Department of **Planning, Lands and Heritage**

GOVERNMENT OF WESTERN AUSTRALIA

GAZETTAL DEFERRED
SUBJECT TO FURTHER AMENDMENTS

Western Australian Planning Commission

State Planning Policy 7.3 Residential Design Codes Volume 1

Explanatory Guidelines

These guidelines supplement State Planning Policy 7.3 Residential Design Codes Volume 1 and are to be read in conjunction with that policy.

The Department of Planning, Lands and Heritage acknowledges the traditional owners and custodians of this land. We pay our respect to Elders past and present, their descendants who are with us today, and those who will follow in their footsteps.

Disclaimer

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PART A

1.0 Purpose, format and application

1.1 Purpose

The purpose of these guidelines is to explain and assist in the interpretation and application of *State Planning Policy 7.3 - Residential Design Codes Volume 1* (R-Codes Volume 1).

These guidelines have been prepared by the Western Australian Planning Commission (**WAPC**) to be read in conjunction with the R-Codes Volume 1 and provide advice and guidance to assist interpretation and assessment of **development** proposals against the **design principles** and **deemed-to-comply** provisions of the R-Codes Volume 1. These guidelines may be amended from time-to-time.

Throughout this document, **bolded** words have the corresponding definition listed in *Appendix 1* of the R-Codes Volume 1. Where a defined word occurs multiple times in a section, only the first occurrence is marked.

For the purpose of this document, the R-Codes refers to R-Codes Volume 1. Where referenced, R-Coding refers to the density code designated to residential zoned land in a **Scheme**.

1.2 Format

These guidelines are separated into the corresponding parts of the R-Codes Volume 1, with Parts A and D applying to both low and medium density R-Codings and Part B and C applying to the relevant R-Codings as outlined in **Table 1.4a** of the R-Codes. The format of these guidelines is set out as follows:

PART A. PURPOSE, FORMAT AND APPLICATION

Identifies the purpose and intended audience for these guidelines and explains the relationship of the policy provisions within State Planning Policy 7.0 – *Design of the Built Environment (SPP 7.0)*.

DESIGN PROCESS

Outlines a design process conducive to good **residential development** outcomes.

LOCAL PLANNING FRAMEWORK

Outlines the scope of modifying the R-Codes through **Local Planning Frameworks**, how this may be approved by the **decision-maker**, and where **WAPC** approval is required.

PART B. DESIGN AND ASSESSMENT GUIDANCE FOR LOW DENSITY

Explains how the R-Codes Volume 1 are applied to Part B – low density. Part B provides guidance on the **deemed-to-comply** provisions of the R-Codes and the intent of the provisions which can be used in order to address a **design principle** pathway and when preparing **local planning frameworks**.

PART C. DESIGN AND ASSESSMENT GUIDANCE

Design guidance

Provides guidance for each design element in Part C - medium density to assist designers and assessors understand potential design responses and solutions for meeting the requirements of the R-Codes.

This section explains the intent underpinning the provisions and provides alternative approaches for meeting design requirements.

Assessment guidance

Provides advice for the technical interpretation of the **deemed-to-comply** provisions for each design element.

Design tips

Provides descriptions of potential design responses that may assist in addressing the requirements of the **design principle** pathway. These are examples and may not be appropriate for all **sites** and **development** contexts.

Local planning framework considerations

Provides additional guidance for the preparation of modifications to **deemed-to-comply** provisions through **local planning frameworks**.

Figures , tables and photos

Throughout the above sections, figures and tables are referenced, for example as **Figure/Table 1.1** when referring to the R-Codes Volume 1 and **Figure/Table G1.1** when referring to a figure or table provided in the Explanatory Guidelines.

Images are not referenced in the body text however are titled, for example, as **Photo G1.1**. These demonstrate good design outcomes intended by the R-Codes Volume 1, however may not necessarily illustrate a **deemed-to-comply** outcome.

PART D. DESIGN AND ASSESSMENT GUIDANCE FOR LAND

Provides guidance for each design element in Part D - land to assist applicants and assessors with the interpretation and assessment of the **deemed-to-comply** provisions and **design principles**.

1.0 Purpose, format and application (cont.)

1.3 Application

These guidelines have been created to provide a practical guide to support the R-Codes Volume 1. The guidelines do not provide quantitative measures in addition to the R-Codes. It is the 'how to' guide for the code that is intended to be used:

- By landowners, developers, professional town planners, urban designers, architects, landscape architects, builders and other professionals when designing housing **developments** and preparing an application for development approval.
- By **decision-makers** and town planning professionals in local and state government with assessment of development proposals and in advancing strategic planning in the form of **local planning frameworks** and design guidance.
- To support communities by raising awareness of the principles of good design and by promoting quality housing that will make a positive contribution to local neighbourhoods.

Development outcomes are **site** specific and often do not rely on a standard approach or measure. The guidelines seek to clarify the use of discretion by **decision-makers**, however, it is not possible to cover all scenarios and contexts.

1.4 State Planning Policy 7.0 and the R-Codes Volume 1

As Western Australia's cities, towns and suburbs grow, change and become more complex, the need to accommodate a greater diversity of housing types is amplified. Achieving better outcomes requires a considered approach to **residential development**, with increased attention to design quality.

SPP 7.0 includes **Ten Design Principles** to guide the design and assessment of built environment proposals through the Western Australian planning system. These principles inform the design, review and decision-making processes for all **development** under the R-Codes Volume 1, particularly where **local planning frameworks** seek to modify the **deemed-to-comply** provisions. The below table outlines how these Ten Design Principles apply to **residential development**.

1.0 Purpose, format and application (cont.)

Table G1.4a SPP 7.0 Ten Design Principles applied to the R-Codes Vol. 1

1	Context and character	Development responds to and enhances the distinctive characteristics of a local area, contributing to a sense of place. New development is integrated into its setting and is shown to respond positively to the intended future character of an area.
2	Landscape quality	Development incorporates landscape design that benefits resident and community wellbeing while contributing to neighbourhood character and the quality of our environment. Local environments are enhanced through landscape design that includes: – effective water management and WSUD measures; – appropriate vegetation and tree canopy enhancement; and – consideration of microclimate and urban heat island impact.
3	Built form and scale	Built form height and massing is compatible with the intended character of the area. Buildings are appropriately orientated, proportioned and articulated, mitigating negative impacts on neighbouring properties and contributing positively to the character and amenity of the public realm.
4	Functionality and build quality	Housing meets the needs and expectations of the occupant by providing spaces that are easy to use, in good relationship to each other and adaptable to the changing needs of occupants over time. Development is well-detailed, robust, and easy to maintain, with appropriate attention given to services, storage and waste management.
5	Sustainability	Well-designed houses deliver positive environmental, social and economic outcomes, including: – protection and enhancement of the urban tree canopy; – water-sensitive urban design; – passive environmental design and appropriate construction, materials and waste strategies that minimise resource consumption and life-cycle costs; – a diverse range of housing types commensurate with housing need; and – promotion of active and public transport modes.
6	Amenity	Housing provides indoor and outdoor spaces that are comfortable and enjoyable throughout all seasons and times of the day.
7	Legibility	Access to and within the development is easy to navigate, with clear connections and priority access for pedestrians and bicycle riders.
8	Safety	Development applies crime prevention through environmental design (CPTED) principles and incorporates appropriate safety measures.
9	Community	Development responds to community need with an appropriate mix of dwellings including affordable housing, flexible and adaptable housing, universally accessible housing, and housing conducive to social interaction.
10	Aesthetics	The scale, arrangement, articulation and material quality of development contributes to attractive and inviting communities with a coherent identity and cultural relevance.

1.0 Purpose, format and application (cont.)

This table shows the relationship between the **Ten Design Principles** of SPP 7.0 and the elements of Part C – medium density. It indicates where key linkages generally apply, though additional linkages may still apply beyond those indicated on this table, based on the individual nature of each proposal.

Note - a future update to Part B – low density will seek to align low density provisions with the Ten Design Principles.

Key linkages	
Linkages	

Table G1.4b SPP 7.0 Design Principles applied to Part C - medium density

TEN DESIGN PRINCIPLES	DESIGN ELEMENTS																					
	1.1 Private open spaces	1.2 Trees and landscaping	1.3 Communal open space	1.4 Water management and conservation	2.1 Size and layout of dwellings	2.2 Solar access and natural ventilation	2.3 Parking	2.4 Waste management	2.5 Utilities	2.6 Outbuildings	2.7 Universal design	2.8 Ancillary dwellings	2.9 Small dwellings	2.10 Housing on lots less than 100m²	3.1 Site cover	3.2 Building height	3.3 Street setbacks	3.4 Lot boundary setbacks	3.5 Site works and retaining walls	3.6 Streetscape	3.7 Access	3.8 Retaining existing dwellings	3.9 Solar access for adjoining sites	3.10 Visual privacy
1. Context and character		■														■	■	■		■		■		
2. Landscape quality	■	■	■	■			■								■		■	■						
3. Built form and scale							■								■	■	■	■					■	
4. Functionality and build quality					■				■		■										■			
5. Sustainability	■	■		■		■					■											■		
6. Amenity	■	■	■	■	■						■									■			■	■
7. Legibility																				■	■			
8. Safety											■										■			
9. Community		■					■													■		■		
10. Aesthetics		■																		■				

1.0 Purpose, format and application (cont.)

1.5 Housing for diversity

The R-Codes Volume 1 provides **residential development** controls for low and medium density housing.

For the purpose of the R-Codes, low density is defined as:

- **single houses**, **grouped dwellings** and **multiple dwellings** in areas coded R25 and below.

Medium density housing is defined as:

- **single houses** and **grouped dwellings** in areas coded R30 and above, and
- **multiple dwellings** coded R30-R60.

This definition outlines the **dwelling** type and the residential density coding of the land, but does not determine the built form type. A built form type refers to the **building** form rather than dwelling, tenure or R-Coding. For example a detached house (on its own lot) a **terrace** house (attached on both sides with its own **frontage**) and a semi-detached house (attached on one side) are all defined as a **single house** under the R-Codes.

A range of design solutions are possible for a given **site** based on context, **frontage** width, orientation and size. Some sites work better with some **building** types. For example narrow **lots** would suit **terraces**, large corner lots may work better with an apartment. Each project and **development site** should be analysed on its own individual merits to determine the most appropriate outcome with reference to the **design principles** in the R-Codes and any **local planning framework**.

Following is an example of the different built form types possible in the R-Codes.

Built form types:

Single houses and **grouped dwellings**

Single houses and **grouped dwellings** can be either detached or attached. Typically detached types should be located in a suburban residential character (up to R40) and attached dwellings in an urban residential character (up to R60) where there are higher densities.
They include the following built form types:

Detached

- single detached
- ‘plexes (such as duplex, triplex, quadruplex)
- villas

Attached

- semi-attached
- **terrace** house
- row house

Apartments

Multiple dwellings can either be a smaller number of apartments aimed to fit into a suburban residential character or can be larger apartment **buildings** within an urban context. They include the following:

- apartment house
- low-rise apartment building

1.0 Purpose, format and application (cont.)

Detached built form type

Single detached

A single detached **dwelling** is a house on its own **lot** that is not attached to any other dwelling.

The single detached **dwelling** is the traditional housing model initially delivered as a single level house on a large suburban **lot** with a garden.

This type is most appropriate for:

- suburban greenfield **lots**
- suburban infill lots
- front and rear loaded lots
- wider lots

With the delivery of smaller **lot** sizes in urban infill and greenfield areas, there has been a shift towards single detached **dwellings** designed over two levels to allow good orientation and enough area for a garden, particularly on narrower lots. For narrow lots, provision of **laneway** access for car parking consolidates the **building frontage**, minimises cars in the front of the lot, and contributes positively to the **streetscape**.

