envelopes. Separation between buildings contributes to the urban form of an area and the amenity within apartments and open space areas.

Amenity is improved through establishing minimum distances between apartments within the site, between apartments and non-residential uses and with neighbours. Building separation ensures communal and private open spaces have useable space and adequate sunlight and privacy. Within apartments, building separation assists with visual and acoustic privacy, outlook, and daylight access.

Building separation controls should be set in conjunction with height controls and controls for private/communal open space and visual and acoustic privacy.

Objectives

- Ensure that new development is scaled to support the desired future character with appropriate massing and spaces between buildings
- Assist in providing residential amenity including visual and acoustic privacy, natural ventilation, daylight access and outlook
- Provide suitable areas for communal open spaces and deep soil zones where site conditions allow

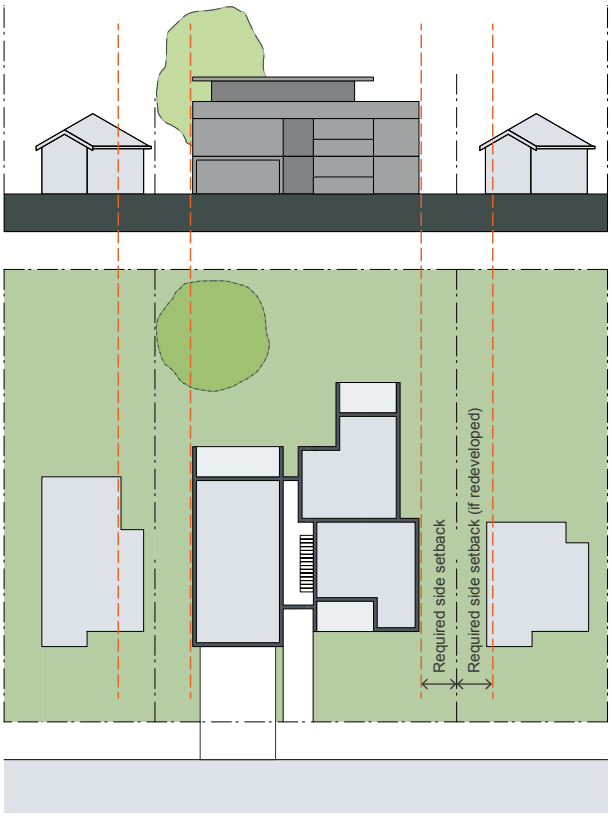
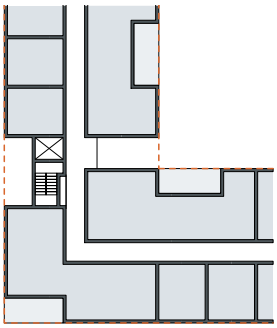
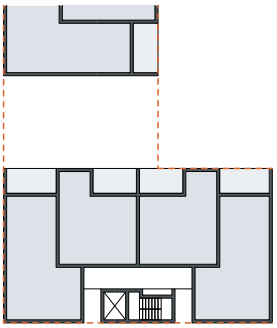


Figure 2F.1 In areas undergoing transition from low density to higher densities, minimum building separation distances may not be achieved until the area completes its transition

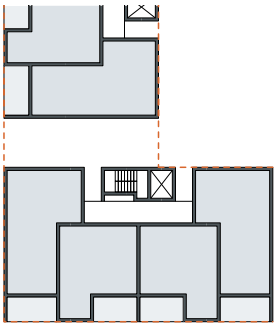
1. No separation



2. Separation between buildings



3. Service core between buildings



4. Service core in building corner

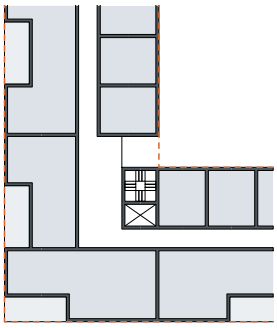


Figure 2F.2 Alternatives to respond to built form corners, location of access cores, building separation and apartment configuration

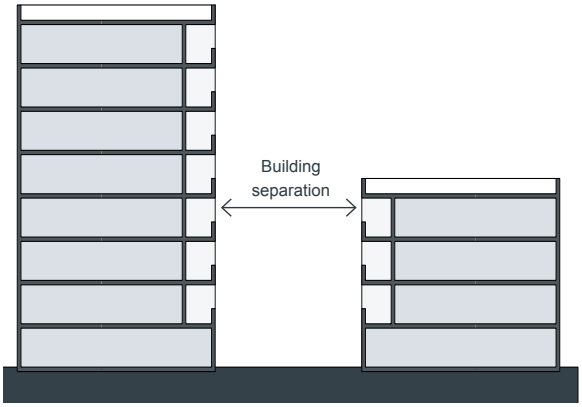


Figure 2F.3 Building separation is measured from the outer face of building envelopes which includes balconies

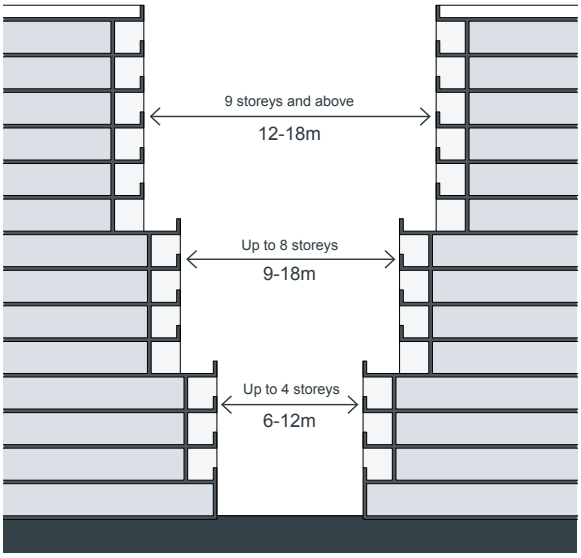


Figure 2F.4 The minimum building separation increases proportionally to the building height

How to measure building separation

Gallery access circulation areas should be treated as habitable space, with separation measured from the exterior edge of the circulation space.

When measuring the building separation between commercial and residential uses, consider office windows and balconies as habitable space and service and plant areas as non-habitable.

Where applying separation to buildings on adjoining sites, apply half the minimum separation measured from the boundary. This distributes the burden of separation equally between sites (see section 3F Visual privacy).

Considerations in setting building separation controls	
1.	Design and test building separation controls in plan and section
2.	Test building separation controls for solar access to buildings and open spaces
3.	Minimum separation distances for buildings within a site and between adjoining sites for buildings are: *Up to four storeys (approximately 12m):* • 12m between habitable rooms/balconies • 9m between habitable and non-habitable • 6m between non-habitable *Five to eight storeys (approximately 25m):* • 18m between habitable rooms/balconies • 12m between habitable and non-habitable • 9m between non-habitable rooms *Nine storeys and above (over 25m):* • 24m between habitable rooms/balconies • 18m between habitable and non-habitable • 12m between non-habitable
4.	Building separation may need to be increased to achieve adequate solar access and open space provision on the site, for example on slopes
5.	Building separation may need to increase at boundaries between lower and higher density residential areas
6.	Increase building separation proportionally to the building height to achieve amenity and privacy for building occupants and a desirable urban form
7.	At the boundary between a change in zone from apartment buildings to a lower density zone, increase the building setback from the boundary by 3m
8.	No building separation is necessary where building types incorporate party walls. Typically this occurs along a main street or at podium levels within centres

2G Street setbacks

Street setbacks establish the alignment of buildings along the street frontage, spatially defining the width of the street. Combined with building height and road reservation, street setbacks define the proportion and scale of the street and contribute to the character of the public domain.

In a centre the street setback or build-to line may be set at the property boundary defining the street corridor with a continuous built edge. In a suburban context, the street setback may accommodate front gardens, contributing to the landscape setting of buildings and the street. Street setbacks provide space for building entries, ground floor apartment courtyards and entries, landscape areas and deep soil zones.

Objectives

- Establish the desired spatial proportions of the street and define the street edge
- Provide space that can contribute to the landscape character of the street where desired
- Create a threshold by providing a clear transition between the public and private realms
- Assist in achieving visual privacy to apartments from the street
- Create good quality entries to lobbies, foyers or individual dwellings
- Promote passive surveillance and outlook to the street

Figure 2G.1 For mixed use buildings with retail uses at the ground floor a zero setback is appropriate

Figure 2G.2 This example provides a landscaped setback which contributes to the residential character of the street

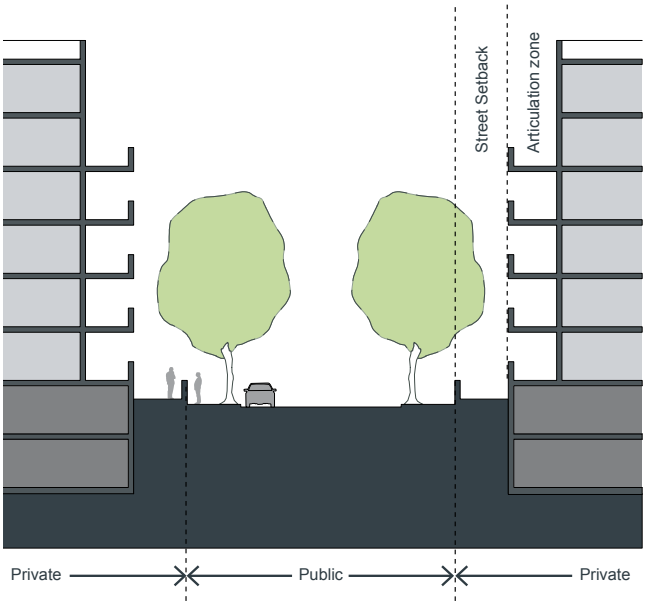
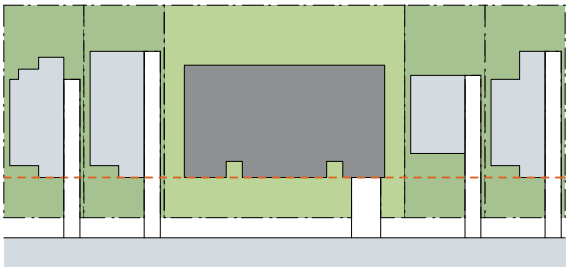
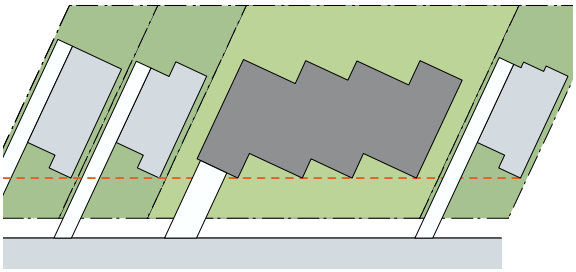


Figure 2G.3 Streetscapes are defined by a combination of public elements (travel lanes, verges and footpaths) and private elements (street setbacks, fences and building facades)

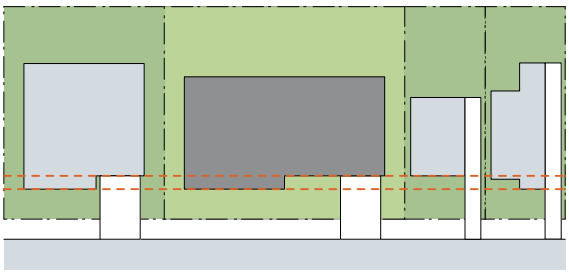
1. Predominant setback



2. Variation for angled subdivision



3. Setback range



4. Build-to line

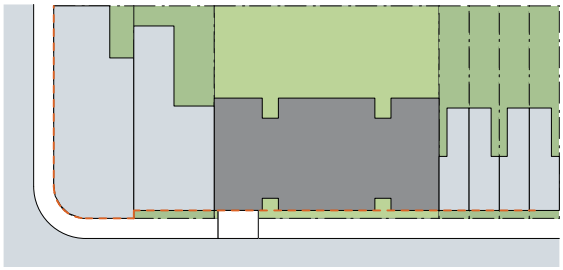


Figure 2G.4 Street setbacks should be consistent with existing setback patterns in the street or setbacks that achieve the desired future character of the area

Considerations in setting street setback controls

1. Determine street setback controls relative to the desired streetscape and building forms, for example:
   - define a future streetscape with the front building line
   - match existing development
   - step back from special buildings
   - retain significant trees
   - in centres the street setback may need to be consistent to reinforce the street edge
   - consider articulation zones accommodating balconies, landscaping etc. within the street setback
   - use a setback range where the desired character is for variation within overall consistency, or where subdivision is at an angle to the street
2. Align street setbacks with building use, for example, in mixed use buildings a zero street setback is appropriate
3. Consider nominating a maximum percentage of development that may be built to the front build-to line, where one is set, to ensure modulated frontages along the length of buildings
4. Identify the quality, type and use of open spaces and landscaped areas facing the street so setbacks can accommodate landscaping and private open space
5. In conjunction with height controls, consider secondary upper level setbacks to:
   - reinforce the desired scale of buildings on the street
   - minimise overshadowing of the street and other buildings
6. To improve passive surveillance, promote setbacks which ensure a person on a balcony or at a window can easily see the street
7. Consider increased setbacks where street or footpath widening is desired

2H Side and rear setbacks

Side and rear setbacks govern the distance of a building from the side and rear site boundaries and are related to the height of the building. They are important tools to for achieving amenity for new development and buildings on adjacent sites.

Setbacks vary according to the building context and type. Larger setbacks can be expected in suburban contexts in comparison to urban settings. Setbacks provide transition between different land uses and building typologies. Side and rear setbacks can also be used to create useable land for common open space, tree planting and landscape treatments.

Objectives

- Provide access to light, air and outlook for neighbouring properties and future buildings
- Provide for adequate privacy between neighbouring apartments
- Retain or create a rhythm or pattern of spaces between buildings that define and add character to the streetscape
- Achieve setbacks that maximise deep soil areas and support mature vegetation consolidated across sites
- Assist in transition between areas with different development controls, i.e. heights or land use

Figure 2H.1 Side setbacks can contribute to the character of the street, for example by allowing views to existing vegetation at the rear of buildings

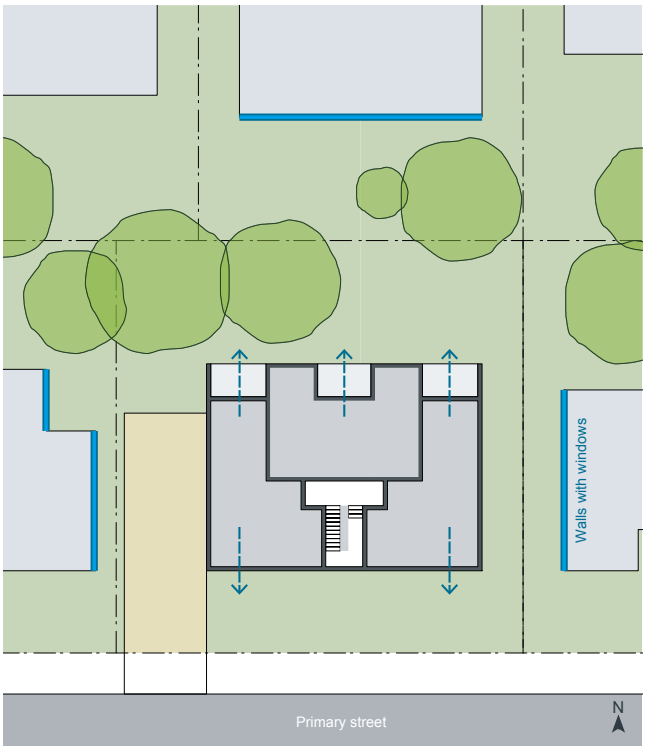


Figure 2H.2 On infill sites, following the existing open space patterns, limiting side setbacks and locating habitable rooms to face the street and rear boundary optimises amenity and privacy for all

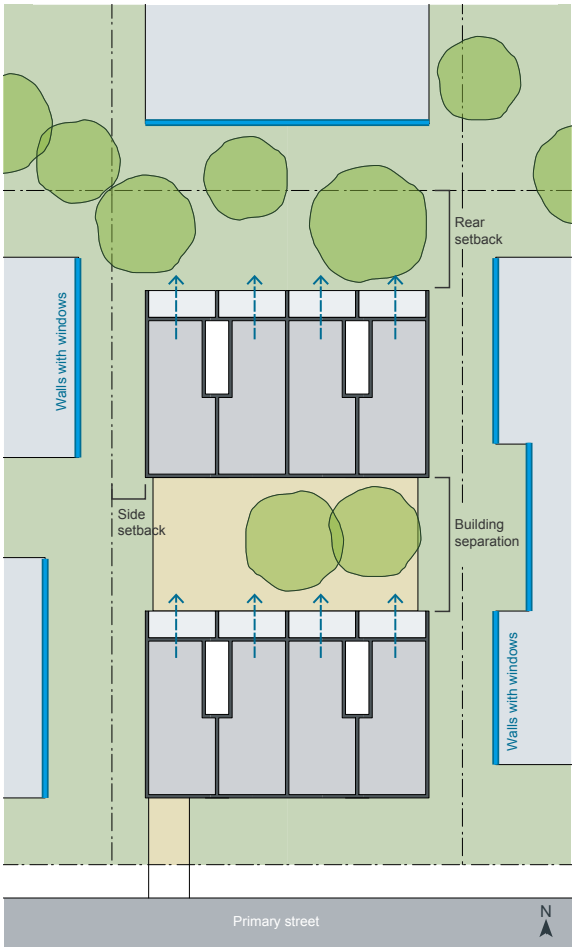


Figure 2H.3 On narrow infill sites, select a building type that orientates habitable rooms to the street and rear, minimising required side setbacks

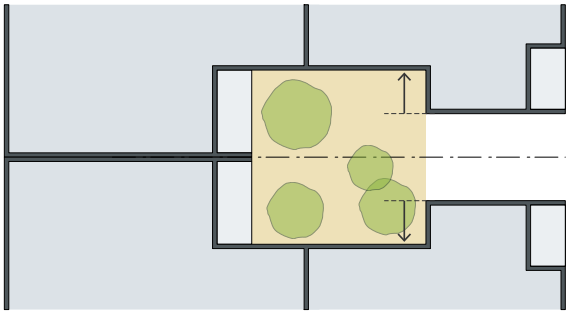


Figure 2H.4 Where limited setbacks and deep buildings are unavoidable, 'step in' the plan layout to create internal courtyards for improved privacy and daylight access

Considerations in setting side and rear setback controls	
1.	Relate side setbacks to existing streetscape patterns
2.	Test side and rear setbacks with height controls for overshadowing of the site, adjoining properties and open spaces
3.	Test side and rear setbacks with the requirements for: • building separation and visual privacy • communal and private open space • deep soil zone requirements
4.	Consider zero side setbacks where the desired character is for a continuous street wall, such as in dense urban areas, main streets or for podiums within centres
5.	On sloping sites, consider increasing side and rear setbacks where new development is uphill to minimise overshadowing and assist with visual privacy

Figure 2H.5 Side and rear setbacks vary according to the building context and type. In urban areas, setbacks are often guided by minimum building separation requirements

Part 3

Siting the development

3A Site analysis

3B Orientation

3C Public domain interface

3D Communal and public open space

3E Deep soil zones

3F Visual privacy

3G Pedestrian access and entries

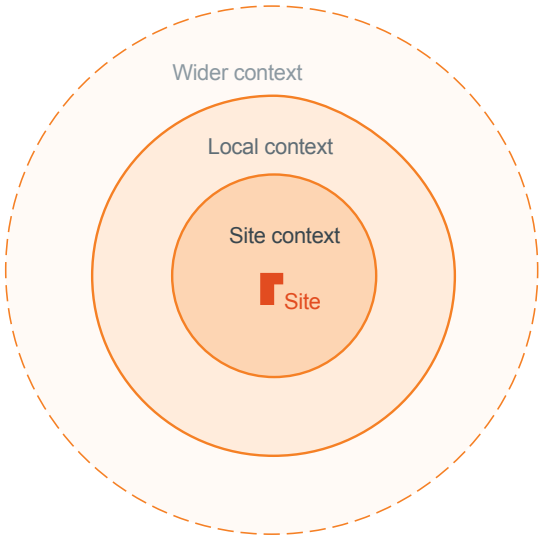
3H Vehicle access

3J Bicycle and car parking

3A Site analysis

Site analysis is an important part of the design process and should be undertaken at the outset of a project to inform its design principles. Development proposals need to illustrate that design decisions are based on careful analysis of the site conditions and relationship to the surrounding context.

By describing the physical elements of the locality and the conditions impacting on the site, opportunities and constraints for future apartment development can be identified and addressed in the design. It may be beneficial to undertake a site analysis in collaboration with technical consultants, depending on the nature of the site and scale of development.



The key elements of a site analysis include:

1. Site location plan

Plan showing the wider context; identifies the site in relation to retail and commercial areas, community facilities and transport

2. Aerial photograph

A colour aerial photograph of the development site and surrounding context

3. Local context plan

Plan drawing(s) of the existing features of the local context; relevant sections and elevations should also be provided, especially on sloping sites. Information may include but is not limited to:

- Land use, height and typology of adjacent and opposite buildings in the street
- Views to and from the site
- Circulation patterns and access for pedestrians, vehicles and servicing
- Location of heritage items and areas of environmental significance
- Patterns of buildings, open spaces and vegetation
- Significant noise sources on and near the site, particularly roads, rail, aircraft and industrial noise
- Building envelopes and setbacks for future development
- A written statement of key issues

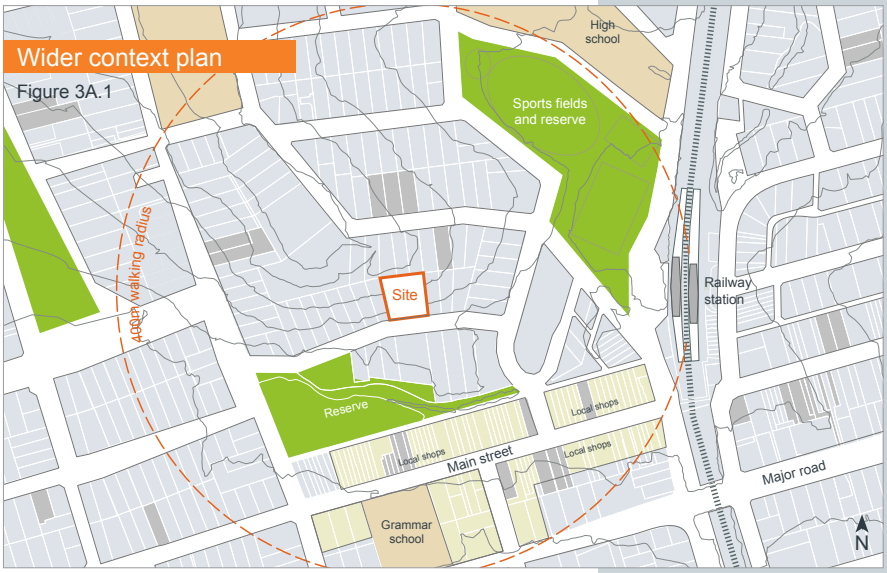
4. Site context and survey plan

Plan and section drawings of existing site features including properties that are adjoining and on the other side of the street, together with appropriate written material. Information may include but is not limited to:

- Site dimensions, site areas and north point
- Topography, showing spot levels and contours at 0.5m intervals, any unique natural features such as rock outcrops, and clearly identifying adjoining streets and land adjoining the site
- Location of major trees on site and adjacent properties including identification of canopy size and species
- Location and use of any existing buildings or built features on the site
- Location and important characteristics of adjacent public, communal and private open spaces
- Location and height of existing windows, balconies, walls and fences on adjacent properties, as well as parapet and ridge lines
- Pedestrian and vehicular access points
- Location of utility services including electricity poles, substation kiosks, stormwater drainage, natural drainage, kerb crossings and easements

Wider context plan

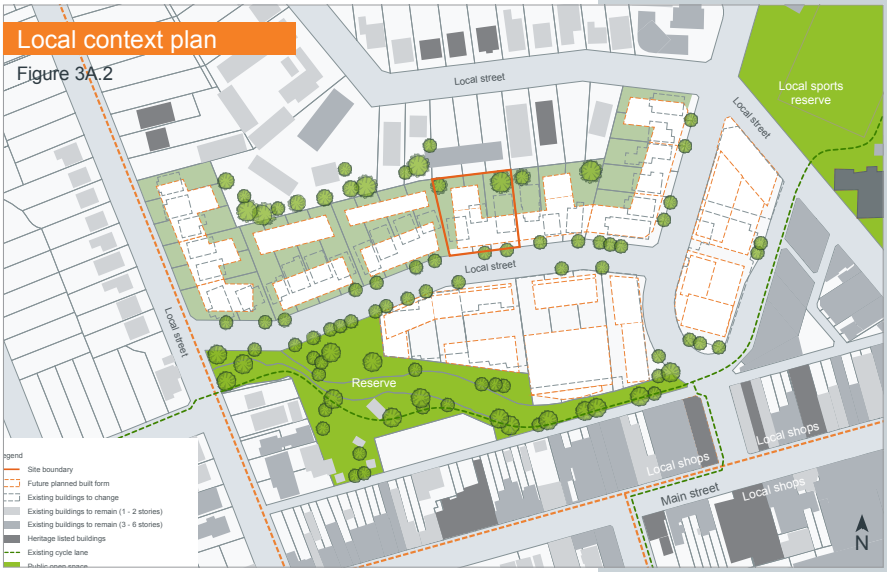
Figure 3A.1



- Proposed development site
- Education facility
- Public open space
- Local shops
- Heritage listed item
- Railway line

Local context plan

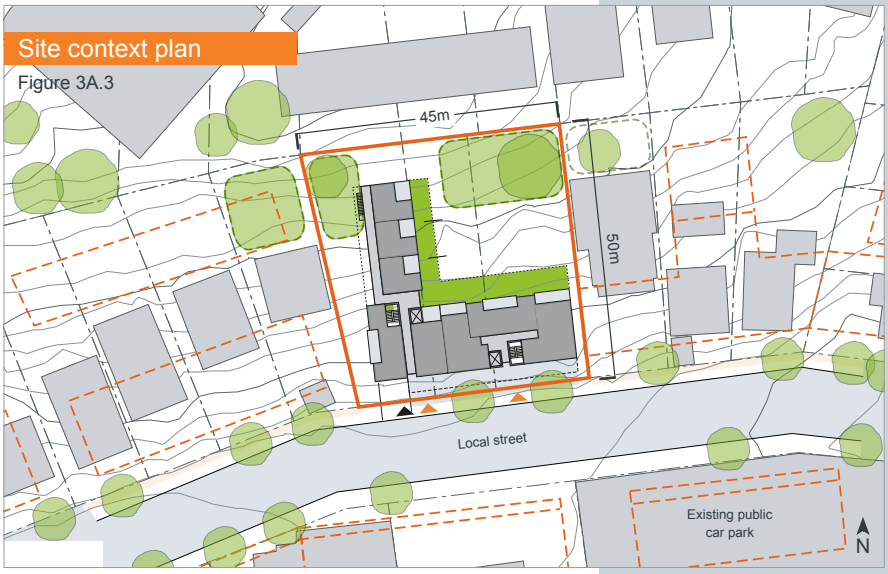
Figure 3A.2



- Proposed development site
- Future planned built form
- Existing buildings to change
- Existing buildings to remain (1 - 2 stories)
- Existing buildings to remain (3 - 4 stories)
- Existing buildings to remain (+5 stories)
- Public open space
- Private open space (planned)
- Heritage listed item
- Bus route
- Cycle lane

Site context plan

Figure 3A.3

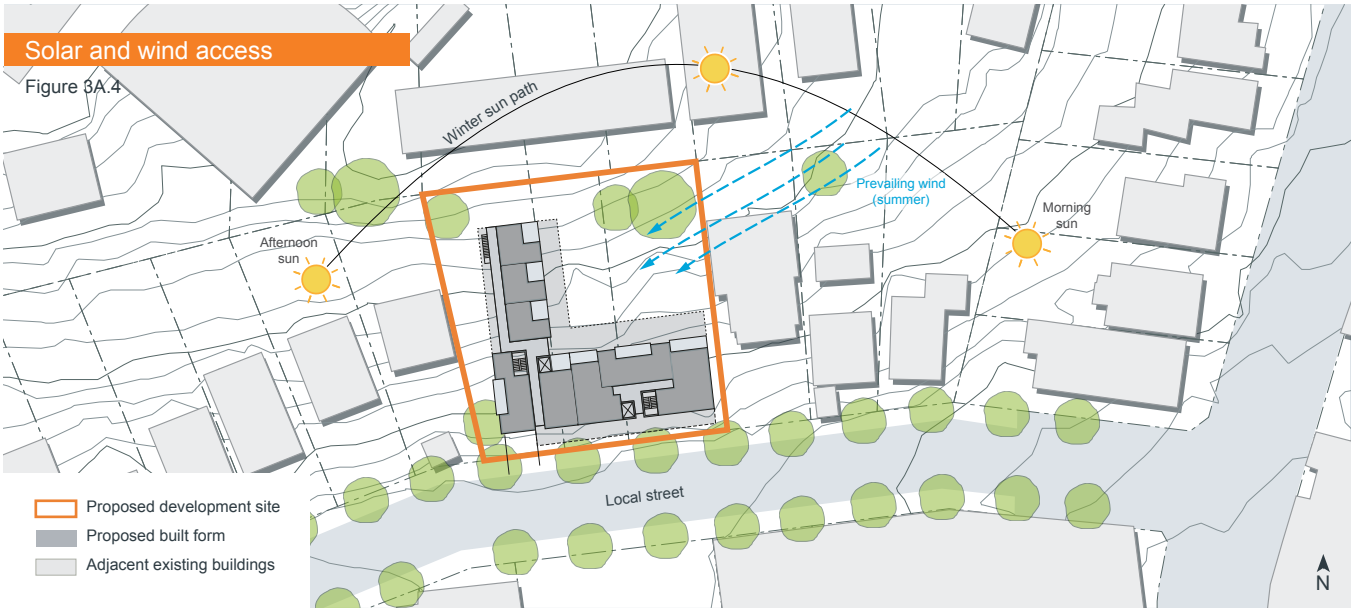


- Proposed development site
- Future planned built form
- Adjacent existing buildings
- Deep soil
- Vehicle access
- Pedestrian access

3A Site analysis

Solar and wind access

Figure 3A.4



5. Streetscape elevations and sections

Photographs and drawings of nearby existing buildings help explain the existing scale of the area, the spacing of development and the local architectural character. Information may include but is not limited to:

- Streetscape: both sides of any street that the development fronts showing the patterns of building frontages, street and side setbacks
- Adjacent buildings: overall height (in metres and storeys) and important parapet and datum lines, awnings, colonnades and other building elements
- Planned heights or building envelopes
- A written statement of key issues

6. Analysis

These plans and sections synthesise and interpret the context, streetscape and site documentation into opportunities and constraints that generate design parameters. Analysis information may include:

- Overshadowing of the site and adjoining properties by neighbouring structures. The winter sun path should be shown from 9am to 3pm on 21 June
- Direction of prevailing wind
- Geotechnical characteristics of the site including topography, and how this relates to the proposed development
- Public domain interface and street setback
- Relationship to and interface with adjacent properties, including side and rear setbacks
- Orientation including solar access and ventilation
- Building footprint location
- Retained trees and tree protection zones
- Proposed trees and deep soil zones
- Communal open space location
- Building entries
- Car park footprint and depth

A written statement explaining how the design of the proposed development has responded to the site analysis must accompany the development application. Where relevant, this should include technical advice from landscape architects, contamination specialists, geotechnical engineers and arborists.

See Appendix 1 Site Analysis Checklist, Appendix 2 Pre-development application design proposal check sheet and Appendix 3 Development Application Recommended Documentation Checklist.

Performance criteria

3A-1 Site analysis illustrates that design decisions have been based on opportunities and constraints of the site conditions and their relationship to the surrounding context

Acceptable solutions

1. Each element in the Site Analysis Checklist is addressed (see Appendix 1)

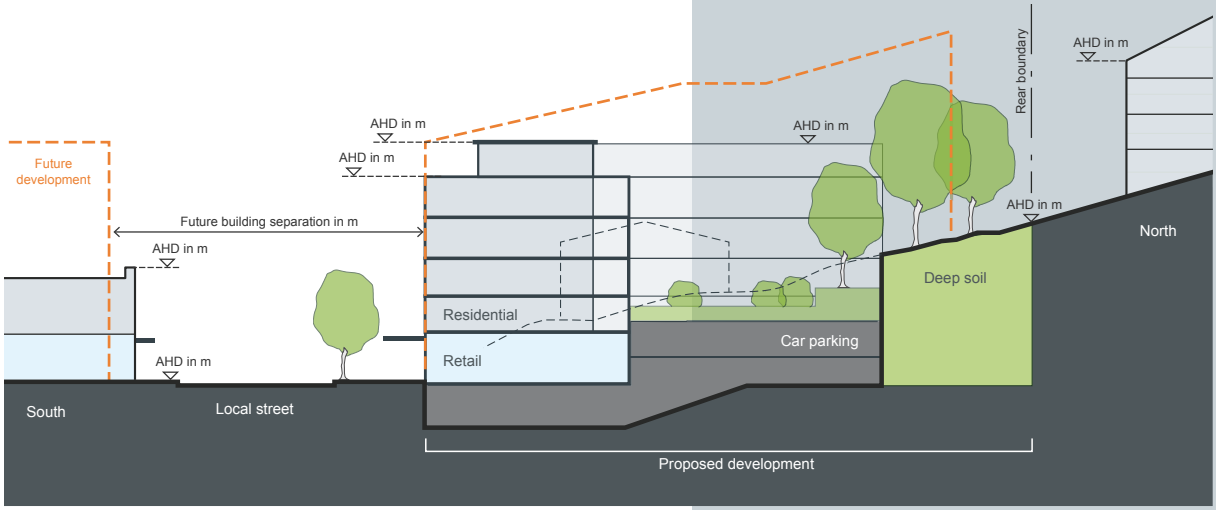


Figure 3A.5 Cross section

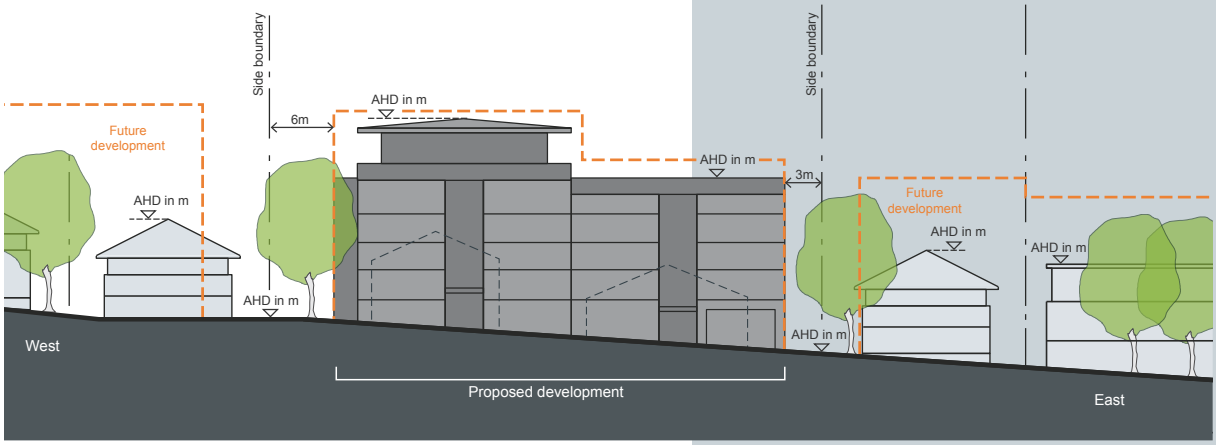


Figure 3A.6 Streetscape elevation

3B Orientation

Orientation is the position of a building and its internal spaces in relation to its site, the street, the subdivision and neighbouring buildings. Building orientation influences the urban form of the street and building address. Building orientation directly affects residential amenity including solar access and influences other matters including visual and acoustic privacy to both the development and neighbouring sites.

Designing the site layout to maximise northern orientation is an important consideration, but it must be balanced with:

- Responding to desired streetscape character
- Promoting amenity for both the proposed development and neighbouring properties
- Providing for the enjoyment of significant views
- Retaining trees and locating open spaces
- Responding to the topography and contextual constraints such as overshadowing and noise

Figure 3B.1 Proposed buildings are sited to clearly address the street while maximising solar access to apartments

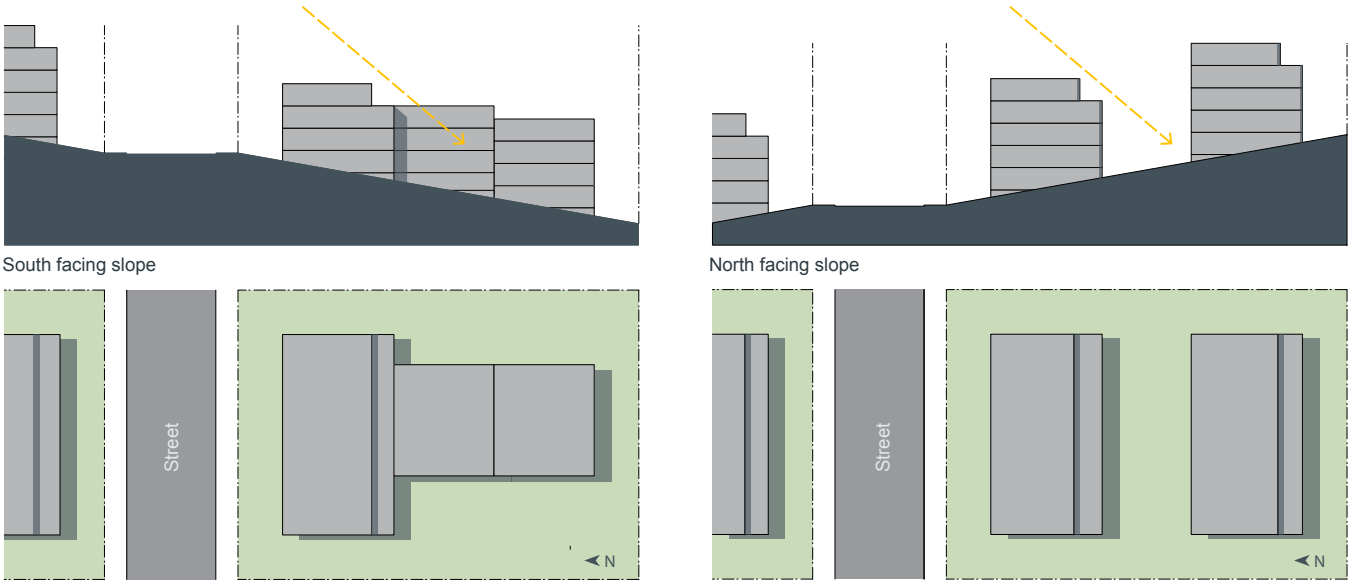


Figure 3B.2 Building orientation and height influences solar access to apartments and common open spaces. On south facing slopes, orient the rear wing of the building(s) east to west to maximise solar access, on north facing slopes, step building(s) with the slope.

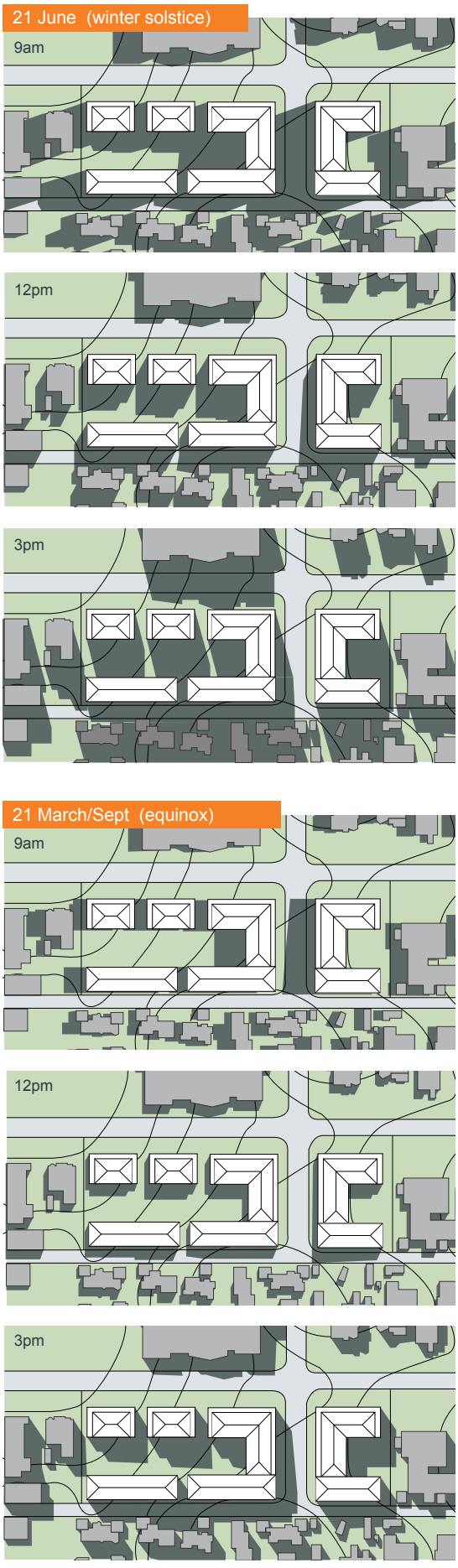


Figure 3B.3 Shadow diagrams demonstrate the impact of overshadowing within and beyond the site

Performance criteria

3B-1 Building types and layouts respond to the streetscape and site while optimising solar access within the development

Acceptable solutions

1.	Buildings along the street frontage define the street, by facing it and incorporating direct access from the street. See figure 3B.1
2.	Where the street frontage is to the east or west, rear buildings are orientated to the north
3.	Where the street frontage is to the north or south, overshadowing to the south is minimised and buildings behind the street frontage are orientated to the east and west. See figure 3B.2

Performance criteria

3B-2 Overshadowing of neighbouring properties is minimised during mid winter

Acceptable solutions

1.	Living areas, private open space and communal areas receive solar access in accordance with sections 3D Communal and public open space 1.4 and 3.5, 4L Solar and daylight access 1.4 and 2.1
2.	Solar access to living rooms, balconies and private open spaces of neighbours is protected
3.	Where an adjoining property does not currently receive 3 hours of solar access, the proposed building ensures solar access to neighbouring properties is not reduced by more than 20%
4.	If the proposal will reduce the solar access of neighbours, building separation is increased beyond minimums contained in section 3F Visual privacy
5.	Overshadowing is minimised to the south or down hill by increased upper level setbacks
6.	Buildings are orientated at 90 degrees to the boundary with neighbouring properties to minimise overshadowing and privacy impacts, particularly where minimum setbacks are used and where buildings are higher than the adjoining development
7.	A minimum of 4 hours of solar access is retained to solar collectors on neighbouring buildings

3C Public domain interface

The public domain interface is the transition area between the apartment building, its private or communal space at the street edge and the public domain.

The interface of the development contributes to the quality and character of the street. Subtle variations through planting and fencing can create an attractive and active public domain with a pedestrian scale. Long, high blank walls or fences can detract from the appearance of the public domain and impact on the safety of pedestrians and residents. Direct access from the street to ground floor apartments and windows overlooking the street can improve safety and social interaction.

Key components to consider when designing the interface include entries, private terraces or balconies, fences and walls, changes in level, services locations and planting. The design of these elements can influence the real or perceived safety and security of residents, opportunities for social interaction and the identity of the development when viewed from the public domain.

Also see sections 3G Pedestrian access and entries, 3H Vehicle access and 4J Mixed use.

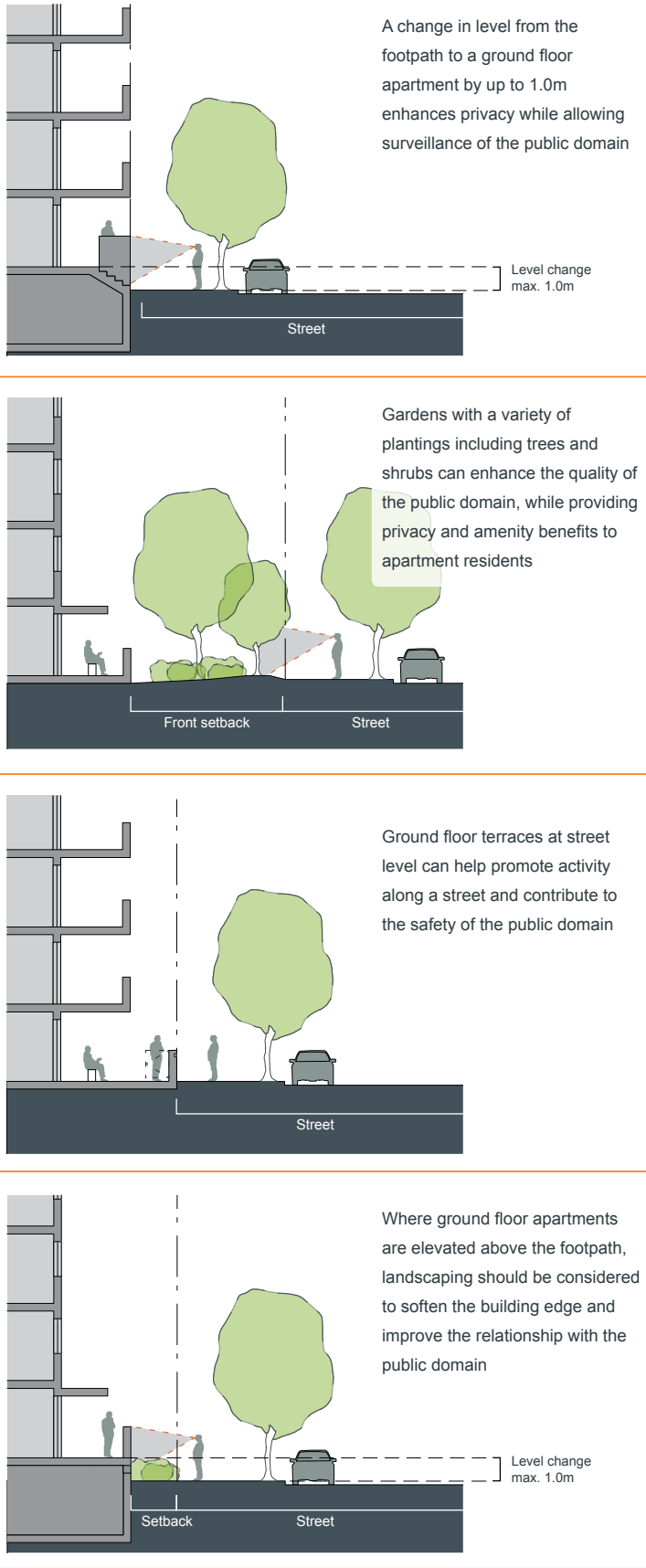


Figure 3C.1 Diagrams illustrating various public domain interface scenarios

Performance criteria

3C-1 Transition between private and public domain is achieved without compromising safety and security

Acceptable solutions	
1.	Terraces, balconies and courtyard apartments have direct street entry, where appropriate
2.	Changes in level between private terraces, front gardens and dwelling entries above the street level provide surveillance and improve visual privacy for ground level dwellings. See figure 3C.1
3.	Upper level balconies and windows overlook the public domain
4.	Front fences and walls along street frontages use visually permeable materials and treatments. The height of solid fences or walls is limited to 1m
5.	Length of solid walls is limited along street frontages
6.	Opportunities for casual interaction between residents and the public domain is provided for, design solutions may include seating at building entries, near letter boxes and in private courtyards adjacent to streets
7.	In developments with multiple buildings and/or entries, pedestrian entries and spaces associated with individual buildings/entries are differentiated to improve legibility for residents, using a number of the following design solutions: • architectural detailing • changes in materials • plant species • colours
8.	Opportunities for people to be concealed are minimised

3C Public domain interface

Figure 3C.2 This courtyard design locates tree planting near the pedestrian entry to the car park, allowing for natural ventilation and daylight access to the levels below, visual screening of the car park and a pleasant environment and micro climate along the through-site link

Figure 3C.3 Front fences along public street frontages should use visually permeable materials and treatments such as timber slats

Figure 3C.4 Setbacks can be used to retain existing trees which increases the quality of the development and the public domain

Figure 3C.5 This development makes use of landscaping, pathways and building entries to clearly identify the transition between public and private space

Performance criteria

3C-2 Amenity of the public domain is retained and enhanced

Acceptable solutions	
1.	Planting softens the edges of any raised terraces to the street, for example above sub-basement car parking
2.	Mail boxes are located in lobbies, perpendicular to the street alignment or integrated into front fences where individual street entries are provided
3.	The visual prominence of underground car park vents is minimised and located at a low level where possible
4.	Substations, pump rooms, garbage storage areas and other service requirements are located in basement car parks or out of view
5.	Ramping for accessibility is minimised by building entry location and setting ground floor levels in relation to footpath levels
6.	Durable, graffiti resistant and easily cleanable materials are used
7.	Where development adjoins public parks, open space or bushland, the design positively addresses this interface and uses a number of the following design solutions: • street access, pedestrian paths and building entries which are clearly defined • paths, low fences and planting that clearly delineate between communal/private open space and the adjoining public open space • minimal use of blank walls, fences and ground level parking
8.	On sloping sites protrusion of car parking above ground level is minimised, using split levels to step underground car parking

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 well being of residents.

Some developments include open space which 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 micro climate
- Amenity and outlook for residents

The principal 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 high density developments (for private open space requirements see to section 4P 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

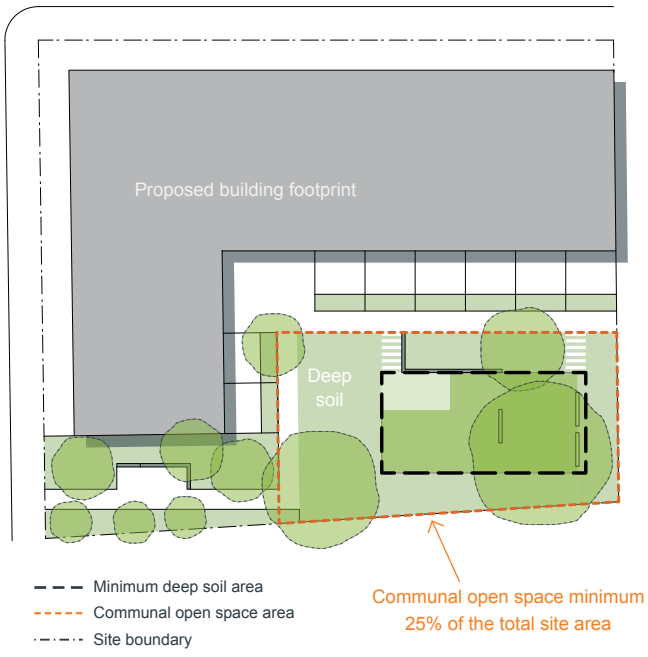


Figure 3D.3 Deep soil areas and principal communal open spaces should be consolidated

Figure 3D.4 Recreation areas such as the communal garden setting above allow residents to relax and connect to the natural environment

Performance criteria

3D-1 Communal open space is consolidated, well configured and designed

Acceptable solutions	
1.	Communal open space has a minimum area equal to 25% of the site. See figure 3D.3
2.	Communal open space is consolidated into a recognisable and usable area
3.	Communal open space is co-located with deep soil areas
4.	Solar access is provided to 50% of the principal useable portion of the communal open space for a minimum of 2 hours between 9am and 3pm in mid winter
5.	Direct, equitable access is provided to communal open space areas from common circulation areas, entries and lobbies
6.	Where communal open space cannot be provided at ground level, it is located on a podium or roof

Performance criteria

3D-2 Communal open space can be used for a range of activities

Acceptable solutions	
1.	Facilities are provided for a range of age groups where size permits, incorporating some of the following elements: • seating for individuals or groups • barbeque areas • play equipment or play areas • swimming pools, gyms, tennis courts or common rooms
2.	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
3.	Impacts of services are minimised, including location of ventilation duct outlets from basement car parks, electrical substation and detention tanks

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 for kids to play

Figure 3D.7 Good solar access to communal open spaces, in particular during the winter months, is an important consideration

Alternative solutions

Where developments are unable to achieve the recommended 25% communal open space, such as those on small lots, sites with high site coverage or in a centre, they should:

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

Figure 3D.8 Community gardens incorporated into residential developments foster interaction amongst residents of all ages

Figure 3D.9 This communal courtyard provides gathering spaces, seating facilities, pergolas and BBQ facilities for residents

Figure 3D.10 This semi-public courtyard connects to the surrounding inner-city neighbourhood and offers a central water feature, seating and convenient pedestrian through-site links

Performance criteria

3D-3 Safety of communal open space is maximised

Acceptable solutions	
1.	Communal open space and public domain is readily visible from habitable rooms and private open space areas while maintaining visual privacy, design solutions may include: • bay windows • corner windows • balconies
2.	Communal open space is well lit
3.	Where communal open space/facilities are provided for children and young people they are safe, well lit and contained

Performance criteria

3D-4 Public open space, where provided, responds to the existing pattern and uses of the neighbourhood

Acceptable solutions	
1.	Space is well connected with public streets along at least one edge
2.	Space is connected with nearby parks and other landscape elements or linked through view lines, pedestrian desire paths, termination points and the wider street grid
3.	Solar access is provided year round and space is protected from strong winds
4.	A range of uses are provided for people of all ages
5.	A positive street address and active street frontages are provided adjacent to public open space
6.	Boundaries are clearly defined between public open space and private areas

3E Deep soil zones

Deep soil zones are areas of soil unimpeded 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 reduction of stormwater runoff, promoting healthy growth of large trees with large canopies and protecting existing mature trees. Deep soil zones may be constrained by the size of lot or the location of a proposed development. To provide shade and amenity for residents they can be co-located with communal open space.

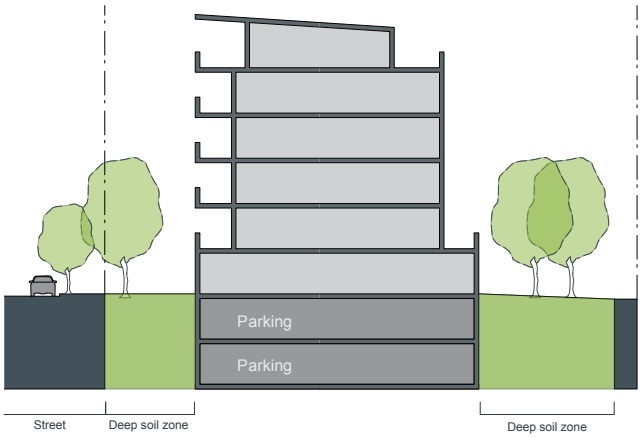


Figure 3E.1 Opportunities for deep soil zones are increased when parking levels are contained within the building footprint

Alternative solutions

Reductions to deep soil zone requirements should demonstrate that the development provides planting on structure and addresses stormwater management in accordance with sections 4F planting on structures and 4U water management and conservation

Some circumstances where alternative solutions may be acceptable include:

- lack of space for deep soil at ground level due to the building typology and its relationship to the site. For example a tower within a central business district or shop top housing in a centre
- the ground floor is predominantly non-residential, site coverage is 100% and the site is located in a centre
- it is demonstrated that deep soil is maximised and/or alternative planting on structure is provided

Table 1 Deep soil zone requirements

Site area	Deep soil zone (% of site area)	Minimum dimensions
less than 650m^2	7% consolidated	-
650m^2 - 1,500m^2	10%	3m
greater than 1,500m^2	15%	6m
greater than 1,500m^2 and significant tree cover	20%	6m

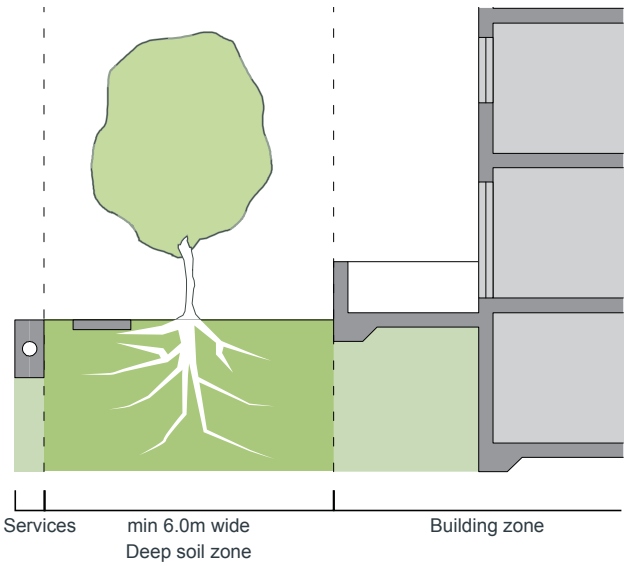


Figure 3E.2 Diagram showing the minimum dimension of deep soil zones for sites greater than 1,500 m^2

Figure 3E.3 Deep soil zones promote the growth of larger trees which improve amenity and local micro-climate

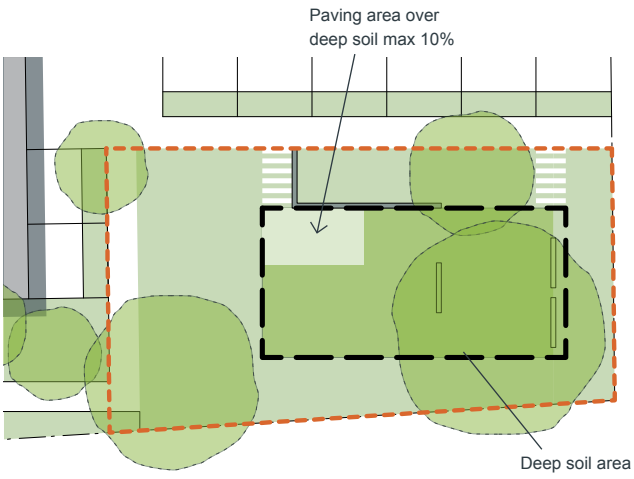


Figure 3E.4 Pathways and paving in deep soil zones should be permeable and limited to 10% of the deep soil zone area

Performance criteria

3E-1 Deep soil zones are suitable for healthy plant and tree growth, improve residential amenity and promote management of water and air quality

Acceptable solutions

1. Deep soil zones meet the requirements as shown in Table 1

2. Deep soil zones are located to retain existing significant trees and 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 does not fully cover the site
   - use of front and side setbacks
   - adequate clearance around trees to ensure long term health
   - co-location with other deep soil areas on adjacent sites

3. On sites with sand, clay, alluvial, transition and disturbed soils, soil volume is:

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

4. On sandy sites with reduced soil volumes, the number of trees planted is proportional to available soil volume

Performance criteria

3E-2 Deep soil zones allow for limited servicing and access

Acceptable solutions

1. Pedestrian pathways and paving which is specifically designed for tree root growth occupies a maximum of 10% of the deep soil zone. See figure 3E.4

2. Services are limited to a maximum 300mm diameter consolidated services trench

3F Visual privacy

Visual privacy allows residents both within an apartment development and on adjacent properties to use all 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 consideration of visual privacy requires an understanding of the adjacent context, site configuration, topography, the scale of the development and the apartment layout

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 and the expectations of occupants for privacy and their ability to control overlooking with screening devices.

Figure 3F.1 Visual privacy is one of the most important factors for residential amenity. The siting of buildings needs to ensure adequate separation between apartments

The privacy separation space in front of a balcony or window can not be used by another balcony or window. This does not apply to adjacent windows in the same building face.

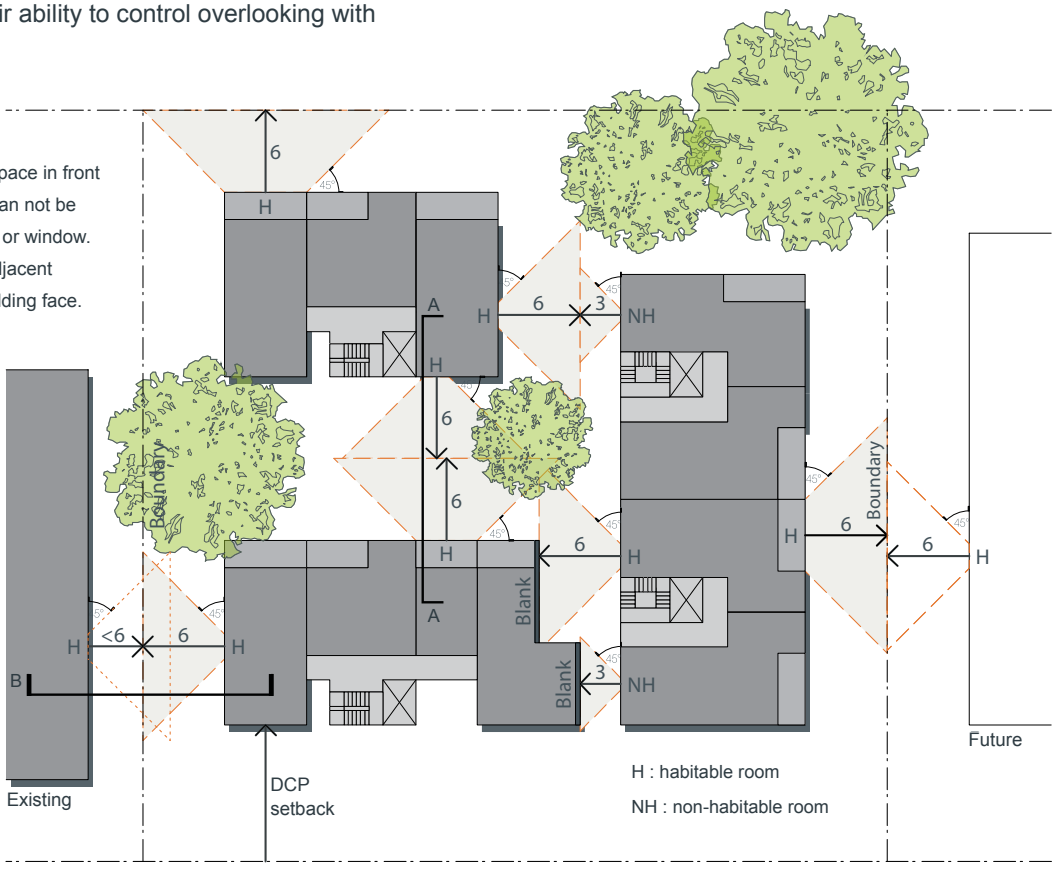


Figure 3F.2 Any one development will have a variety of visual privacy conditions to be accommodated. Section A (figure 3F.4) shows separation distances between apartments within the same site. Section B (figure 3F.5) shows separation distances between the site and adjacent development.

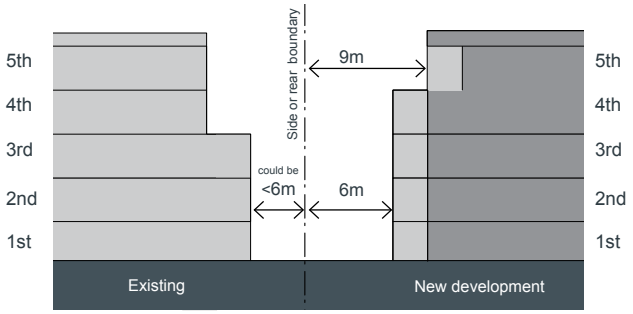


Figure 3F.3 New development adjacent to existing buildings should have unimpeded space in front of habitable rooms and balconies (6-12m depending on building height)

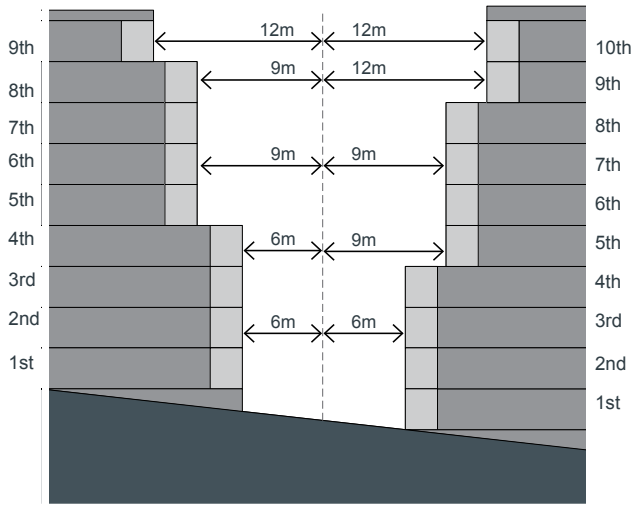


Figure 3F.4 Within the same site, minimum separation should be shared equitably between buildings. On sloping sites, appropriate separation distances ensure visual privacy for apartments on different levels

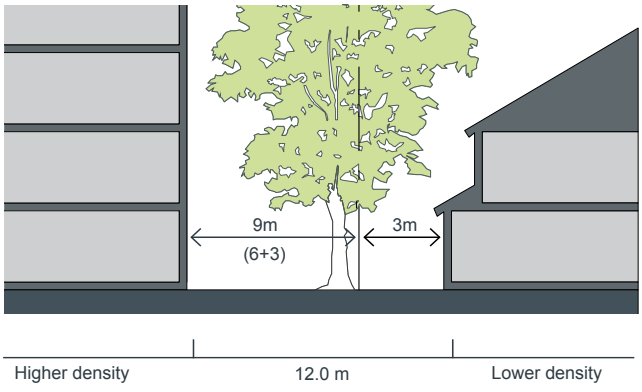


Figure 3F.5 To resolve amenity impacts, apartment buildings should have an increased building separation distance (+3m) when adjacent to a different zone permitting lower density residential

Performance criteria

3F-1 Visual separation distances are shared equitably between neighbouring sites, providing reasonable levels of external and internal visual privacy

Acceptable solutions

1. New development is located and oriented to maximise visual privacy between on site and neighbouring buildings. Design solutions include:
   - side and rear setbacks satisfy section 2H Side and rear setbacks
   - site layout and building orientation minimise privacy impacts (also see section 3B)
   - on sloping sites, apartments on different levels have appropriate visual separation distances. See figure 3F.4

2. Unimpeded space is provided in front of windows and balconies to ensure visual privacy is achieved. Separation distances from buildings to the side and rear boundaries are:

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

   Separation distances between buildings on the same site are double the above requirement. See figure 3F.4

3. Privacy separation distances between residential and commercial buildings meet the above required separation distances as follows:
   - retail, office spaces and commercial balconies - habitable room distances
   - service and plant areas - non-habitable room distances

4. Apartment buildings should have an increased separation distance of 3m (in addition to the requirements set out in 3F-1.2) when adjacent to a zone permitting lower density residential development. See figure 3F.5

5. Direct lines of sight are avoided for windows and balconies across corners

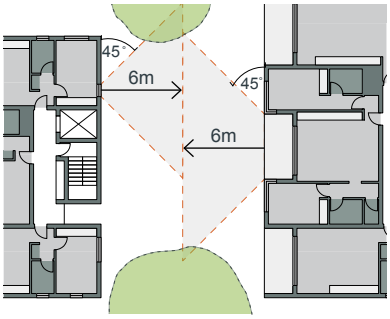
6. For small infill sites where it is demonstrated that privacy separation distances can not be achieved, minimum separation distances for rooms such as secondary bedrooms and studies are:
   - 4.5m for up to 12m (4 storeys)
   - 7m for up to 25m (5-8 storeys)
   - 9m for over 25m (9 storeys+)

   The above dimensions should be used as a guide when sizing light wells

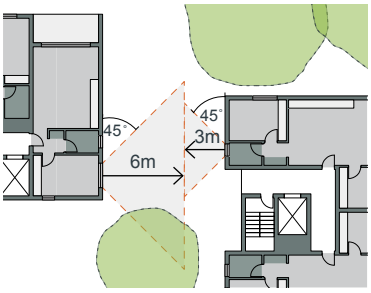
3F Visual privacy

Conditions within a development

Habitable to habitable rooms

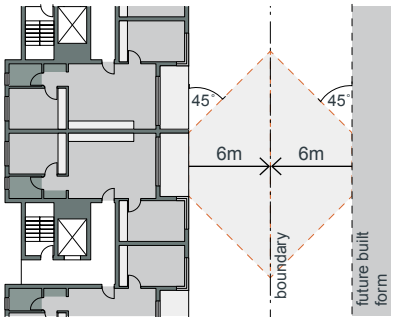


Habitable to non-habitable rooms

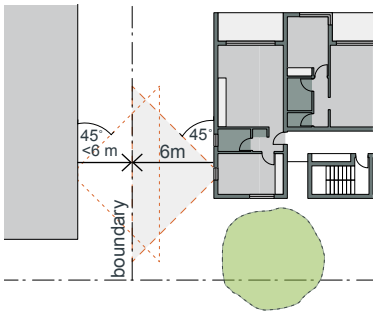


Boundary conditions

Habitable to habitable rooms

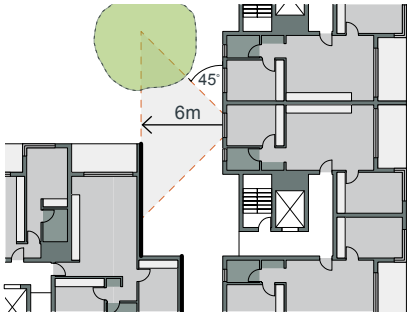


Habitable to non-compliant existing



Blank wall conditions

To habitable rooms



To non-habitable rooms

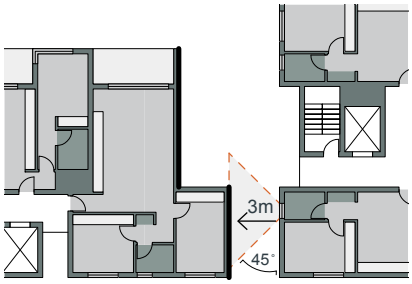
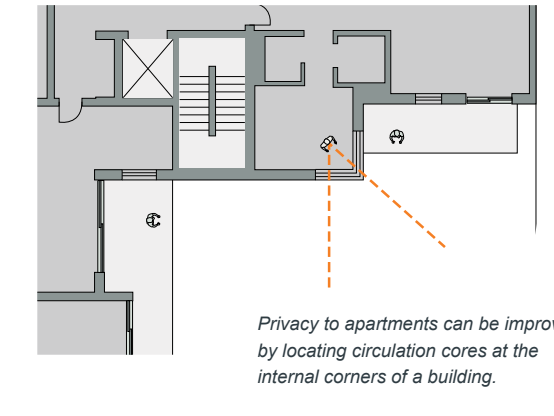


Figure 3F.6 Diagrams showing different privacy interface conditions

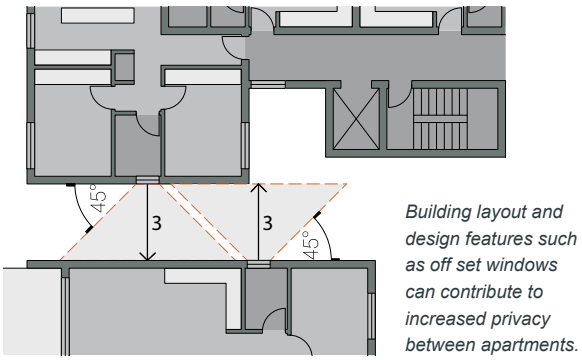
Figure 3F.7 Solid walls with non-habitable room windows are used for end elevations to manage privacy impacts between buildings. Solid balconies at lower levels provide better privacy from the street.

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

Performance criteria

3F-2 Site and building design elements increase privacy without compromising access to light and air, balance outlook and views from habitable rooms and private open space

Acceptable solutions

1. Communal open space, common areas and access paths are separated from windows to apartments, particularly habitable room windows. Design solutions may include:
   - setbacks
   - windows offset from the windows of adjacent buildings
   - recessed balconies and/or vertical fins between adjacent balconies
   - solid or partially solid balustrades to balconies at lower levels
   - fencing and/or trees and vegetation to separate spaces
   - screening devices
   - 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
2. Balconies and private terraces are located in front of living rooms to increase internal privacy

Note: Gallery access circulation in high traffic large developments should be treated as habitable space when measuring privacy separation distances between neighbouring properties.

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.

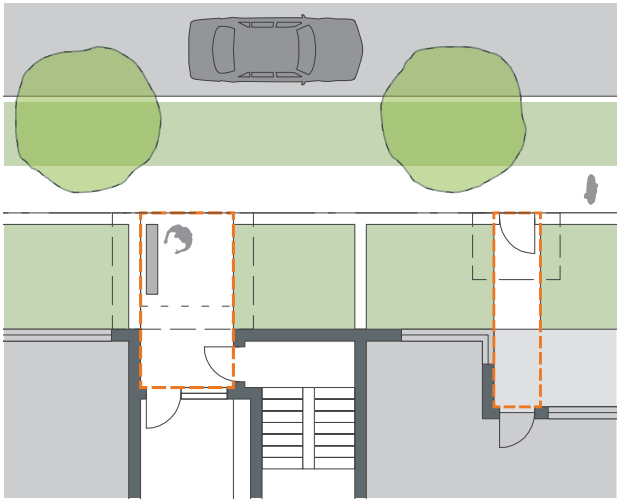


Figure 3G.1 Successful building entries define public and private space, are clearly identifiable and activate the street

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.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

Performance criteria

3G-1 Building entries and pedestrian access connects to and addresses the public domain

Acceptable solutions

1. Multiple entries (including communal building entries and individual ground floor entries) are provided to activate the street edge
2. Entry locations relate to the street and subdivision pattern and the existing pedestrian network
3. Building entries are clearly identifiable. Communal entries are clearly distinguishable from private entries
4. Where street frontage is limited and multiple buildings are located on the site, a primary street address is provided with clear sight lines and pathways to secondary building entries

Performance criteria

3G-2 Access, entries and pathways are equitable and easy to identify

Acceptable solutions

1. Building access areas including lift lobbies, stairwells and hallways are clearly visible from the public domain and communal spaces
2. The design of ground floors and underground car parks minimise level changes along pathways and entries
3. Steps and ramps are integrated into the overall building and landscape design
4. For large developments 'way finding' maps are provided to assist visitors and residents
5. For large developments electronic access and audio/video intercom is provided to manage access

Performance criteria

3G-3 Pedestrian links through developments provide access to streets and connect destinations

Acceptable solutions

1. Pedestrian links through sites facilitate direct connections to main streets, centres and public transport
2. Pedestrian links are direct, have clear sight lines, are overlooked by habitable rooms or private open spaces of dwellings, are well lit and contain active uses, where appropriate

3H Vehicle access

The location, type and design of vehicle access points have significant impacts on the streetscape, the site layout and the building facade design. It is important that vehicle access is integrated with site planning from an early stage to balance any potential conflicts with traffic patterns, streetscape elements and safe pedestrian access.