'Plexes (such as duplex, triplex, quadruplex)

Two, three or four **dwellings** on one **lot**, that can be either side by side or behind one another (or oriented to different street **frontages** on a corner lot).

This built form type typically accommodates between two and four villas on a traditional **single house lot**. Generally, one **dwelling** has a **street frontage**, with the others accessed by a **communal street** or **driveway**.

These are usually delivered within a suburban context that is densifying, but where land values make more intensive **development** (apartments) less viable.

This type is most appropriate for:

- corner **lots** where the **dwellings** can address both **street frontages**
- deep lots with a minimum frontage of 18m
- two **storey development** that provides for good orientation and adequate garden areas

Villas

Five or more **dwellings** on one larger **lot**, typically delivered one behind another. The **driveway** / **communal street** is usually centralised.

This built form type is generally built on larger **lots** within a suburban context that is densifying, where land values constrain more intensive **development**.

This type is most appropriate for:

- amalgamated **sites** and corner **lots**
- wide and deep sites (min lot depth usually approx. 40m, and minimum **frontage** 25m, although wider frontages support efficient layout with shared central driveway)

1.0 Purpose, format and application (cont.)

Attached built form type

Semi-detached

A semi-detached **dwelling** is a house that shares one common **wall** with its neighbour, both fronting the **street** as half of a pair (not necessarily in the same style). Semi-detached dwellings could be both on a single **lot** (a dual occupancy arrangement) or on separate titles.

Sharing a common **wall** is an efficient use of space for narrower lots. **Setbacks** for light and ventilation can still be achieved on one side of the dwelling. Space available for gardens and **buildings** is increased when space for **driveways** is reduced through dual primary **frontages** (i.e. not one dwelling behind another) and **laneway** access.

This type is most appropriate for:

- in established residential and mixed-use areas where more density can be achieved in a contextually appropriate manner
- mid-block subdivision
- wide, shallow **lots** (for future subdivision or dual occupancy) or pairs of narrower lots
- minimum lot width highly dependent on availability of **laneway** access

Terrace house

A **terrace** is a narrow, attached dwelling built to both side boundaries with a **primary street frontage**.

It can be either **grouped dwellings**, where there is common property for parking, or green titled where each dwelling and related parking is contained on its own **lot**. It is often delivered where parking is accessed from a rear **laneway** but, parking may also be accessed from the front.

Traditionally **terraces** are an urban/ inner city housing typology, however are now often delivered in high **amenity** greenfield areas such as adjacent to parkland.

This type is most appropriate for:

- new subdivisions where optimal **site** orientation and **laneway** access can be established
- mid-block subdivision on appropriately oriented **lots**
- wide shallow lots and amalgamated sites
- areas with higher density housing or transitional areas between higher and lower density

Row house

Row houses have a built form similar to the **terrace**, but without a direct **street frontage**. These are attached **group dwellings** with a frontage to a **communal street**.

The row house form is a less urban typology than **terraces**, suited to **sites** that might otherwise deliver 'plexes' or villas. Row houses are strata titled **development** (due to common access areas).

This type is most appropriate for:

- integrated **development**, with all **dwellings** constructed at the same time.
- minimum **lot** width of 17-20m to enable efficient **site** planning
- deep lots

1.0 Purpose, format and application (cont.)

Apartments

Apartment house

A multi-storey **building** that contains two to six **multiple dwellings** in various arrangements where at least one is above another. The building presents to the **street** like a **single house** and can have a common entry and circulation areas. It can include built forms known as manor house, duplex apartments (1 up 1 down) and maisonette apartments.

The apartment house is a historic built form typology with few contemporary examples. This built form type is suitable for a range of household types including a flexible model for intergenerational living, either connected or separate, depending on family needs. Apartment houses can also be sublet by owners for supplementary income and incorporated into mixed typology developments.

This type integrates well into established residential areas (including lower density areas); presenting to the **street** as a large family home.

This type is most appropriate for:

- corner **sites** or sites with rear **laneway** access to accommodate **garages** and car parking
- **lots** with a minimum 15m **frontage** to achieve **setbacks** and sufficient space for parking
- amalgamated lots
- in areas with medium to high density R-Codes
- areas of high **amenity**, with good access to public transport, shops, schools and jobs

Low-rise apartment building

A residential apartment **building** (**multiple dwellings**) that is not an apartment house where a **dwelling** is above another dwelling.

Low-rise apartment **buildings** (up to 4 **storey**s) can bring significant benefits to residential suburbs that are increasing in density, as they can provide a space efficient, more affordable but less imposing built form model than high rise apartments, while contributing to the housing diversity of the area.

Apartments are generally less expensive than other housing types and provide a good transitional built form type between lower and higher density residential areas.

This type is most appropriate for:

- on corner **sites** or sites with rear **laneway** access to accommodate **garages** and car parking
- amalgamated **lots**
- in areas with medium to high density R-Codes
- areas of high **amenity**, with good access to public transport, shops, schools and jobs
- areas that can accommodate additional carparking requirements of larger **dwelling** numbers

Apartment house

Low-rise apartment building

2.0 Design process

2.1 Delivering good design outcomes

The design process involves progressing a proposal from an idea to a resolved design. This includes developing a brief, identifying **site** opportunities and constraints, and working collaboratively within project teams and with **decision-makers** towards a common goal. A thorough and well-considered design process is key to delivering great design outcomes. A good design approach will help reconcile what may appear to be conflicting requirements into outcomes that will benefit occupants, neighbours and the quality of our environment.

A good resource for describing the typical stages of the design process is *Your Home: Australia's guide to environmentally sustainable homes* (Australian government), and can be found at: https://www.yourhome.gov.au/you-begin/design-process.

Outlined below is a recommended design process involving three key stages:

Stage 1 - Project Definition

Stage 2 - Project Investigation

Stage 3 - Design Development

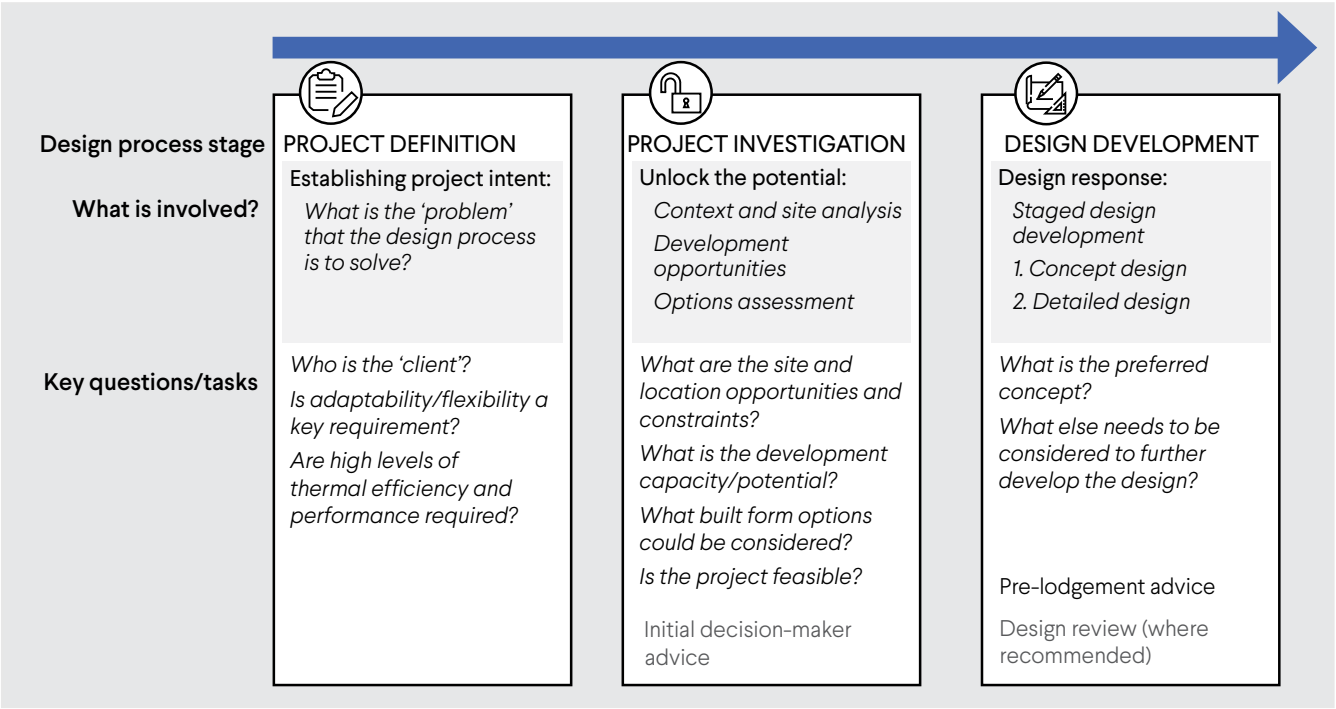


Figure 2.1a Design process stage

2.2 Design process stages

Stage 1 - Project definition

At the beginning of every **development** is an idea or concept. This idea, along with a list of intended functional outcomes, needs to be refined and developed into a project brief. The project brief is a written description of the objectives and requirements of a project. The brief needs to understand the zoning of the land (including applicable R-Coding), the requirements of the **local planning framework**, and the client's objectives. Preparing a project brief should be a collaboration between client and architect or **building** designer, and requires investigation, analysis and discussion to ensure that the client's requirements and the development opportunities and constraints presented by the **site** are well understood.

2.0 Design process (cont.)

Stage 2 - Project investigation

Context and site analysis

Good **residential development** responds to the **site**, **streetscape** and neighbourhood context, as well as to the requirements of the R-Codes and relevant **local planning framework**. To support this, context and site analysis should be undertaken early in the design process.

Context and **site** analysis involve investigating the physical and cultural characteristics of the locality and the **development site**, so that development opportunities and constraints are understood. Analysis should also include consideration of statutory planning requirements, including relevant provisions of the **local planning framework**.

Outcomes from context and **site** analysis can then inform the design development phase, so that the design response:

- capitalises on-site opportunities and addresses constraints; and
- contributes to the existing or desired **streetscape** and **local character**.

Appendix 2 *Context and Site Analysis* of the R-Codes Vol.1 recommends a list of documentation for the context and **site** analysis. Further investigations and documentation to address relevant provisions of the **local planning framework** or site-specific considerations may also be required by the **decision-maker**.

The figure below identifies important considerations for various scales of context analysis, from the neighbourhood level through to the immediate **site** context.

Development options

Each **development site** can typically support a variety of built form types and land tenure arrangements.

The density coding for the **site** and **site area** concessions and requirements available under the R-Codes for different **dwelling** types, including **single houses**, **grouped dwellings** and **multiple dwellings**, determine the potential dwelling yield (refer Part D*, 1.1 Site Area* for site area provisions).

Testing a range of built form options will help determine the best development response for a **site**. Built form types, tenure arrangements, **dwelling** yield and feasibility, site conditions, and **streetscape** character should all weigh into the decision process of a preferred option. Different approaches will deliver different outcomes for **amenity**, gardens, site-responsiveness, and streetscape character compatibility.

2.0 Design process (cont.)

Context and site analysis

Figure 2.2a Neighbourhood context plan

The neighbourhood context plan considers local planning framework and urban structure of the locality (within 400m of the site). The analysis should outline the zoning, land use, and the built and landscape features of the neighbourhood. This includes street layout and nearby open spaces; topography, drainage and vegetation patterns that impact on the site; services and future infrastructure requirements (if known); nearby public transport services (to determine Location A or B status) and heritage places / local landmarks.