Figure 3H.1 The impact of vehicle access points on the street can be minimised by locating them on secondary frontages

Figure 3H.2 Clear sightlines help to keep pedestrians safe. Locating entries to car parks at the lowest level of the site reduces ramp length

Figure 3H.3 The visual impact of vehicle entries can be minimised by an offset alignment of the driveway and screen planting

Figure 3H.4 Where possible vehicle access points should not dominate the streetscape and be limited to the minimum width possible

Figure 3H.5 Vehicle and pedestrian access should be clearly separated to improve pedestrian safety and comfort

Performance criteria

3H-1 Vehicle access points are designed and located to achieve safety and high quality streetscapes

Acceptable solutions

1. Car park access is integrated with the building's overall facade, design solutions may include:
   - the materials and colour palette minimise visibility from the street
   - security doors or gates at entries that minimise voids in the facade
   - where doors are not provided, the visible interior reflects the facade design and the building services, pipes and ducts are concealed
2. Car park entries are located behind the building line
3. Vehicle entries are located at the lowest point of the site minimising ramp lengths, excavation and impacts on the building form and layout
4. Car park entry and access is located on secondary streets or lanes where available
5. Vehicle standing areas that increase driveway width and encroach into setbacks are avoided
6. Access point locations avoid headlight glare to habitable rooms
7. Adequate separation distances are provided between vehicular entries and street intersections
8. The width of vehicle access points is limited to the minimum
9. Visual impact of long driveways is minimised through changing alignments and screen planting
10. The requirement for large vehicles to enter or turn around within the site is avoided
11. Garbage collection, loading and servicing areas are screened

Performance criteria

3H-2 Conflicts between pedestrians and vehicles are avoided

Acceptable solutions

1. The width and number of vehicle access points are as narrow and as few as possible
2. Clear sight lines are provided at pedestrian and vehicle crossings
3. Traffic calming devices such as changes in paving material or textures are used where appropriate
4. Pedestrian and vehicle access is separated and distinguishable. Design solutions may include:
   - changes in surface materials
   - level changes
   - the use of landscaping for separation

3J Bicycle and car parking

Integrating car parking within apartment buildings has a significant impact on site planning, landscape and building design. On site parking can be located underground, above ground within a structure or at grade.

The location, form and organisation of parking is usually a balance of development feasibility, site constraints, local context, apartment types and regulatory car parking requirements, e.g. council car parking rates. Deep soil zones, stormwater management and the retention of trees can also affect the size and shape of a car park footprint.

Parking requirements should be determined in relation to the availability, frequency and convenience of public transport. Reduced requirements promote a reduction in car dependency and encourage walking, cycling and use of public transport. Provision of parking for alternative forms of transport such as car share vehicles, motorcycles and bicycles should also be considered. Where less car parking is provided, councils are encouraged to limit on street resident parking for these new residents.

Figure 3J.1 This development provides green open space on top of the car park structure (top photo). The ground level facing the street is 'wrapped' with retail and commercial uses (bottom photo)

Table 2 Car parking requirements for development close to public transport

Metropolitan Sydney	
Location	**Minimum requirement**
Sites within 400m of a railway station or light rail stop in nominated inner and middle ring metropolitan Sydney areas [1)]	No specific requirement
Sites within 400m of a railway station or light rail stop in the remainder of metropolitan Sydney areas	The relevant requirement set out in the RMS' Guide to Traffic Generating Development or the car parking requirement prescribed by the relevant council, whichever is less
Sites within 400 – 800 metres of a railway station or light rail stop	The relevant requirement set out in the RMS' Guide to Traffic Generating Development or the car parking requirement prescribed by the relevant council, whichever is less

[1)] Includes the local government areas: Ashfield, Auburn, Bankstown, Botany Bay, Burwood, Canada Bay, Canterbury, City of Sydney, Hurstville, Kogarah, Lane Cove, Marrickville, Leichhardt, North Sydney, Parramatta (City Centre), Randwick, Rockdale, Ryde, Strathfield, Waverley, Willoughby, Woollhara

Nominated regional centres	
Location	**Minimum requirement**
Land zoned, and sites within 400m of land zoned, B3 Commercial Core, B4 Mixed Use or equivalent in a nominated regional centre [2)]	The relevant requirement set out in the RMS' Guide to Traffic Generating Development or the car parking requirement prescribed by the relevant council, whichever is less

[2)] Includes the regional centres: Albury, Ballina, Batemans Bay, Bathurst, Bega, Bowral, Cessnock, Charlestown, Coffs Harbour, Dapto, Dubbo, Glendale–Cardiff, Gosford, Goulburn, Grafton, Lismore, Maitland, Morisset, Newcastle, Nowra, Orange, Port Macquarie, Queanbeyan, Raymond Terrace, Shellharbour, Tamworth, Taree, Tuggerah–Wyong, Tweed Heads, Wagga Wagga, Warrawong, Wollongong

Figure 3J.2 Car share parking spaces that are conveniently located in front of apartment buildings encourage reduced car ownership

Figure 3J.3 Bicycle parking for residents should be secure and easy to access from common areas

Figure 3J.4 Example of a car wash bay integrated into the basement car park of a residential apartment building

Performance criteria

3J-1 Car parking is provided based on proximity to public transport in metropolitan Sydney and centres in regional areas

Acceptable solutions

1. Number of car parking spaces meet the requirements as shown in Table 2 where applicable
2. Number of visitor spaces are limited, particularly in basements, to 1 space per every 10 apartments
3. Where a car share scheme operates locally, provide car share parking spaces within the car park or on street. Car share spaces may be provided in lieu of the required number of car parks, in accordance with council policy

Performance criteria

3J-2 Parking and facilities are provided for other modes of transport

Acceptable solutions

1. Conveniently located and sufficient numbers of parking spaces are provided for motorbikes and scooters
2. Secure undercover bicycle parking is provided that is easily accessible from both the public domain and common areas
3. Conveniently located charging stations are provided for electric vehicles, where desirable

Performance criteria

3J-3 Car park design and access is safe and secure

Acceptable solutions

1. Car park contains supporting facilities including garbage, plant and switch rooms, storage areas and car wash bays, which can be accessed without crossing car parking spaces
2. Direct, clearly visible and well lit access is provided into common circulation areas
3. A clearly defined and visible lobby or waiting area is provided to lifts and stairs
4. For larger car parks, safe pedestrian access is clearly defined and circulation areas have good lighting, colour, line marking and/or bollards

3J Bicycle and car parking

Figure 3J.5 Permeable roller doors allow for natural ventilation and improve the safety of car parking areas by enabling passive surveillance

Figure 3J.6 Natural ventilation to the underground car park is integrated into the landscape design of this development

Figure 3J.7 Where car parks are located above ground and visible from public or common areas, they should be partially of fully screened from view

Performance criteria

3J-4 Visual and environmental impacts of on-grade car parking are minimised

Acceptable solutions	
1.	On-grade car parking is avoided
2.	Where on-grade car parking is unavoidable, the following design solutions are used: • parking is located on the side or rear of the lot away from the primary street frontage • cars are screened from view of streets, buildings, communal and private open space areas • safe and direct access to building entry points is provided • parking is incorporated into the landscape design of the site, by extending planting and materials into the car park space • stormwater run-off is managed appropriately from car parking surfaces • bio-swales, rain gardens or on site detention tanks are provided, where appropriate • light coloured paving materials or permeable paving systems are used and shade trees are planted between every 4-5 parking spaces to reduce increased surface temperatures from large areas of paving

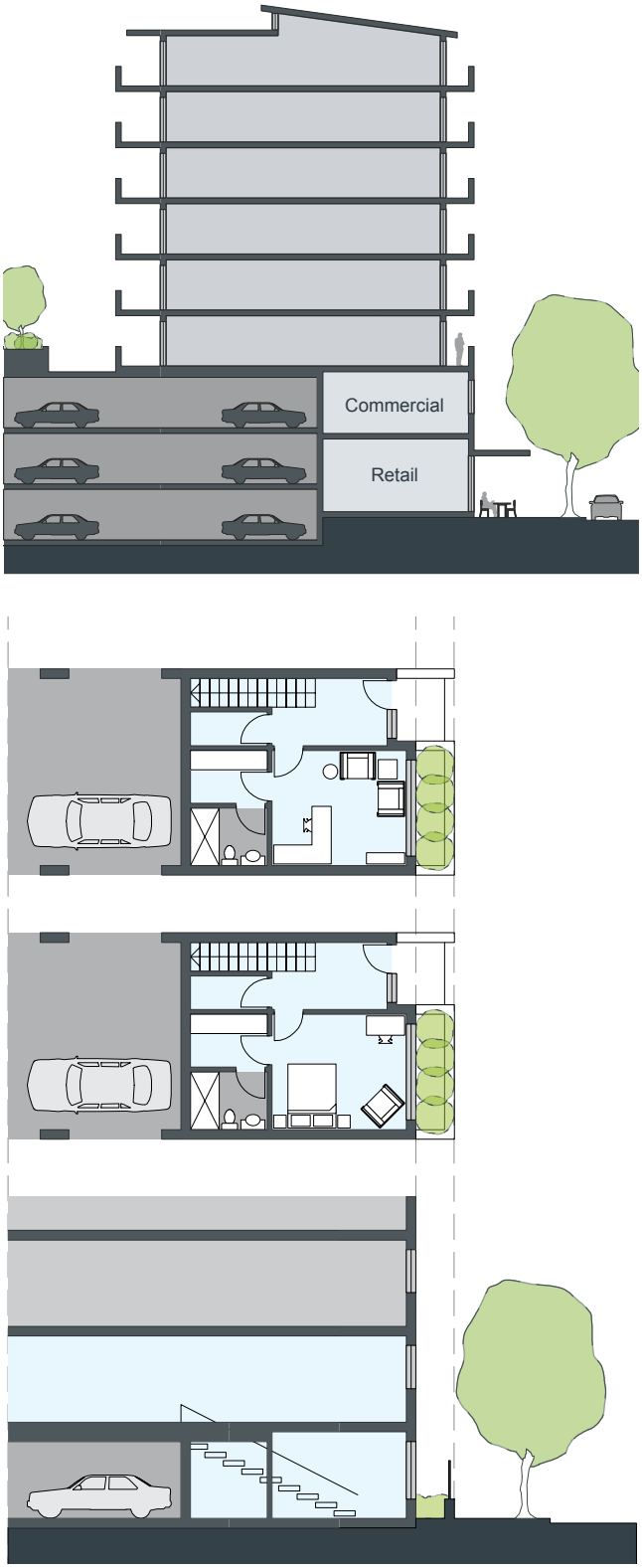


Figure 3J.8 Above ground parking should be concealed behind the building facade and wrapped with other uses along the primary street frontage, such as retail, commercial or two storey SOHO units

Performance criteria

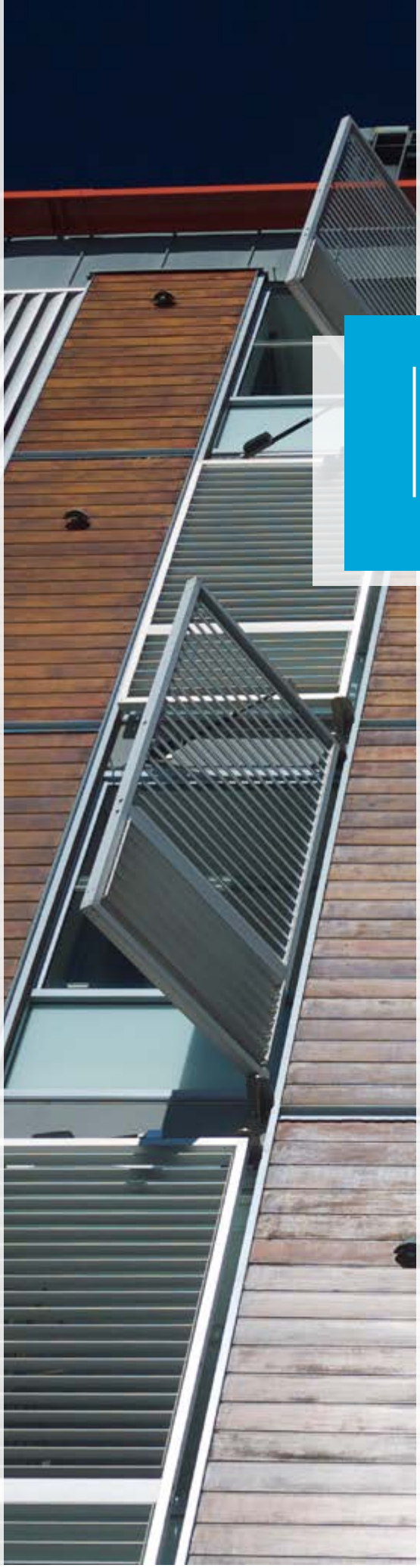
3J-5 Visual and environmental impacts of underground car parking are minimised

Acceptable solutions	
1.	Excavation is minimised through efficient car park layouts and ramp design
2.	Car parking layout is well organised, using a logical, efficient structural grid and double loaded aisles
3.	Protrusion of car parks does not exceed 1m above ground level, design solutions may include stepping car park levels or using split levels on sloping sites
4.	Natural ventilation is provided to basement and sub basement car parking areas
5.	Ventilation grills or screening devices for car parking openings are integrated into the facade and landscape design

Performance criteria

3J-6 Visual and environmental impacts of above ground enclosed car parking are minimised

Acceptable solutions	
1.	Exposed parking is not located along primary street frontages
2.	Screening, landscaping and other design elements including public art are used to integrate the above ground car parking with the facade. Design solutions may include: • car parking that is concealed behind the facade, with windows integrated into the overall facade design (approach should be limited to developments where a larger floor plate podium is suitable at lower levels) • car parking that is 'wrapped' with other uses, such as retail, commercial or two storey SOHO units along street frontage. See figure 3J.9
3.	Positive street address and active frontages are provided at ground level



Part 4

Designing the building

Configuration

4A Apartment mix

4B Ground floor apartments

4C Facades

4D Roof design

4E Landscape design

4F Planting on structures

4G Universal design

4H Adaptive reuse

4J Mixed use

4K Awnings and signage

Amenity

4L Solar and daylight access

4M Common circulation and spaces

4N Apartment layout

4O Ceiling heights

4P Private open space and balconies

4Q Natural ventilation

4R Storage

4S Acoustic privacy

4T Noise and pollution

Performance

4U Energy efficiency

4V Water management and conservation

4W Waste management

4X Building maintenance

4A Apartment mix

Apartment mix refers to the percentage of apartments with different numbers of bedrooms in a development. The number of bedrooms is directly related to floor area which in turn determines the yield that can be generated on the site.

A mix of apartment types provides housing choice and supports equitable housing access. By accommodating a range of household types, apartment buildings support the needs of the community now and into the future. This is particularly important because apartment buildings form a significant and often long term part of the urban fabric.

Figure 4A.1 The mix of apartments provided in a development should respond to the housing needs of the local area

Figure 4A.2 Apartment mix that is reflected in the facade composition adds variety and visual interest

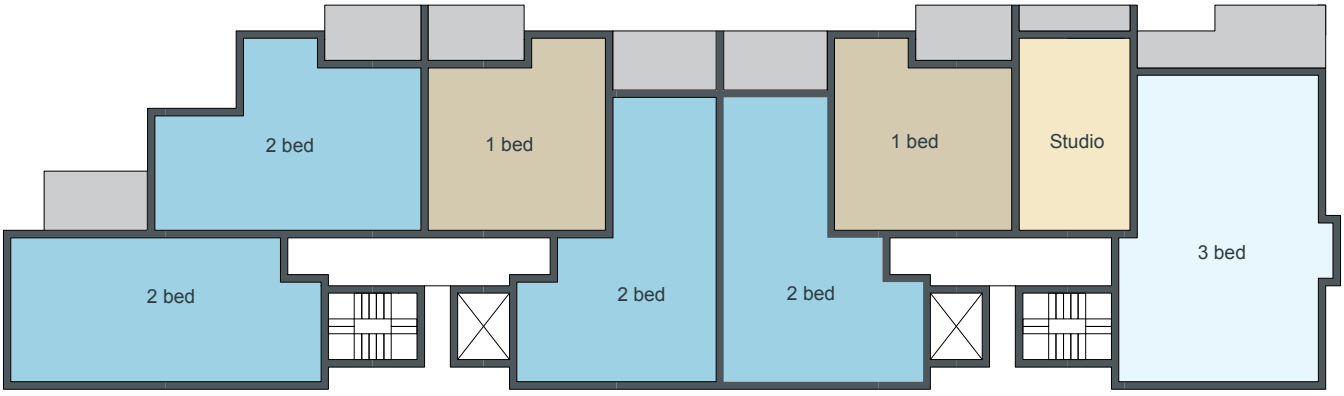


Figure 4A.3 A variety of apartments can be accommodated within a floor plate

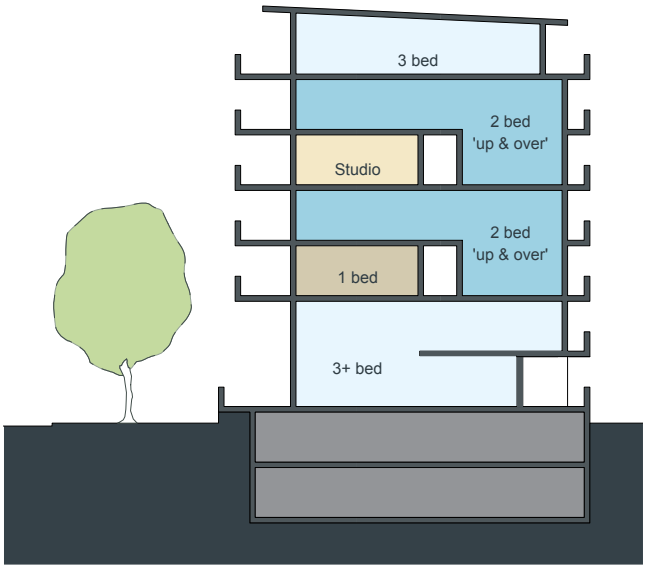


Figure 4A.4 Large apartments are often located on the ground or roof level due to opportunities for increased private open space; internal common circulation (e.g. corridors) can be reduced by adding 'up & over' apartments to the mix

Figure 4A.5 Flexible apartment configurations should be provided to support diverse household types and stages of life

Performance criteria

4A-1 A range of apartment types and sizes is provided to cater for different household types now and into the future

Acceptable solutions

1. The apartment mix is appropriate, taking into consideration:
   - the distance to public transport, employment and education centres
   - the current market demands and projected future demographic trends
   - the demand for social and affordable housing
   - different cultural and socioeconomic groups
2. A variety of apartment types is provided
3. Flexible apartment configurations, such as dual key apartments, are provided to support diverse household types and stages of life including single person households, families, multi-generational families and group households

Performance criteria

4A-2 The apartment mix is distributed to suitable locations within the building

Acceptable solutions

1. Different apartment types are located to achieve successful facade composition and to optimise solar access. See figure 4A.3
2. Larger apartment types are located on the ground or roof level where there is potential for more open space and on corners where more building frontage is available

4B Ground floor apartments

Ground floor apartments offer the potential for at-grade landscaped private open spaces and direct access from the street. They also provide opportunities for the apartment building and its landscape to respond to the human scale of the streetscape. On steep sites they may be located over different floors of the building stepping down the site.

Ground floor apartments can be of particular benefit to the elderly and disabled as they are generally more accessible. They also suit families with small children and extend the lifestyle choices available in apartment buildings by facilitating activities such as home business, gardening, outdoor play and pet ownership.

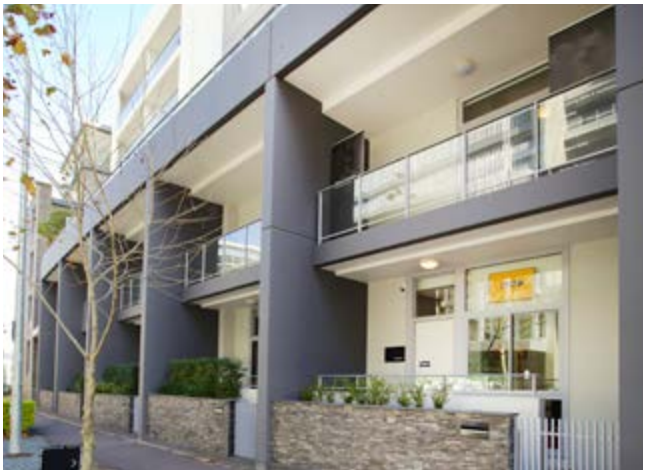


Figure 4B.2 The ground floor component of this double storey apartment is flexible and can be used as a home office

Figure 4B.1 Ground floor apartments should address the public domain and be accessed directly from the street

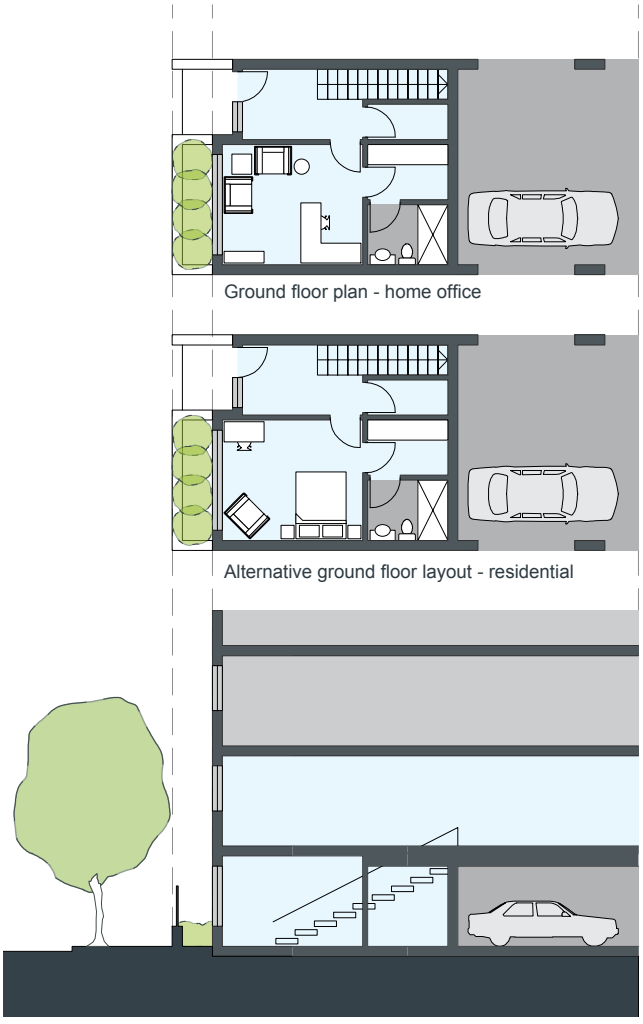


Figure 4B.3 Plan and section of a double storey apartment which is directly accessible from the street

Alternative solutions

Ground floor apartment layouts support small office home office (SOHO) use to provide future opportunities for conversion into commercial or retail areas. In these cases provide higher floor to ceiling heights and ground floor amenities for easy conversion.

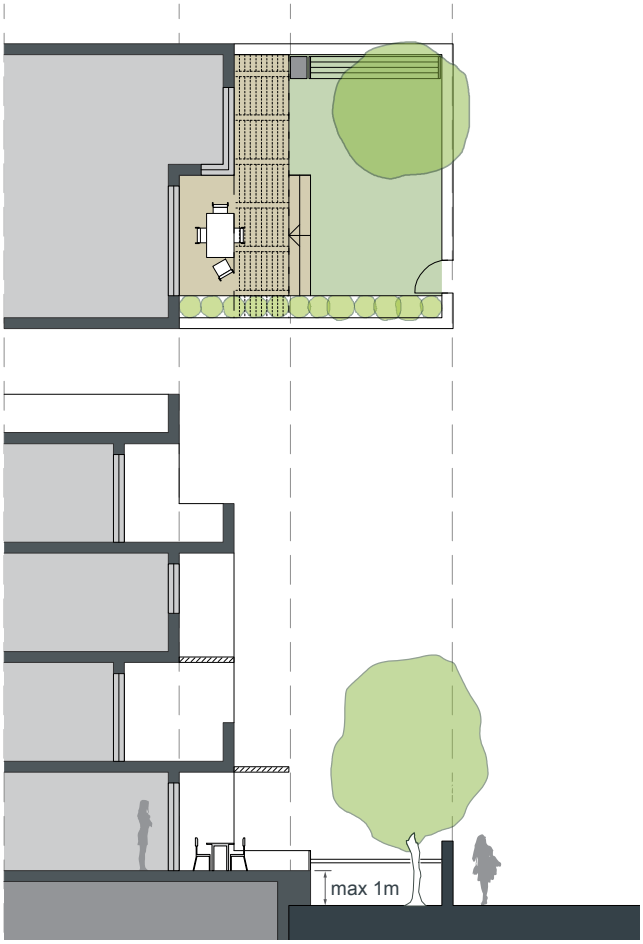


Figure 4B.4 Plan and section of a ground floor apartment with an elevated terrace and a level private courtyard

Figure 4B.5 The design of courtyards should balance the need for privacy of ground floor apartments with surveillance of public spaces

Performance criteria

4B-1 Street frontage activity is maximised where ground floor apartments are located

Acceptable solutions

1. Direct street access is provided to ground floor apartments

2. Activity is achieved through front gardens, terraces and the facade of the building. Design solutions may include:
   - both street and foyer entrances to ground floor apartments
   - private open space is next to the street
   - doors and windows face the street

3. Retail or home office spaces are located along street frontages

Performance criteria

4B-2 Design of ground floor apartments delivers amenity and safety for residents

Acceptable solutions

1. Privacy and safety is provided without obstructing causal surveillance. Design solutions may include:
   - elevation of private gardens and terraces above the street level by a maximum of 1m (see Figure 4B.4)
   - landscaping and private courtyards
   - window sill heights that minimise sight lines into apartments
   - integrating balustrades, safety bars or screens with the exterior design

2. Solar access is maximised through:
   - high ceilings and tall windows
   - trees and shrubs that allow solar access in winter and shade in summer

4C Facades

The architectural expression of facades contributes greatly to the visual interest of the building and the character of the local area. Facades that face the street have an impact on the public domain, while side and rear facades often influence the amenity of neighbouring buildings and communal and private open spaces.

High quality facades are a balanced composition of building elements, textures, materials and colour selections. Well designed facades also reflect the use, internal layout and structure of an apartment building.

The composition and detailing of a facade is not only important to the appearance of the building, it also influences its perceived scale. The pattern and rhythm of the facade, the proportions and articulation of external walls and the detailed design of facade elements are all important considerations.

Figure 4C.1 Thoughtful modulation of the facade reduces the perceived depth and bulk of a building

Figure 4C.2 Building facades should have an appropriate scale, rhythm and proportion relative to the streetscape

Figure 4C.3 Building articulation such as balconies and deeper window reveals provide visual interest to the facade

Figure 4C.4 The terracotta tile cladding used on this building contrasts with the white framed balconies and roof line, adding visual interest

Figure 4C.5 Changing facade materials, building articulation or height effectively highlights prominent corners

Performance criteria

4C-1 Building facades provide visual interest along the street while respecting the character of the local area

Acceptable solutions

1. Design solutions for front building facades may include:
   - a composition of varied building elements
   - a defined base, middle and top of buildings
   - revealing and concealing certain elements
   - changes in texture, material, detail and colour to modify the prominence of elements
2. Building services are integrated within the overall facade
3. Building facades have appropriate scale, rhythm and proportion to the streetscape and human scale. Design solutions may include:
   - well composed horizontal and vertical elements variation in floor heights to enhance the human scale
   - elements that are proportional and arranged in patterns
   - public artwork or treatments to exterior blank walls
   - grouping of floors or elements such as balconies and windows on taller buildings
4. Building facades relate to key datum lines of adjacent buildings through upper level setbacks, parapets, cornices, awnings or colonnade heights
5. Shadow is created on the facade throughout the day with building articulation, balconies and deeper window reveals

Performance criteria

4C-2 Building functions are expressed by the facade

Acceptable solutions

1. Building entries are clearly defined
2. Important corners are given visual prominence through a change in articulation, materials or colour, roof expression or increased height
3. The apartment layout is expressed through facade features such as party walls and floor slabs

4D Roof design

The roof is an important element in the overall composition and architectural expression of a building. Quality roof design provides a positive addition to the character of an area and can form an important part of the skyline. Roofs also provide opportunities for open space where appropriate and can add to the sustainability performance of a building.

The Standard Instrument Local Environmental Plan allows for architectural roof features that can exceed the maximum building height. This is an important tool for achieving high quality roof design and articulation.

Figure 4D.1 Special roof features need to be proportionate to the overall building size, scale and form

Figure 4D.2 Architectural roof features and articulation are generally allowed to exceed the maximum statutory building height

Figure 4D.3 Solar access to apartments can be maximised by tilting roof elements towards north

Figure 4D.4 The composition of this roof form creates a skyline silhouette and contributes to the identity and character of the area

Figure 4D.5 The composition and contemporary design of this roof top level adds visual interest

Figure 4D.6 This roof design creates an interesting view from street level, improves solar access and accentuates the built form rhythm

Performance criteria

4D-1 Roof treatments are integrated into the building design and positively respond to the street

Acceptable solutions

1. Roof design relates to the street. Design solutions may include:
   - special roof features and strong corners
   - use of skillion or very low pitch hipped roofs
   - breaking down the massing of the roof by using smaller elements to avoid bulk
   - using materials or a pitched form complimentary to adjacent buildings

2. Roof treatments are integrated with the building design. Design solutions may include:
   - roof design is proportionate to the overall building size, scale and form
   - roof materials compliment the building
   - service elements are integrated

Performance criteria

4D-2 Opportunities to use roof space for residential accommodation and open space are maximised

Acceptable solutions

1. Habitable roof space is provided with good levels of amenity. Design solutions may include:
   - penthouse apartments
   - dormer or clerestory windows
   - openable skylights

2. Open space is provided on roof tops subject to acceptable visual privacy, comfort levels, safety and security impacts

Performance criteria

4D-3 Roof design incorporates sustainability features

Acceptable solutions

1. Roof design maximises solar access to apartments during winter and shade during summer. Design solutions may include:
   - the roof lifts to the north
   - eaves and overhangs shade walls and windows from summer sun

2. Skylights and ventilation systems are integrated into the roof design

3. Rainwater tanks are located on roofs where possible

4E Landscape design

Successful landscape design compliments 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 4E.2 Landscape design should include plants endemic to the region, enhancing biodiversity and providing habitat for native wildlife

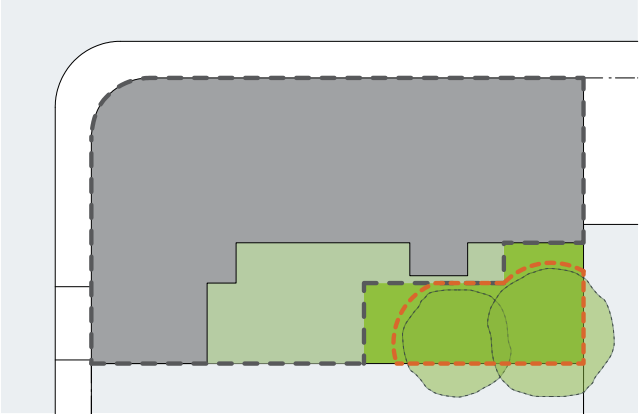
Figure 4E.1 Existing landscape features such as significant trees contribute to the overall quality of residential developments

Figure 4E.3 Landscape design should respond to the local context by using complementary materials and planting schemes

Table 3 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 850-1500m^2	1 large tree or 2 medium trees per 90m^2 of deep soil area
Great than 1,500m^2	1 large tree or 2 medium trees per 80m^2 of deep soil area

Figure 4E.4 Shading trees improve the microclimate and are particularly effective along the eastern and western elevations of buildings



Tree protection zone
Construction zone

Figure 4E.5 Where trees are retained, tree protection zones need to be established during construction to protect the canopy and roots

Performance criteria

4E-1 Landscape design is viable and sustainable

Acceptable solutions

1. Landscape design is environmentally efficient and may include:
   - bio-filtration gardens
   - appropriately planted shading trees
   - areas for residents to plant vegetables and herbs
   - composting
   - green roofs or walls
2. Ongoing maintenance plans are prepared
3. Microclimate is enhanced by:
   - appropriately scaled trees located on the eastern and western elevations for shade
   - a balance of evergreen and deciduous trees to provide shading in summer and solar access in winter
   - shade structures such as pergolas for balconies and courtyards
4. Tree and shrubs selection considers size at maturity and the potential for roots to overlap

Performance criteria

4E-2 Landscape design contributes to the streetscape and amenity

Acceptable solutions

1. Landscape design responds to the existing site condition and includes retaining:
   - changes of levels
   - views
   - significant landscape features including trees and rock outcrops
2. Significant landscape features are protected by:
   - tree protection zones (see Figure 4E.5)
   - appropriate signage and fencing during construction
3. Plants selected are endemic to the region and reflect the local ecology

4F Planting on structures

Planting on structures is where plants are on top of built structures such as basement car parks, podiums, roofs and walls. Planting on structures can provide amenity, improve air quality and micro climate, and reduce direct energy use and stormwater runoff. It can also supplement deep soil planting on sites where opportunities for this are limited or restricted, e.g. in high density areas.

Common ways of planting on structures include green roofs, green walls, raised planters and roof top gardens. Plants grown in these situations are subject to a range of environmental stresses that affect both the health and vigour of the plants. Designing soil profiles, irrigation and systems that provide adequate oxygen, water and nutrients is crucial to ensure plant survival.

Figure 4F.1 Green walls and/or facades make positive contributions to the environment and to urban amenity more generally. They can also improve the sustainability performance of a building

Table 4 Minimum soil standards for plant types and sizes

Plant type	Definition	Soil volume	Soil depth	Soil area
Large trees	12-18m high, 16m crown spread at maturity	150m^3	1200mm	10m x 10m or equivalent
Medium trees	8-12m high, 8m crown spread at maturity	35m^3	1000mm	6m x 6m or equivalent
Small trees	6-8m high, 4m crown spread at maturity	9m^3	800mm	3.5m x 3.5m or equivalent
Shrubs			500-600mm	
Ground cover			300-450mm	
Turf			200mm	

Note: The above has been calculated assuming fortnightly irrigation. Any sub-surface drainage requirements are in addition to the above minimum soil depths

Figure 4F.2 Planting on structures are a way to create open space, in particular where opportunities for deep soil zones are restricted

Figure 4F.3 Roof top planting require careful plant selection and an understanding of the local climate conditions

Figure 4F.4 Methods for planting on structures include raised planters and a mix of shallow and deep profile garden beds

Performance criteria

4F-1 To contribute to the quality and amenity of communal and public open spaces

Acceptable solutions

1. Building design incorporates opportunities for planting on structures. Design solutions may include:
   - green walls with specialised lighting for indoor walls
   - wall design to incorporate planting
   - green roofs, particularly where roofs are visible from the public domain
   - planter boxes

Performance criteria

4F-2 Plant growth is maximised with appropriate selection and maintenance

Acceptable solutions

1. Plants are suited to site conditions, considerations include:
   - drought and wind tolerance
   - seasonal changes in solar access
   - modified substrate depths for a diverse range of plants
2. A landscape maintenance plan is prepared
3. Irrigation and drainage systems respond to:
   - changing site conditions
   - soil profile and the planting regime
   - whether rainwater, stormwater or recycled grey water is used

Performance criteria

4F-3 Appropriate soil profiles are provided

Acceptable solutions

1. Structures are reinforced for additional saturated soil weight
2. Soil volume is appropriate for plant growth, considerations include;
   - depths and widths are modified according to the planting mix and irrigation frequency
   - free draining and long soil life span
   - tree anchorage is encouraged
3. Minimum soil standards for plant sizes, are provided in accordance with Table 4

4G Universal design

Universal design is an international design philosophy that enables people to carry on living in the same home by ensuring that apartments are able to change with the needs of the occupants. Universally designed apartments are safer and easier to enter, move around and live in. They are of benefit to all members of the community, from young families to older people, their visitors, as well as those with permanent or temporary disabilities.

Incorporating universal design principles in apartment design is a step towards producing a robust, flexible housing stock. It ensures that simple and practical design features are incorporated into new buildings that would be difficult and costly to retrofit at a later date.

Universal design is different to adaptable housing which is governed by Australian Standard 4299 and is specifically designed to allow for the future adaptation of a dwelling to accommodate the occupant's needs.

In addition to the specific aims of universal design and adaptable housing, flexible apartment design is also desirable to allow buildings to accommodate a diverse range of lifestyle needs such as different household structures, live/work housing arrangements and future changes in use.

Figure 4G.1 A universally designed apartment provides design features such as wider circulation spaces, reinforced bathroom walls and easy to reach and operate fixtures

The following universal design silver level features should be incorporated into a proportion of all new apartments to meet performance criteria 4G-1. The Liveable Housing Design Guidelines provide more detail about how to meet each of these features. The second table of other features have also been extracted from the Liveable Housing Design Guidelines for information. They are desirable considerations in building design but are not mandatory to meet performance criteria 4G-1.

Table 5 Universal design solutions

Silver level universal design features include:
Safe and continuous levelled path to entrances
Accessible entry door with a minimum 820mm clear opening width and a step-free threshold
Level landing area of 1200mm x 1200m at the entrance door
Internal doors with a minimum 820mm clear opening width and a step-free transition between surfaces
Internal corridors with a minimum of 1000mm clear width
Step free shower recess
Bathroom wall is reinforced for grab rails around the toilet, shower and basin
A toilet is provided on the ground or entry level in multi-level apartments that provides: • minimum clear width of 900mm between walls • minimum clear circulation space forward of the toilet pan of 1200mm (excluding the door swing)

Other desirable features include:
Continuous travel paths that connect public and private areas
Avoiding trip hazards and floor level changes
Continuous handrails on stairs
Additional circulation space in kitchens and laundries
Providing a bathroom, bedroom, kitchen, laundry and living space on the entry level of multi-level apartments
Light switches, door handles and power points at reachable heights
Easy to operate tap sets

Source: www.livablehousingaustralia.org.au/design-guidelines

Figure 4G.2 Wide and barrier free entries and common circulation spaces help accessibility

Figure 4G.3 Level threshold transitions eliminate trip hazards

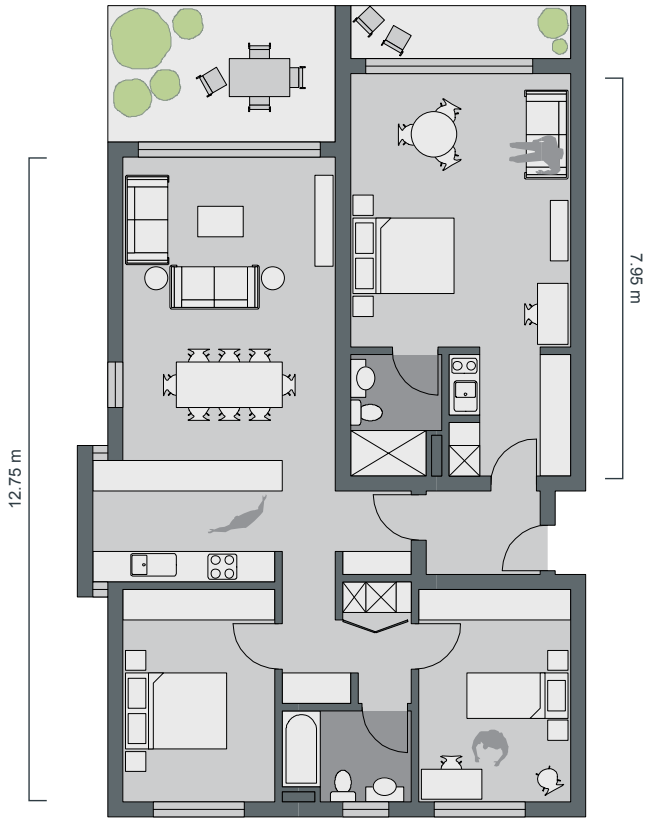


Figure 4G.4 A flexible apartment design allows for a variety of configurations including home office or separate tenancy

Performance criteria

4G-1 Universal design features are included in apartment design

Acceptable solutions

1. Developments achieve a benchmark of 20% of total apartments incorporating the silver level universal design features in Table 5

Performance criteria

4G-2 A variety of apartments with adaptable designs are provided

Acceptable solutions

1. Adaptable housing is provided in accordance with the relevant council policy

2. Adaptable apartment design solutions may include:
   - convenient access to communal and public areas
   - high level of solar access
   - minimal structural change and residential amenity loss when adapted
   - larger car parking spaces for accessibility
   - parking is titled separately from apartments or there are shared car parking arrangements

Performance criteria

4G-3 Apartment layouts are flexible and accommodate a range of lifestyle needs

Acceptable solutions

1. Apartment design incorporates flexible design solutions which may include:
   - rooms with multiple functions
   - dual master bedroom apartments with separate bathrooms
   - larger apartments with various living space options
   - dual key apartments which are separate but on the same title
   - open plan 'loft' style apartments with only a fixed kitchen, laundry and bathroom

4H Adaptive reuse

Buildings adapted for reuse as apartments can be of any shape or size from large houses, redundant industrial buildings, major institutional buildings and groups of buildings or commercial office towers.

There are many benefits of retaining existing buildings. Adaptation of an existing building for a new residential use provides for the evolution of that place and should be approached in a way that acknowledges the past. Modifications should ensure the building's continued relevance in the future. Residential adaptive reuse projects should be well designed contemporary layers that respect existing elements.

Non-residential buildings often have dimensions, layouts and orientations that are not designed for residential use. A balance must be achieved between the benefits of retaining the building versus the quality of residential amenity that can be achieved.

Figure 4H.1 Contrasting materials allow for interpretation of the older and newer building elements

Figure 4H.2 Residential conversion of these silos successfully acknowledges the industrial past of this local landmark

Figure 4H.3 New building elements should be distinguishable from the original structure

Alternative Solutions

Alternatives may be considered for adaptive reuse projects for the following areas:

- greater depths for habitable rooms, particularly where there are higher ceilings – subject to demonstrating access to natural cross ventilation and daylight
- alternatives to providing deep soil where less than the minimum requirement is currently available on the site
- building and visual separation – subject to demonstrating alternative design approaches to achieving privacy
- common circulation
- car parking

Figure 4H.4 Contemporary infill can create an interesting dialogue between old and new, adding to the character of a place

Figure 4H.5 Places that demonstrate a connection to the past by reusing older structures often become popular destinations for people

Figure 4H.6 Adaptive reuse should respect the original building fabric and facade rhythm, and create a clear separation of the old and new

Performance criteria

4H-1 New additions to existing buildings are contemporary and complementary

Acceptable solutions	
1.	Design solutions may include: • new elements align with the existing building • additions complement the existing scale, proportion, pattern, form and rhythm • use of contemporary materials and finishes
2.	There is clear separation of the old and new
3.	Existing significant fabric is exposed with well designed insertions and signage
4.	New additions allow for the interpretation and future evolution of the building

Performance criteria

4H-2 Adapted buildings provide residential amenity while not precluding future adaptive reuse

Acceptable solutions	
1.	Considered features are incorporated into adapted buildings to make up for any physical limitations, to ensure residential amenity is achieved. Design solutions may include: • generously sized voids in deeper buildings • perimeter wall length is extended with facade indents • deeper apartments have greater ceiling heights • alternative apartment types when orientation is poor • additions expand the existing building envelope

4J Mixed use

Mixed use development includes multiple uses in one building. In apartment buildings this is commonly achieved vertically with different uses stacked above one another. A vertical mix of uses is more likely to increase activity through the day and night which in turn improves passive surveillance of the public domain.

Building design should allow for a range of non-retail uses such as commercial offices in areas where the location or site constraints make retail tenancies undesirable. Non-residential uses should be located on lower levels of buildings in areas where residential use may not be appropriate or desirable, such as along main roads or railway lines.

Figure 4J.1 Integrating residential apartments into centres creates a permanent population and increases activity levels during the day and after hours

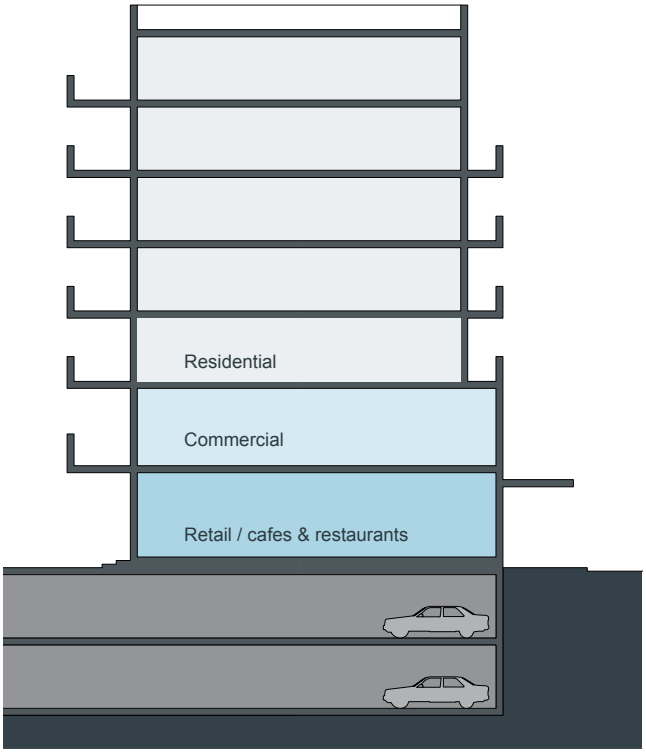


Figure 4J.2 Commercial floors are an appropriate buffer to residential apartments from busy active ground floor uses such as cafes

Figure 4J.3 Shop and office entries, service areas and loading zones in a mixed use development should be separate from lobby entries to residential apartments

Figure 4J.4 A compact and varied mix of uses improves access to services and promotes walking, social interaction and safety

Figure 4J.5 Mixed use development should maximise retail and commercial activity at ground level

Performance criteria

4J-1 Mixed use developments are provided in appropriate locations and provide active street frontages that encourage pedestrian movement

Acceptable solutions

1. Mixed use development is concentrated around public transport and centres

2. Mixed use developments positively contribute to the public domain, design solutions may include:
   - development addresses the street
   - active frontages are provided
   - diverse activities and uses
   - avoidance of blank walls at the ground level
   - live/work apartments are located on the ground floor, rather than commercial

Performance criteria

4J-2 Residential floors are integrated within the development, safety and amenity is also maximised

Acceptable solutions

1. Residential circulation areas are clearly defined. Design solutions may include:
   - residential entries are separated from commercial entries and directly accessible from the street
   - commercial service areas separated from residential components
   - residential car parking and communal facilities are separated or secured
   - security at entries and safe pedestrian routes are provided
   - avoiding concealment opportunities

2. Landscaped communal open space is provided at podium or roof levels

4K Awnings and signage

Awnings are prominent streetscape elements requiring considerable design attention. Continuous awnings encourage pedestrian activity along streets and in conjunction with active frontages, support and enhance the vitality of the local area. Awnings coupled with building entries provide a public address, thereby contributing to the identity of a development.

Signage is also an important consideration in the design of apartment buildings located in mixed use areas, and should be integrated with the awning or street wall without obscuring or dominating important views.

Figure 4K.1 Continuous awnings should be provided where there is high pedestrian activity, e.g. in centres and along active frontages

Figure 4K.2 Awnings should be designed as an integral element of the building and incorporate lighting for added safety

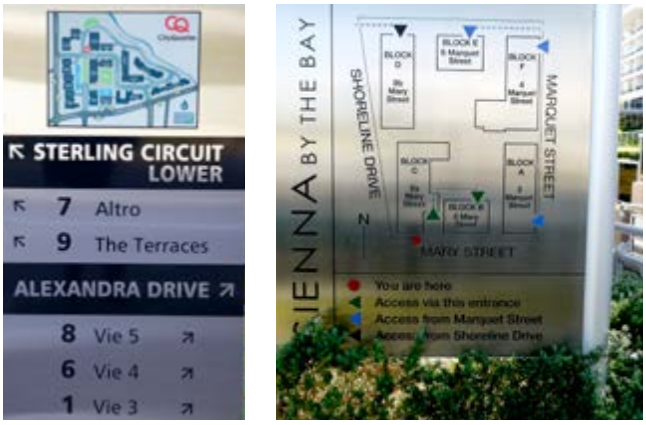


Figure 4K.3 Clear way-finding signage is important to both residents and visitors, in particular in larger residential developments

Figure 4K.4 Building address signage can be integrated as a feature of the facade design

Figure 4K.5 Signage should respond to the scale, proportion and detailing of the development and its surrounds

Performance criteria

4K-1 Awnings are well located and complement and integrate with the building design

Acceptable solutions	
1.	Awnings are located along streets with high pedestrian activity and active frontages
2.	A number of the following design solutions are used: • continuous awnings are maintained and provided in areas with an existing pattern • height, depth, material and form complements the existing street character • protection from the sun and rain is provided • awnings are wrapped around the secondary frontages of corner sites • awnings are retractable in areas without an established pattern
3.	Awnings are located over building entries for building address and public domain amenity
4.	Awnings relate to residential windows, balconies, street tree planting, power poles and street infrastructure
5.	Gutters and down pipes are integrated and concealed
6.	Lighting under awnings is provided for pedestrian safety

Performance criteria

4K-2 Signage responds to the context and desired streetscape character

Acceptable solutions	
1.	Signage is integrated into the building design and responds to the scale, proportion and detailing of the development
2.	Legible and discrete way finding is provided for larger developments
3.	Signage is limited to on and below awnings and a single facade sign on the primary street frontage

4L 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, but 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 and represents the 'worst case' scenario for solar access.

Figure 4L.2 At least 70% of all apartments in a building should receive a minimum of 3 hours direct sunlight in mid winter

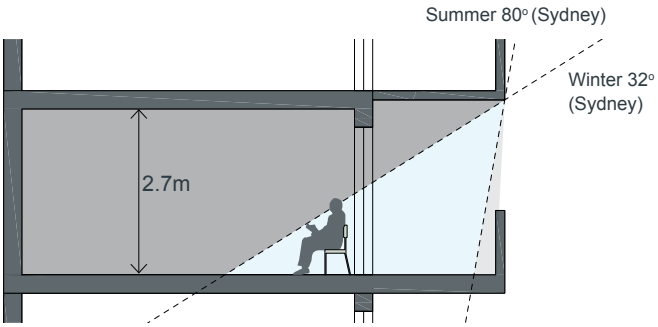


Figure 4L.1 Shading devices on balconies should shade summer sun and allow winter sun access to living areas

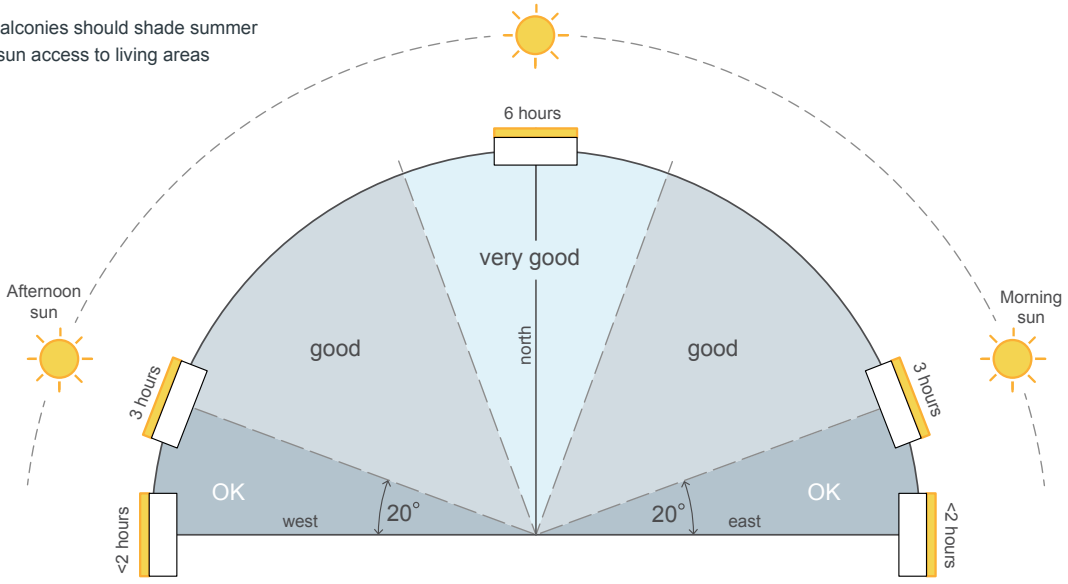


Figure 4L.3 The hours of sunlight that can be expected in mid winter are directly related to the orientation of the facade. This diagram shows the optimal orientation for habitable rooms and balconies

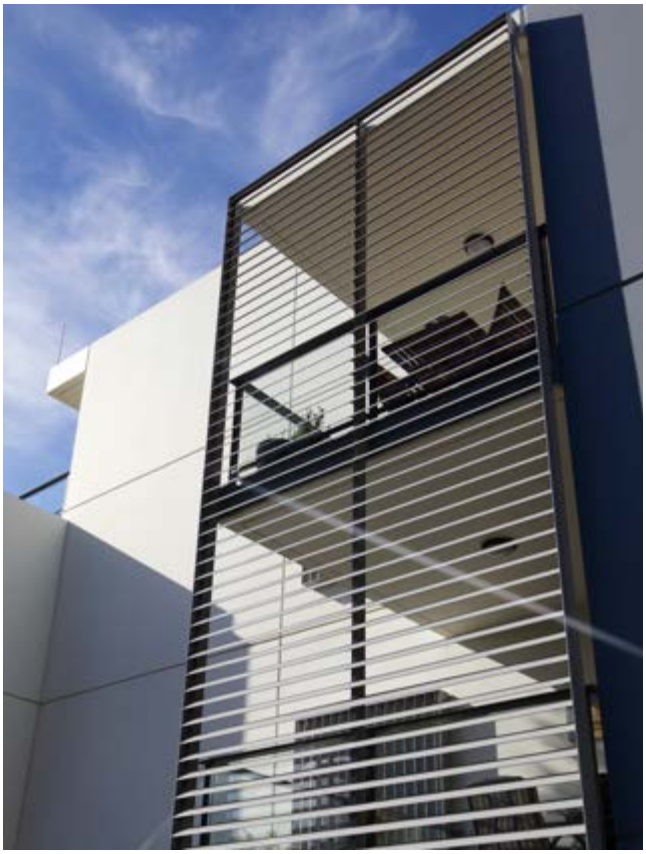


Figure 4L.4 Horizontal louvres are most effective on north facing elevations and achieve summer shade and winter sun access

Figure 4L.5 These operable screens can be adjusted by residents according to the season, weather conditions and time of day

Performance criteria

4L-1 The number of apartments receiving sunlight to habitable rooms, primary windows and private open spaces is optimised

Acceptable solutions	
1.	The design maximises north aspect
2.	Single aspect, single storey apartments have a northerly or easterly aspect
3.	The number of single aspect west and south facing apartments is minimised
4.	Living rooms and private open spaces of at least 70% of apartments in a building receive a minimum of 3 hours direct sunlight between 9am and 3pm in mid winter
5.	A maximum of 15% of apartments in a building have no direct sunlight between 9am and 3pm in mid winter
6.	Living areas are located to the north and service areas to the south and west of apartments

Performance criteria

4L-2 Reasonable levels of direct sunlight is provided to habitable rooms and balconies

Acceptable solutions	
1.	Apartments that receive direct sunlight in accordance with the acceptable solution 4L-1.4 need to demonstrate that a person is able to sit in the sun in a habitable room or on a balcony of an apartment in mid winter between 9am and 3pm. See Figure 4L.1
2.	A number of the following design features are used: • dual aspect apartments • shallow apartment layouts • two storey and mezzanine level apartments • bay windows

4L Solar and daylight access

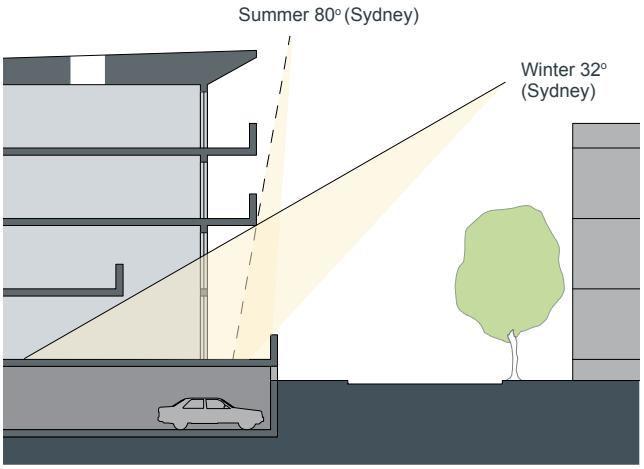


Figure 4L.6 Double height apartments and skylights on roofs increase daylight access (Note: angles will vary slightly for different locations in NSW)

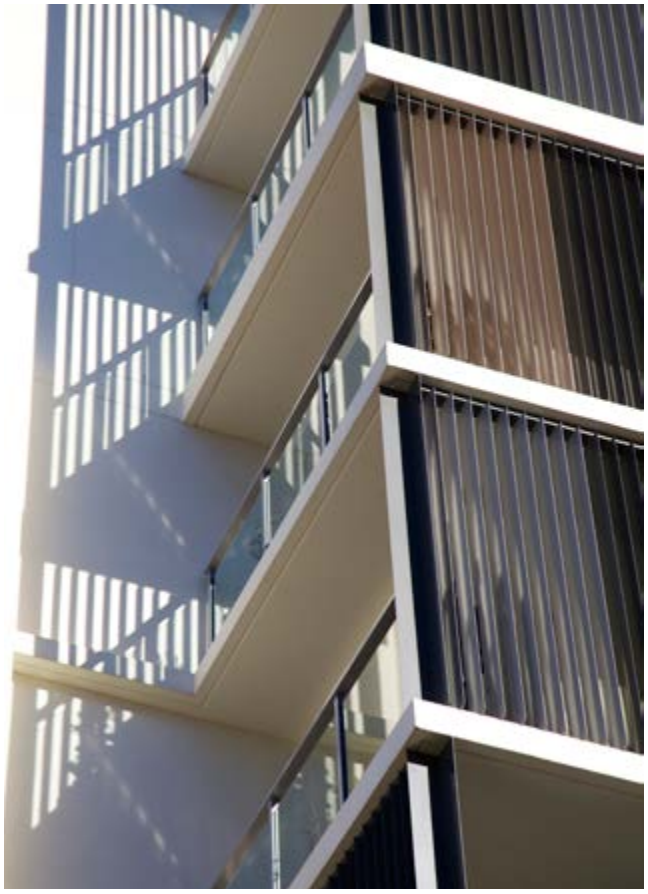


Figure 4L.7 Vertical louvres are an effective sun management technique for east and west-facing windows and balconies

Alternative solutions

There may be some circumstances or locations where an alternative solution is proposed because 3 hours of direct sunlight in mid winter is not achievable. It needs to be demonstrated that the number of apartments receiving direct sunlight has been maximised. Design drawings need to demonstrate how site constraints and orientation preclude the achievement of acceptable solutions in this section and how the development meets the performance criteria.

Circumstances where this may apply include:

- where apartments face greater than 20 degrees east or west of north
- in major centres or areas characterised by high density development
- where greater residential amenity can be achieved along a busy road or rail line by orienting living rooms away from the noise source
- on south facing slopes
- where significant views are oriented away from the desired aspect for direct sunlight

In these circumstances the development should receive a minimum of 2 hours of direct sunlight to 70% of living rooms and balconies at mid winter.

Where buildings face within 20 degrees east or west of south, apartments should maximise dual aspect or have narrow depth for single aspect apartments.

Figure 4L.8 Trees help shade building facades. For east and west facing facades consider planting deciduous species

Figure 4L.9 Light wells can provide for daylight access to common areas. For habitable rooms of apartments, they should only be used as a secondary light source

Performance criteria

4L-3 Design incorporates shading and glare control, particularly for summer

Acceptable solutions

1. A number of the following design features are used:
   - 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
   - balconies or sun shading that extend far enough to shade summer sun, but allow winter sun to penetrate living areas
   - operable shading to allow adjustment and choice, where possible and appropriate
   - 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

Performance criteria

4L-4 Opportunities for improved daylight are provided where sunlight is limited

Acceptable solutions

1. Light wells, skylights and high level windows (with sills of 1500mm or greater) are used only as a secondary light source in habitable rooms

2. Where light wells are unavoidable:
   - use is restricted to kitchens, bathrooms and service areas
   - building services are concealed with appropriate detailing and materials to visible walls
   - lightwells are fully open to the sky
   - access is provided to the lightwell from a communal area for cleaning and maintenance
   - acoustic privacy, fire safety and minimum privacy separation distances (see section 3F Visual Privacy) are achieved

3. 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

4M 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 4M.1 Natural daylight improves the amenity of common circulation areas and increases the likelihood of social interaction between residents

Figure 4M.2 A single centralised core circulation type maximises efficiency. It is particularly suited to north-south aligned building envelopes where apartments are likely to face east and west

Alternative solutions

Variations to the number of apartments per core/corridor may be possible. Developments should demonstrate a high level of amenity for common lobbies, corridors and apartments including:

- access to ample daylight
- natural ventilation of the space
- common areas for seating and gathering
- wider corridors with greater than minimum ceiling heights
- other innovative design solutions that provide high levels of amenity

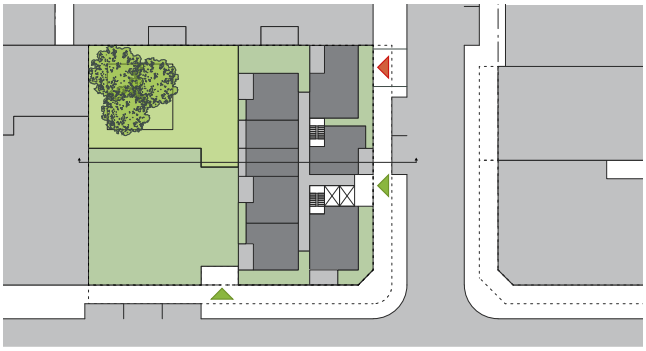


Figure 4M.3 The total number of apartments accessed off one circulation core should be eight or fewer

Figure 4M.4 Multiple cores provide more entries along the street, increasing activity levels and passive surveillance

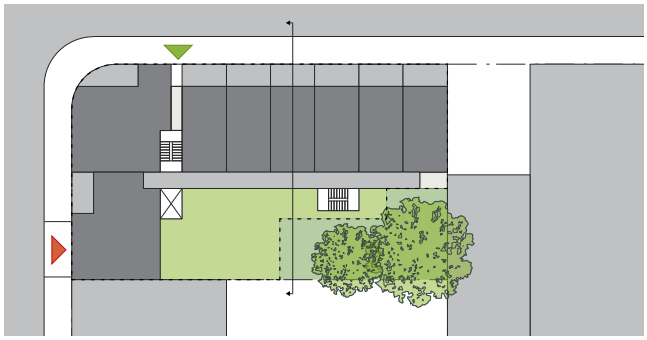


Figure 4M.5 External gallery access can be useful to maximise northern aspect for apartments or as a buffer to a noise source

Figure 4M.6 Mixed use buildings may have a range of circulation spaces including multiple cores and gallery access

Performance criteria

4M-1 Common circulation spaces achieve good amenity and provide for a variety of apartment types

Acceptable solutions

1.	The maximum number of apartments off a circulation core on a single level is eight
2.	The number of vertical circulation points and number of entries are maximised
3.	Corridor widths and/or ceiling heights are greater than minimum requirements, allowing comfortable movement and accessibility particularly in entry lobbies, outside lifts and at apartment entry doors
4.	Daylight and natural ventilation is provided to all common circulation and spaces, where possible
5.	Windows to corridors are provided where possible, commonly adjacent to the stair or lift core or at the ends of corridors
6.	Longer corridors are articulated. Design solutions may include: • a series of foyer areas with space for seating • wider areas at apartments entry doors and varied ceiling heights
7.	Design of common circulation and spaces maximises opportunities for dual aspect apartments, including multiple core apartment buildings and gallery access cross over apartments

Performance criteria

4M-2 Common circulation spaces provide for interaction between residents

Acceptable solutions

1.	Direct and legible access is provided between vertical circulation points and apartment entries by minimising corridor or gallery length to give short, straight clear sight lines
2.	Tight corners and spaces are avoided
3.	Legible signage is provided for apartment numbers, common areas and general wayfinding
4.	Incidental spaces, for example space for seating in a corridor, at a stair landing, or near a window are provided, where appropriate
5.	In larger developments, community rooms for activities such as owners corporation meetings or resident use are provided and ideally co-located with communal open space
6.	Where external galleries are provided, they are more open than closed along the length above the handrail

4N Apartment layout

The layout of an apartment establishes the spatial arrangement and dimensions of 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 provide daylight access, natural ventilation, and acoustic and visual privacy. The apartment layout also includes private open space and conveniently located storage.

Figure 4N.1 This living area has a combined kitchen dining area that opens directly onto the balcony

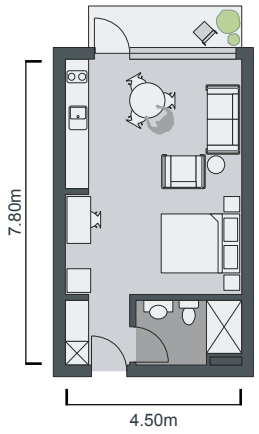
Alternative solutions

Where apartments do not meet the minimum depth standard for habitable rooms, alternative solutions must demonstrate how satisfactory daylight access and natural ventilation are achieved.

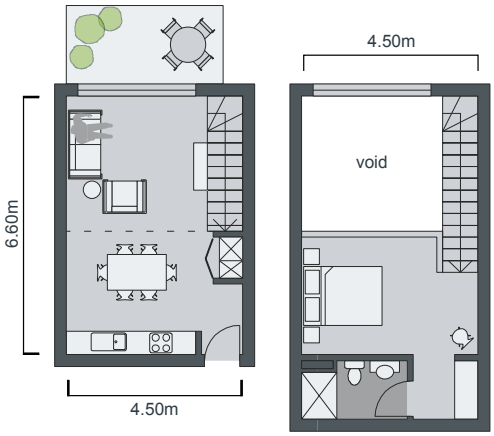
Alternative solutions proposing greater than the minimum ceiling heights could increase the habitable room depth in single aspect apartments by a ratio of 2.5:1 (room depth = ceiling height in metres x 2.5).

Where minimum apartment size and room dimensions are not met, the usability and functionality of the space needs to be demonstrated using realistically scaled furniture layouts and circulation areas.

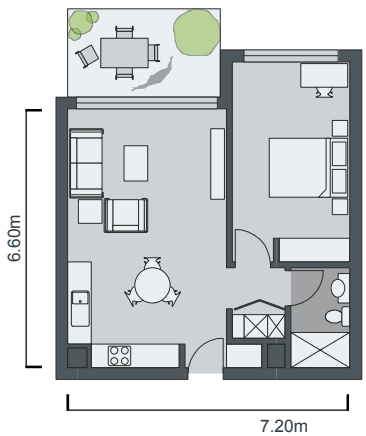
Indicative layouts studio



1 bedroom



1 bedroom single aspect mezzanine



1 bedroom single aspect

Figure 4N.2 Diagrams showing indicative layouts for small apartments
Note: they do not represent the only solution

Table 6 Minimum apartment sizes

Apartment type	Minimum size
Studio	35m²
1 bedroom	50m²
2 bedroom	70m²
3 bedroom	95m²

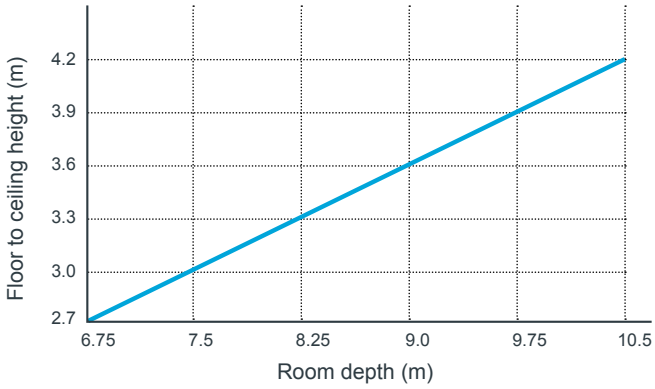


Figure 4N.3 Graph showing acceptable ceiling height to room depth ratio

Figure 4N.4 For open plan layouts, combining the living room, dining room and kitchen, the back of the kitchen is a maximum of 8 metres from a window

Performance criteria

4N-1 Spatial arrangement and layout of apartments is functional, well organised and provides a high standard of amenity

Acceptable solutions

1. Apartment sizes are in accordance with Table 6
2. A window should be visible from any point in a habitable room
3. Kitchens are not located as part of the main circulation space in larger apartments (such as hallway or entry space)

Performance criteria

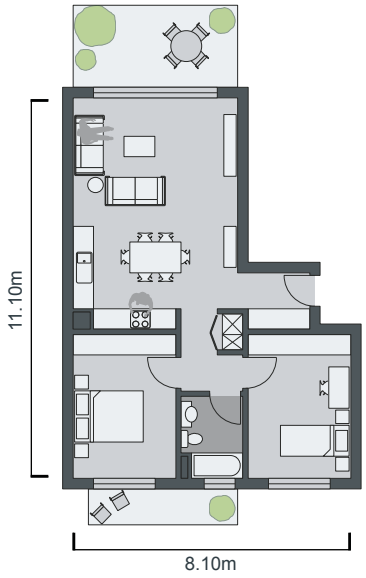
4N-2 Environmental performance of the apartment is maximised

Acceptable solutions

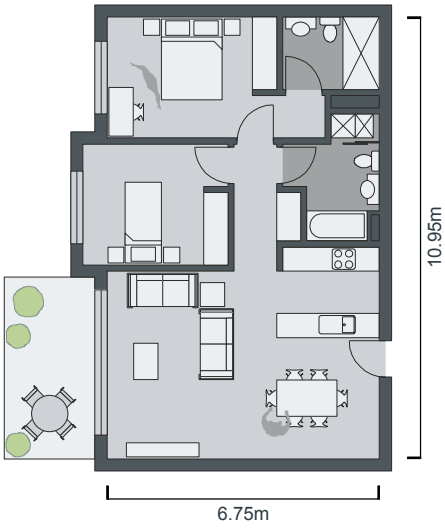
1. Habitable room depth complies with the ceiling height to room depth ratio as per Figure 4N.3
2. For open plan layouts, combining the living room, dining room and kitchen, the back of the kitchen is a maximum of 8 metres from a window
3. Main living spaces are oriented toward the primary outlook and aspect and away from noise sources
4. Main living spaces are located adjacent to main private open spaces to provide direct connections and increase usability
5. All living areas and bedrooms are located on the external face of the building
6. All kitchens in corner apartments have an external openable window/door
7. For non-corner apartments the number of kitchens with an external openable window/door is maximised.
8. The number of bathrooms and laundries with windows is maximised

4N Apartment layout

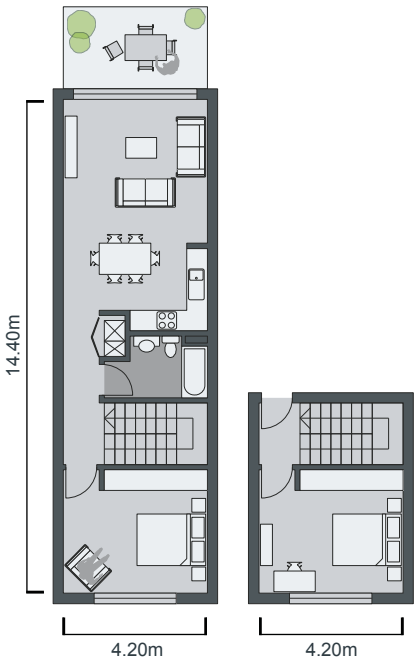
Indicative layouts 2 bedroom



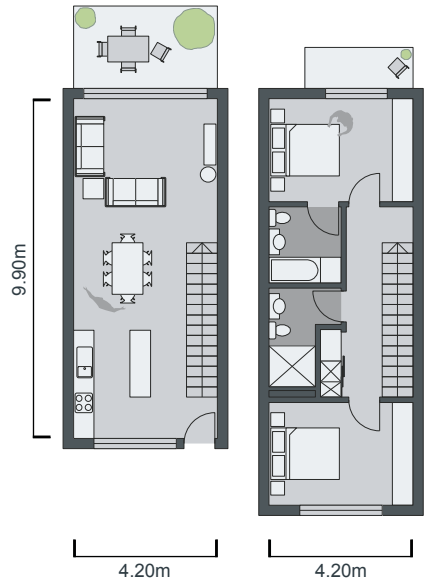
2 bedroom "L" dual aspect apartment



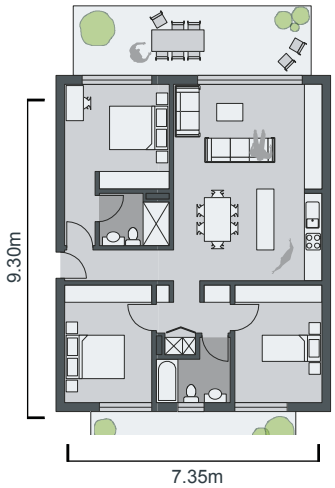
2 bedroom mid-floor plate single aspect



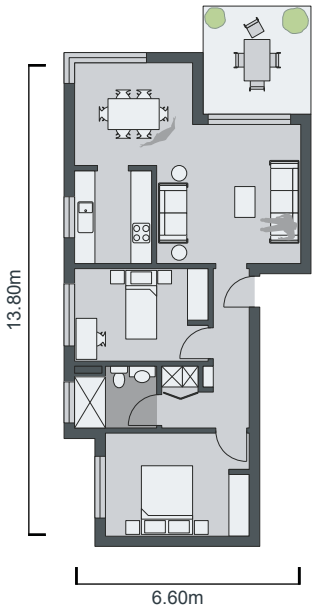
2 bedroom mid-floor plate cross over



2 bedroom mid-floor plate 2 storey gallery access



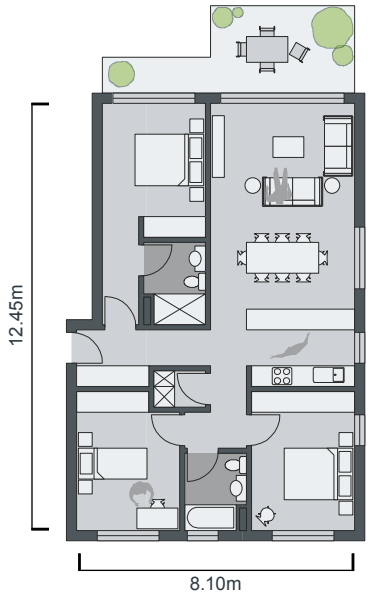
2 bedroom mid-floor plate dual aspect



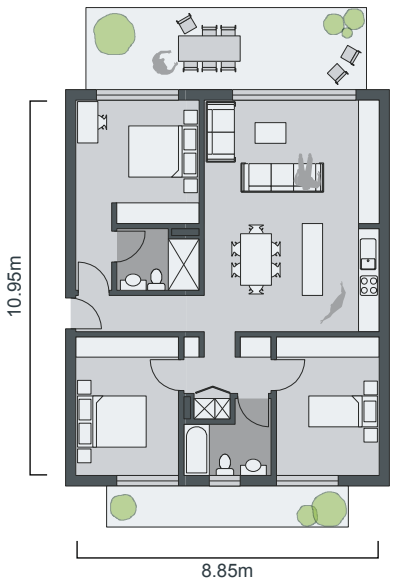
2 bedroom corner apartment

Figure 4N.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 4N.6 Diagrams showing indicative layouts for 3 bedroom apartments
Note: these do not represent the only solutions

Performance criteria

4N-3 Apartment layout can accommodate a variety of household activities and occupant needs

Acceptable solutions

1. The number of bathrooms and size of living areas, kitchens and laundries increase proportionately with the number of bedrooms
2. Master bedrooms have a minimum area of 10m² and other bedrooms 9m² (excluding wardrobe space)
3. Bedrooms have a minimum dimension of 3m (excluding wardrobe space)
4. All bedrooms allow a minimum length of 1.5m for robes
5. 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
6. Access to bedrooms, bathrooms and laundries is separated from living areas minimising direct openings between living and service areas
7. Apartment layouts are resilient over time and have dimensions that facilitate a variety of furniture arrangements and removal, design solutions may include:
   - spaces for a range of activities and privacy levels between different spaces within the apartment
   - dual master or dual key apartments to provide tenancy flexibility
   - flexible 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

Performance criteria

4N-4 Safety of children and young people within apartments is maximised

Acceptable solutions

1. Windows have safety screens, window locks or other safety devices in place to prevent falls. Safety screens support natural ventilation
2. Room layouts minimise the need to locate furniture immediately adjacent to windows or balustrades

4O 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.