Figure 2.2b Street context plan

This plan identifies the character of the street(s) in the immediate vicinity of the development site, including landscape, land use (including public space), street design and proportions, footpaths, subdivision pattern, and building scale and design.

Analysing the street context should involve reference to the local planning framework as it may identify an intended character. For areas undergoing change, this may mean development is to be designed to 'fit' with a planned future character rather than the existing streetscape. Where local character is not defined in the local planning framework, the street context analysis should inform a reasoned assessment of character and an appropriate design response.

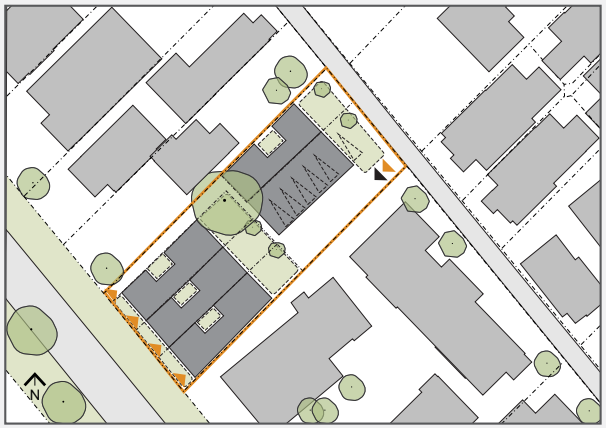


Figure 2.2c Site context plan

This plan provides the site details relative to neighbouring properties, including adjacent buildings and public spaces. It considers existing vegetation and trees (including verge trees), fences/walls (including retaining), on-street parking, overshadowing and privacy considerations.

At this scale site specific factors such as orientation, views, slope, geology, infrastructure, easements, and stormwater management can be understood to inform site responsive design.

Site analysis legend

- Proposed development site
- Local shops
- Education facility
- Development site boundary
- Existing buildings
- Public open space
- Railway line
- Train station
- Bus route

2.0 Design process (cont.)

Stage 3 - Design Development

The design development phase takes the project brief, the context and **site** analysis, and early design thinking, and begins to shape a built form design response. Typically design **development** proceeds from general concepts to specific details, and from the macro to the micro-scale. Design development may include early sketches for concept design and pre-lodgement meetings with the **decision-maker**, or design review where available.

Concept design

At concept design stage, plans are typically unresolved sketches and conceptual drawings, showing elements such as **building** footprint, zones for living areas and bedrooms, and garden areas. The aim at this stage is to provide enough information to communicate the proposal effectively for the purpose of feedback, rather than to have fully resolved drawings.

The concept design should respond to findings from the project investigation phase and identify a preferred design response for the **site** that can achieve the relevant R-Codes provisions, including **site cover**, **building setbacks** and **deep soil areas**.

Figure 2.2d Built form design response analysis

2.0 Design process (cont.)

Early engagement

Pre-lodgement engagement with decision-maker

Pre-lodgement engagement with the **decision-maker** is highly recommended. Depending on the complexity of the proposal, pre-lodgement engagement could be a phone conversation, over-the-counter advice, or a meeting. In the case of an application that is to be determined by a Development Assessment Panel, pre-lodgement advice should be sought from the relevant local government or agency undertaking the assessment.

During pre-lodgement engagement, the **decision-maker** may advise the proponent of specific considerations, requirements, or processes that apply under the adopted **local planning framework** and that will require further resolution by the proponent to achieve a resolved development application. For large-scale or more complex **development** proposals, this may include design review.

Initial pre-lodgement engagement is recommended during the project investigation phase, with further advice sought prior to lodgement of the development application to confirm the application meets submission requirements. Effective pre-lodgement engagement is a known success factor for improving design outcomes and minimising approval timeframes, particularly for more complex proposals.

Design Review

Design review is a process of obtaining independent, expert advice on the design quality of a **development** proposal. **Decision-makers** are increasingly using formal design review processes, carried out by a panel of multi-disciplinary built environment professionals, to provide objective and constructive design advice prior to development application lodgement and during the assessment process. Design review can offer feedback and observations that improve the quality of the design and may be particularly useful for more complex developments, or where there are specific **streetscape** character, heritage or other requirements to be met.

For complex **developments** that adopt a **design principle** pathway, design review may also assist in the assessment of the proposal. Review can be helpful to both the proponent and **decision-maker** when creative and innovative design solutions are proposed. To prepare for design review, proponents are encouraged to submit a design statement that demonstrates how the proposal responds to the **Ten Design Principles** of SPP 7.0.

Design review, undertaken early in the design process has the best potential to improve design outcomes, without significantly impacting on costs or delaying development.

For further information regarding design review, refer to SPP 7.0, the *Design Review Guide* (WAPC, 2019), or consult the relevant **decision-maker**.

Design Resolution

At design resolution stage, the design is finalised for lodgement with the **decision-maker**. This will include a drawing package consisting of site plans, elevations, sections and preliminary details indicating **building** structure and materials, **landscaping**, and servicing requirements. The design resolution phase should build upon the concept design to 'firm up' the proposal in preparation for development assessment.

The application for **development** approval should be accompanied by all of the documentation and other material required by the **decision-maker** to facilitate the assessment, refer to Appendix 3 *Application Documentation* of the R-Codes Volume 1.

3.0 Local planning framework

3.1 General

The R-Codes recognises that there are variations across Western Australia in terms of **local character,** community need, climate and the environment, and that **local planning frameworks** can amend, replace or augment **deemed-to-comply** provisions of the R-Codes in order to cater to these different contexts.

However, there are some provisions for which it is unlikely there would need to be modifications, irrespective of location.

The **deemed-to-comply** provisions of the R-Codes are carefully calibrated to ensure that development can achieve the objectives and **design principles** of the R-Codes. For example, street and **lot boundary setbacks**, **site cover** and **building height** requirements ensure that development is of a scale and density appropriate to a **site's** R-Coding; however, changing one of those provisions may require a change to another provision.

Given the above, any modifications to the **deemed-to-comply** provisions in **local planning frameworks** need to be equally carefully calibrated by local government and proponents.

3.2 Scope of modifications by Local Planning Frameworks

Local planning framework instruments that may amend, replace and/or augment provisions of the R-Codes include **schemes**, **local planning policies**, precinct **structure plans** and **local development plans**. The provisions of the R-Codes that may be amended, replaced and/or augmented by each type of local planning instrument are identified in Part A, 3.2 of the R-Codes Volume 1. Local planning framework instruments are to clearly outline which **deemed-to-comply** provisions are being amended, replaced and/or augment by reference to the design element.

Where **WAPC** approval for a modification to the **deemed-to-comply** is not required, the local government should carefully consider modifications against the criteria in Part A, 3.1 of the R-Codes Volume 1 and the guidance within these Guidelines.

Each design element within Part C provides design guidance and some contain more specific **local planning framework** guidance to assist local government/proponents and decision-makers when considering modifications to the **deemed-to-comply** provisions through local planning frameworks. A future review of the explanatory guidelines is intended to include similar guidance for the design elements in Part B, however in the interim the guidance in Part C is still useful.

3.2.1 Regional considerations

The R-Codes are designed to apply throughout Western Australia. It is recognised that local governments and/or proponents may wish to prepare a **local planning policy** or **local development plan** to vary a particular aspect of some of the design elements in recognition of a regional circumstance. Regional circumstances may present themselves in the form of climatic extremes, topographical variations or physical landform and geomorphologic differences. Regional local governments have an additional set of **deemed-to-comply** provisions that may be modified without **WAPC** approval, however the criteria in Part A, 3.1 of the R-Codes Volume 1 and the guidance within these Guidelines is still to be carefully considered.

3.2.2 Heritage considerations

In **heritage areas**, it is appropriate for certain aspects of the R-Codes to be modified in order to ensure the maintenance of the **local character** of the heritage place. Local governments have an additional set of **deemed-to-comply** provisions that may be modified without **WAPC** approval for heritage areas, however the criteria in Part A, 3.1 of the R-Codes Volume 1 and the guidance within these Guidelines is still to be carefully considered.

3.0 Local planning framework (cont.)

3.3 Process for WAPC approval of a local planning policy

Where **WAPC** approval is required under Part A, 3.2 of the R-Codes Volume 1, a **local planning policy** that proposes to amend, replace and/or augment a **deemed-to-comply** provision is to be prepared in accordance with Part 2 of Schedule 2 of the *Planning and Development (Local Planning Schemes) Regulations 2015* (the deemed provisions) and additionally, follow the procedures set out below.

3.3.1 Pre lodgement advice

Prior to a resolution to commence advertising of a **local planning policy**, the local government is encouraged to provide the **WAPC** with a copy of the proposed local planning policy and a written statement detailing:

- the rationale for the proposed modification to the R-Codes Volume 1 **deemed-to-comply** provisions;
- the extent to which the proposed modification meets criteria **(i)** – **(v)** set out at Part A, 3.1 of the R-Codes Volume 1; and
- any other matter the local government considers relevant.

Within 30 days (or another period agreed to) of receiving the proposed **local planning policy**, the **WAPC** may advise the local government or proponent of any modification required to the local planning policy before commencing advertising. A local government that has not received advice from the WAPC within 30 days (or another period agreed to), may resolve to advertise the local planning policy as if the WAPC had provided advice that no modification is required.

While the above procedure is not a requirement of the deemed provisions, it may ensure consistency from draft (as advertised) **local planning policies** through to endorsement, ensuring stakeholder expectations are satisfied.

3.3.2 Post-advertising WAPC approval process

Upon completion of advertising, the local government must not resolve to commence operation of the policy until approval of the **WAPC** has been granted under cl.4(3A), of the deemed provisions.

The local government is to provide the **WAPC** with a copy of the proposed **local planning policy** and a written statement detailing:

- the rationale for the proposed modification to the R-Codes Volume 1 **deemed-to-comply** provisions;
- the extent to which the proposed modification meets criteria **(i)** – **(v)** set out at Part A, 3.1 of the R-Codes Volume 1;
- a summary of submissions; and
- any other matter the local government considers relevant.

Within 60 days of receiving the proposed **local planning policy**, including any modifications made following the expiry of the submission period, the **WAPC** will determine whether to:

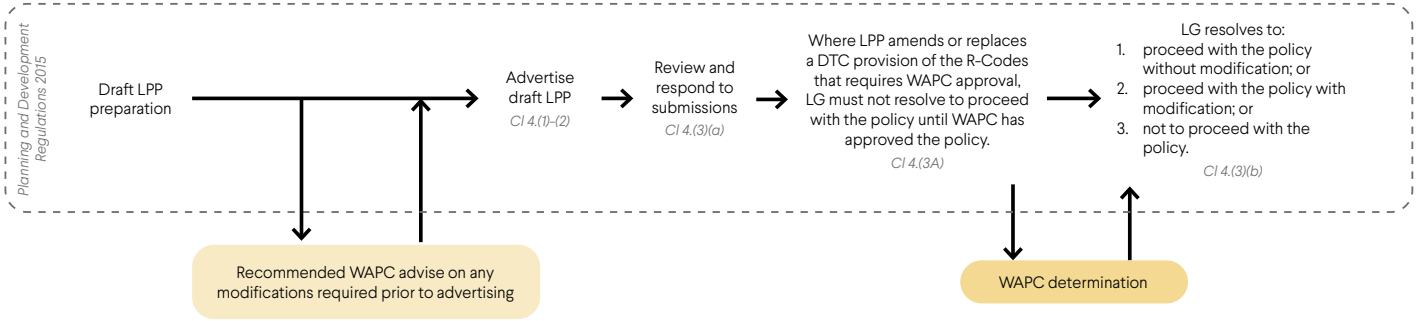
i. advise the local government that it approves the local planning policy with no further modification; or
ii. advise the local government that it approves the local planning policy subject to minor specified modifications; or
iii. advise the local government that it does not approve the local planning policy without further modification being made.