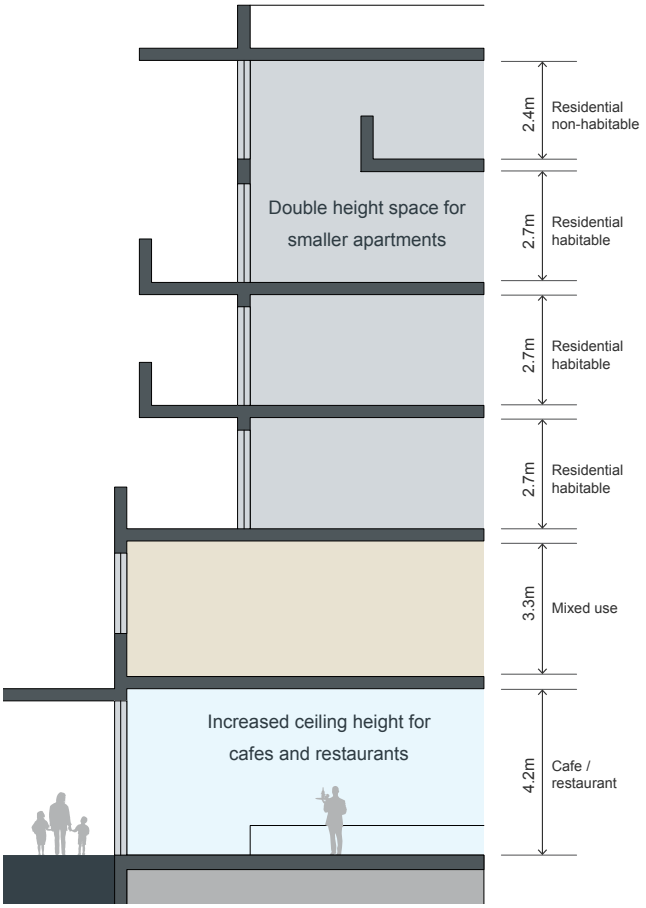


Figure 4O.1 Retail and commercial floors of mixed use buildings require greater ceiling heights

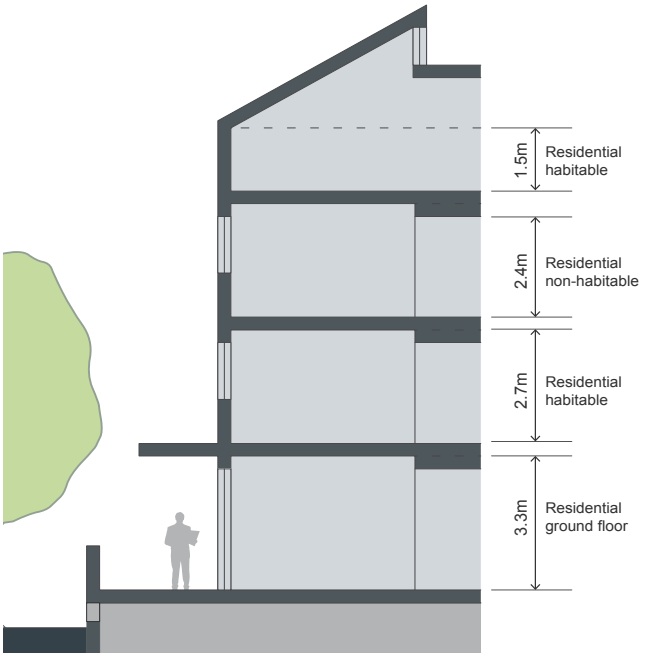


Figure 4O.2 Ceiling heights of minimum 2.7m help to achieve good daylight access and natural ventilation to residential apartments

Figure 4O.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 4O.4 Differing ceiling heights are an opportunity to provide visual interest in the building facade

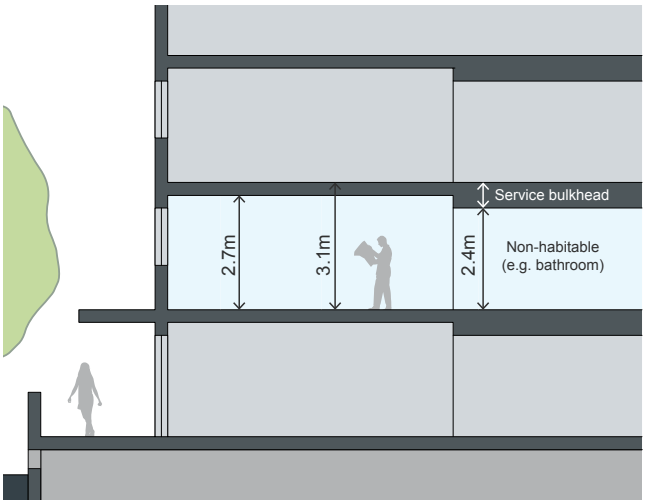


Figure 4O.5 Services bulkheads are wholly contained within non-habitable rooms and do not intrude into habitable spaces

Performance criteria

4O-1 Ceiling height achieves sufficient natural ventilation and daylight access

Acceptable solutions

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	1.5m at edge of room with a 30 degree minimum ceiling slope
If located in mixed used areas	3.3m for ground floor to promote future flexibility of use

These minimums do not preclude higher ceilings if desired

2. Ceiling height can accommodate use of ceiling fans for cooling and heat distribution

Performance criteria

4O-2 Ceiling height increases the sense of space in apartments and provides for well proportioned rooms

Acceptable solutions

1. A number of the following design solutions are 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

Performance criteria

4O-3 Ceiling heights contribute to the flexibility of building use over the life of the building

Acceptable solutions

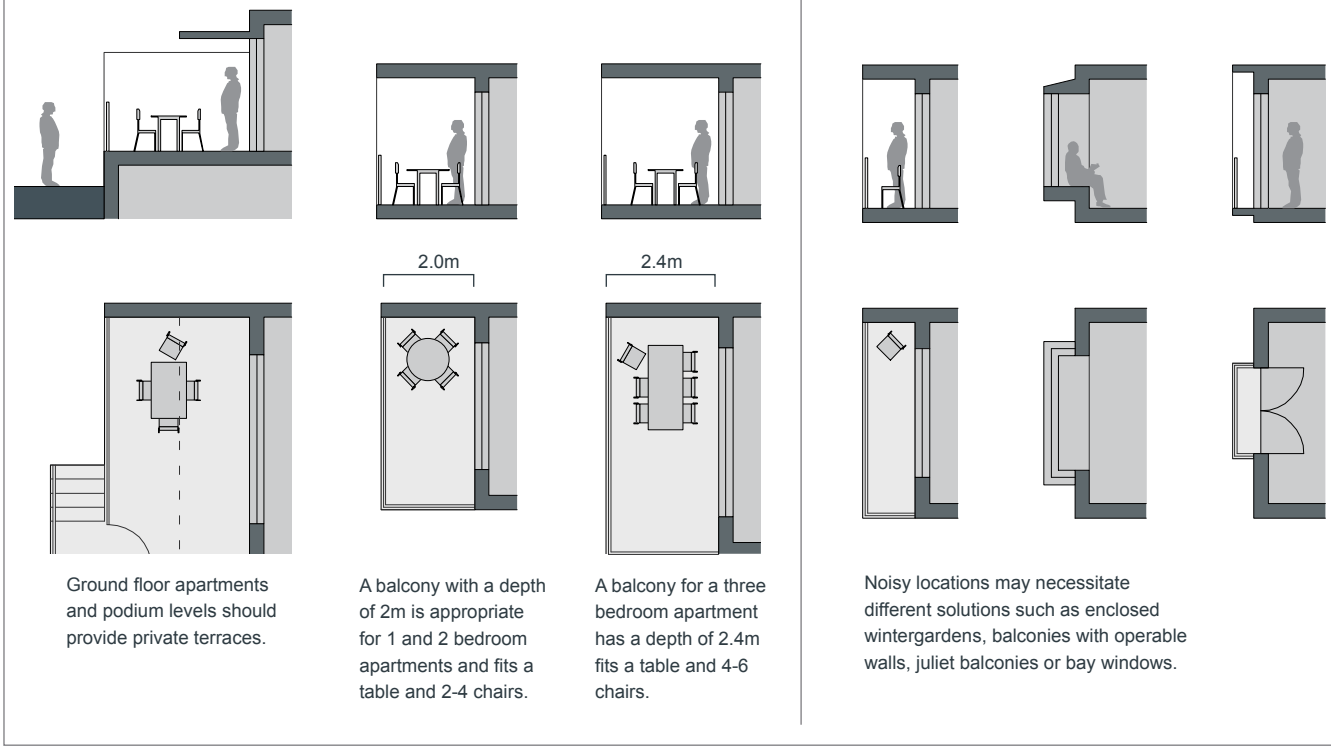
1. Ceiling heights of lower level apartments in centres are greater than the minimum required in the table above (4O-1.1) allowing flexibility and conversion to non-residential uses

4P 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 NSW's temperate climate, providing an area for external activities, an extension of living spaces as well as 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 4P.1 Balconies, courtyards and terraces enhance the amenity and indoor/outdoor lifestyle of residents



Ground floor apartments and podium levels should provide private terraces.

A balcony with a depth of 2m is appropriate for 1 and 2 bedroom apartments and fits a table and 2-4 chairs.

A balcony for a three bedroom apartment has a depth of 2.4m fits a table and 4-6 chairs.

Noisy locations may necessitate different solutions such as enclosed wintergardens, balconies with operable walls, juliet balconies or bay windows.

Figure 4P.2 Diagrams illustrating minimum balcony depth and options for noise treatment

Figure 4P.3 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 4P.4 Primary balconies provide outdoor living, articulate the building facade and contribute to the safety of the public domain through increased surveillance opportunities

Performance criteria

4P-1 Primary private open space and balconies are appropriately located

Acceptable solutions

1. Primary open space and balconies are located adjacent to the main living areas, such as the living room, dining room or kitchen to extend the living space
2. Private open spaces and balconies predominantly face north, east or west and solar access to living rooms is not impeded
3. Primary open space and balconies are orientated with the long side facing outwards to optimise daylight access into adjacent rooms

Performance criteria

4P-2 Primary private open space and balconies are appropriately sized

Acceptable solutions

1. Primary private open space at ground level or similar space on a structure has a minimum area of 16m^2 and a minimum dimension in one direction of 3m
2. Primary balconies are provided for all apartments with the following minimum area and depth according to apartment size:

Dwelling type	Minimum area	Minimum depth
1 bedroom apartments	8m^2	2m
2 bedroom apartments	10m^2	2m
3+ bedroom apartments	12m^2	2.5m

4P Private open space and balconies

Figure 4P.5 For one and two bedroom apartments, balconies should be at least 2m deep to allow enough space for a small table

Alternative Solutions

Alternative solutions such as juliet balconies, operable walls, enclosed wintergardens or bay windows may be appropriate where balcony use is limited by:

- consistently high wind speeds at 9 storeys and above
- close proximity to road, rail or other noise sources (see section 4T Noise and pollution for further guidance)
- exposure to significant levels of aircraft noise

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

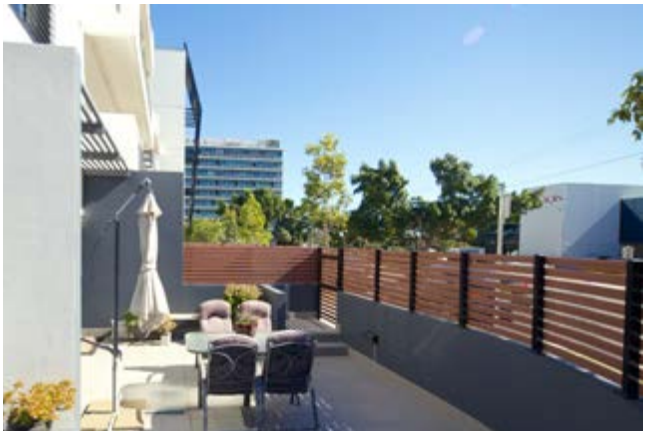


Figure 4P.7 Partially solid fences and balustrades allow views and passive surveillance of the street while maintaining visual privacy

Figure 4P.6 A combination of solid and transparent materials balances the need for privacy with surveillance of the public domain

Figure 4P.8 Viewed from the inside, screening increases privacy and allows for clothes drying, storage and air conditioning units

Figure 4P.9 Setting the balustrade back from the building edge allows for landscaping towards the street for increased privacy

Figure 4P.10 Soffits and undersides of balconies need to be well detailed as they are visible from the street

Performance criteria

4P-3 Private open space and balcony design is integrated into the overall architectural form and detail of the building

Acceptable solutions	
1.	Projecting balconies are integrated into the building design
2.	Operable screens, shutters, hoods and pergolas are used to control sunlight and wind, where required
3.	Solid, partially solid or transparent fences and balustrades are suitable for the location and are designed to allow views and passive surveillance of the street while maintaining visual privacy
4.	Balustrades are set back from the building or balcony edge where overlooking or safety is an issue
5.	Screening is provided for clothes drying, storage and air conditioning units
6.	Downpipes, balcony drainage and air conditioning units are integrated with the overall facade and building design, with unsightly features hidden
7.	Ceilings of apartments below terraces are insulated to avoid heat loss

Performance criteria

4P-4 Private open space and balcony design maximises safety

Acceptable solutions	
1.	Changes in ground levels or landscaping are minimised
2.	Design and detailing of balconies avoids opportunities for climbing and falls

4Q 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 reduce 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 allowing air to be drawn through the apartment using opposing air pressures, 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.

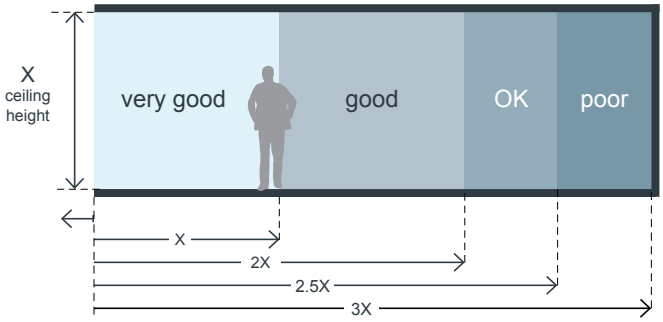


Figure 4Q.1 The depth of a single aspect apartment relative to the ceiling height directly influences the quality of natural ventilation and daylight access

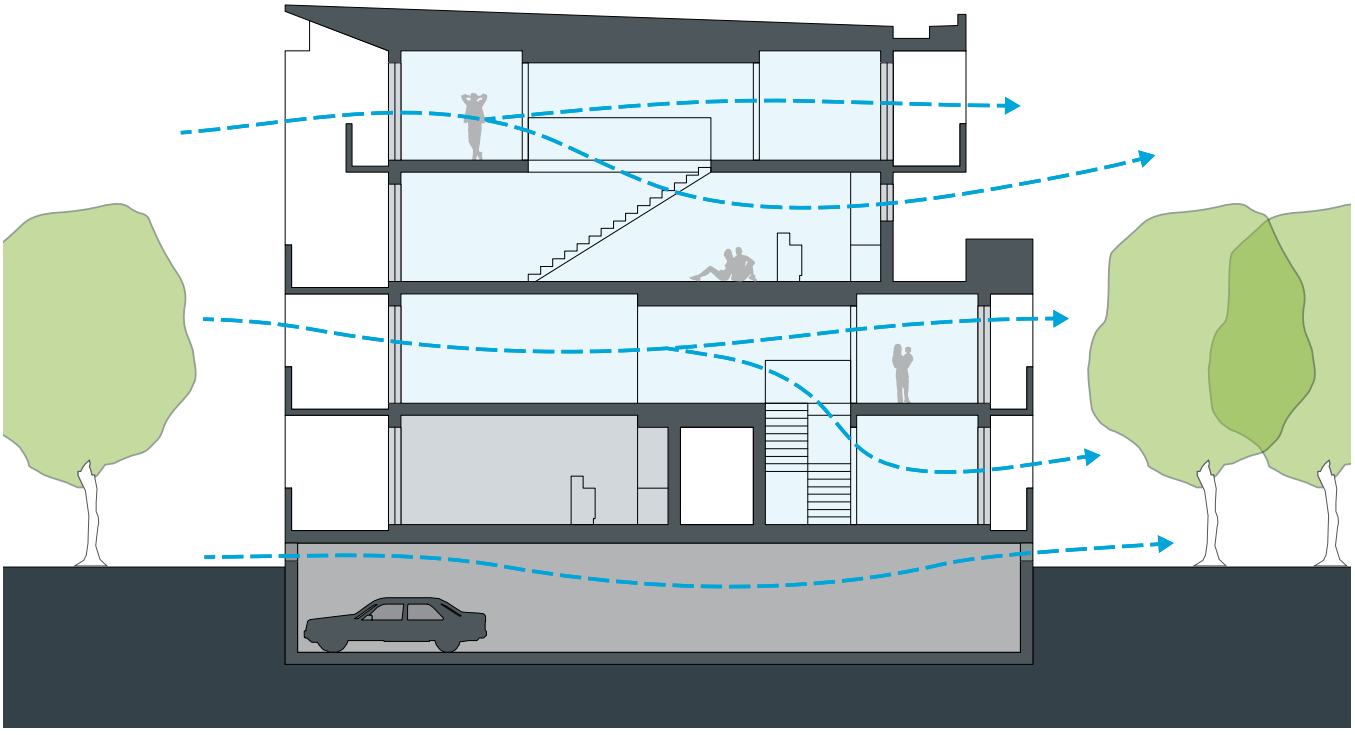


Figure 4Q.2 Prevailing winds vary for different locations and depend on local conditions. For coastal areas in NSW, cooling sea breezes in summer tend to come from a north-easterly direction

Figure 4Q.3 Operable balcony screens allow occupants to customise their environment and regulate access of natural light and ventilation

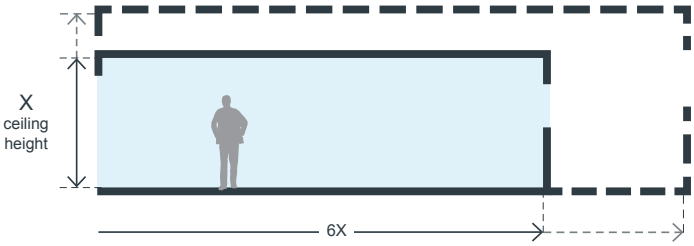


Figure 4Q.4 Where greater than the minimum ceilings heights are provided, the allowable depth of dual aspect apartments can increase using a ratio of 6:1 (apartment depth = 6 x ceiling height)

Performance criteria

4Q-1 All habitable rooms are naturally ventilated

Acceptable solutions	
1.	Orientation of building maximises capture and use of prevailing breezes for natural ventilation
2.	Rooms have appropriate depths (see Section 4N Apartment layout)
3.	Unobstructed window openings are equal to at least 5% of the floor area served
4.	Doors and operable windows maximise natural ventilation opportunities established by the apartment layout, using a number of 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

Performance criteria

4Q-2 Natural ventilation for single aspect apartments is maximised

Acceptable solutions	
1.	Apartment depths are limited to maximise ventilation and airflow. See figure 4Q.1
2.	Light wells are not the primary air source for habitable rooms
3.	A number of the following design solutions are used: • primary windows are augmented with plenums and lightwells (generally not suitable for cross ventilation) • solar chimneys, stack effect ventilation or similar to naturally ventilate internal building areas or rooms such as bathrooms and laundries • lightwells or building indentations with a width to depth ration of 2:1 or 3:1 where possible to ensure effective air circulation and avoid trapped smells

4Q Natural ventilation

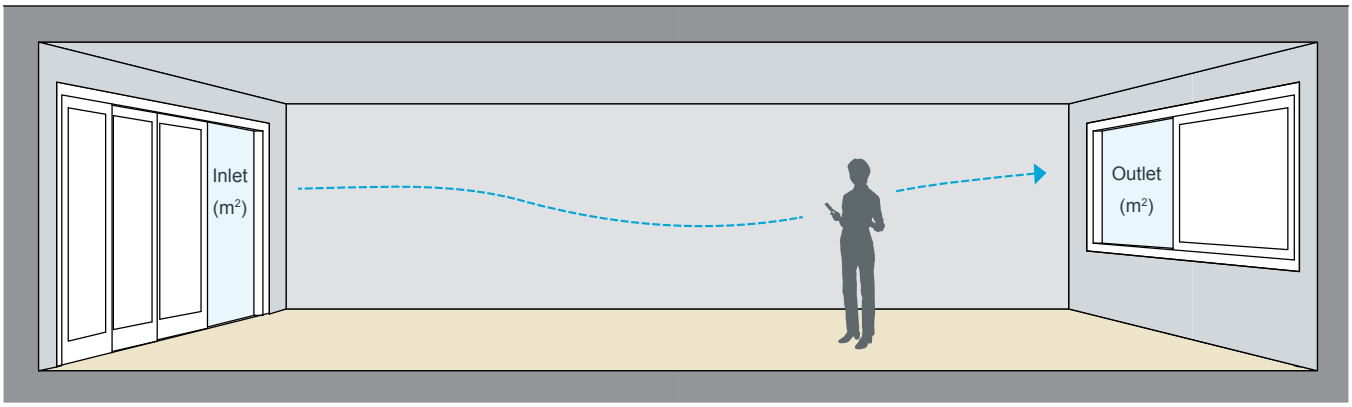


Figure 4Q.5 Effective cross ventilation is achieved when the inlet and outlet have approximately the same area, allowing air to be drawn through the apartment using opposite air pressures on each side of the building

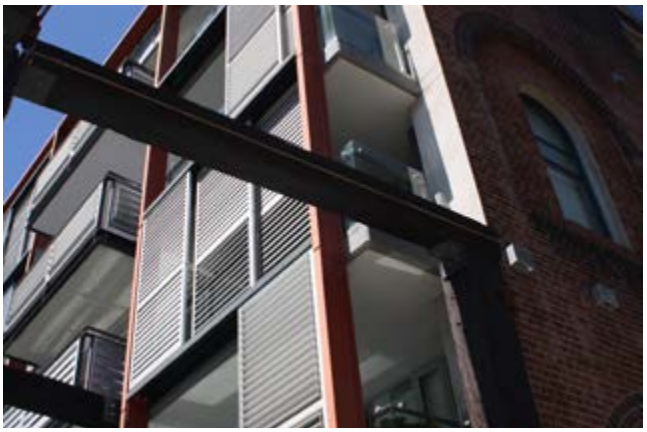


Figure 4Q.6 Responding to the local climate reduces the need for mechanical ventilation and air conditioning

Figure 4Q.7 Natural cross ventilation is facilitated by limited apartment depths and use of dual aspect apartments

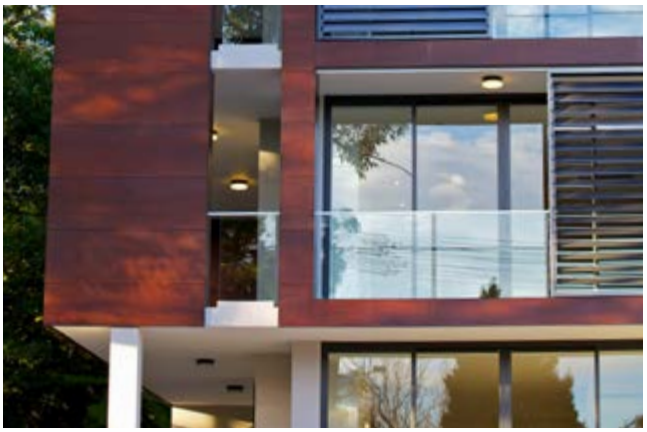


Figure 4Q.8 Natural ventilation is further enhanced by using generous window and door openings

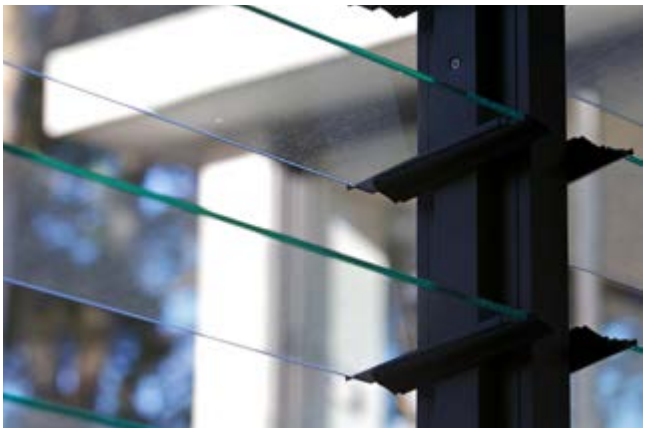


Figure 4Q.9 Operable louvres allow residents to regulate natural ventilation effectively

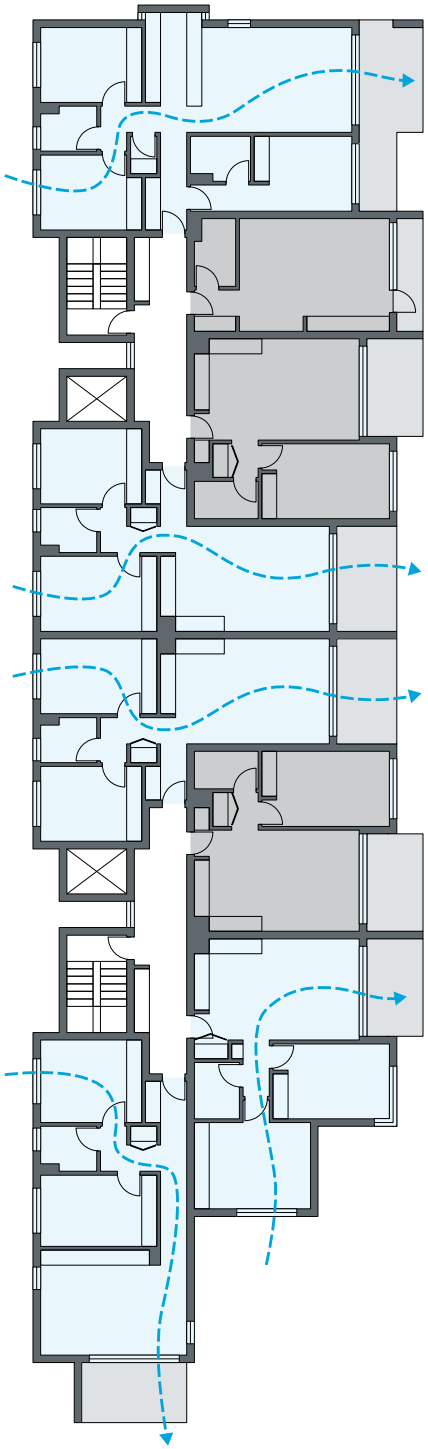


Figure 4Q.10 The floor plan above demonstrates how five of total eight apartments achieve natural cross ventilation

Performance criteria

4Q-3 The number of apartments with natural cross ventilation is maximised

Acceptable solutions

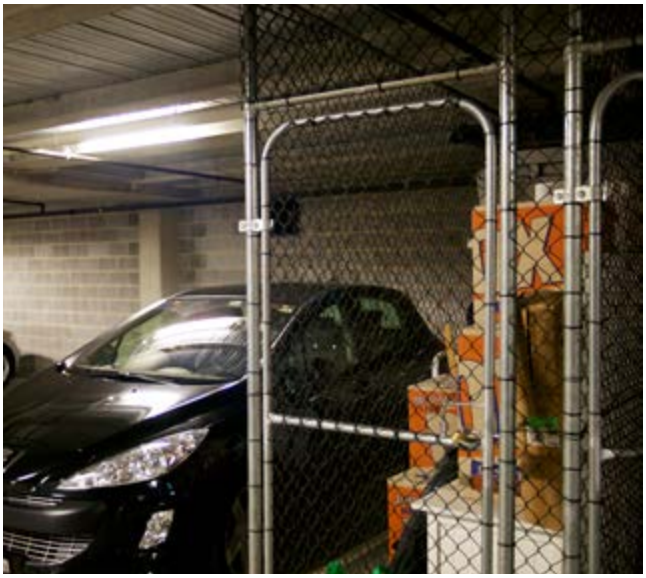
1.	At least 60% of apartments are naturally cross ventilated
2.	For apartment buildings 9 storeys and over an appropriately qualified wind consultant has confirmed that 60% of the apartments achieve cross ventilation
3.	Overall building depth does not exceed 12-18 metres
4.	Cross ventilation is facilitated by limited apartment depths and use of dual aspect apartments, cross through apartments and corner apartments
5.	In dual aspect 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 4Q.5
6.	Interruptions to airflow are limited through the apartments by minimising the number of corners, doors and rooms that might obstruct airflow
7.	Apartment depths, combined with ceiling heights, maximise ventilation and airflow. See figure 4Q.4

4R 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 4R.1 Storage within an apartment needs to be convenient and accessible from circulation or living areas

Figure 4R.2 Storage located on private balconies or within courtyards should be integrated and screened from view



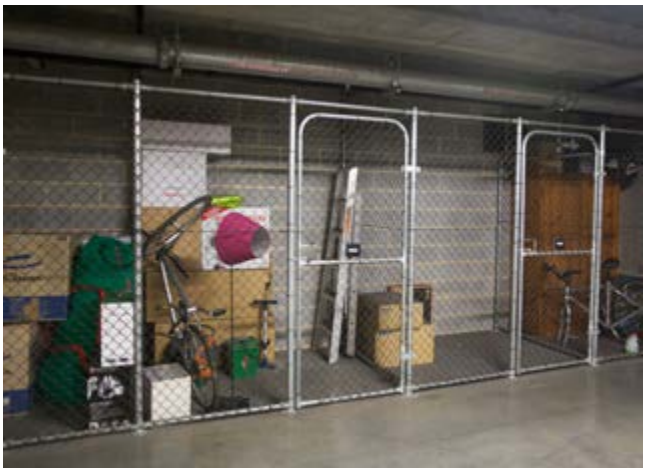


Figure 4R.3 Areas in car parks provide an opportunity to incorporate secure and convenient storage facilities for residents

Performance criteria

4R-1 Adequate, well designed storage is provided in each apartment

Acceptable solutions

1. In addition to storage in kitchens, bathrooms and bedrooms, the following storage is provided:

Dwelling type	Storage size
studio apartments	6m^3
1 bedroom apartments	6m^3
2 bedroom apartments	8m^3
3+ bedroom apartments	10m^3

with at least 50% located within the apartment

2. Storage is accessible from either circulation or living areas
3. 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
4. Left over space such as under stairs is used for storage

Performance criteria

4R-2 Additional storage is conveniently located, accessible and nominated for individual apartments

Acceptable solutions

1. Storage not located in apartments is secure and clearly allocated
2. Storage is provided for larger and less frequently accessed items, where practical
3. Storage space in internal or basement car parks is provided at the rear or side of car spaces or in cages
4. Storage rooms are accessible from common circulation areas of the building
5. Storage not located in an apartment is integrated into the overall building design and not visible from the public domain

4S Acoustic privacy

Acoustic privacy is about protecting sound transmission between external and internal spaces, between apartments and communal areas and between apartments within a building.

Designing for acoustic privacy considers the site context, surrounding uses, building separation, the location of public and private open spaces and the arrangement of internal spaces in a building.

This section outlines typical considerations for acoustic privacy. For constrained sites such as sites near a rail corridor, major roads or underneath flight paths, refer to Part 4T Noise and Pollution for further guidance.

Figure 4S.1 Appropriate finishes, treatments and construction methods help reduce noise transmission through walls and floors

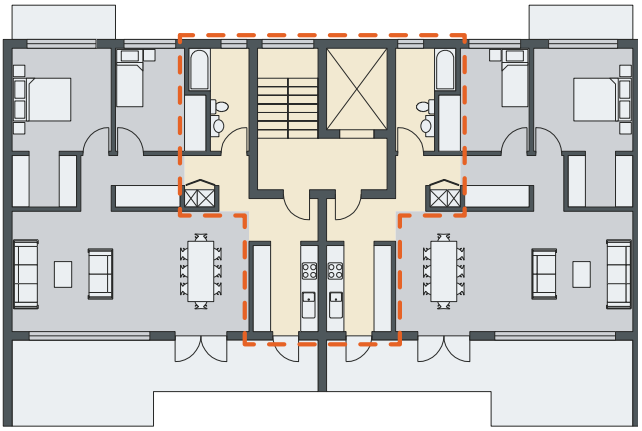


Figure 4S.2 The building layout should ensure that amenity impacts from noise are reduced to both living areas and bedrooms. The plan above locates living spaces away from the noisy access core

Figure 4S.3 The timing and extent of activities allowed in common areas should be managed by strata or owners corporation

Figure 4S.4 Sleeping and living areas should be located at least 3m away from noise sources such as driveways and garage doors

Figure 4S.5 In addition to mindful siting and orientation of the building, acoustic seals and double or triple glazing are effective methods to further reduce noise transmission

Performance criteria

4S-1 Noise transfer is minimised through the siting of buildings and building layout

Acceptable solutions

1.	Adequate building separation is provided within the development and from neighbouring buildings/ adjacent uses (also see section 2F Building separation and section 3F Visual Privacy)
2.	Window and door openings are generally orientated away from noise sources
3.	Noisy areas within buildings including building entries and corridors are located next to or above each other and quieter areas next to or above quieter areas
4.	Storage, circulation areas and non-habitable rooms are located to buffer noise from external sources
5.	The number of party walls (walls shared with other apartments) are limited and are appropriately insulated
6.	Noise sources such as garage doors, driveways, service areas, plant rooms, building services, mechanical equipment, active communal open spaces and circulation areas are located at least 3m away from bedrooms

Performance criteria

4S-2 Noise impacts are mitigated through internal apartment layout and acoustic treatments

Acceptable solutions

1.	Internal apartment layout separates noisy spaces from quiet spaces, using a number of the following design solutions: • rooms with similar noise requirements are grouped together • doors separate different use zones • wardrobes in bedrooms are co-located to act as sound buffers
2.	Where physical separation cannot be achieved noise conflicts are resolved using the following design solutions: • double or acoustic glazing • acoustic seals • use of materials with low noise penetration properties • continuous walls to ground level courtyards where they do not conflict with streetscape or other amenity requirements

4T Noise and pollution

Properties located near major roads, rail lines and beneath flight paths can be subject to noise and poor air quality. Similarly, hostile and noisy environments such as industrial areas, substations or sports stadiums can have impacts on residential amenity. Careful design solutions can help to improve quality of life in affected apartments by minimising potential noise and pollution impacts.

This section addresses design responses on sites that are affected by significant noise and pollution sources. Section 4S Acoustic Privacy deals with more typical residential developments that do not face these challenges.

Figure 4T.1 This mixed use development is located on a busy road and is designed with limited openings exposed to the noise source

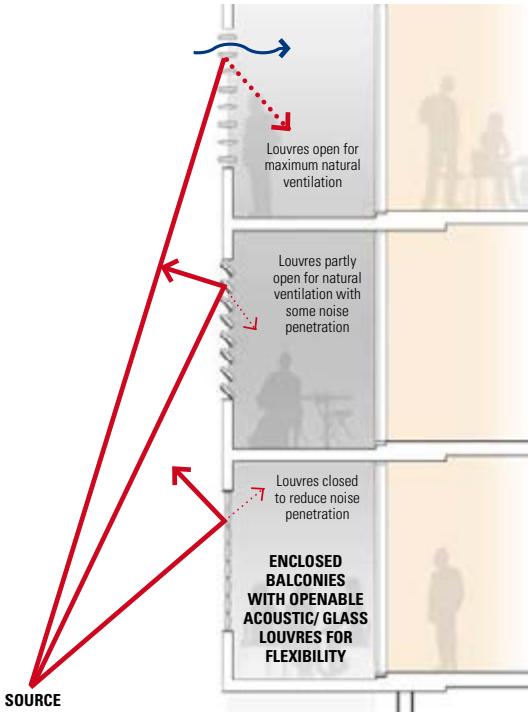


Figure 4T.2 Enclosing balconies to function as 'wintergardens' is an effective means of reducing road and rail noise (Source: Development Near Rail Corridors And Busy Roads – Interim Guideline, NSW)

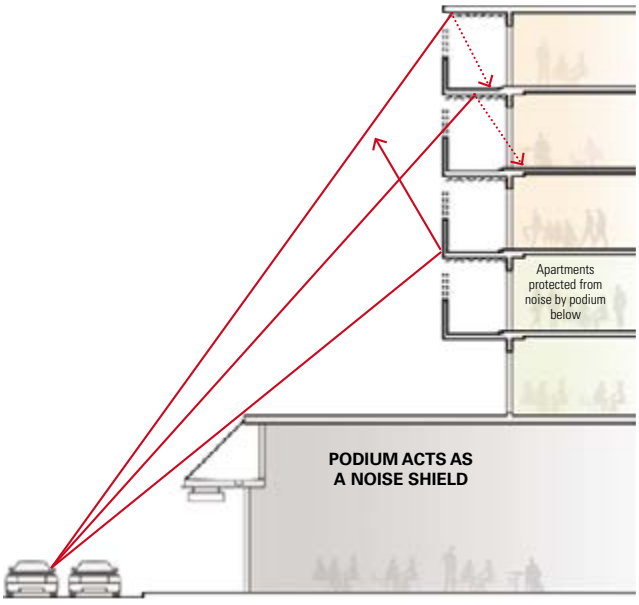


Figure 4T.3 Setting back the residential component on a podium helps shielding apartments from major noise (Source: Development Near Rail Corridors And Busy Roads – Interim Guideline, NSW)

Alternative Solutions

Alternative solutions to the requirements for:

- solar and daylight access
- private open space and balconies and
- natural cross ventilation

may be proposed to achieve appropriate design solutions on sites that are constrained due to noise and pollution.

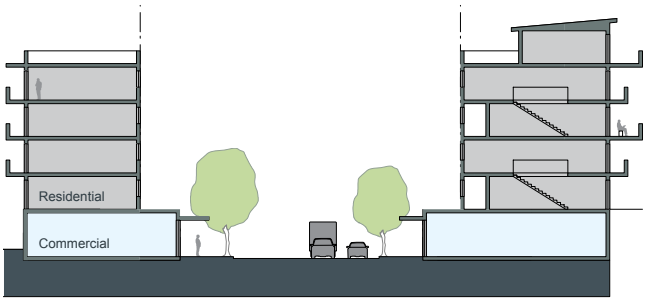


Figure 4S.6 Horizontal separation of land uses can shield residential uses from hostile road or rail environments

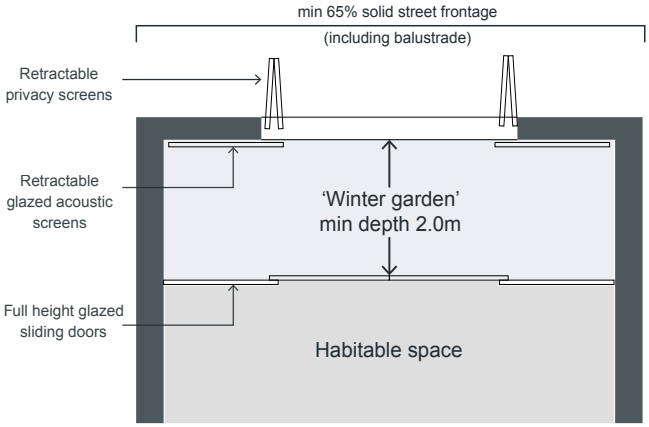


Figure 4T.4 Balconies designed as acoustically sealed wintergardens can improve liveability of the balcony and adjoining habitable rooms

Figure 4T.5 Wintergardens can be either closed off or incorporated as living space, depending on the time of day and local conditions

Performance criteria

4T-1 The siting and layout of buildings minimise the impacts of external noise and pollution

Acceptable solutions

1. A number of the following design solutions are used:
   - residential uses are located perpendicular to the noise sources and where possible buffered by other uses
   - non-residential buildings are positioned parallel to the noise source to provide a continuous building shielding residential uses and communal open spaces
   - non-residential uses are located at lower levels vertically separating the residential component from the noise source
   - where solar access is in the opposite direction to the noise or pollution source, habitable rooms are located away from these and storage areas, circulation areas, non-habitable rooms and kitchens provide a buffer to the noise or pollution source
   - where solar access is in the same direction as the noise or pollution source, apartments are dual aspect with shallow building depths
   - landscape design reduces the perception of noise and acts as a filter for air pollution generated by traffic and industry

Performance criteria

4T-2 Noise transmission is mitigated by appropriate noise shielding or attenuation techniques for the building design, construction and choice of materials

Acceptable solutions

1. A number of the following design solutions are used:
   - number and size of openings facing noise sources are limited
   - seals prevent noise transfer through gaps
   - double or acoustic glazing, acoustic louvres or enclosed balconies (wintergardens)
   - materials with mass and/or sound insulation or absorption properties e.g. balcony balustrades, external screens and soffits

4U Energy efficiency

Passive environmental and energy efficient design is about the ability of an apartment to manage thermal performance (thermal comfort) and daylight access, providing increased amenity to occupants and reducing energy costs.

This section offers guidance on meeting BASIX sustainability requirements and other rating systems through better design practice. For additional design practice linked to passive environmental design and energy efficiency see sections 4L Solar and daylight access, 4N Apartment layout and 4Q Natural ventilation.

Figure 4U.2 Shading trees and landscaping contribute to the energy efficiency of buildings

Figure 4U.1 Example of shading devices that can be operated by the resident to manipulate the level or daylight and sun access

Figure 4U.3 Thermal mass in floors and walls allow for heat storage in winter and reduced heat transfer in summer

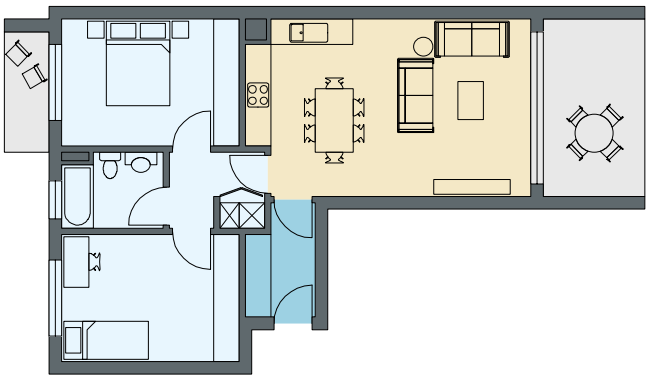


Figure 4U.4 Grouping rooms with similar uses together creates different zones in an apartment, helping to optimise energy use

Figure 4U.5 Environmental technology, integrated into the overall design, add to the sustainable performance of buildings

Performance criteria

4U-1 Development incorporates passive environmental design

Acceptable solutions

1. Adequate natural light is provided to habitable rooms (see 4L Solar and daylight access)
2. Well located, screened outdoor areas are provided for clothes drying

Performance criteria

4U-2 Development incorporates passive solar design to optimise heat storage in winter and reduce heat transfer in summer

Acceptable solutions

1. A number of the following design solutions are used:
   - the use of smart glass or other technologies on north and west elevations
   - thermal mass in floor and walls in the north facing rooms is maximised
   - polished concrete floors, tiles or timber rather than carpet
   - insulated roofs, walls and floors and seals on windows and door openings
   - overhangs and shading devices such as awnings, blinds and screens
2. Provision of consolidated heating and cooling infrastructure in a centralised location (e.g. the basement)

Performance criteria

4U-3 Adequate natural ventilation minimises the need for mechanical ventilation

Acceptable solutions

1. A number of the following design solutions are used:
   - rooms with similar usage are grouped together
   - natural cross ventilation for apartments is optimised
   - natural ventilation is provided to all habitable rooms and as many non-habitable rooms, common areas and circulation spaces as possible

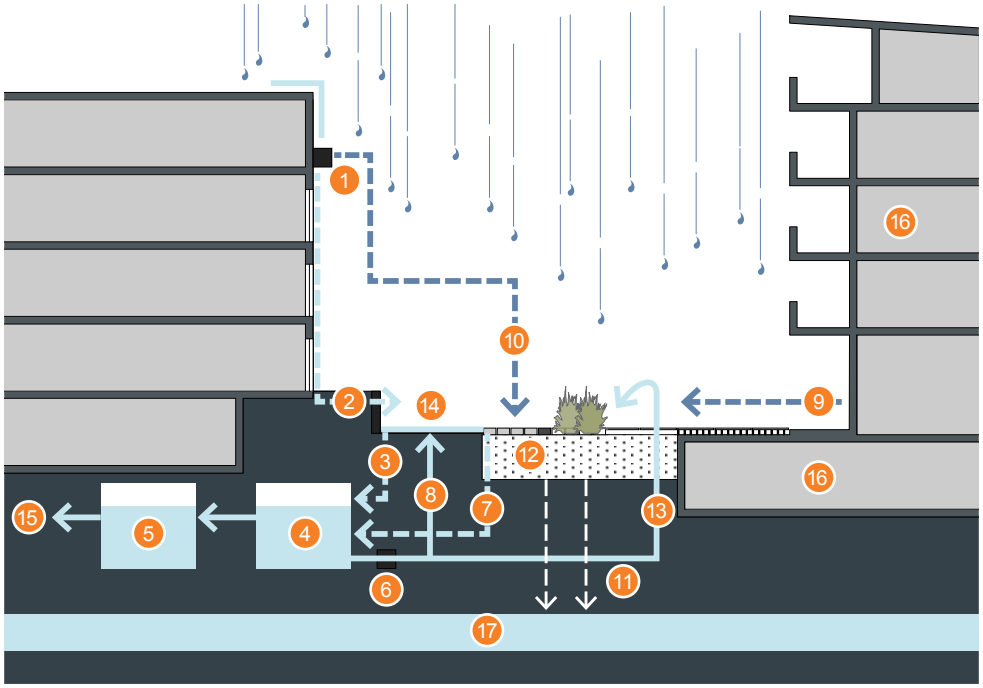
4V Water management and conservation

Water sensitive urban design is the integrated management of water in urban areas. It takes into account all of the elements of the urban water cycle including potable (drinking quality) water, rainwater, wastewater, stormwater and groundwater.

Best practice water management considers water measures at all stages of the project. This ranges from initial site planning measures that maximise deep soil areas for water infiltration to detailed building design that captures and recycles stormwater and wastewater for building services.

The Building Sustainability Index (BASIX) ensures that all new dwellings are designed to minimise potable water use and reduce greenhouse gas emissions. To support the requirements of BASIX there are a number of planning and design considerations that are relevant to apartment developments.

Figure 4V.1 Streets and parks of larger developments should be designed to treat stormwater runoff and accommodate flooding events



Clean water
Contaminated water

1. First flush diversion valve
2. Diversion to water feature spout
3. Over flow from water feature
4. Retention tank
5. Detention tank
6. Pump and filter
7. Over flow from courtyard detention
8. Water feature supply
9. Pavement runoff
10. First flush roof water (15mm)
11. Infiltration to water table
12. Biosink/wetland filter system
13. Irrigation
14. Water feature
15. Municipal storm water system
16. Basement parking
17. Water table

Figure 4V.2 Stormwater quantities can be reduced and water quality increased by circulating rainwater through a connected water feature and wetland system

Figure 4V.3 Water sensitive features are attractive elements able to effectively filter and reuse stormwater runoff

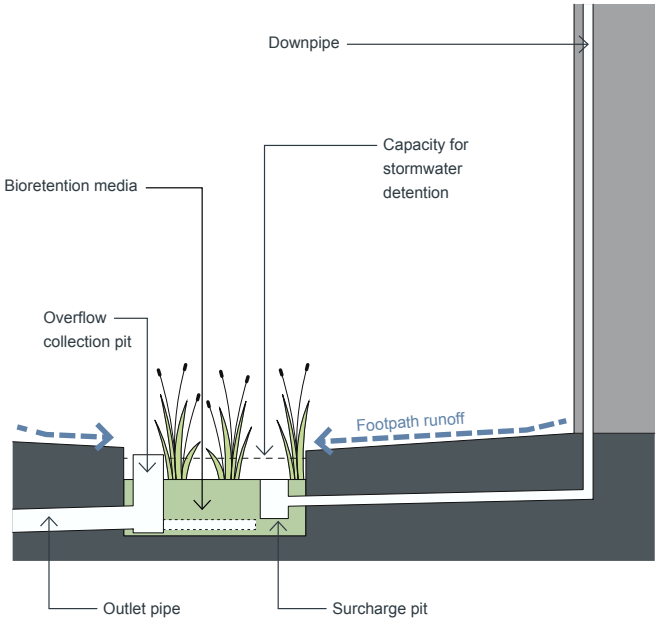


Figure 4V.4 A bio-retention garden improves water quality by using plants to treat roof and surface water runoff

Performance criteria

4V-1 Potable water use is minimised

Acceptable solutions	
1.	Water efficient fittings, appliances and wastewater reuse are incorporated
2.	Apartments are individually metered
3.	Rainwater is collected, stored and reused on site
4.	Drought tolerant, low water use plants are used within landscaped areas

Performance criteria

4V-2 Urban stormwater is treated on site before being discharged to receiving waters

Acceptable solutions	
1.	Water sensitive urban design systems are designed by a suitably qualified professional
2.	A number of the following design solutions are used: • runoff is collected from roofs and balconies in water tanks and plumbed into toilets, laundry and irrigation • porous and open paving materials is maximised • on site stormwater and infiltration, including bio-retention systems such as rain gardens or street tree pits

Performance criteria

4V-3 Flood management systems are integrated into site design

Acceptable solutions	
1.	Detention tanks are located under paved areas, driveways or in basement car parks
2.	On large sites parks or open spaces are designed to provide temporary on site detention basins

4W Waste management

The minimisation and effective management of domestic waste from apartments contributes to the visual and physical amenity of the building as well as limiting potentially harmful impacts on the environment.

Minimising waste is relevant to all stages of the building's life cycle and also includes the way in which waste is collected and stored in a manner that is safe and convenient. Waste management should be considered early on in the design process.

Figure 4W.1 Common garbage areas should be screened from view and well ventilated

Figure 4W.2 Alternative waste disposal, such as composting, can be incorporated into the design of common open space areas

Figure 4W.3 This residential development incorporates compost bins and a community garden for residents

Figure 4W.4 Well designed, easily accessible and clean garbage rooms improve the collection and management of household waste

Figure 4W.5 Garbage areas should allow for sufficient space to manoeuvre bins and sort waste for recycling

Figure 4W.6 For taller development, garbage chutes can be located on floors to allow for convenient disposal of waste

Performance criteria

4W-1 Waste storage facilities are designed to minimise impacts on the streetscape, building entry and amenity of residents

Acceptable solutions

1.	Adequately sized storage areas for rubbish bins are located discreetly away from the front of the development or in the basement car park
2.	Garbage storage areas are well ventilated
3.	Circulation design allows bins to be easily manoeuvred between storage and collection points
4.	Temporary storage is provided for large bulk items such as mattresses
5.	A waste management plan is prepared

Performance criteria

4W-2 Domestic waste is minimised by providing safe and convenient source separation and recycling

Acceptable solutions

1.	All dwellings have a waste cupboard or temporary storage area of sufficient size to hold two days worth of garbage recycling
2.	Communal garbage rooms are in convenient and accessible locations related to each vertical core
3.	For mixed use developments, residential garbage storage areas and access are separate and secure from other uses
4.	Alternative waste disposal methods such as composting are provided

4X Building maintenance

Careful design and material selection can reduce the long term maintenance obligations of apartment development. In addition, effective maintenance of the development ensures the longevity of buildings, sustaining the value of the property and reducing the life-cycle cost to owners.

Figure 4X.1 Building facades should use materials that are long lasting and weather well over time, such as brickwork, tiles and glass

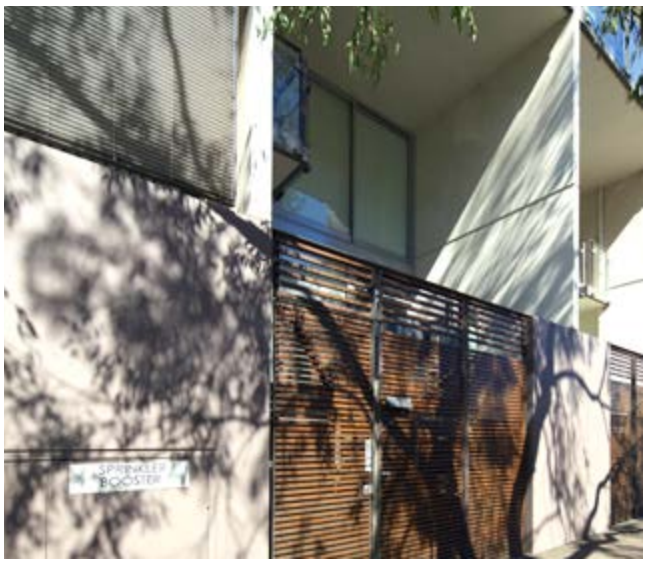


Figure 4X.2 The building layout should provide easy access for maintenance and inspection of services and plant equipment

Figure 4X.3 Roof overhangs, hoods and drip lines protect walls from the elements (rain, sun, wind) reducing maintenance costs

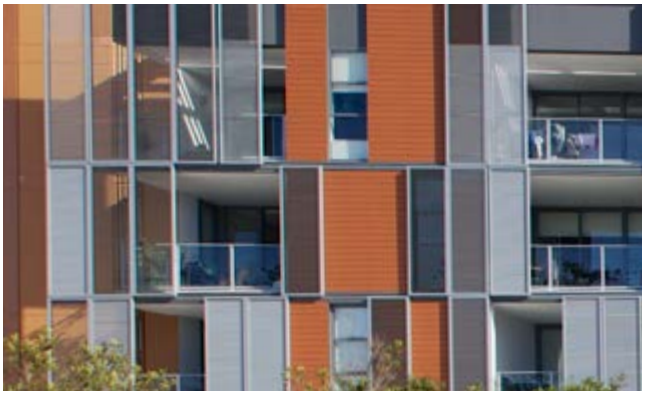


Figure 4X.4 Apartment windows should be designed so that they are easy to access and clean by residents

Performance criteria

4X-1 Building design detail provides protection from weathering

Acceptable solutions

1. A number of the following design solutions are used:
   - roof overhangs to protect walls
   - hoods over windows and doors to protect openings
   - detailing horizontal edges with drip lines to avoid staining of surfaces
   - methods to eliminate or reduce planter box leaching
   - appropriate design and material selection for hostile locations

Performance criteria

4X-2 Systems and access enable ease of maintenance

Acceptable solutions

1. Window design enables cleaning from the inside of the building
2. Building maintenance systems are incorporated and integrated into the design of the building form, roof and facade
3. Design solutions do not require external scaffolding for maintenance access
4. Manually operated systems such as blinds, sunshades and curtains are used in preference to mechanical systems
5. Centralised maintenance, services and storage are provided for communal open space areas within the building

Performance criteria

4X-3 Material selection reduces ongoing maintenance costs

Acceptable solutions

1. A number of the following design solutions are used:
   - natural materials that weather well and improve with time such as face brickwork
   - easily cleaned surfaces that are graffiti resistant
   - robust and durable materials and finishes are used in locations which receive heavy wear and tear, such as common circulation areas and lift interiors

Part 5

Design review panels

5A Function of design review panels

5B Membership and establishment

5C Roles and responsibilities

5D Meeting procedures

5E Templates

5A Function of design review panels

SEPP 65 allows for design review panels to be established as an important tool to improve and enhance the design quality of apartment developments. Whether the panel is for one or more local government areas, they should operate consistently to provide certainty and efficiency.

This section of the Apartment Design Guide is a toolkit for the establishment and operation of panels. It includes details about:

- functions, membership and constitution
- roles and responsibilities of councils and panel members
- operating procedures and guidelines
- templates (meeting agenda, development assessment and meeting minutes).

General function

Design review panels are advisory only, and do not have a decision making function. Their primary functions are to:

- provide independent expert design advice on applications and policy for apartment buildings
- assist in improving the design quality of apartment development.

The panel advises on the design quality of applications with reference to SEPP 65's nine design quality principles and this Apartment Design Guide. The panel may identify and recommend improvements necessary to achieve consistency with the design quality principles and the Apartment Design Guide.

The advice has legal weight and can be relied upon by the consent authority when determining a development application or modification for apartment development under SEPP 65. It should be outlined in the planning officer's report to council. A full copy of the advice should be attached to the council report as well as being made publicly available on council's website.

Design review panels may also provide independent advice to consent authorities on design principles for local environmental plans, development control plans, precinct plans and other design related policies. This may include a review of design related controls, advice on methods to achieve design quality and local provisions related to apartment development.

Relationship between design review panels and architectural design competitions

A council is not required to send a development application for apartment development to a design review panel if an architectural design competition, consistent with the Director General's Design Excellence Guidelines has been held.

Pre-development application discussions

This Apartment Design Guide encourages pre-development application discussions, including early input by a design review panel. Early panel advice on a schematic proposal can allow applicants to address issues early on, and save time later in the application process.

5B Membership and establishment

Membership

A design review panel should consist of at least three members. However, it is recommended that two alternates also be appointed to ensure a quorum can be maintained. Panel members should have expertise in:

- architecture,
- landscape architecture, or
- urban design.

Councils should ensure that panels have a mix of expertise. councillors, council officers or council employees cannot be appointed as panel members.

Panel establishment and selection of members

Councils should undertake the following steps to establish a SEPP 65 design review panel under delegation, or to establish its own panel:

- resolve to establish a design review panel for the local government area/s
- seek expressions of interest for panel members from suitably qualified professionals
- assess the expressions of interest against the core selection criteria (see below) and any other additional criteria established to address local issues
- appoint members for an initial term of 3 years, and
- determine and confirm all terms of the appointment, including remuneration details for each member.

Core selection criteria for panel members

Expressions of Interest for design review panel members should include a brief professional profile addressing the selection criteria below:

Selection criteria	
1.	Appropriate qualification and demonstrated experience in the design of apartment developments in relation to architecture, landscape architecture or urban design
2.	Demonstrated highly developed skills and experience in urban analysis of local planning strategies and policies (e.g. local environmental plans, development control plans, precinct plans and town centre revitalisation) that contain provisions for apartment development
3.	Knowledge or understanding of local council policies and development controls
4.	Knowledge of the design issues of the local area
5.	Ability to analyse, evaluate and report on complex design quality issues for development applications and strategic planning
6.	Ability to develop design options and/or recommendations to ensure appropriate application of SEPP 65 design quality principles and the Apartment Design Guide
7.	Ability to work in a multi-disciplinary team
8.	Ability to liaise/negotiate with local government as well as the private sector
9.	Good written and verbal communication skills including the ability to translate technical information into plain English
10.	Knowledge, commitment and ability to implement council policies and standards, including those that relate to integrity, ethics, safety, anti-discrimination and equity

Funding and remuneration

Design review panel members are entitled to remuneration and the payment of expenses. The Environmental Planning and Assessment Regulation 2000 allows councils with a SEPP 65 panel to charge a maximum fee for panels. Councils are therefore responsible for the funding and remuneration of design review panels.

The following should be considered when determining funding and remuneration arrangements with panel members:

- where more than one council is involved in the operation of a design review panel, councils should fund the panel's operation on an equitable basis, for example, based on the number of development applications referred to the panel
- the Environmental Planning and Assessment Regulation 2000 allows a maximum additional development application fee to be charged for apartment building applications that will be referred to a design review panel. This allows councils to determine within their own fee policy how much they will charge up to the maximum. This may be influenced by the average panel costs per application and the estimated number of times an application will be referred to a panel
- councils are to remunerate each panel member commensurate with their professional role and meeting input. Remuneration should be fair and equitable taking into consideration the time taken to participate in panel processes

5C Roles and responsibilities

Panel coordinator

Councils are responsible for coordinating the operation of the design review panel. It is suggested that a specific council officer be the nominated coordinator or the role may be shared amongst several officers. In the case of panels formed for more than one local government area, the role could be shared on a rotational basis.

Whichever approach is taken, arrangements about how tasks will be undertaken need to be established, particularly where more than one person or council is involved.

The nominated coordinator will need to:

- determine the annual meeting schedule and make it publicly available
- be the central point of contact between the panel members and other council staff or stakeholders
- arrange meeting venues which have appropriate display space and room for applicants and other observers
- prepare and distribute meeting invites, application information and agendas, ensuring sufficient notice is provided to all parties
- arrange site inspections
- ensure in advance of each meeting that there will be a quorum
- arrange for relevant council staff members to attend meetings
- arrange minute taking and panel member endorsement of minutes
- distribute minutes to relevant parties and make them publicly available on council's website within 14 days of the panel meeting
- administer fee and member remuneration payments
- arrange for a summary of council decisions on applications considered by the panel to be given to panel members, providing feedback on consideration of applications and awareness of any other relevant matters, and
- provide information about the panel and its operation to any interested party, including new panel members

Panel chairperson

The panel chair is responsible for:

- running design review meetings
- ensuring that the meeting agenda is followed and that allocated timeframes are adhered to
- ensuring that discussion remains focused on the application being considered and that advice relates to matters covered by SEPP 65 and the Apartment Design Guide
- ensuring the advice and recommendations developed for each application is voted on by the panel. In the case of a tied vote, the chairperson has the casting vote
- ensuring the panel endorses the minutes
- liaising with council staff about the operation of the panel, where required
- attending meetings to brief councillors on panel advice provided, where required, and
- ensuring new members have been inducted and are briefed about panel operation

Panel members

Panel members are required to:

- treat all discussions and information about applications with sensitivity and confidentiality
- provide independent, fair and reasonable professional advice relative to the design quality principles of SEPP 65 and this Apartment Design Guide, and
- respond to and comment on material presented, providing constructive feedback to make amendments as required

Pecuniary interests

Under SEPP 65 design review panel members must disclose any pecuniary interests. Where a pecuniary interest exists, the member must:

- disclose the interest to the chair as soon as practicable, and preferably before the meeting to ensure there is a quorum for all items
- not take part in the consideration or discussion of the matter, and
- not vote on any question relating to the matter

Pecuniary interests should be recorded in panel meeting minutes.

Agenda

The agenda is to be prepared and distributed, taking account of the following:

- applications should be referred to the design review panel as soon as possible after lodgement. This will ensure that design modifications can be identified early, together with any additional information being requested by council
- the agenda for each meeting should be circulated to all panel members and meeting attendees at least one week prior to the meeting. A meeting agenda template is included in section 5E Templates
- the priority of agenda items for each meeting should be determined by each council ensuring the timing has regard for their statutory timeframes
- each item should be allocated an equitable time slot on the agenda adjusted for complexity where appropriate, to allow fair and reasonable consideration of the application and time for a brief presentation by the applicant or their representative, as well as questions of them by the panel, and
- each agenda item should be accompanied by a brief development assessment overview prepared by council's assessment staff, giving a summary of the development's compliance with the key SEPP 65 requirements and council development standards

5D Meeting procedures

The following design review panel meeting procedures have been developed to ensure consistency in the process and to make expectations clear for all parties. A council may choose to include additional operating procedures to address local circumstances. If a council chooses to include additional operating procedures the panel chair should make recommendations to the council for their endorsement.

It is recommended that an inception meeting be held when new panels are established to confirm general operating and meeting procedures. The inception meeting should be hosted by the council so that members can be briefed on specific operational matters. Meeting procedures can also be discussed and confirmed.

Suggested topics to be covered in the inception meeting are outlined below. Where individual new members are appointed to a panel at a later time, it is recommended that they be briefed jointly by the panel coordinator and chair on this information.

Suggested inception meeting topics:

- introduce panel coordinator, members, relevant council staff and provide contact details
- provide background on local planning and design issues and copies of relevant policies including the LEP and DCP
- advise of annual meeting schedule, confirm member responsibilities and reporting timeframes
- advise of responsibilities for preparing the agenda, circulation of project information and minutes
- confirm contact details for remuneration matters, and frequency of invoicing
- advise of council's media protocols
- determine a protocol for the panel responding to any media enquiries (e.g. only through the chair, or only through council's media unit)
- appoint a chairperson (which may be revolving)
- confirm standard meeting procedures and any additional local procedures
- arrange to advise the Minister for Planning and council of the agreed procedures and publicise on council's website

Meeting preparation and site inspection

- panel members should familiarise themselves with the agenda and documents prior to the meeting
- panel members should visit each site on the agenda prior to the meeting. Joint inspections are arranged by the panel coordinator, and can be part of the overall agenda for the day. Specific arrangements for this can be determined by each panel

Quorum and attendance

Each meeting is to maintain a quorum. A quorum consists of three appointed or alternate design review panel members. If less than three members are present there is no quorum and the meeting cannot proceed. Panel members should attend at least 75% of design review panel meetings. The Minister or council/s may replace panel members who are regularly unavailable for meetings during a 12 month period.

Meeting format

The chairperson should run the meeting in accordance with the agenda. A suggested format for individual items includes:

- site inspections
- panel pre-discussion and application overview by council planning staff including site history, background, surrounding proposed/approved developments, compliance with planning controls, internal referral comments (e.g. heritage, stormwater, traffic / parking) and submissions/objections. Relevant state government agency comments should also be provided. Depending on the issue, a representative of the referral agency may also be invited to attend the meeting
- proponent presentation – short presentation explaining the project within the local context, background and how it addresses key design quality principles of SEPP 65 and the Apartment Design Guide
- panel questions/clarifications of the proponent – as required
- panel discussion – debate and drafting of advice and recommendations
- confirm agreed advice and recommendations - the chair convenes a vote by panel members on the advice and recommendations

Where an application has been considered previously a site inspection may not be necessary and the council planning staff briefing will update the panel about the compliance of the amended scheme.

Providing advice and voting on recommendations

Panel members should be aware of the following points when providing advice and finalising recommendations:

- advice should be in plain English that is readily understood by the consent authority, the development proponent and the community
- advice should be consistent between scheme iterations. If significant changes are recommended that depart from previously issued advice they must be supported by full written justification
- when preparing advice, the panel should be aware that the BASIX State Environmental Planning Policy overrides SEPP 65 provisions on thermal performance, greenhouse emission reduction and water reduction
- either the design review panel or the council may require that additional expert assistance be sought in the assessment of a particular proposal or other matter, and
- panel members should vote on the recommendations for each proposal being considered. In the case of a tied vote, the chairperson has the casting vote

Minutes and reporting

Panel members should be aware of the following points when minutes are being drafted:

- minutes should be recorded directly into the template and preferably wall-projected in the meeting room to enable recommendations to be finalised at the meeting. A meeting minutes template is provided in section 5E templates
- the panel meeting minutes should include an accurate record of the key discussion points and panel recommendations
- the minutes are to be endorsed by the design review panel and returned to council within 14 days of the meeting. Ideally the minutes should be completed on the day of the meeting to streamline timeframes
- report recommendations should assist council's decision making, including suggested amendments, draft conditions of approval and if relevant, options for consideration

SEPP 65 requires that the panel's advice be made publicly available and accessible. It should therefore be published on the council/s website within seven days of receipt from the panel.

5E Templates

This section provides a number of standard templates to assist design review panels to operate in a consistent manner across NSW.

(a) Meeting Agenda Template

[LGA Name] Design Review Panel Meeting

Agenda

Meeting Date:	
Time and Location:	
Item No.	Subject
1	Attendance & apologies
2	Deferred applications
2.1	
2.2	
3.	New applications
3.1	
3.2	
4.	Other business / advice
5.	Next meeting – time / date
6.	Confirmation of minutes
7.	Meeting close
[Attendees Council panel Applicant other]	

(b) Development Assessment Overview Template

This overview is to be prepared by the responsible council officer and distributed to the design review panel members with the meeting agenda at least one week before the meeting

Development assessment overview

Proposed development	
Street address	
Applicant/owner	
Report by	
The proposal	[Brief and succinct summary of proposal]
Background	[A summary of relevant background information establishing history of the proposal to date including response to context and site; photos may also be useful]

Assessment summary

Council's key development standards		
	Proposed	Assessment
Floor space ratio		
Height		
Front setback		
Side setbacks		
Rear setback		
Other (e.g. building depths or envelopes)		

SEPP 65 key standards		
	Proposed	Assessment
3F Visual privacy		
3J Parking		
4L Solar and daylight access		
4M Common circulation and spaces		
4N Apartment layout		
4O Ceiling heights		
4P Private open space and balconies		
4Q Natural ventilation		
4R Storage		
Key issues	[Summary / dot points]	

(c) Meeting Minutes Template

The Report of the Design Review Panel is taken to also be the minutes of the review meeting. The report accurately records the discussion and recommendations reached at the review meeting. In endorsing the Design Review Panel Report, the Design Review Panel has ensured the meeting discussion and the drafting of the report contain consistent conclusions and recommendations

Meeting minutes and recommendations

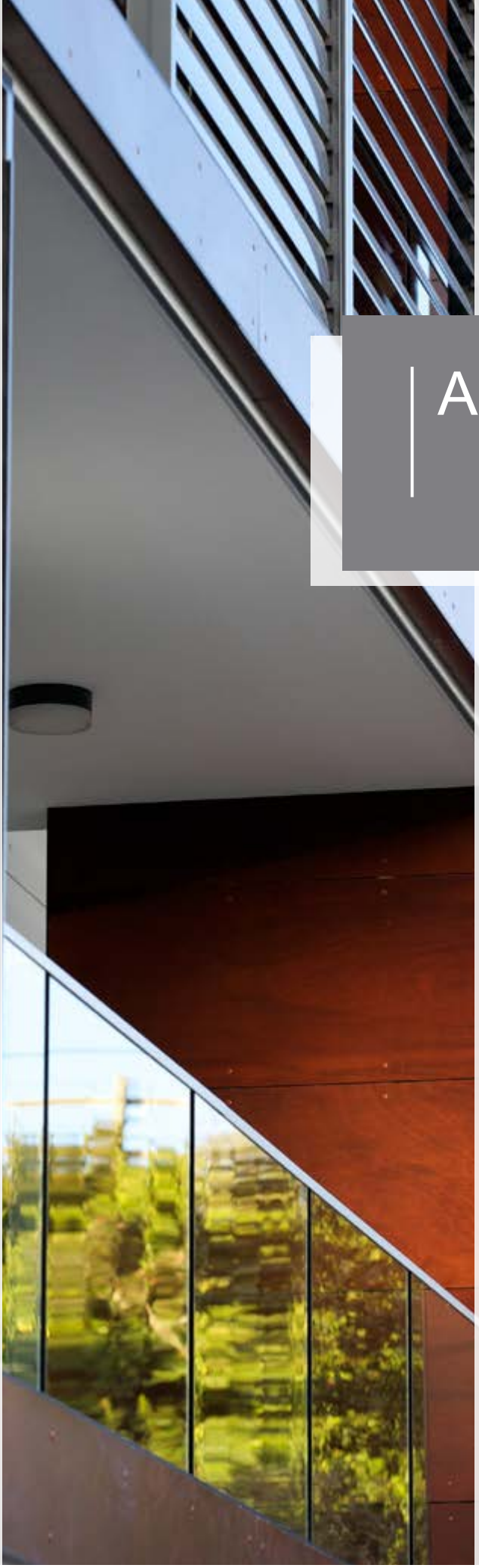
Time & date	
Meeting location	
Panel members	(Chair)
	(Member)
	(Member)
	(Member)
Apologies	
Council staff	
Guests	
Declarations of interest	
Business item and meeting minutes	
Item number	
DA number	
Property address	
Proposal	[Succinct summary of proposal]
Applicant or applicant's representative address to the Design Review Panel	[Note if applicant addressed the Design Review Panel. Include name and position]
Background	The site was inspected by the panel [DATE] A development application was previously before the panel at its meeting of [DATE]. At this time the panel made the following recommendation: [Insert recommendation]

(d) Design Quality Test Template

The Design Review Panel must establish if the proposal exhibits design quality or not, using the SEPP Design Quality Principles and the Apartment Design Guide. Suggested solutions should also be recorded in the amendments section to aid clarity

Design Quality Test

Nine design quality principles	**Apartment Design Guide**
The matrix in the introduction to this guide should be used when testing how a proposal addresses the Apartment Design Guide and the SEPP 65 Design Quality Principles. The matrix shows the main relationships but not all, therefore some proposals may have more relationships because of their context and or design	*This section must discuss all the relevant aspects of the Apartment Design Guide. Where performance criteria is included, this must be discussed*
Principle 1 - Context and Neighbourhood Character	
[record of discussion]	
Principle 2 - Built form and Scale	
Principle 3 - Density	
Principle 4 - Sustainability	
Principle 5 - Landscape	
Principle 6 - Amenity	
Principle 7 - Safety	
Principle 8 - Housing Diversity and Social Interaction	
Principle 9 - Architectural Expression	
Amendments	[identify any recommended amendments necessary to achieve design quality and the related design quality principle]
Recommendation	[insert recommendation]



Appendices

App1 Site analysis checklist

App2 Pre-development application checklist

App3 DA documentation checklist

App4 Apartment building example schemes

APPENDIX 1
Site analysis checklist

Documentation	Required information	Provided	
		Yes (√)	No (x)
Site location	Broad map or aerial photo showing site location in relation to surrounding centres, shops, civic/community facilities and transport		
Aerial photograph	Colour aerial photographs of site in its context		
Local context plan	Plan(s) of the existing features of the wider context including adjoining properties and the other side of the street, that show:		
	• pattern of buildings, proposed building envelopes, setbacks and subdivision pattern		
	• land use and building typologies of adjacent and opposite buildings in the street		
	• movement and access for vehicles, servicing, pedestrians and cyclists		
	• topography, landscape, open spaces and vegetation		
	• significant views to and from the site		
	• significant noise sources in the vicinity of the site, particularly vehicular traffic, train, aircraft and industrial noise		
Site context and survey plan	Plan(s) of the existing site based on a survey drawing showing the features of the immediate site including:		
	• boundaries, site dimensions, site area, north point		
	• topography, showing relative levels and contours at 0.5 metre intervals for the site and across site boundaries where level changes exist, any unique natural features such as rock outcrops, watercourses, existing cut or fill, adjacent streets and sites		
	• location and size of major trees on site and relative levels where relevant, on adjacent properties and street trees		
	• location and use of existing buildings or built features on the site		
	• location and important characteristics of adjacent public, communal and private open spaces		
	• location and height of existing windows, balconies, walls and fences on adjacent properties facing the site, as well as parapet and ridge lines		
	• pedestrian and vehicular access points, driveways and features such as service poles, bus stops, fire hydrants, etc.		
	• location of utility services, including easements and drainage		
	• location of any other relevant features		

Documentation	Required information	Provided	
		Yes (√)	No (x)
Streetscape elevations and sections	Photographs or drawings of the site in relation to the streetscape and along both sides of any street that the development fronts, that show:		
	• overall height (storeys, metres) and important parapet/datum lines of adjacent buildings		
	• patterns of building frontage, street setbacks and side setbacks.		
	• planned heights		
Analysis	Plan that synthesises and interprets the context, streetscape and site documentation into opportunities and constraints that generate design parameters, including the following information:		
	• orientation and any overshadowing of the site and adjoining properties by neighbouring structures (excludes vegetation). The winter sun path should also be shown between 9am and 3pm on 21 June		
	• identification of prevailing wind		
	• the geotechnical characteristics of the site and suitability of the proposed development		
	• the public domain interface and street setback		
	• relationship to and interface with adjacent properties, including side and rear setbacks		
	• ventilation for the subject site and immediate neighbours		
	• proposed building footprint location		
	• retained and proposed significant trees and deep soil zones		
	• proposed communal open space		
	• proposed car park footprint and depth		
	• proposed building entries		
	• supporting written material; this should include technical advice from specialists involved in the development process including landscape architects, arborists, geotechnical engineers and/or contamination specialists where applicable		

APPENDIX 2
Pre-development application design proposal checklist

This Apartment Design Guide encourages pre-development application (pre-DA) discussions. To ensure maximum benefit of pre-DA discussions, consent authorities should appoint an urban designer or architect to provide specialist design advice. This may be a member of the Design Review Panel and their early input may help to resolve any issues prior to a development application being submitted.