The **WAPC** must be satisfied that the proposed modification to the **deemed-to-comply** provision(s) is consistent with criteria **(i)** – **(v)** set out at Part A, 3.1 of the R-Codes Volume 1. Where the WAPC provides advice under **(ii)** or **(iii)** above, it should also provide a reason for the decision to the local government.

Where the **WAPC** provides advice under **(i)** or **(ii)** above, the local government may commence operation of the **local planning policy** after completing the requirements of cl.4 of the deemed provisions.

Where the **WAPC** provides advice under **(iii)** above, the local government may re-consider and/or re-advertise the **local planning policy**.

A **local planning policy** that requires **WAPC** approval to modify provisions of the R-Codes shall not come into effect until the approval of the WAPC has been granted in accordance with the R-Codes Volume 1 and the deemed provisions.



3.0 Local planning framework (cont.)

3.4 Process for local government and WAPC approval of a local development plan

Where the local government or a proponent proposes to amend, replace and/or augment a **deemed-to-comply** provision of the R-Codes Volume 1 through a **local development plan**, the local development plan is to be prepared in accordance with Part 6 of Schedule 2 of the *Planning and Development (Local Planning Schemes) Regulations 2015* (the deemed provisions) and additionally, follow the procedures set out below.

3.4.1 Pre-lodgement advice

Prior to lodgement with the local government, the proponent is encouraged to provide the local government with a copy of the proposed **local development plan** and a written statement detailing:

- the rationale for the proposed modification to the R-Codes Volume 1 **deemed-to-comply** provisions; and
- the extent to which the proposed modification meets criteria (**i**) – (**v**) set out at Part A, 3.1 of the R-Codes Volume 1.

Within 30 days (or another period agreed to) of receiving the proposed **local development plan**, the local government may advise the proponent of any modification required to the local development plan before it is lodged and advertised.

A proponent that has not received advice from the local government within 30 days (or another period agreed to), may lodge the **local development plan** with the local government as if the local government had provided advice that no modification is required.

While the above procedure is not a requirement of the deemed provisions, it may ensure consistency from draft (as advertised) **local development plans** through to endorsement, ensuring stakeholder expectations are satisfied.

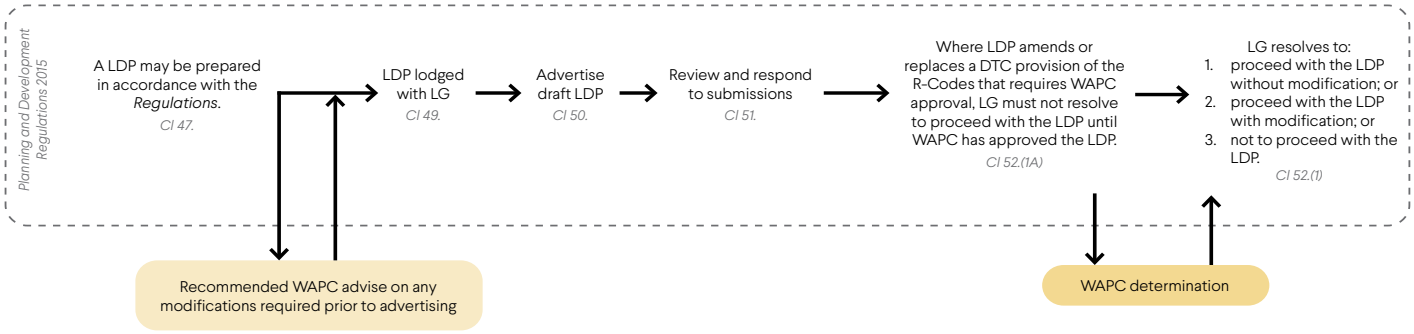
Where **WAPC** approval under Part A, 3.2 of the R-Codes Volume 1 is required, local government and proponents are also encouraged to seek pre-lodgement advice from the WAPC subject to the same process and timeframes as above.

3.4.2 Post-advertising WAPC approval process

Upon completion of advertising, the local government must not resolve to commence operation of the **local development plan** until approval of the **WAPC** has been granted under cl.52(1A), part 6 of Schedule 2 of the Regulations.

The local government is to provide the **WAPC** with a copy of the proposed **local development plan** and a written statement detailing:

- the rationale for the proposed modification to the R-Codes Volume 1;
- the extent to which the proposed modification meets criteria (**i**) – (**v**) set out at Part A, 3.1 of the R-Codes Volume 1;
- a summary of submissions;
- whether the local government supports the local development plan; and
- any other matter the local government considers relevant.



3.0 Local planning framework (cont.)

Within 30 days of receiving the proposed **local development plan**, including any modifications made to the local development plan following the expiry of the submission period, the **WAPC** will determine whether to:

i. advise the local government that it approves the local development plan with no further modification; or
ii. advise the local government that it approves the local development plan subject to minor specified modifications; or
iii. advise the local government that it does not approve the local development plan without further modification being made.

The **WAPC** must be satisfied that the proposed modification to the **deemed-to-comply** provision(s) is consistent with criteria (i) to (v) set out at Part A, 3.1 of the R-Codes Volume 1.

Where the **WAPC** provides advice under (**ii**) or (**iii**) above, it should also provide a reason for the decision to the local government.

Where the **WAPC** provides advice under (**i**) or (**ii**) above, the local government may commence operation of the local development plan as provided for in cl.52, part 6 of Schedule 2 of the Regulations.

Where the **WAPC** provides advice under (**iii**) above, the local government may re-consider and/or re-advertise the local development plan.

A local development plan that requires **WAPC** approval shall not come into effect until the approval of the WAPC has been granted in accordance with this provision

PART B
Low density

4.0 CONTEXT

GENERAL (Clause 5.1 of R-Codes Volume 1)

Physical and natural attributes combine to define the character of an area. It is important that development maintains and enhances local or neighbourhood character. In situations where areas are undergoing transition, good design will reflect the future desired character of the area as outlined in the **local planning framework**. However, if no future desired character has been set out, **development** should respond to the existing character of the area, in terms of its scale, function and visual appearance.

Consideration of the surrounding development context

Most suburban **streetscapes** are open, with direct views along the **street**, and generally direct (although sometimes **screened**) views across the street between houses. This visual relationship is shaped by the width of the roadway and verges, the public and private **landscapes** with the edges defined by **buildings** as they are set back from the street and each other. The heights and **setback** of buildings, area dedicated to private landscaping, and access **driveways** all contribute to the open, suburban appearance and function. There is an expectation that the built form is not the dominant feature of the suburban landscape.

Residential character is created by the relationship between **landscape** and built form. The visual character may be described as suburban and is shown in **Figure 3**.

An urban context is expected to have less of the open characteristics of a suburban area. Where an area of housing is dense, for example in many inner city and inner suburban precincts, the urban **landscape** is visually dominated by the built form and is shown in **Figure 4**. The **buildings** are set close to, and sometimes right on, the street alignment, and close to or abutting each other.

However, prevailing patterns of development in Western Australia, with greater use of medium density codes used in both infill and greenfield areas, results in something of a hybrid between the open suburban and traditional closed urban characters. In these medium urban areas, care should be taken to protect elements of **setback** and open space to maintain the difference in context between high and medium urban density areas.

Figure 3 Example of suburban character

Figure 4 Example of urban character

GENERAL (cont.) (Clause 5.1 of R-Codes Volume 1)

Context analysis

Notwithstanding whether the **development** is occurring in a manner that is consistent with existing character or in a manner consistent with the desired character, a context analysis assists in establishing an appropriate design response, refer to **Figure 5**.

Neighbourhood context

The neighbourhood context analysis considers the proposed **development site** within the planning framework for the locality. The analysis should outline the zoning and land use of the development **site** and the surrounding neighbourhood, as outlined within the **local planning framework**.

At this level the appropriateness of a particular development proposal for the **site** can be identified, based upon the existing and likely future development in the locality.

Street context

The **street** context analysis establishes the existing character and features of the immediate area. Key considerations include:

- distribution and mix of land uses;
- subdivision pattern;
- scale and setting of adjoining built form;
- impacts from adjoining land uses;
- **building** articulation, materials and finishes;
- street design and proportions; and
- public spaces.

Site context

The **site** context analysis investigates the parameters of the site and the relationship with the **buildings** on the adjoining **lots** and opportunities for improving functionality and performance. Key considerations include:

- building **setbacks** and separation;
- active and passive areas on adjoining lots;
- open space and **landscaping**;
- orientation;
- existing vegetation and topography;
- views from public places; and
- location of existing on-street car parking.

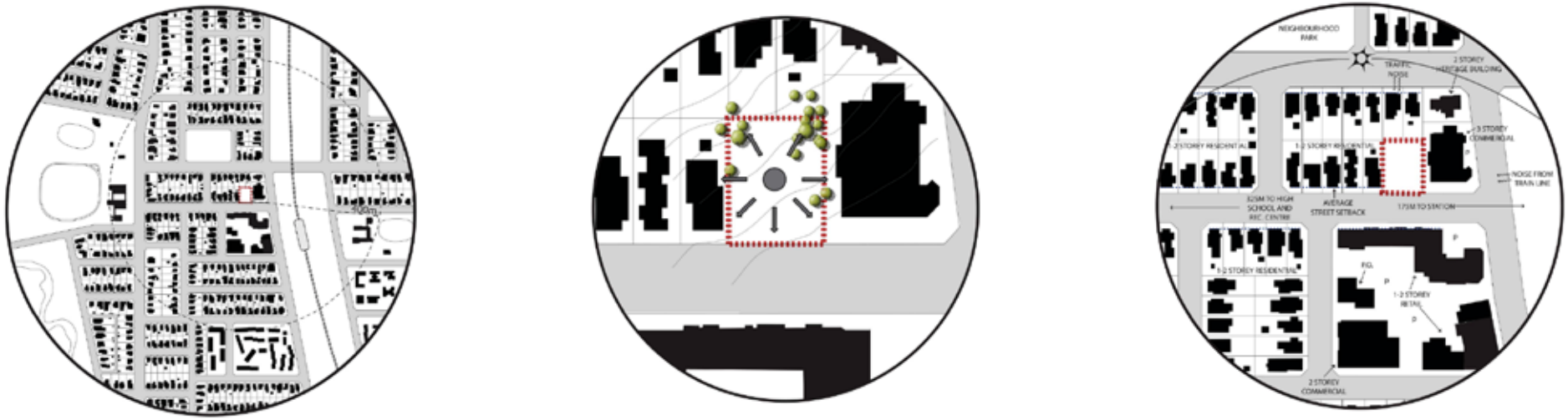


Figure 5 Context analysis example

SPECIFIC DESIGN ELEMENTS (Clause 5.1 of R-Codes Volume 1)

This generic design element deals with significant factors that affect and contribute to the context of the **development**. The following are the design elements of Part B of the R-Codes Volume 1.

- 4.1 Street setback;
- 4.2 Lot boundary setback;
- 4.3 Open space; and
- 4.4 Building height.
- 4.5 Site area; and
- 4.6 Communal open space.

There is a strong relationship between elements of context and elements of **streetscape**; some streetscape elements are encompassed within context here, others are dealt with specifically in design element *5.2 Streetscape* of the R-Codes Volume 1, respectively.

4.1 STREET SETBACKS (Clause 5.1.2 of R-Codes Volume 1)

GENERAL GUIDANCE

The urban design presumption is for the **street setback area** to be free from **buildings** and structures, enabling a clear view to and from the **street**. This provides a comfortable and secure relationship and transition between public and private space.

From a social point of view, the **street setback area** and how it is developed and managed allows for comfortable communication and interaction between residents, neighbours and passers-by or callers who may not be known to the occupants. This creates the opportunity for casual and safe interaction to enhance a sense of community and safety.

At the same time, an open **street setback area** provides for mutual surveillance between the street and **building**, enhancing security for the **building** (and its occupants) and for people passing by.

From a visual point of view, an open **street setback area** provides a more attractive setting for the **building**. The street setback area should also provide, depending on the location of essential services, adequate clearances from, and access to, essential services for reasons of safety and utility.

The same principles apply to **communal streets** and **rights-of-way** that provide the **frontage** to **dwellings**.

There will, of course, be exceptions, principally where the street is an arterial road carrying significant volumes of traffic.

Frontage streets

Street setbacks are an integral part of the **streetscape** and are fundamental to the amenity and particular character of residential localities. They may perform a number of different, but complementary roles:

- continuity of the streetscape;
- a visual setting for the **dwelling**;
- a buffer against noise and general activity on the public street;
- privacy for the **dwelling**;
- visual connection to the street, its users and to neighbours;
- space for car parking and access; and
- a transition zone between the public street and private dwelling.

These considerations apply particularly to public **streets** to influence orientation of the main **frontage** to **dwellings** as it presents to the street. Similar principles apply to **communal streets**, and **rights-of-way** used to provide frontage to dwellings. Secondary or side streets may also function in this way.

Side or secondary streets

Different **streetscape** characteristics usually occur on secondary or side **streets**, with the street alignments formed by the long side boundaries of corner **lots**. These are characterised by side fences or **walls** rather than open gardens, and a small **setback** to the **building**.

In many cases these **streetscapes** are being altered by urban redevelopment and infill, by the subdivision of corner **lots**, creating new **frontages** to the side **street**. Where this happens, similar considerations to those for **setbacks** to frontage streets will apply although there will be scope for common-sense rationalisation between existing houses which create the character of the street and infill **development**.

The **setback** area should be open but with a reduced setback for practical and **streetscape** reasons. **Private open space** may be located to one side of the **building** rather than a narrow strip along the rear.

Rights-of-way as streets

Many **rights-of-way**, especially in older areas, are becoming increasingly important, not only to provide vehicle access to the rear of properties, but in the case of subdivision also to provide **frontage** access for new **buildings**. In some cases the rights-of-way may become dedicated public roads or **streets**. In other cases they will remain as private rights-of-way to provide secondary access. Inevitably, the scale and character of these **streetscapes** are different, and a lesser **setback** is often appropriate, consistent with the narrowness of the rights-of-way and the principal function for resident access rather than for local through traffic.

Communal streets

Communal streets are those created as part of a **grouped dwelling** development. They are in private ownership common to a number of **dwellings**, whose owners are also responsible for maintenance. As semi-public spaces, they share some of the characteristics and roles of public **streetscapes** and share the need for design to address issues of visibility and security. Clear demarcation between private space and the communal street is important, as is the need for a transition area, a buffer against noise and glare and privacy for dwellings. However, the reduced scale, communal nature and use, and often informality of layout of communal streets, calls for a less rigid approach to **setbacks** for dwellings (refer to **Figure 2d** of the R-Codes Volume 1).

Measurement of street setback distances

The impact of a **building** on the **streetscape** is most commonly observed from the standpoint of a person moving parallel to the street alignment. Accordingly, the **street setback** is measured at right angles to the street alignment.

4.1 STREET SETBACKS (cont.) (Clause 5.1.2 of R-Codes Volume 1)

SPECIFIC GUIDANCE

Appropriate street setback distances

In the case of new residential areas, the desirable **street setback line** is often fixed as an integral part of the subdivision, for example as part of **structure plan(s)** or **local development plan(s)**.

In the case of established residential areas with valued **streetscapes**, it will usually be the case that there is a consistent pattern of **street setbacks**. In these cases, new **development** should closely conform to the established pattern. Where the pattern varies, a setback mid-way between that of the **buildings** on either side may be appropriate.

In established areas, it may be desirable for the **decision-maker** to stipulate **setbacks** for a particular area by setting them out in the **local planning framework**. The R-Codes Volume 1 **street** setback requirements apply in all other cases.

The manner in which **street setbacks** may be reduced is illustrated in **Figure 2a** of the R-Codes Volume 1. This includes a provision allowing a street setback reduction of up to 50 per cent, providing the area of **building** (including any **garage**) forward of the required **street setback line** is compensated for by an equal or greater area of **open space** behind the street setback line.

The prime purpose of this provision is to only allow a reduced **setback** from the **street boundary** where this will create flexibility of design to achieve the design objectives for the area, and lead to a more varied and interesting **streetscape**. **Figure 2a** in the R-Codes Volume 1 illustrates situations where portions of the **dwelling** may intrude into the **street setback** provided there is a positive relationship with adjacent dwellings and the streetscape.

Other structures

In addition to **carports** and **garages** (subject to clause 5.2.1 of the R-Codes Volume 1), the following structures may be allowed in **street setback areas**:

- fences or **walls**, which are the subject of separate consideration;
- **landscape** or sculptural structures, ornamental features designed to enhance the relationship between street and **dwelling**; and
- appropriately scaled archways or gateways, provided they are in character with the **streetscape**.

In addition, **balconies**, **porches** and open **verandahs** may encroach into up to half the **primary street setback** required under **Table D** without the requirement to apply a compensating area for street setback averaging (refer to **Figure 2e** in the R-Codes Volume 1).

Similarly, for **lots** coded R15 or higher, these elements may be **setback** a minimum of 1.5m where the **dwelling** has its main **frontage** to a **secondary street**, **right of way** or **communal street**. The reduced **street setback** recognises that these design elements can contribute positively to **streetscapes** and promote **passive surveillance** and interaction with the **street**.

4.2 LOT BOUNDARY SETBACKS (Clause 5.1.3 of R-Codes Volume 1)

GENERAL GUIDANCE

Boundary **setbacks**, other than **street setbacks**, serve several objectives:

- to ensure adequate **daylight**, direct sun and ventilation for **buildings** and the **open space** associated with them;
- to moderate the visual impact of **building** bulk on a neighbouring property;
- to ensure access to **daylight** and direct sun for adjoining properties; and
- to assist with the protection of privacy between **adjoining properties**.
- Related clauses in the R-Codes Volume 1 which deal with some aspects of these objectives are:
  - clause 5.1.6 building height;
  - clause 5.4.1 visual privacy; and
  - clause 5.4.2 solar access for adjoining sites.

Calculation of boundary setbacks

The distance required to set back a **wall** from a boundary is a function of the height and length of the wall and whether there are **major openings** in the wall.

It is first necessary to consider whether an opening falls within the definition of a **major opening** under the R-Codes Volume 1. The intention of the definition is to restrict clear glazing that would impact on privacy. A 'highlight window' is also excluded from the definition of major opening; a window is considered a highlight if it has a minimum sill height of 1.6m. The intention is for the window glazing to be a minimum of 1.6m above floor height to avoid overlooking.

The **setback** requirements are set out in **Tables 2a** and **2b** or **Table 5** of the R-Codes Volume 1. **Tables 2a** and **2b** should be used for **walls** less than 10m in height and in the case of intermediate height and length measurements, the nearest higher setback should be used.

The matters to take into account in establishing the height and length of **walls** for the purpose of determining side **setbacks** is illustrated in **Figure Series 3** and **4** of the R-Codes Volume 1.

The **setback** at any particular point depends on the **wall height** at that point rather than the average wall height. This means that a wall which varies in height (in relation to the **natural ground level**) could require a varying setback along its length. Height of walls and **buildings** is calculated from the lowest point of natural ground level at the boundary adjacent to that point of the wall on the building.

Buildings built up to lot boundaries

Buildings built up to **lot boundaries** are subject to the provisions of clause 5.4.1 for overlooking and clause 5.4.2 in relation to solar access (overshadowing). The **deemed-to-comply** provisions adopt a conservative or risk-averse approach in recognition that the **decision-maker** would not be required to make a technical judgement.

Where a **wall** is built on the boundary, the surface of the wall facing a neighbour should be finished to the satisfaction of the **decision-maker.**

The **decision-maker** may adopt a **local planning policy** to vary the provisions in respect of **boundary walls** to require less or more exacting standards or require consultation with adjoining neighbours as a prerequisite.

4.2 LOT BOUNDARY SETBACKS cont. (Clause 5.1.3 of R-Codes Volume 1)

SPECIFIC GUIDANCE

Basis of setback controls

The boundary **setback** provisions of the R-Codes Volume 1 have been designed, as closely as possible, to reflect the approach that a proponent would adopt when siting and designing a **building**.

The overarching principles which need to be considered in assessment of designs are:

- the taller and longer a **wall** adjacent to a boundary is, the further it should be set back;
- walls with no windows, with windows only to **non-habitable rooms** or with highlight windows, can be permitted to be closer to boundaries than those walls with windows to habitable rooms or with **balconies**;
- single **storey** walls are not usually problematic in terms of impact on **adjoining properties**;
- short walls built up to boundaries are often preferable to long walls set back a short distance;
- with the increasing tendency for infill **development** and more flexible design approaches, any distinction between rear and side boundaries has become largely obsolete;
- community acceptance of walls built up to side or rear boundaries is greater in medium-to high-density areas compared with low density areas;
- **outdoor living areas**, whether in the form of decks, **verandahs**, **balconies** or raised **terraces**, have an impact at least equal to, and usually greater than, those of indoor living areas, and hence ought to be treated similarly, in terms of setting back from boundaries; and
- **minor projections** and projecting sections of wall which do not increase the basic impact of a wall may be accepted. For long runs of wall it is best to relieve the run by using indented sections, at greater **setback** distance from the boundary.

The height of the **wall** adjacent to that boundary (side and rear) should generally be lower the closer that wall is to the boundary. The height of a wall in relation to the **setback** from the boundary should be measured in terms of its overall impact on an **adjoining property**. In the case of a **boundary wall** where there is an existing abutting boundary wall, the proposed wall should match the alignment of the other boundary wall.

It should be noted that boundary fences are not matters controlled by the R-Codes Volume 1. However, boundary fences are used as a means to address visual privacy.

Exceptions to basic setback provisions

Consideration of **setbacks** should have regard to the **natural ground level**, shape, **development** and orientation of adjoining **lots**.

A reduction to the R-Codes Volume 1 **deemed-to-comply setback** requirements should only be considered where it can be demonstrated this is preferable for practical or aesthetic reasons, and will not be to the detriment of the **amenity** of **adjoining properties**, particularly where the reduced setback may result in increased overshadowing, overlooking or lack of privacy. In these situations the **building** design would need to address the **design principles** of clause 5.1.3.

As illustrated in **Figure 4f** of the R-Codes Volume 1, in the case of a **battleaxe lot** only, the stated **setback** distance may also be reduced by half the width of an adjoining **right-of-way**, pedestrian access way or public open space reserve to a maximum of two metres.

4.3 OPEN SPACE (Clause 5.1.4 of R-Codes Volume 1)

GENERAL GUIDANCE

In the R-Codes, **open space** means that part of a **site** not covered by **buildings** and available for the use of residents, including those areas at ground level, covered for weather protection or shade but not used as part of the **dwelling**. Above ground areas, external to dwellings, readily accessible and sufficiently large to be usable, such as roof decks, may be included as part of the area allocated to open space. Note that roof decks, **balconies** and other **outdoor living areas** would be subject to visual privacy provisions of clause 5.4.1 of the R-Codes Volume 1.