Where a council requests panel members to attend a pre-DA discussion, it should be held at a regular time, and before the scheduled Design Review Panel meeting.

Pre-DA discussions are a critical component of the development process. Meeting early in the process allows for discussion and agreement of the overall design approach. This provides greater efficiency at the development assessment stage and also saves time and costs associated with revisions or major modifications. Minutes from pre-DA discussions should be issued by the consent authority within one week of the meeting or as soon as available.

The adjacent table shows the basic information that should be provided by the applicant before the pre-DA discussion.

Documentation	Required information	Provided	
		Yes (√)	No (x)
Development details	A summary of the proposal that establishes the: • Floor space ratio • Building height in metres and storeys • Number and mix of apartments • Number of car parking spaces • Indicative percentage of apartments receiving the minimum level of cross ventilation and daylight access		
Design quality statement	A statement that establishes how the proposal satisfies the design quality principles of State Environmental Planning Policy No.65		
Precedents	Images of precedents relevant to the proposal such as: • streetscape concept • landscape design • communal open spaces use • building elements such as entries, balconies, materials		
Site analysis	Prepared in a manner consistent with Appendix 1 of the Apartment Design Guide		
Site plan	A drawing to scale showing: • any proposed site amalgamation or subdivision • the indicative footprint of the proposal • setbacks and building separation dimensions • site entry points • areas of communal open space and private open space • indicative locations of planting and deep soil zones including retained or proposes significant trees • interface with public domain		
Floor plans	Drawings to scale showing: • the internal building layout and unit type distribution for the ground floor, representative middle floor, and the top floor • typical car park layout • sample unit plans with furniture layouts, key room depth dimensions and balcony sizes		
Building mass elevations	Drawing to scale showing the basic massing of the proposal in the context of the adjacent three properties, or for 50m in each direction, on each elevation. This drawing should show, in diagrammatic form: • the composition of the elevations including ground level, roof form, and articulation of massing of overall building • pattern of buildings and spaces between buildings along the street • the profile of any existing buildings		
Sections	A drawing to scale showing: • the proposal and adjacent buildings • the relationship of the proposal to the ground plane, streets, open spaces and deep soil zones		

APPENDIX 3
Development application – recommended documentation checklist

Information required in a development application is established in Schedule 1 of the Environmental Planning and Assessment Regulation 2000. For residential flat development, SEPP 65 provides additional recommendations for development application requirements.

The following table elaborates on the SEPP recommendations and suggests more detailed and well resolved drawings to facilitate better design practice. The consent authority may also identify additional information that is required for the assessment of a residential flat development. All plans, elevations and sections should be drawn to scale and include a graphic scale bar and true north point. A cover page with drawing list and BASIX commitments should be included.

Documentation	Required information	Provided	
		Yes (√)	No (x)
Development details	A summary document that provides the key details of the development proposal. It contains information such as the:		
	• floor space ratio of the development		
	• number, mix, size, accessibility of apartments		
	• number of car parking spaces for use (residential, retail, accessible, visitor, etc.)		
	• percentage of cross ventilation and daylight compliance		
Statement of Environmental Effects	In addition to the consent authorities requirements:		
	• An explanation of the design in terms of the design quality principles set out in Part 2 of State Environmental Planning Policy No 65		
	• If the proposed development is within an area where the built form and density is changing, statements about how the proposed development responds to existing context and contributes to desired future character of the area		
	• Description of how the proposed development achieves the relevant performance criteria of the Apartment Design Guide		
Site analysis	Prepared in a manner consistent with Appendix 1 of the Apartment Design Guide		

Documentation	Required information	Provided	
		Yes (√)	No (x)
Site plan	A scale drawing showing:		
	• any proposed site amalgamation or subdivision		
	• location of any proposed buildings or works in relation to setbacks, building envelope controls and building separation dimensions		
	• proposed finished levels of land in relation to existing and proposed buildings and roads		
	• pedestrian and vehicular site entries and access		
	• interface of the ground floor plan with the public domain and with open spaces within the site		
	• areas of communal open space and private open space		
	Indicative locations of planting and deep soil zones including retained or proposed significant trees		
Landscape plan	A scale drawing showing:		
	• the building footprint of the proposal		
	• pedestrian, vehicular and service access		
	• trees to be removed shown dotted		
	• trees to remain with their tree protection zones		
	• deep soil zones and associated tree planting		
	• areas of planting on structure and adequate soil depth		
	• proposed planting including species and size		
	• details of public space, communal open space and private open space		
	• ramps, stairs and retaining wall levels		
	• lines of fencing, security and access points		
	• built elements (fences, pergolas, walls, planters, water features)		
	• ground surface treatment with indicative materials and finishes		
	• site lighting		
	• water management and irrigation concept design		

Documentation	Required information	Provided	
		Yes (√)	No (x)
Floor plans	A scale drawing showing:		
	• all levels of the building including roof plan		
	• layout of entries, circulation areas, lifts and stairs, communal spaces, and service rooms with key dimensions and RLs shown		
	• apartment plans with apartment numbers and areas, all fenestration, furniture layouts, room dimensions and intended use labelled, private open space dimensions		
	• accessibility clearance templates		
	• visual privacy separation shown where necessary		
	• vehicle and service access and parking		
	• storage areas		
Elevations	A scale drawing showing:		
	• proposed building height and RL lines		
	• building height control, setbacks or envelope outline		
	• building length and articulation		
	• the composition of the facade and roof design		
	• existing buildings on the site		
	• building entries (pedestrian, vehicular and service)		
	• profile of buildings on adjacent properties or for 50m in each direction, whichever is most appropriate		
Sections	A scale drawing showing:		
	• proposed building height and RL lines		
	• building height control		
	• setbacks or envelope outline		
	• adjacent buildings		
	• building circulation		
	• the relationship of the proposal to the ground plane, the street and open spaces particularly at thresholds		

Documentation	Required information	Provided	
		Yes (√)	No (x)
Sections (continued)	• the location and treatment of car parking		
	• the location of deep soil and soil depth allowance for planting on structure (where applicable)		
	• building separation within the development and between neighbouring buildings		
	• ceiling heights		
	• detailed sections of the proposed facades		
Solar access study	Where required, graphic documentation at winter solstice (June 21) at minimum of hourly intervals showing:		
	• number of hours of solar access to the principal communal open space		
	• number of hours of solar access to units within the proposal and tabulation of results		
	• overshadowing of existing adjacent properties and overshadowing of future potential development where neighbouring sites are planned for higher density		
	• elevation shadows if shadow is likely to fall on neighbouring windows, openings or solar panels		
Cross ventilation study	Where required, graphic documentation of unobstructed path of air movement through dual aspect apartments and tabulation of results		
Material and finishes board	A sample board of the proposed external materials, finishes and colours of the proposal, keyed to elevations		
Illustrative views	Photomontages or similar rendering or perspective drawings illustrating the proposal in the context of surrounding development. Note: Illustrative views need to be prepared using a perspective that relates to the human eye. Where a photomontage is prepared, it should use a photo taken by a full frame camera with a 50mm lens and 46 degree angle of view		
Models	• A physical model that shows the massing of the proposal that includes relevant context (particularly for developments over 20 apartment units or on contentious sites)		
	• A three dimensional computer generated model showing views of the development from adjacent streets and buildings		
	Note: The consent authority will specify the modelling required to be submitted with a development application. This may be one of the above, or both		

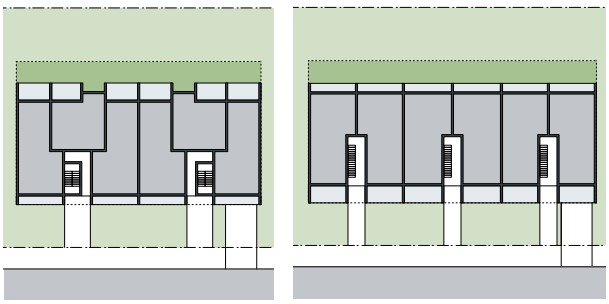
APPENDIX 4
Apartment building types - Example schemes

01
Row apartments

This example scheme of a row apartment type uses two separate volumes to step down the street in response to the site slope and the height of neighbouring buildings. To further integrate with the neighbourhood character, the front of the building is aligned with adjacent properties to achieve a consistent setback and open space character.

Building entries, balconies and windows address the street and provide passive surveillance, while non-habitable rooms face the side boundaries. A generous rear setback allows for visual privacy and ensures solar access to private open spaces.

Site amenity is maximised by providing deep soil areas which incorporate the existing significant vegetation in both the front and rear setbacks. Vehicle access is restricted to a single access point and basement car parking is contained within the building footprint.



Row apartment types are modular and can be adapted to fit various site widths. They are well suited to wide, shallow lots and typically have 2-3 apartments accessed off one common access core

Context and subdivision

The site is a consolidation of three narrow residential lots, located in a suburban area undergoing an increase in density with a mix of detached, duplex, terrace and apartment buildings

Key considerations

- Character of the area and streetscape
- Visual privacy and overshadowing of adjacent properties
- Retention of existing trees

Design qualities

- Building scale (3 levels + 4th level setback) relates well to existing urban character
- Dual aspect apartments with good daylight access and natural ventilation
- Good visual privacy for residents and neighbours with balconies facing the street and rear garden

Data

Site dimensions: 33m wide x 33.5m deep

Site area: 1,100m^2

Building height: 3-4 storeys above ground

FSR: 1:1

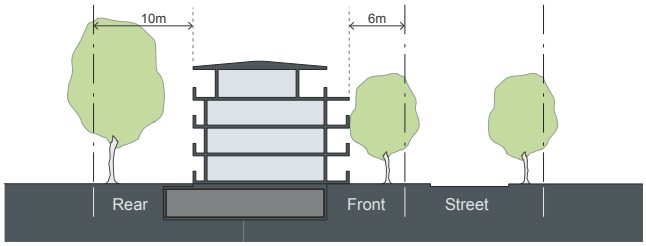
Building depth: 17m (incl. balconies)

Setbacks: front setback consistent with established pattern in street; side setback 3m; rear setback 10m

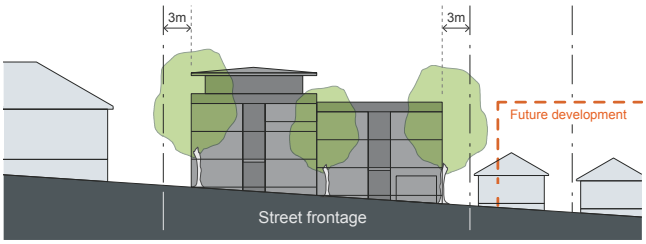
Deep soil: 35%

Car parking: 17 spaces (basement)

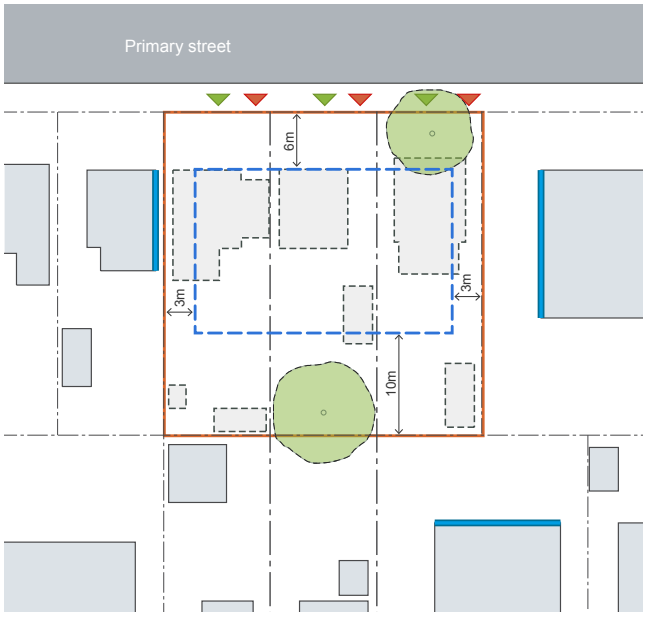
Number of dwellings and mix:
12 apartments, predominantly 2 bedrooms



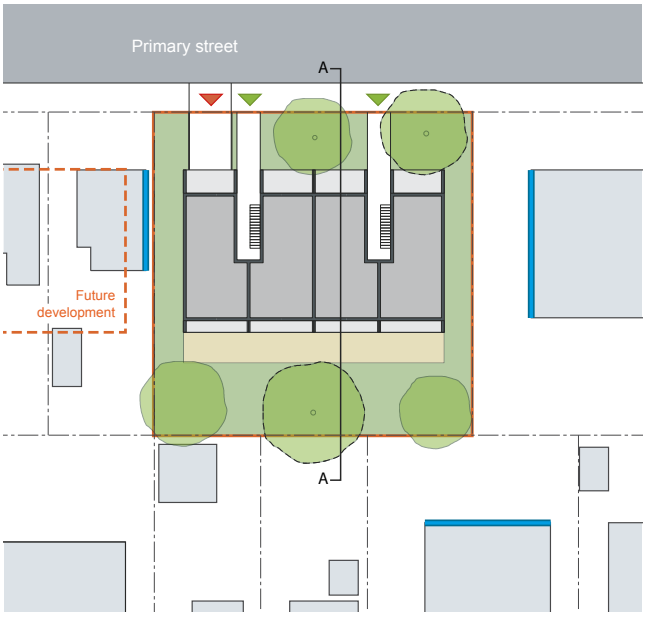
Proposed development - Section A



Proposed development - Street elevation



Existing site and proposed development footprint



Proposed development - Typical upper level plan

- Site boundary
- Proposed development footprint
- Pedestrian access
- Vehicular access
- Deep soil zone
- Significant tree to be retained
- Walls with balconies or windows to habitable rooms

Apartment building types - Example schemes

02

Narrow infill apartment

This example scheme divides the built form into two components, a front component that addresses the street to the south and a longer rear building positioned perpendicular to the street alignment.

The front building faces the street and provides a unified streetscape. This allows for a prominent building entry as well as overlooking of the street from balconies and windows of apartments. One of the side setbacks of the front building is able to be reduced to 3 metres as the side wall has no windows to the neighbour. The rear component has increased setbacks to resolve privacy and overshadowing impacts to adjoining properties. Ground floor apartments are two levels and accessed from a private courtyard.

The building height relates to the area's desired future character. Height is also determined by sunlight access requirements to communal and private spaces for this development and its neighbours, and changes from 4 storeys at the street frontage to 3 storeys at the rear. This change in height also provides an opportunity for a roof garden.

Dual aspect apartments (dwellings with windows and/or balconies to at least two sides) allow for a high level of amenity for residents. Likewise the setbacks provide areas for communal open space, deep soil and retention of significant trees. The split level basement parking area is accessed from a single point on the lower side of the street frontage.

Context and subdivision

Suburban infill site in an area undergoing transition from detached dwellings to residential flat buildings; the site is a consolidation of two detached housing lots

Key considerations

- Visual privacy and sunlight access to proposed apartments and adjoining properties
- Visual impact of vehicle access to car park

Design qualities

- All proposed apartments are dual aspect and offer natural cross ventilation
- Daylight access is shared equitably

Dimensions and data

Site dimensions: 20m wide x 50m deep

Site area: 1,000m^2

Building height: 3-4 storeys above ground

FSR: 1.1:1

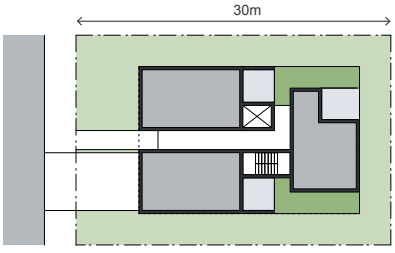
Building depth: 9.5-13m

Setbacks: front setback consistent with established pattern in street; side setback 3-4m; rear setback 6m

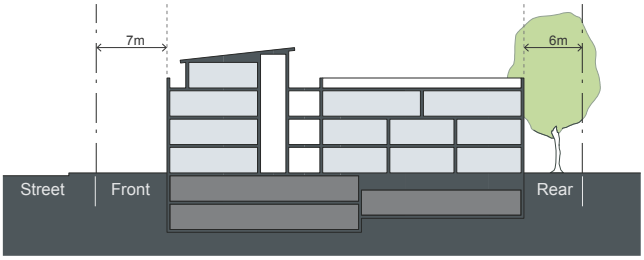
Deep soil: 40%

Car parking: 15 spaces (basement)

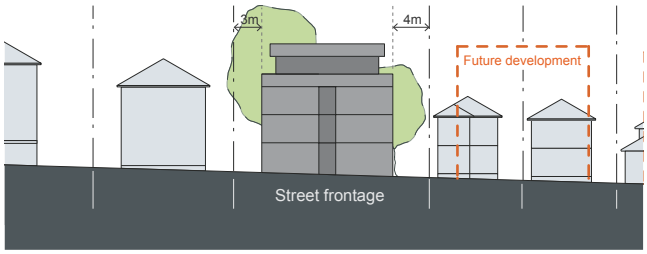
Number of dwellings and mix:
11 apartments with a mix of 1 and 2 bedrooms



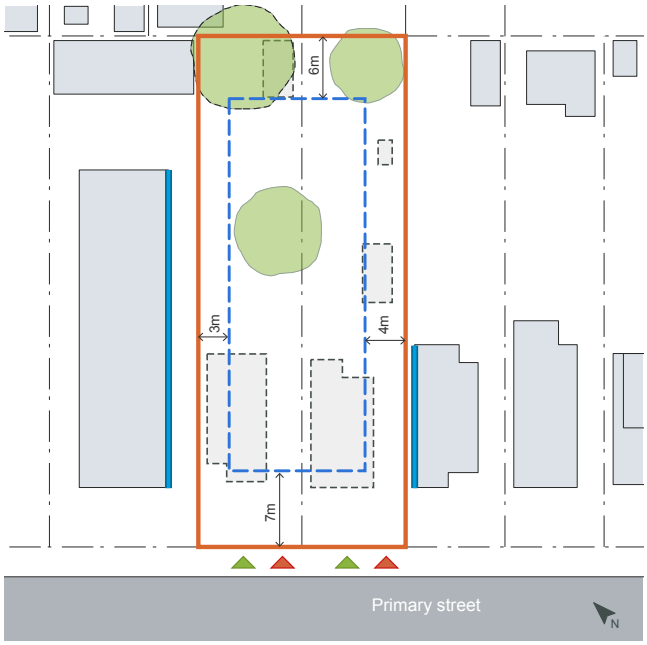
Narrow infill apartment types are modular and can be adapted to fit various site depths. This example is situated on a 30m deep lot.



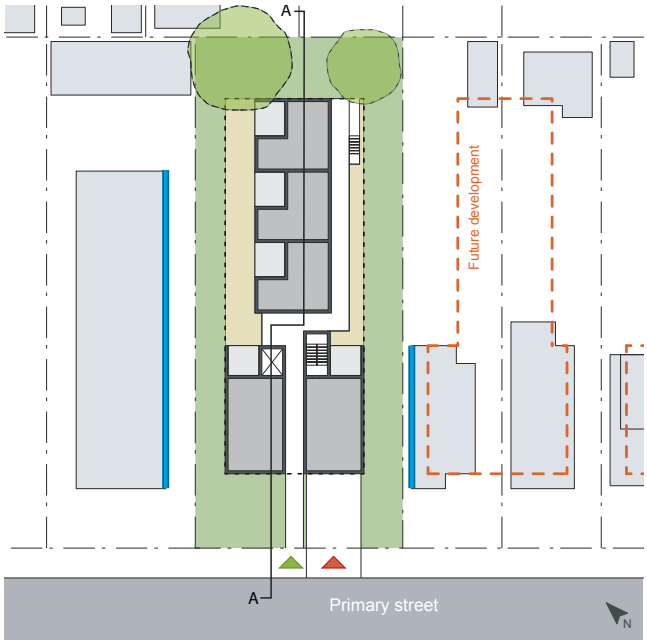
Proposed development - Section A



Proposed development - Street elevation



Existing site and proposed development footprint



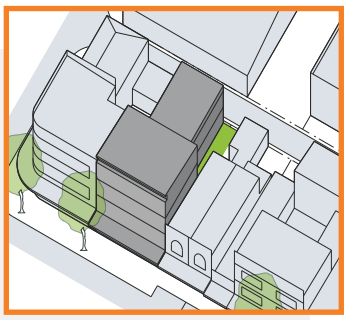
Proposed development - Typical upper level plan

- Site boundary
- Proposed development footprint
- Pedestrian access
- Vehicular access
- Deep soil zone
- Significant tree to be retained
- Walls with balconies or windows to habitable rooms

Apartment building types - Example schemes

03

Shop top apartments



This example scheme adopts the established building alignment, responds to the fine urban grain of the main street and provides for a continuous awning along the street frontage.

Above the retail and to the rear of the site, a mix of 1 and 2 bed apartments are located in a 'T' configuration of 3 to 4 storeys. The front building extends to side boundaries to provide a continuous street wall. Dual aspect apartments ensure good daylight access and natural ventilation.

The building to the rear is perpendicular to the main street and setback from both side and rear boundaries. This provides amenity benefits including a small courtyard space, privacy to residents and neighbouring dwellings and access to sunlight. Solutions such as adjustable screens may be required on the northern elevation to manage privacy impacts.

Access for the residential apartments is separated from access to the ground floor retail, enhancing safety. Likewise access from the main street and rear lane, as well as the layout of apartments facilitates passive surveillance to both the main street and rear lane, increasing safety and security.

The rear lane provides access to a single level basement car park with planting above the basement structure. Where possible, opportunities to create or retain deep soil zones within side and rear setbacks should be explored on sites similar to this example.

Context and subdivision

Urban main street undergoing renewal; heights range between 2 and 3 storeys and buildings are built to the street alignment; the development site is a consolidation of three retail terrace lots fronting a busy road to the north-west and laneway to the south-east; adjacent development includes a mix of three storey shop top apartments and 2 storey retail buildings

Key considerations

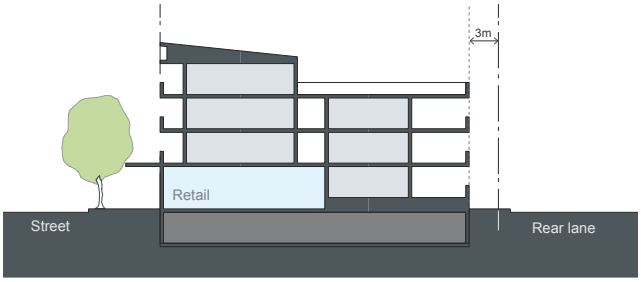
- Heritage values of adjacent buildings and retention of streetscape character
- Interface between residential and non-residential uses
- Visual privacy and noise impacts

Design qualities

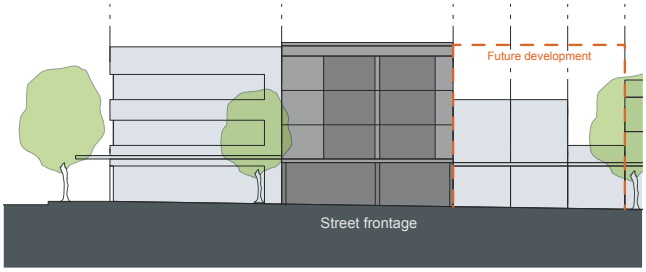
- Increase of residents within local centre in walkable distance to services and facilities
- Continuous street wall height and proportion
- Activation and increased surveillance of rear lane

Dimensions and data

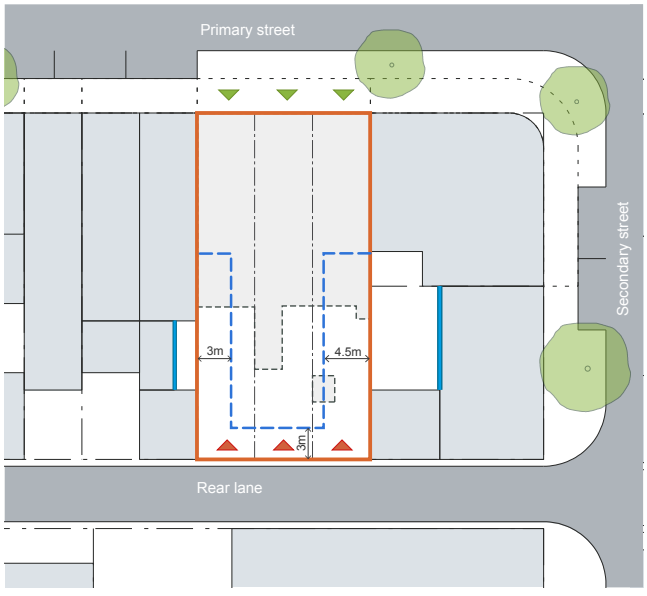
Site dimensions: 15m wide x 30m deep
Site area: 450m^2
Building height: 3-4 storeys above ground
FSR: 1.8:1
Building depth: 7.5-12m
Setbacks: zero front setback consistent with established pattern in street; zero side setback; rear setback 3m
Deep soil: 15%
Car parking: 7 spaces (basement)
Retail GFA: 100m^2 (ground floor)
Number of dwellings and mix: 9 apartments with a mix of 1 and 2 bedrooms



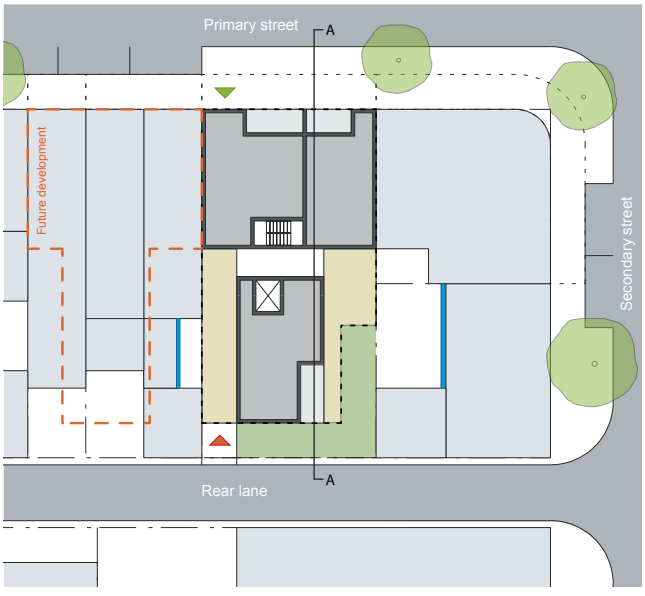
Proposed development - Section A



Proposed development - Street elevation



Existing site and proposed development footprint



Proposed development - Typical upper level plan

- Site boundary
- Proposed development footprint
- Pedestrian access
- Vehicular access
- Deep soil zone
- Significant tree to be retained
- Walls with balconies or windows to habitable rooms

Apartment building types - Example schemes

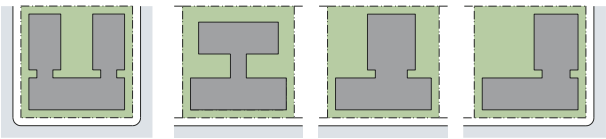
04

Courtyard apartments (U-shape)

This example of a U-shaped courtyard apartment building addresses both the primary street frontage and the rear lane which increases safety by encouraging activity and surveillance. Access points to apartments from the courtyard are clearly defined by three access cores which help to break up the building into smaller masses and contribute to better surveillance, daylight access and natural ventilation.

The prominent central courtyard present an attractive landscaped setting to the street. Surveillance of the central courtyard and side boundaries is achieved from balconies and windows. In this example and on properties with similar characteristics the transition from public to private space should be carefully considered and managed.

Visual privacy and daylight access to adjacent sites is ensured through appropriate building separation and height. Amenity within the site is achieved through a 12m building separation (courtyard) and a building orientation that enables an attractive outlook and good daylight access. Large side setbacks provide opportunities to retain significant trees and vehicle access is off the rear lane.



Courtyard apartment types can take many forms depending on the site configuration and orientation and be adapted or combined accordingly

Context and subdivision

Suburban area undergoing transition from detached dwellings to residential flat buildings; two lots have been consolidated to form the development site; dual frontage to street and rear lane

Key considerations

- Visual privacy for adjoining properties
- Overshadowing of courtyard
- Design of corners to ensure good daylight access to apartments

Design qualities

- Activates both the street and the rear lane
- Communal courtyard increases opportunities for social interaction amongst residents
- Integration with neighbourhood character by orienting either the short ends or the long frontage to the street
- Suited to step with the slope and be oriented to capture views, daylight and prevailing breezes
- Suitable to respond to a variety of lots shapes

Dimensions and data

Site dimensions: 43m wide x 35m deep

Site area: 1,470m^2

Building height: 3-4 storeys above ground

FSR: 1:1

Building depth: 7m - 10m

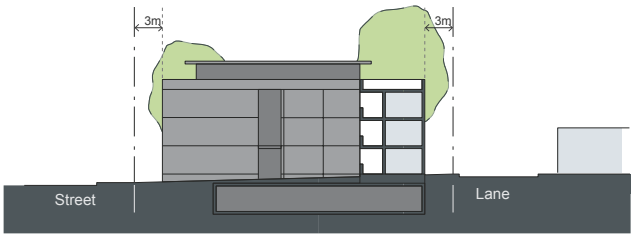
Setbacks: front setback consistent with established pattern in street; side setback 6m; rear setback 3m, courtyard 12m

Deep soil: 30%

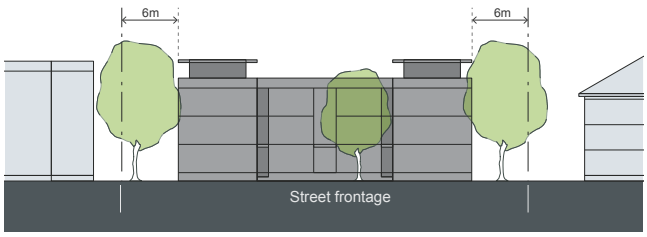
Car parking: 22 spaces (basement)

Retail component: 100m^2 ground floor

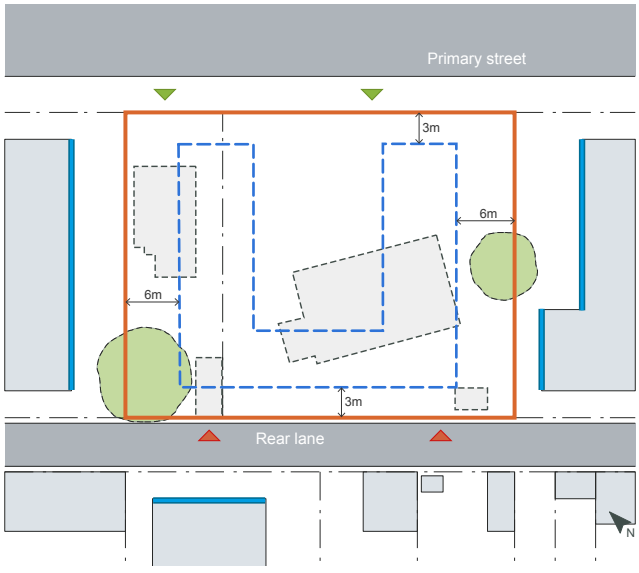
Number of dwellings and mix:
19 apartments with a mix of 1, 2 and 3 bedrooms



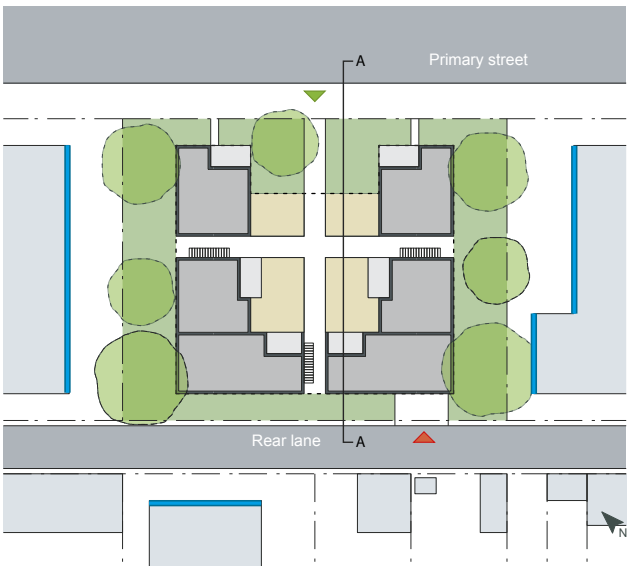
Proposed development - Section A



Proposed development - Street elevation



Existing site and proposed development footprint



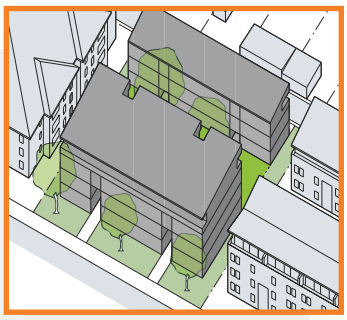
Proposed development - Typical upper level plan

- Site boundary
- Proposed development footprint
- Pedestrian access
- Vehicular access
- Deep soil zone
- Significant tree to be retained
- Walls with balconies or windows to habitable rooms

Apartment building types - Example schemes

05

Courtyard apartments (linear)



This example uses a centralised courtyard between two linear buildings to optimise development of the site while ensuring good amenity. By using this typology it is possible to provide consistent setbacks to the street and lane, a sense of address and good surveillance of the public domain.

Building height should relate to the adjacent development, street width and the direction of solar access. In this example, the larger 4 storey building fronts the wider street while the 3 storey building is oriented to the north and fronts the narrower lane. This lower building height allows for sunlight to access to the courtyard behind.