SPECIFIC GUIDANCE

Open space serves several functions (**Figure 15**):

- a setting for **buildings**;
- access and car parking;
- leisure opportunities for a range of domestic activities: gardening; children's play; outdoor entertaining, and leisure as an extension of inside activities, the pursuit of hobbies; and
- space for functional purposes, such as clothes drying and **storage** of household items.

Open space is an important component of the character of a location. In suburban areas, greater open space is important to maintain the open, **landscaped** feel that is expected. In areas of higher density, lesser open space is warranted to support a more urbanised **streetscape**.

Private open space is synonymous with **open space** in the case of **single houses** and **grouped dwellings**.

As the manner in which **open space** is used may vary over the life of the **dwelling**, and is more likely to be reduced than increased, it is important to retain flexibility and, accordingly, the R-Codes Volume 1 should not unduly constrain how open space is provided. Adequate open space should, however, be retained for the life cycle of the dwelling.

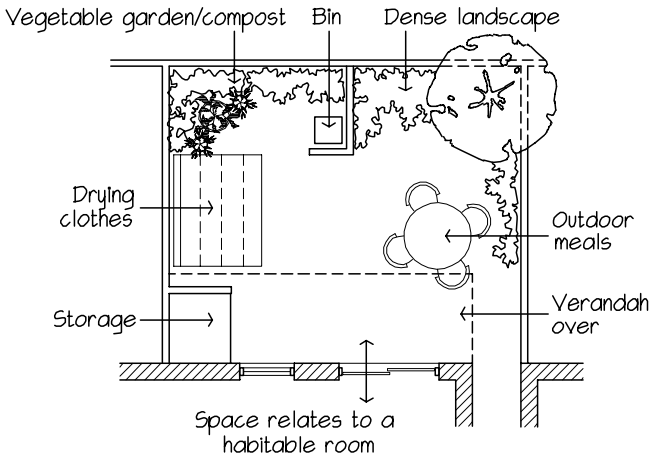


Figure 15 Open space provides many functions on a residential lot

4.4 BUILDING HEIGHT (Clause 5.1.6 of R-Codes Volume 1)

GENERAL GUIDANCE

Measuring building height

Figure Series 7 of the R-Codes Volume 1 provide a standard method of height measurement designed to reduce ambiguity and confusion.

Building height is relatively straightforward to measure and administer as a control. There are two basic measures that can be used; one being height in **storeys** and the other height in metres. The former has problems of definition (for example, what constitutes a storey, use of roof spaces and mezzanines) and also can vary, depending on ceiling heights. For the purpose of the R-Codes Volume 1, the measure used is height in metres.

For administrative simplicity, limits are often taken from a single point usually the level at the centre point, or centroid, of the **site** or averaged over a site. However, this approach lacks precision and can lead to unintended outcomes. Therefore, the R-Codes Volume 1 refer to the height of the **building** as the distance between the point where the base of the **wall** meets the **natural ground level** and measured to the highest point of a wall or roof of a building vertically above that point (for measurement guidance refer to **Figure Series 7** of R-Codes Volume 1). This preferred method distinguishes it also from the measurement of the **height** of walls for the purposes of **setbacks**, where the height is measured from natural ground level at points on the boundary corresponding to the wall in question. In the first case, the concern is about the general impact on the locality. In the second case the concern is about the specific impact on the **adjoining property**.

Determining natural ground level

While most **sites** have reasonably constant slopes (less than a 1–2m fall across a **lot**), there may be cases where the terrain is irregular, as follows:

- fractured, so as to vary significantly from one point to another; or
- convex, humped or containing an isolated high point or points; or
- concave, hollowed out at one or more places.

In these cases common sense and sound **design principles** dictate that the natural contours should be interpolated so as to modify or smooth out such anomalies for the purposes of establishing a common level for height calculation (**Figure 7b** of the R-Codes Volume 1).

It has become common practice to provide level **sites** with boundary retaining **walls** at subdivision. In these cases, the levels so established at subdivision are deemed to be **natural ground levels**.

In accordance with the definitions:

- height shall be measured from the **natural ground level** immediately below the relevant point on the **wall** or roof;
- **natural ground level** may be taken as the levels resulting from **development** carried out as an approved part of a land subdivision; and
- **minor projections** such as chimneys, television aerials, satellite dishes and vent pipes are exempted.

Views

Obtaining and keeping views is a significant issue, particularly where a locality's housing values place a premium on an outlook or featured **landscape** views.

Because views are an important part of the **amenity** shared and enjoyed by many people in certain areas, a proponent should take into account the desirability of protecting those views enjoyed by neighbours, and the public to the extent that it is possible to design the **dwelling** to enjoy the view, but not to the exclusion or detriment of others.

While the R-Codes Volume 1 cannot guarantee the protection of views, the **decision-maker** may exercise a degree of control by **primary** and **secondary street setbacks** and height controls enhanced by **local planning policies** as permitted under clause 7.3.1 of the R-Codes Volume 1. Alternatively the decision-maker may consider the development of **local planning policies** or **local development plans** which target the protection of views. This approach would identify views ahead of potential **development** and may require visual assessment and reliance on technical opinion rather than advertisement for public comment and objections to specific proposal(s).

4.4 BUILDING HEIGHT cont. (Clause 5.1.6 of R-Codes Volume 1)

SPECIFIC GUIDANCE

The consumer/lifestyle trend towards double **storey** (and sometimes three storey) development raises issues of overshadowing, visual dominance and concern for privacy. The **building height** requirements of the R-Codes Volume 1 aim to address these matters (refer to **Figure 16**).

Common height limits

It is common for **decision-makers** to impose height limits on **residential development** in order to maintain consistency of **streetscapes** to minimise privacy conflicts and loss of views. However, there is a lack of consistency between decision-makers in terms of how **building height** is measured and the precise limits imposed. It is therefore desirable for the R-Codes to address height.

Regulation of **building height** and **setback** is fundamental to defining the **streetscape**, and in character areas or other places with special design sensitivity, the appropriate limits should be determined on a local streetscape basis, via **scheme** provisions, **local planning policies** or **local development plans**.

The R-Codes Volume 1 establish an objective set of **building height** limits that correspond approximately to one, two and three-**storey** building heights.

A default provision establishes Category B, corresponding to two **storeys**, as a limit in the absence of a **local planning policy**.

A **decision-maker** may adopt Category A or C for all or parts of its district as an amended requirement through the adoption of a **local planning policy**. A decision-maker may also adopt Category A or C for specific types of development, such as development upon rear battleaxe **sites**, through **local planning policies**.

Building height of a proposal may be considered appropriate where:

- the building height of the proposed **development** is consistent with the building heights of existing and adjacent **buildings** in the locality; or
- meets objectives identified in **local planning policies** and/or **local development plans** adopted for the locality; and
- has little or no adverse impact on the **amenity** of **adjoining properties**, including the public domain and natural areas.

Figure 16 Building heights in Part B of the R-Codes Volume 1 relate to one, two and three storey limits

4.5 SITE AREA (Clause 5.1.5 of R-Codes Volume 1)

Deleted and replaced by Part D, 1.1 Site Area by amendment dated 1 September 2023.

4.6 COMMUNAL OPEN SPACE (Clause 5.1.5 of R-Codes Volume 1)

SPECIFIC GUIDANCE

Table D does not require mandatory provision of **communal open space**, however, it should be encouraged if considered appropriate within a **development**. Communal open space is open space provided for the exclusive use of a defined group of residents. It serves a similar range of functions to that of **private open spaces** and includes:

- a setting for **buildings**;
- space for active and passive recreation;
- other group activities, which may be very particular to a particular group of residents; and
- access to direct sun and **natural ventilation**.

Where **communal open space** is provided as part of a **grouped dwelling development**, some trade-off between private and communal open space should be allowed but not at the expense of the core provision of **private open space**.

5.0 STREETSCAPE

GENERAL (Clause 5.2 of R-Codes Volume 1)

The **streetscape** contributes to **local character**. Streetscapes are created by the relationship between **landscape** and built form, often separating public from private domains. High quality design should be consistent with the existing streetscape character. In order to enhance streetscape, **buildings** should address the **street** and create a strong connection and relationship to the street.

Irrespective of the suburban or urban context of an area, there are a number of elements of **streetscapes** that have general impacts on **amenity**. Broadly, apart from the character of an area, residents expect to maintain views and vistas, have security and **passive surveillance**, **landscape** and shade, safety of access, privacy and **open space**, and an attractive setting.

SPECIFIC DESIGN ELEMENTS (Clause 5.2 of R-Codes Volume 1)

This design element deals with those factors that affect and contribute to the broader amenity of the **streetscape**. The following are provisions of Part B of the R-Codes Volume 1:

- 5.1 street surveillance;
- 5.2 street walls and fences; and
- 5.3 sight lines.
- 5.4 setback of garages and carports;
- 5.5 garage width; and
- 5.6 appearance of retained dwelling.

Any other factors affecting **streetscape** are dealt with in other elements of the R-Codes Volume 1.

5.1 STREET SURVEILLANCE (Clause 5.2.3 of R-Codes Volume 1)

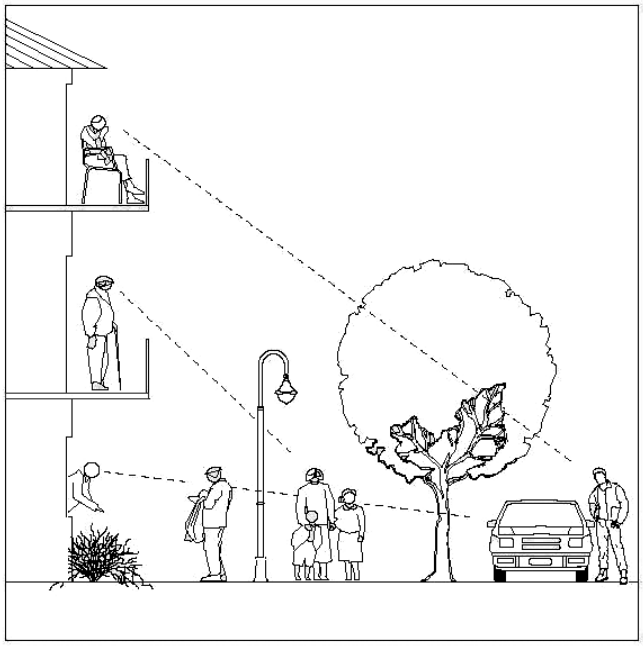


Figure 31 An example of effective sight lines and surveillance

GENERAL GUIDANCE

Interface between buildings and streetscape – designed with consideration of public safety and passive surveillance

Given the importance of crime prevention through environmental design principles it is appropriate to design **buildings**, front fences and **walls** to ensure that a clear view exists between the building, particularly its main entry and the **street**. This not only provides opportunity for incidental street surveillance but also contributes to **streetscape amenity**.

Casual surveillance and sightlines

Casual surveillance involves the location and design of facilities to maximise visibility of the **site**. Maximising casual surveillance increases a sense of safety and can deter criminal activity. Clear sight lines, or the ability to see what is ahead along a route, or in a space, provide opportunities for casual surveillance. A clear sight distance provides an individual with both a perception of safety and adequate space to react to possible threats. Further information is provided in the **WAPC's** *Designing Out Crime Planning Guidelines.*

Entries to buildings are legible from the street

Entries that are clearly defined from the **street** provide a distinction between private and public areas. Minimising the number of **dwellings** that share a common entrance along the **frontage** can spread the activity along the street. Providing individual pedestrian access points off the street to ground level **dwellings** can also assist in providing activity and surveillance. Pedestrian access should be appropriately designed to provide clear and secure access to the dwellings and should be the main focus of access to the **site** in preference to vehicle access.

Orientate development to maximise street frontage for balconies, living areas and common areas

Buildings with street **frontages** that employ **balconies**, living areas and common areas contribute to increased casual surveillance of the street. This increases both actual and perceived levels of safety for pedestrians. The treatment of building frontages will reduce opportunities for concealment and entrapment, through safety by design.

5.2 STREET WALLS AND FENCES (Clause 5.2.4 of R-Codes Volume 1)

GENERAL GUIDANCE

Height of street walls and fences

In recent times and with the trend for larger houses and smaller **lots**, there is a tendency for some owners to construct high **walls** or fences at or near the **street**. This is often justified by the proponent for reasons of privacy, security or protection from traffic noise or headlights.

High **walls** and solid fences on the front boundary are undesirable because they visually affect the **streetscape** and generally separate residents from their street and what occurs in it (refer to **Figure 35**).

Provide a clear distinction between private and public areas

Buildings that facilitate a visual connection between the street and private spaces can provide opportunities for high levels of casual surveillance of the street. Appropriate treatment of street **walls** and fences can clearly define the boundary between private and public areas and contribute to an enhanced **streetscape**. This reinforces a visual connection between street users and private spaces.

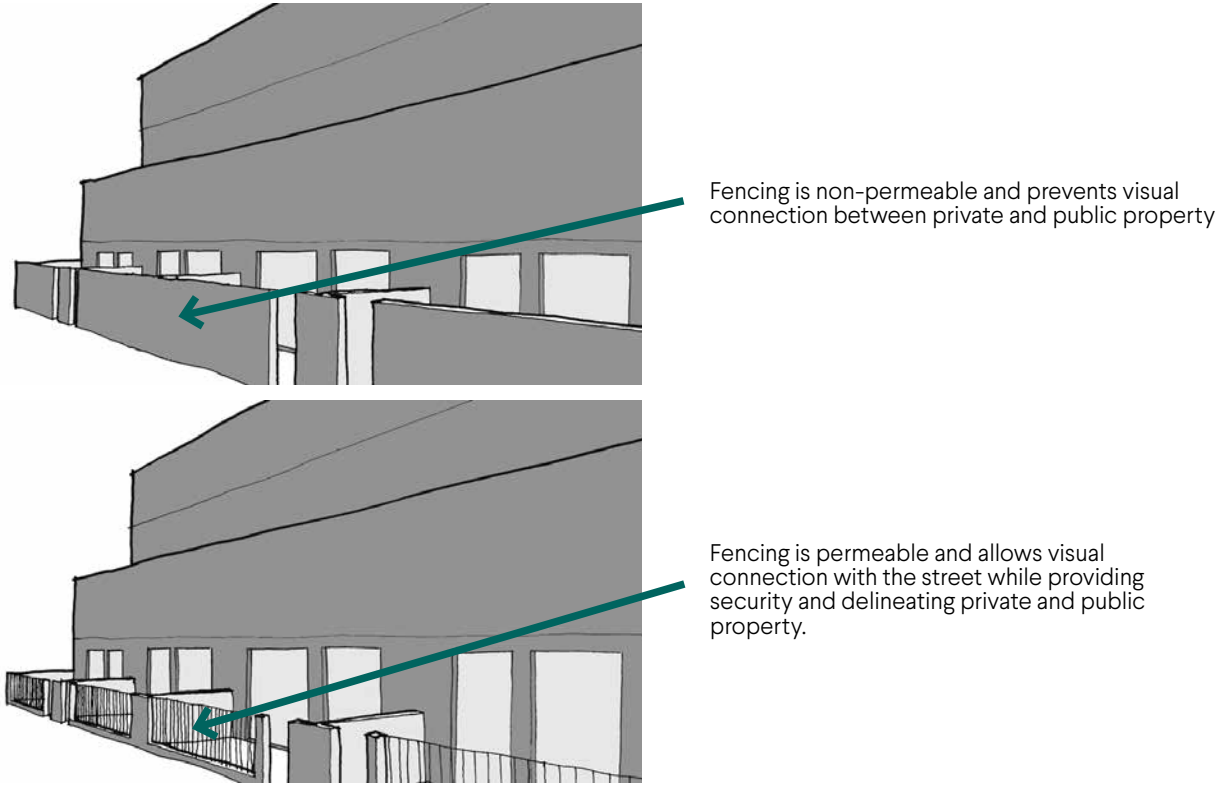


Figure 35 Fencing should not impede visual surveillance of the street by either being too high and/or non-permeable

5.2 STREET WALLS AND FENCES cont. (Clause 5.2.4 of R-Codes Volume 1)

Figure 36 Traditional and low fences are acceptable

Figure 37 High walls are not acceptable unless in exceptional circumstances

SPECIFIC GUIDANCE

Fences (excluding pillars) higher than 1.2m should be **visually permeable** along all street types, including **communal streets** (refer to **Figure 12** in the R-Codes Volume 1). Where a **dwelling** fronts onto an arterial road carrying high traffic volumes, or where protection is needed from headlight glare from such a road, there may be a case to justify a high **wall** especially to provide privacy to an **outdoor living area**. In these circumstances a solid wall of up to 1.8m high would be acceptable for a minimal proportion of the **frontage**, on approval by the decision-maker and provided the remainder of the **frontage** provides for views to the street. **Design principles** are provided in the R-Codes Volume 1 to guide circumstances where a **decision-maker** could grant such approval.

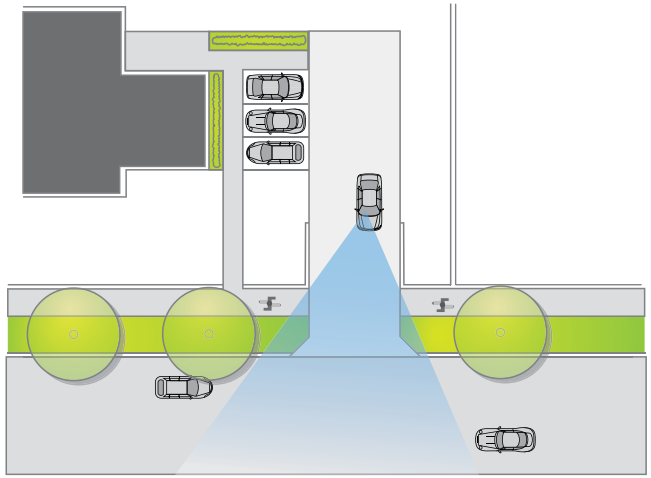
Ideally, **outdoor living areas** should be located behind the **setback** line (R-Codes Volume 1 clause 5.3.1), however, in some circumstances the only possible location for an outdoor living area will be in the **street setback area**. Where a narrow **lot** faces north to the **street**, the street setback area may be the only possible area open to winter sun. In these cases, part of the area should be permitted to be **screened** from view for privacy. Where a private **courtyard** is unavoidable in the front setback area, screening with dense planting and/or a permeable fence that will provide reasonable privacy is appropriate (refer to **Figures 36** - **38**).

Figure 38 High street walls should be limited to the minimum necessary and be visually permeable

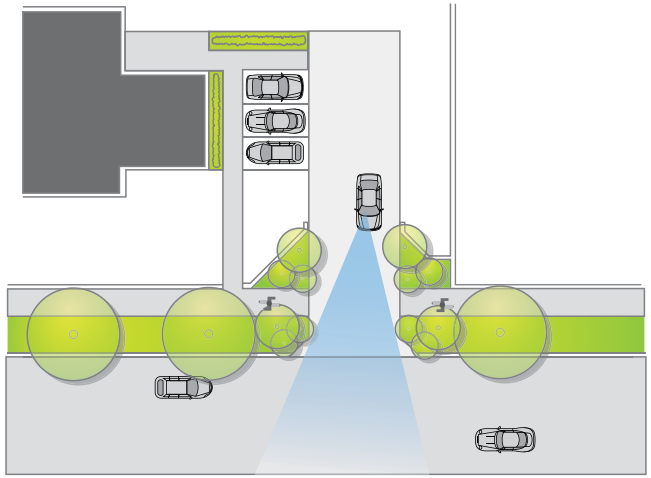
5.3 SIGHT LINES (Clause 5.2.5 of R-Codes Volume 1)

GENERAL GUIDANCE

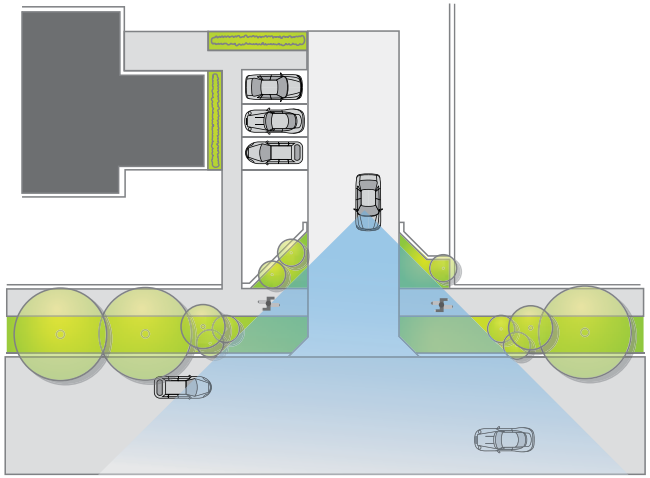
Driveways need to maintain adequate **sightlines** where they intersect **streets**, **rights- of-way**, and footpaths to ensure visibility and safety. Also, the corner of **lots** located at intersecting streets should maintain adequate sight lines. **Walls** are to be reduced in height to 0.75m within a 1.5m truncation to meet the **deemed-to-comply** provision. This is illustrated in **Figure 9a** of the R-Codes R-Codes Volume 1 (refer to **Figure 41**).



Inadequate truncations are provided resulting in poor sight lines.



Adequate truncations area provided, however, the landscaping has not been designed to facilitate clear views to the street.



Truncations are provided to the street in a manner that enables a safe view of the pedestrian and vehicular traffic before leaving the property boundary.

Figure 41 Walls and fences should be truncated where the crossover meets the property boundary to ensure that vehicles can account for on-coming pedestrians and vehicles at the conflict point

5.4 SETBACK OF GARAGES AND CARPORTS (Clause 5.2.1 of R-Codes Volume 1)

SPECIFIC GUIDANCE

For the purposes of the R-Codes Volume 1, a **carport** means an **unenclosed** roofed structure designed to accommodate a motor vehicle and is without a door. Carports are **unenclosed** which limits it to being bound on no more than two sides. A **garage** door cannot be considered a **wall** when demonstrating a carport enclosure. All other structures for housing vehicles, including open-sided carports with solid doors, are deemed to be garages.

Because many houses in established suburbs were built without provision for vehicles, street-side parking and parking in **street setback areas** have become essential, especially where rear access to the property is not available. With increasing affluence, car ownership rates have increased, as has the desire to provide a roof over vehicles.

Consequently it is accepted that, where no feasible alternative exists, the **street setback area** may be used for **carports** and unroofed parking spaces. Carports are acceptable, because they allow a clear view between a public **street** and a private **dwelling**. **Garages** are not acceptable except as provided by clause 5.2.1 **C1.1**, unless they can be accommodated without obstruction to views between street and house at ground level. Such exceptions are likely to be rare.

The R-Codes allow for a **carport** to be built in the front **setback** area with up to 50% reduction of the **setback** requirement of **Table D** where the carport is compatible in form, materials and design to that of the **dwelling**. Careful consideration is required, particularly when there are extensions or additions to an existing dwelling, so that materials, colours and the design of the carport is compatible with the dwelling, and considerate of the **streetscape** character.