Amenity to neighbouring properties is improved by providing greater visual privacy and improved daylight and solar access than would otherwise be possible with a building perpendicular to the street alignment. Walls facing the side boundary are mostly blank with windows only to common entry corridors and non-habitable rooms. This improves the privacy to adjacent properties that have habitable windows and balconies facing the side boundary.

A centralised courtyard provides separation between facades and a pleasant open space for passive recreation. The courtyard also provides opportunities to retain any significant vegetation and overlap deep soil with communal open space. In addition, planting on top of the car park increases the attractiveness and usability of this area. Vehicle access is from the lane to a split level car park which is located predominantly below the building footprint.

Context and subdivision

Suburban area in transition to increased density with a mix of apartment buildings and detached dwellings; the development site is an amalgamation of four traditional detached housing lots with street and rear lane frontage

Key considerations

- Visual privacy for adjoining properties
- Adequate building separation to ensure good solar access and ventilation

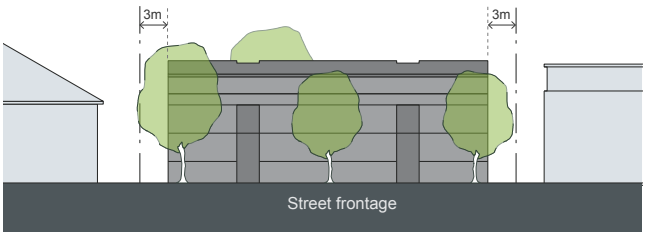
Design qualities

- Multiple building entries achieve activation of the street and rear lane
- Front building forms part of an intended street wall
- Can be adapted for narrow sites and include SOHO units (live-work) or small commercial tenancies
- Suitable for sloping sites

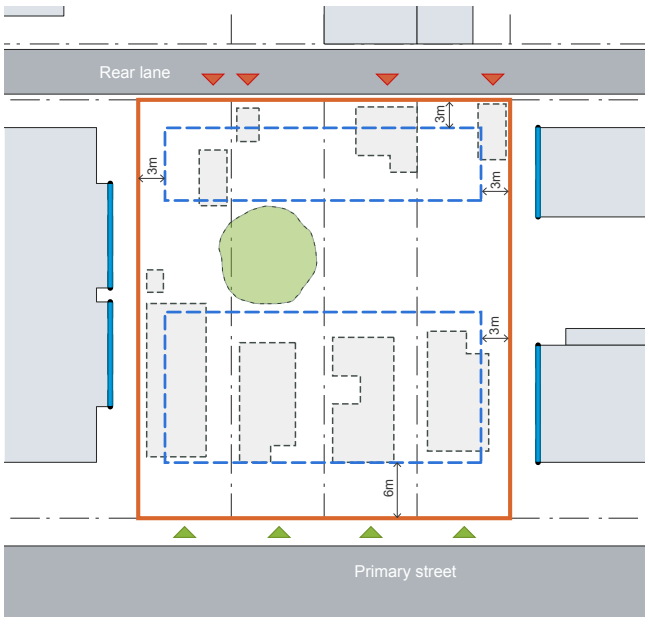
Dimensions and data

Site dimensions: 45m wide x 40m deep
Site area: 1,800m^2
Building height: 3-4 storeys above ground
FSR: 1.3:1
Building depth: 7.8m - 16.2m
Setbacks: front setback consistent with established pattern in street; side setback 3m
Deep soil: 20%
Car parking: 30 spaces (basement)
Number of dwellings and mix: 22 apartments with a mix of 1, 2 and 3 bedrooms

Proposed development - Section A



Proposed development - Street elevation

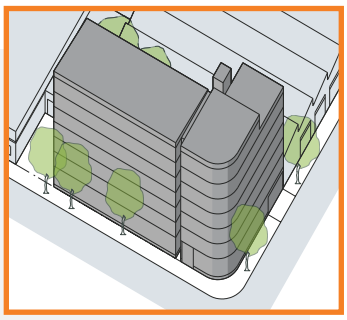


Existing site and proposed development footprint

Proposed development - Typical upper level plan

- Site boundary
- Proposed development footprint
- Pedestrian access
- Vehicular access
- Deep soil zone
- Significant tree to be retained
- Walls with balconies or windows to habitable rooms

Apartment building types - Example schemes



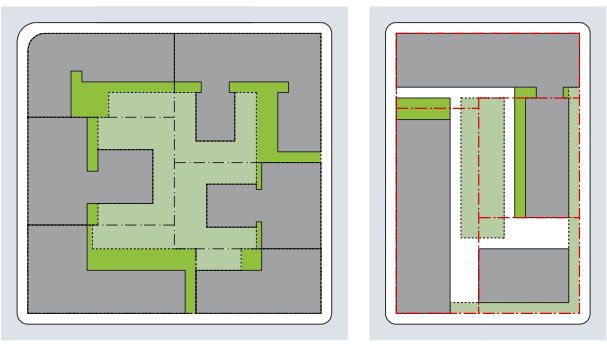
06

Perimeter block apartments

This example uses a perimeter block building to align the development with both street edges and clearly define the street corner. The building is constructed to the side boundaries in anticipation of future development and a desired continuous street wall height for the area.

Residential apartments are set above the noisy street level. Noise impacts are managed through a variety of solutions including the provision of wintergardens and adjustable screens. 2 storey apartments are arranged along an open gallery to maximise northern solar access, while single storey apartments are located towards the corner adjacent to the lift core.

Privacy within the site and to future neighbouring residential flat development is achieved through a rear boundary setback. This also creates space for a communal courtyard with deep soil zones and landscaping on the top of the basement structure. Vehicle access is off the secondary street and designed to minimise safety risks for pedestrians.



Perimeter blocks can be delivered in stages and over time. They are often designed as a series of buildings which share a central communal open space and/or basement car parking

Context and subdivision

Former industrial area under transition into urban neighbourhood; the site is located on a busy street corner and surrounded by industrial sheds and several new apartment buildings

Key considerations

- Visual privacy and good daylight access to neighbouring properties
- Relationship and interface between residential and non-residential uses
- Emphasis on design of corner component

Design qualities

- Cleary defines the visually prominent street corner
- Supports a vibrant neighbourhood by creating active retail frontages at ground level facing the street
- Offers high residential amenity due to shallow building depth and dual aspect apartments
- Defines the desired future streetscape scale

Dimensions and data

Site dimensions: 41m wide x 23m deep

Site area: 950m^2

Building height: 6-7 storeys above ground

FSR: 3.3:1

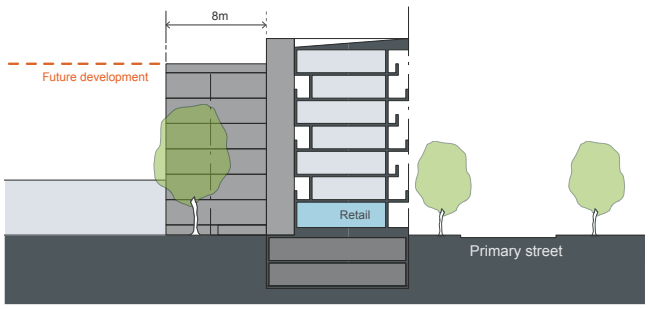
Building depth: 9.6m - 13.5m

Setbacks: zero front setback consistent with established pattern in street; zero side and rear setback

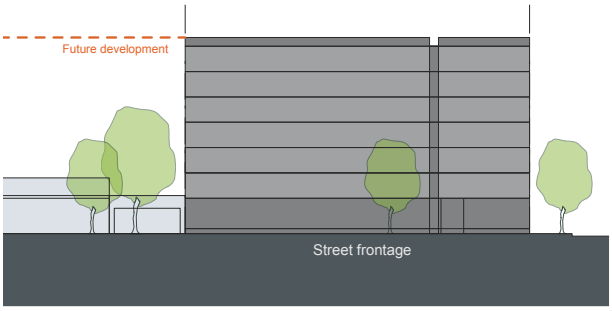
Deep soil: 13%

Car parking: 48 spaces (basement)

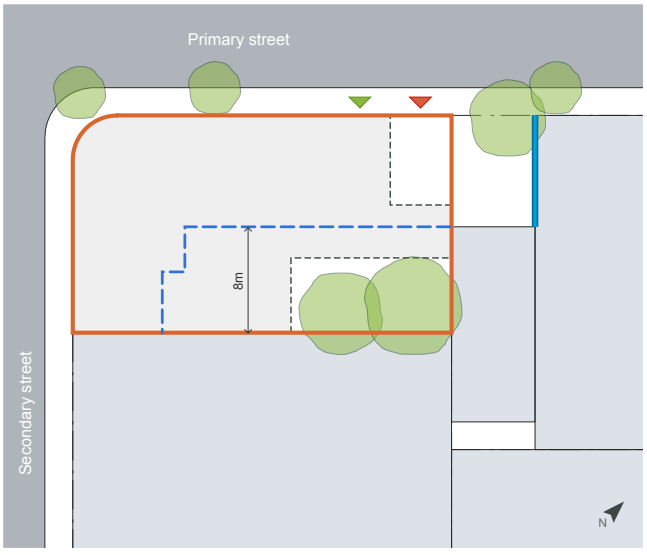
Number of dwellings and mix:
29 apartments with a mix of 2 and 3 bedrooms



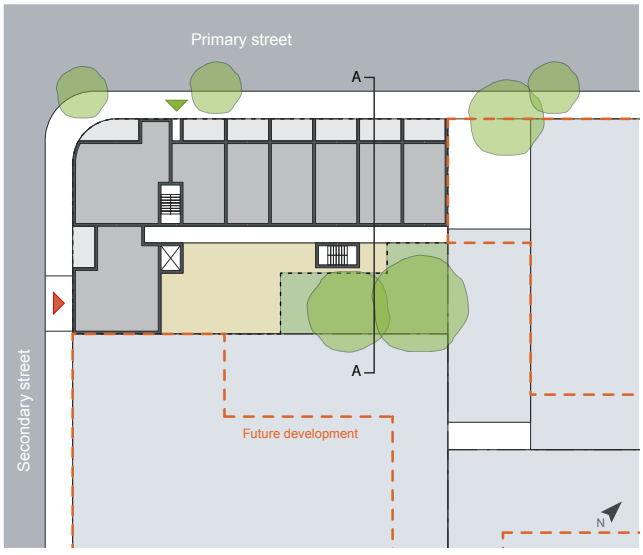
Proposed development - Section A



Proposed development - Street elevation



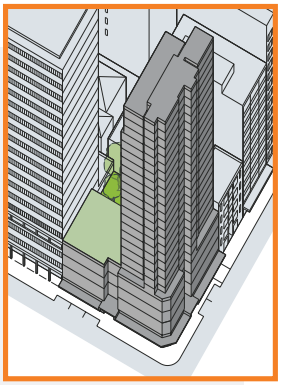
Existing site and proposed development footprint



Proposed development - Typical upper level plan

- Site boundary
- Proposed development footprint
- Pedestrian access
- Vehicular access
- Deep soil zone
- Significant tree to be retained
- Walls with balconies or windows to habitable rooms

Apartment building types - Example schemes



07

Tower apartments (podium)

This example consists of three distinct built form components: a ground floor retail level with full site coverage, a podium with commercial floors and a residential tower. The building integrates with its context by building to the street alignment and providing a street wall height consistent with the typical range of the area.

The ground floor interface balances the need for flexible use of space with the potential for varied tenancy sizes that encourage activation and a vibrant street life. Commercial floors above the retail ground floor act as a buffer and vertically separate noisy areas from upper level apartments. Entries to the residential lobbies are directly accessible from the street, but distinctly separate from retail and commercial entrances.

While the tower has a repetitive floor layout, facade articulation offers the opportunity to group floors together and vary facade treatments to add interest. Each residential floor has eight apartments that are accessed from the lift core, with windows located at the end of common corridors. Corner apartments are cross ventilated. Balconies at higher levels may need to be partially enclosed to resolve wind impacts, e.g. through operable louvres or wintergardens.

In highly urbanised locations, deep soil zones may be impractical to provide. This example compensates for the lack of deep soil by landscaping the roof of the podium, providing common open space for residents and environmental benefits, i.e. improvement of the local microclimate. Access to basement parking is from the secondary street frontage and integrated into the overall building design.

Context and subdivision

An inner city corner site with a mix of towers and street wall buildings; predominant street wall height ranges between 20m and 45m; podium buildings are constructed to the street alignment and have a zero setback to side boundaries

Key considerations

- Visual impact of tower element
- Visual privacy to neighbouring development
- Overshadowing of communal and public space and neighbouring development

Design qualities

- Provision of housing close to jobs, shopping, entertainment and transport choices
- Residential use activates the area outside of business hours (applicable to inner city or CBD location)
- Podium allows for integration into streetscape, e.g. continuous street wall height
- Opportunity to be a gateway building or landmark

Dimensions and data

Site dimensions: 46m wide x 38m deep

Site area: 1,750m^2

Building height: 4 to 25 storeys above ground

FSR (retail): 2.8:1; FSR (residential): 8.4:1

Building depth (retail/commercial): 25m

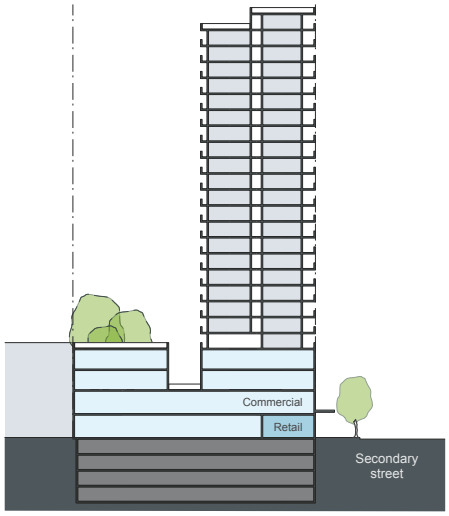
Building depth (residential): 18m

Setbacks: zero front setback consistent with established pattern in street; zero side and rear setback

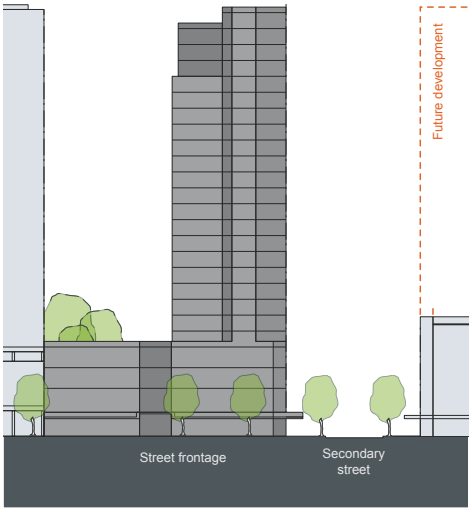
Deep soil: 0%, Planting on structure: 24%

Car parking: 192 spaces (basement)

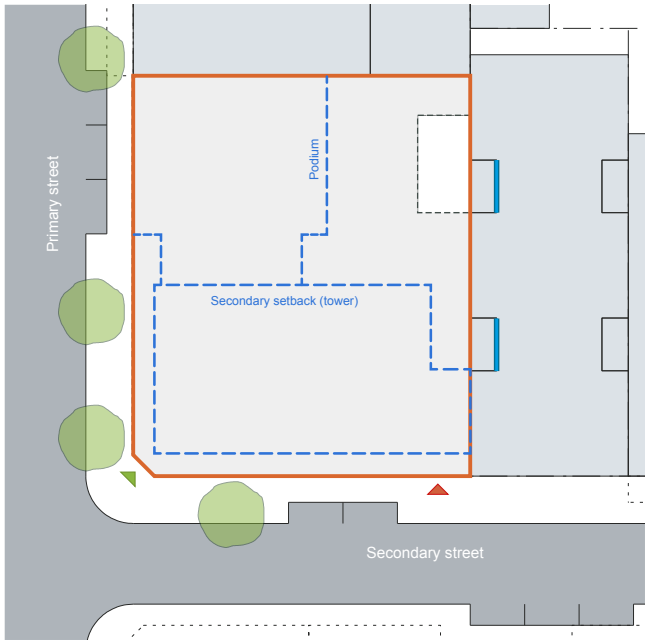
Number of dwellings and mix:
150 apartments with a mix of studio, 1, 2 & 3 bedrooms



Proposed development - Section A



Proposed development - Street elevation



Existing site and proposed development footprint

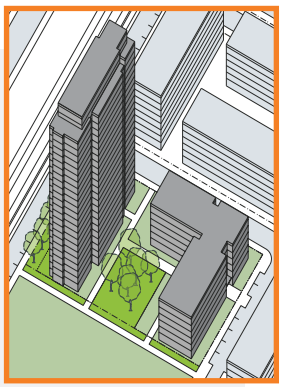
Proposed development - Typical upper level plan

- Site boundary
- Proposed development footprint
- Pedestrian access
- Vehicular access
- Deep soil zone
- Significant tree to be retained
- Walls with balconies or windows to habitable rooms

Apartment building types - Example schemes

08

Tower apartments (freestanding)



This development integrates with its context by aligning with the setback of adjacent buildings and providing an address to surrounding streets. The location of the tower minimises overshadowing of communal and public open space and neighbouring development. The orientation of the tower building along the north-south axis maximises views and enables good solar access to all apartments.

Communal open space for residents is provided in the centre of the site facing the public park. The basement car park has a "U" shaped footprint over two levels and wraps around a deep soil zone under the communal courtyard. Vehicle access is located on the secondary street to the south.

Pedestrian entries to lobbies are located along all street frontages. Additional access is provided from the public park to the north and off the communal courtyard. At ground level, apartments have direct access from the street or the communal courtyard and the design allows for live-work apartments and retail space facing the street.

The tower has a central core with eight apartments per floor. All circulation corridors have access to natural light and ventilation. On each level are two dual key apartments (able to be separated into two individual apartments) which increases flexibility in tenancy and housing choice.

Context and subdivision

The site is located within a predominantly residential context at the edge of a town centre, adjacent to a (noisy) railway line to the east and defined by streets on three sides and a public park to the north

Key considerations

- Visual impact of tower element
- Visual privacy to neighbouring development
- Overshadowing of communal and public space and neighbouring development
- Relationship with streetscape

Design qualities

- Small footprint minimises hard surface areas and reduces urban heat island effect
- Excellent views, daylight access and natural ventilation for residents
- Separation from noise sources (e.g. busy road/rail)
- Opportunity to be a gateway building or landmark

Dimensions and data

Site dimensions: 95m wide x 62m deep

Site area: 5,890m^2

Building height: 25 storeys above ground

FSR: 4.4:1

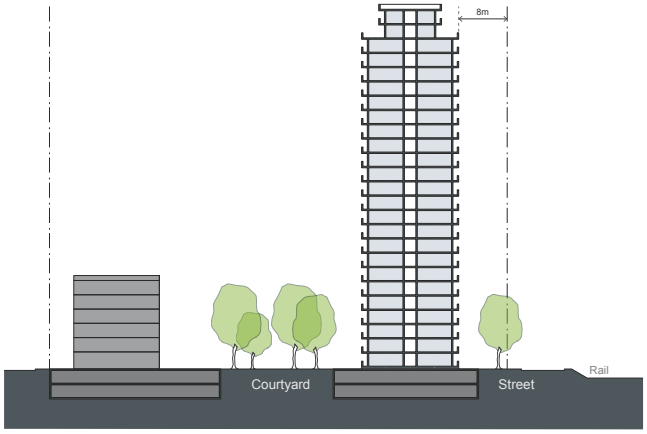
Building depth: 15.5m - 21.5m

Setbacks: landscaped setback, consistent with surrounding context

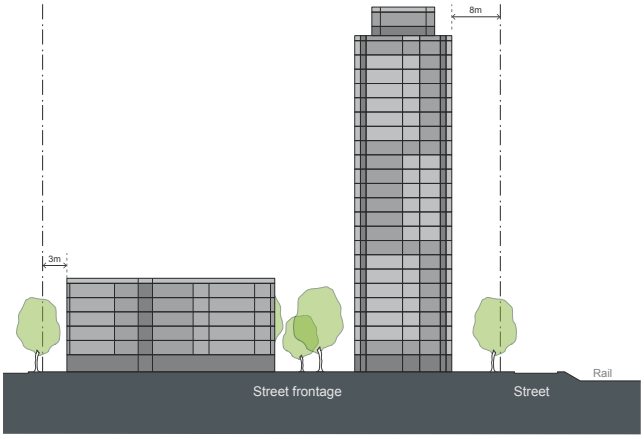
Deep soil: 14%

Car parking: 340 spaces (basement)

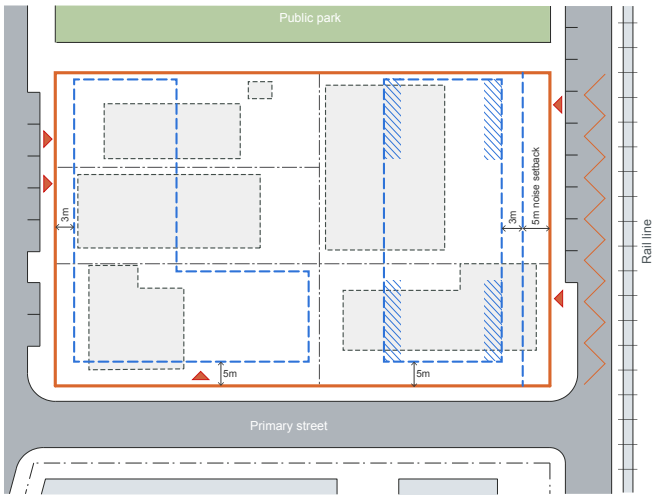
Number of dwellings and mix:
314 apartments with a mix of 1, 2 and 3 bedrooms



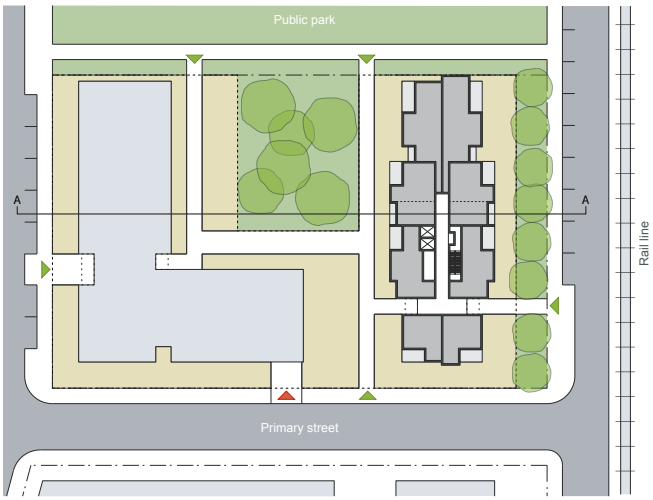
Proposed development - Section A



Proposed development - Street elevation



Existing site and proposed development footprint



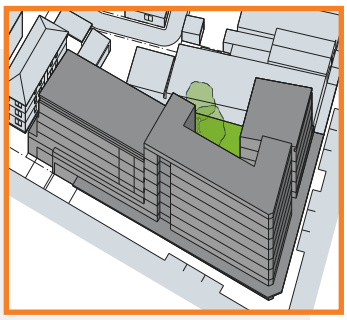
Proposed development - Typical upper level plan

- Site boundary
- Proposed development footprint
- Pedestrian access
- Vehicular access
- Deep soil zone
- Significant tree to be retained
- Walls with balconies or windows to habitable rooms

Apartment building types - Example schemes

09

Hybrid (mixed) development



This example scheme of a mixed use development is an amalgamation of four lots and located at a prominent street corner. It consists of a single level retail podium with full site coverage and residential apartments on the upper levels.

The sharp street corner is defined and both streets are addressed through the use of commercial frontages (windows and entries) and a continuous awning that turns the corner. Lift cores to residential floors above are located at the street edge. Single storey units are stacked vertically on the corner and accessed from an open gallery while crossover apartments to either side of the building maximise northern sunlight access.

Communal open space is provided on the podium with substantial planting on structure (roof garden). Large trees and adequate building separation further enhance residential amenity. Vehicle access to the basement car park and the retail loading dock are located off the secondary street to the north.

Integrating residential apartments with large format commercial uses requires detailed consideration to resolve potential conflicts between uses. The location of retail and residential entries, the arrangement of loading docks and basement car parking and the impact and mitigation of noise generated by the commercial component are some examples.

Context and subdivision

A prominent corner site that addresses two streets with different streetscape character; surrounding buildings are anticipated to redevelop into similar density and height; desired future character of the area includes active street frontages, continuous awnings, zero built-to alignments and street frontage heights of 17 to 24m

Key considerations

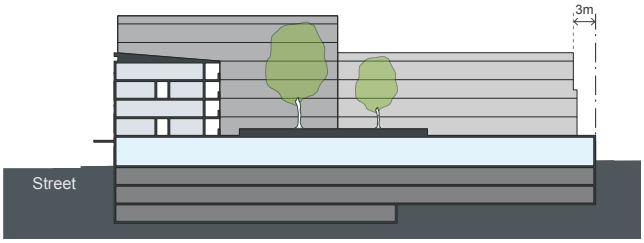
- Relationship and activation of surrounding streets
- Relationship and interface between residential and non-residential uses, i.e. mitigation of potential conflicts between retail and apartments
- Emphasis on design of prominent corner component

Design qualities

- Clear street address with active frontages
- Podium roof gardens add to residential amenity
- Selection of robust facade materials
- Integration of photo voltaics (PV) on roofs and awnings

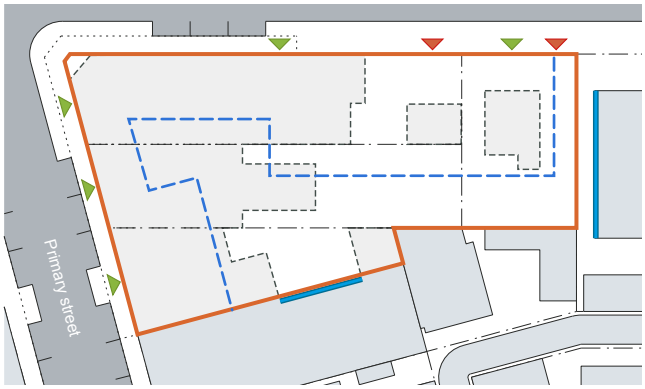
Dimensions and data

Site dimensions: 80 x 45m (irregular)
Site area: 2,840m^2
Building height: 5-7 storeys above ground
FSR: 2.8:1 residential and 0.8:1 retail
Building depth (residential): 10.2 - 17m
Setbacks: nil front setback, 2.4m front setback upper levels, nil side setback, 3m upper levels, nil rear setback, 9m upper levels
Deep soil zone: 0%, Planting on structure: 10%
Car parking: 210 spaces (basement)
Retail GFA: 2,270m^2 (ground floor)
Number of dwellings and mix: 64 apartments with a mix of 1, 2 and 3 bedrooms



Proposed development - Section A

Proposed development - Street elevation



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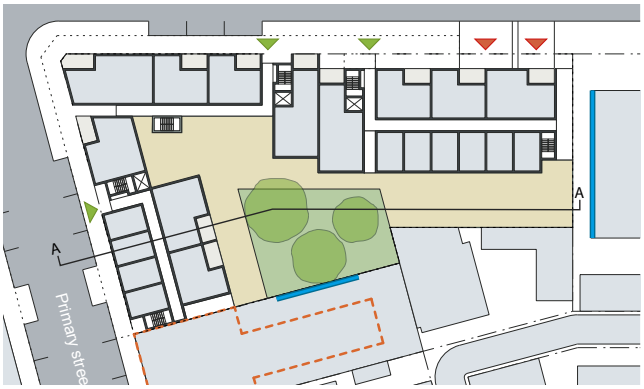

Proposed development - Typical upper level plan

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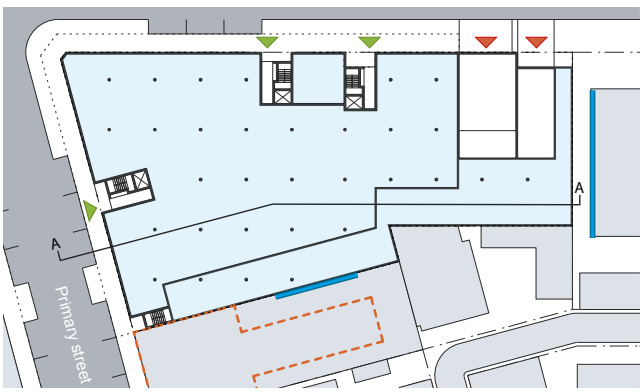

Proposed development - Ground level plan

Glossary

Acoustic privacy

a measure of sound insulation between apartments, between apartments and communal areas, and between external and internal spaces

Adaptable housing

housing that is designed and built to accommodate future changes to suit occupants with mobility impairment or life cycle needs

Adaptive reuse

the conversion of an existing building or structure from one use to another, or from one configuration to another

Affordable housing

rental housing for low to moderate income households. Affordable housing is required to be financially viable for its occupants based on a ratio of housing costs to income

Amenity

the 'liveability', comfort or quality of a place which makes it pleasant and agreeable to be in for individuals and the community. Amenity is important in the public, communal and private domains and includes the enjoyment of sunlight, views, privacy and quiet. It also includes protection from pollution and odours

Aircraft noise

Aircraft noise is identified as contours on the Australian Noise Exposure Forecast (ANEF) Map. The higher the ANEF contour value, the greater the exposure to aircraft noise

Articulation zone

An area in front of the building line that may contain porticos, balconies, bay windows, decks, patios, pergolas, terraces, verandahs, window box treatment, window bays, awnings and sun shading features

Bay window

window element which projects a short way past the face of the building. It can have windows on the return walls and sometimes incorporates a seat

BCA

Building Code of Australia

Build to line

a required front setback of the building envelope from the street edge. In urban areas the build to line often corresponds to a zero front setback, to respond to a consistent streetscape

Building line

the predominant line formed by the main external face of the building. Balconies or bay window projections may or may not be included depending on desired streetscape

Building height

as defined in the Standard Instrument (Local Environmental Plans) Order 2006

Building depth

is the overall cross section dimension of a building envelope. It includes the internal floor plate, external walls, balconies, external circulation and articulation such as recesses and steps in plan and section.

Busy road or rail line

as defined in State Environmental Planning Policy (Infrastructure) 2007 and Development Near Rail Corridors and Busy Roads – Interim Guideline

Core

vertical circulation (lift and/or stairs) within a building. A single core may include multiple lifts serving the same floor area

Corner apartment

Cross ventilating apartments on one level with aspects at least 90 degrees apart. Corner apartments are commonly located on the outermost corners of buildings

Cornice

decorative horizontal moulding at the top of a building which 'crowns' or finishes the external facade

Courtyard

communal space at ground level or above a structure (e.g. podium), formed by the building and enclosed on 3 or more sides and open to the sky

Cross over apartments

cross ventilating apartments with two opposite aspects and with a change in level between one side of the building and the other

Cross through apartment

cross ventilating apartments on one level with two opposite aspects

Datum point or datum line

a significant point or line in space established by the existing or desired context, often defined as an Australian Height Datum. For example, the top of significant trees or the cornice of a heritage building

Daylight

consists of both skylight (diffuse light from the sky) and sunlight (direct beam radiation from the sun). Daylight changes with the time of day, season and weather conditions

Deep soil

areas of soil unimpeded by buildings or structures above and below ground within a development and a minimum dimension of 6m. Deep soil zones exclude basement car parks, services, swimming pools, tennis courts and impervious surfaces including car parks, driveways and roof areas

Double loaded corridor

corridor with apartments accessed off both sides, generally associated with single aspect apartments

Dual aspect apartment

cross ventilating apartments which have at least two major external walls facing in different directions, including corner, cross over and cross through apartments

Dual key apartment

apartment with a common internal corridor and lockable doors to sections of the apartment so that it is possible to separate into 2 independent units

Effective Openable Area (EOA)

the minimum area of clear opening of a window that can take part in providing natural ventilation. The effective openable area of a sliding or hung sash window can be measured in elevation. Hinged windows such as casement, awning and hopper windows may measure the diagonal plane from the sash to the jamb and add the triangles at either end up to a total area of the window opening in the wall. Obstructions within 2m of a window reduce the effective openable area as measured in elevation. Fly screens and security screens will reduce the effective openable area by half

Facade

the external face of a building, generally the principal face, facing a public street or space

Floor Space Ratio

as defined in the Standard Instrument (Local Environmental Plans) Order 2006

Gallery access

an external corridor, generally single loaded, which provides access to individual apartments along its length

Glass line

inside face of windows on the external walls of a building

Green roof

a roof surface that supports the growth of vegetation,comprised of a waterproofing membrane, drainage layer, organic growing medium (soil) and vegetation. Green roofs can be classified as either extensive or intensive, depending on the depth of substrate used and the level of maintenance required. Intensive green roofs are generally greater than 300mm depth and are designed as accessible landscape spaces with pathways and other features. Extensive green roofs are generally less than 300mm in profile and are generally not trafficable

Green walls

walls with fixtures to facilitate climbing plants. They can also be cladding structures with growing media to facilitate plant growth

Habitable room

includes a bedroom, living room, lounge room, music room, television room, kitchen, dining room, sewing room, study, playroom, family room, home theatre and sunroom; but does not include bathrooms, laundries, water closets, pantries, walk-in wardrobes, corridor, hallway, lobby, photographic darkroom, clothes-drying room, and other spaces of a specialised nature occupied neither frequently nor for extended periods, as defined by the BCA

Juliet balcony

a small projecting balcony, generally ornamental or only large enough for one person standing

Lightwell

a shaft for light, enclosed on all sides or which has the potential to be enclosed by future adjoining development, and either open to the sky or glazed

Master bedroom

the main bedroom within an apartment, often the largest with an ensuite bathroom

Metropolitan Sydney

Greater Sydney (Greater Capital City Statistical Area) as defined by the Australian Bureau of Statistics, extending from Wyong and Gosford in the north to the Royal National Park in the south, following the coastline in between. Towards the west, the region includes the Blue Mountains, Wollondilly and the Hawkesbury

Mid winter

is 21 June (winter solstice) when the sun is lowest in the sky.

Natural cross ventilation

natural ventilation which allows air to flow between positive pressure on the windward side of the building to the negative pressure on the leeward side of the building providing a greater degree of comfort and amenity for occupants. The connection between these windows must provide a clear, unobstructed air flow path. For an apartment to be considered cross ventilated, the majority of the primary living space and n-1 bedrooms (where n is the number of bedrooms) should be on a ventilation path

Non-habitable room

spaces of a specialised nature not occupied frequently or for extended periods, including bathrooms, laundries, water closets, pantries, walk-in wardrobes, corridor, hallway, lobby, photographic darkroom, and clothes-drying room

On-grade

on ground level (not on a building structure)

Open plan

apartment layouts where spaces are not divided into discrete rooms, but are open and connected to allow flexibility of use (typically living, dining, kitchen and study areas)

Operable screening device

sliding, folding or retractable elements on a building designed to provide shade, privacy, and protection from natural elements

Operable walls

internal walls which can be moved, for example by sliding, folding, or pivoting, to allow for different room configurations or a balcony

Parapet

a horizontal low wall or barrier at the edge of a balcony or roof. Often taken to refer to the decorative element which establishes the street wall height of heritage buildings (see Cornice)

Perimeter block

development where buildings generally define the street edge and enclose or partially enclose an area in the middle of the block

Plenum

a duct or chamber, usually with grilles, that air passes through. Plenums of small cross section tend to limit the passage of air and are not equivalent in performance to standard windows

Podium

the base of a building upon which taller (tower) elements are positioned

Potable water

water which conforms to Australian Standards for drinking quality

Primary private open space

the principal area of private open space, usually the largest consolidated area

Primary windows

windows to habitable rooms located on the external wall of a buildings; primary windows may be supplemented by windows in lightwells, skylights, notches and along galleries.

Communal open space

consolidated area of communal open space for the active use of residential, for example seating, BBQ space, play space

Private courtyard

private open space which may be on a structure (e.g. podium, parking deck) or at ground level

Public open space

Public land for the purpose of open space and vested in or under the control of a public authority

Residential flat building

as defined in the Standard Instrument (Local Environmental Plans) Order 2006; development to which SEPP 65 applies

Shop top housing

as defined in the Standard Instrument (Local Environmental Plans) Order 2006

Silhouette

a building outline viewed against the sky

Sloping site

a site with a slope 15% or greater

Solar access

is the ability of a building to continue to receive direct sunlight without obstruction from other buildings or impediments, not including trees

Stack ventilation / solar chimney

air convection resulting from hot air being pushed up and out by colder denser air which is drawn in at a lower level

Stormwater detention systems

detention systems that hold runoff for short periods by providing temporary storage to reduce the speed of stormwater flow

Stormwater retention systems

retention systems that allow for stormwater to be retained, for infiltration into groundwater or storage in tanks

Street setback

the space along the street frontage between the property boundary and the building. Refer to building line or setback as defined in the Standard Instrument (Local Environmental Plans) Order 2006

Sunlight

direct beam radiation from the sun

Terrace (outdoor area)

an unroofed and usually paved area connected to an apartment and accessible from at least one room. May be on-grade or on a structure (podium or roof)

Universal design

international design philosophy that enables people to carry on living in the same home by assuring apartments are able to change with the needs of the occupant

Wintergarden

an enclosed balcony, typically glazed and used in coastal areas and to minimise noise impacts along busy roads, railway lines and from aircraft noise

Yard

on-grade private open space

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