It is desirable for **carports** in an existing **setback area** to be set back sufficiently clear of any window of the **dwelling** so as not to unduly obstruct light to that window. Car parking spaces should not intrude into traditional **verandahs**. In the case of complete redevelopment of a **site** in an established **streetscape**, any **garage** or carport accessed from the **street** should be set back in accordance with the general **building setback** unless:

- the area, dimensions or shape of the site make this unfeasible; or
- there is an established, consistent, pattern of carports within the setback area.

5.5 GARAGE WIDTH (Clause 5.2.2 of R-Codes Volume 1)

SPECIFIC GUIDANCE

Garages and supporting structures are potentially dominant and often imposing elements on **dwelling** appearance and **streetscapes**, especially the now common double garages which occupy a large **frontage** of increasingly narrow width **lots**. To avoid the dominance of garages and the visual impact this has on the streetscape, it may be appropriate to consider single garages, **carports**, tandem parking, and/or two **storey** development for narrow frontage lots.

The R-Codes Volume 1 limit the proportion of **frontage** and **building façade** that may be occupied by a **garage** (**Figure 8c** of the R-Codes Volume 1). Assessment will need to weigh up the safe and convenient access to garages while maintaining a **streetscape** not dominated by garage doors. **Decision-makers** may encourage the integration of garages and supporting structures into the design of the **dwelling** by considering changes to **setback** provisions when assessing proposals that address **design principles** relating to streetscape refer to **Figure 42**).

Figure 42 Garage doors, particularly on narrow lots, can be an imposing element in the streetscape

5.6 APPEARANCE OF RETAINED DWELLING (Clause 5.2.6 of R-Codes Volume 1)

SPECIFIC GUIDANCE

Under **deemed-to-comply** clause 5.2.6 **C6**, where an existing **dwelling** is to be retained as part of a **grouped dwelling** development, the appearance of the retained dwelling is to be upgraded externally to an acceptable maintenance standard as the rest of the development.

Ordinarily this would be required as a condition of development approval to the **development**. **Decision-makers** may prepare a **local planning policy** to provide guidance on acceptable maintenance standards.

This provision would not apply if the **development** would result in the subsequent subdivision of the existing **dwelling** as a **single house** (either **green title**, **strata** or **survey strata** without **common property**).

There is no ability to require upgrading of the existing (grouped) **dwelling** once the **lot** title of the property containing the existing dwelling has been separated from that of the **development site**.

6.0 SITE PLANNING AND DESIGN

GENERAL (Clause 5.3 of R-Codes Volume 1)

The **development site** needs to accommodate all the functionality requirements to ensure that the **amenity** for residents is maximised by the provision of high quality facilities that are well located and accessible, while minimising impact of the **development** on adjoining land users.

Outdoor living areas provide outdoor **amenity** for users of **dwellings**. The **landscape** treatment of **open space**s such as those within **street setback areas** is important in creating consistent and attractive communal **streetscapes**.

Natural topographical features of the land contribute significantly to **local character**. **Development** should aim to respect the natural topography of the area by minimising cut and fill of land. Significant fill is discouraged, as privacy and overshadowing issues often result.

It is important for a **site** to effectively deliver facilities and areas for use by residents, such as **outdoor living areas**, **landscaping**, parking, and access.

SPECIFIC DESIGN ELEMENTS (Clause 5.3 of R-Codes Volume 1)

This design element deals with matters that affect the physical planning and design of **development**. Provisions that relate to Part B of the R-Codes Volume 1 include:

- 6.1 Outdoor living areas;
- 6.2 Landscaping;
- 6.3 Parking;
- 6.4 Design of car parking spaces;
- 6.5 Vehicular access;
- 6.6 Site works;
- 6.7 Retaining walls;
- 6.8 Stormwater management; and
- 6.9 Pedestrian access.

6.1 OUTDOOR LIVING AREAS (Clause 5.3.1 of R-Codes Volume 1)

GENERAL GUIDANCE

At least one outdoor area for each **dwelling** is required for entertaining and leisure that is:

- large enough to be functional and usable;
- directly accessible from **primary living space**; and
- with access, if possible, to winter sun.

Outdoor living areas should be oriented to make best use of northern **sunlight**, (where climatically appropriate) and provide opportunities for **natural ventilation** by cooling breezes.

Additionally, where an **outdoor living area** is provided in the **street setback area**, it should have **visually permeable** fencing or balustrading (for **balconies**) to facilitate casual street surveillance.

SPECIFIC GUIDANCE

Because of the importance of providing shade in summer, especially in conjunction with **outdoor living areas**, a part of the outdoor living area (up to one-third) can be roofed (refer to **Figure 13** in the R-Codes Volume 1). The unroofed area(s) is to ensure access to natural light from the outdoor living area and **primary living space** is maintained.

This clause should be read in conjunction with 5.3.2 *Landscaping* to ensure tree planting and associated areas are taken into consideration in the design and assessment of this area.

6.2 LANDSCAPING (Clause 5.3.2 of R-Codes Volume 1)

GENERAL GUIDANCE

The **landscaping** of **street setback areas** for all **dwelling** types, makes an important contribution to the **streetscape**. Landscaping is even more important in the case of **grouped** and **multiple dwelling developments**, because of the intensity of development and land use, and because the development makes such a large contribution to the overall **streetscape** (refer to **Figure 49**).

Landscaping for all **dwelling** types should be designed and installed with regard for the following aspects:

- the desirability of creating attractive **streetscapes**;
- meets the projected needs of the residents of all ages and abilities;
- enhances security and safety for residents;
- provides new trees and vegetation for shade;
- the desirability of protecting existing trees where possible;
- the considered design and choice of materials for surfaces, such as vehicle access ways and **crossovers**, parking areas and **outdoor living areas**;
- **solar access** throughout the year that will influence the choice of trees and plants and their placement; and
- the need for shade structures, such as **pergolas**, to complement shade trees and enhance microclimate.

The tree requirements of **C.2.2** are to apply to all **dwellings**, including **single houses**, **grouped dwellings** and **ancillary dwellings**, as well as to **multiple dwelling sites**. These requirements also apply to existing dwellings retained within new **developments**. The tree requirements however do not apply to extensions to existing dwellings, or to ancillary structures, such as **carports** and **outbuildings**.

Retained existing trees may be included to satisfy the minimum tree requirements of this provision.

Maximise areas for natural planting

Maximise **deep soil area** and limit **impervious** (hard) **surfaces** to provide sufficient areas for trees and other **landscaping** to grow which also maximises the amount of water penetration to the soil. Refer also section 6.8 of guidelines regarding clause 5.3.9 of the R-Codes Volume 1 – stormwater management. The R-Codes Volume 1 limits the use of impervious surfaces within the **street setback area**. The table below gives guidance on materials that would constitute impervious.

It is anticipated that larger **developments** will need to provide a greater number of canopy trees and tree planting areas to contribute to **streetscape** and **sense of place**.

Permeable	Impervious
Lawn	Brick and other solid paving
Mulch	Artificial
Garden	Concrete
Grass pavers	
Decking	
Permeable paving systems	

Provide planting types in appropriate locations to respond to site and climate

The **landscaping** on a **site** can impact **solar access** to **habitable rooms** and private **outdoor living areas**. The selection of vegetation and planting locations should also ensure that **solar access** of both residents and neighbouring properties will not be adversely affected in the future once the vegetation matures. The selection of trees and plants should also respond to the climate, soil type and rainfall profile of the location.

Landscaping enhances outlook from apartments as well as facilitating stormwater infiltration.

Figure 49 Landscaping provided to complement the appearance and function of the building

6.2 LANDSCAPING (cont.) (Clause 5.3.2 of R-Codes Volume 1)

Dense landscaping provided between the building and the street, however, visual surveillance is maintained. The landscaping is a key feature in defining the building.

Figure 50 Landscaping provided to maintain visual surveillance and define the building

Plan landscaping to avoid obstructing pedestrian and vehicle sight lines

Landscaping can be used to define entry points and specific **building** elements. It is important, however, to consider the impact of the landscaping on sight lines, ensuring that they do not compromise the casual surveillance across the **site**, or obscure sight lines at pedestrian and vehicle crossings (refer to **Figure 50**).

Design **landscaping** along the **streetscape** to reflect the existing or future desired character of the area.

Where there is a **streetscape** character defined by **landscaping**, such as continuous street tree plantings or hedges, design the landscaping to be consistent with that established streetscape character.

Private open space

Private open space is developed to suit the requirements of occupants and is likely to be modified over time as occupiers' requirements and **landscaping** trends change.

Consequently, the R-Codes Volume 1 require the provision of **landscaping** as part of the development of **communal open space**, and where required, **common property**, but not of **private open space**.

Communal open space

Although **grouped** and **multiple dwellings** (under Part B of the R-Codes Volume 1) are not required to provide **communal open space**, it should not be discouraged if considered appropriate within a **development**. Communal open space is **open space** provided for the exclusive use of a defined group of residents (refer also to section 4.6, of guidelines and clause **5.1.5** of the R-Codes Volume 1). It serves a similar range of functions to that of **private open spaces** that include:

- a setting for **buildings**
- space for active and passive recreation
- other group activities
- access to direct sun.

6.3 PARKING (Clause 5.3.3 of R-Codes Volume 1)

GENERAL GUIDANCE

Provision of car parking

The R-Codes Volume 1 adopt the basic position of requiring adequate on-site provision of parking to the assessed need. The **decision-maker** can exercise technical judgement where appropriate and is justified to relax on-site parking requirements when:

- the applicant can demonstrate that actual demand is lower; or
- satisfactory alternate parking provision is available and accessible in close proximity other than on-site.

There is a long accepted principle that the demand for car parking generated by a **residential development** should be accommodated on the **development site**. The main exceptions to this are:

- In most cases visitors' car parking for **single houses** (that is, low density development) can be accommodated in the **driveway** or **street** (via on- street/verge parking where permitted).
- In many older areas, pre-dating widespread ownership and reliance on private cars, off-street car parking provision is not feasible without a detrimental change to character housing and the **streetscape**, especially as these areas tend to be developed with small **street setbacks** and narrow **lots** and often where no on-street/ verge parking is permitted.

The need for on-**site** provision for car parking relates to the availability of parking on the **street**. Where a street has exceptionally wide verges which can be used for parking, the actual need for on-site parking may be quite small, although some owners who wish to secure their vehicle would still prefer on-site parking to be provided.

Calculating car parking requirement

Where **deemed-to-comply** provisions for on-**site** parking require a fraction of a space, it must be rounded up to the nearest higher whole number.

Tandem car bays

In the case of **single houses**, **grouped dwellings** and **multiple dwellings**, two cars bays in tandem would be considered two bays where they relate specifically to one **dwelling**.

Reduced car parking requirements

Clause 5.3.3 of the R-Codes Volume 1 detail that smaller **dwellings** (either by size or number of bedrooms) may have reduced car parking requirements. This is based on the premise that smaller dwellings tend to have less demand for car parking, as the anticipated inhabitants per dwelling is lower. In addition, a further reduction is provided for when the dwelling is located in close proximity to convenient public transport.

When measuring a **walkable catchment**, refer to *Liveable Neighbourhoods* (Appendix 3) walkable catchment technique.

On-street car parking

On-**street** car parking should be limited in circumstances where:

- there is heavy traffic in the street and kerbside parking may be unsafe,
- or even prohibited, at least during peak hours;
- **frontages** are narrow and **crossovers** frequent, limiting the length of
- kerb available for parking;
- the street is too narrow; and/or
- space for kerbside parking is taken up by other uses or activities.

Where parking capacity is available on-street or in other off-street parking, on-site parking requirements can be reduced

On-**street** parking is a valuable community resource that serves a variety of social and economic needs including residential uses. **Decision-makers** need to consider how to achieve a balance between different uses in areas with high and/or competing needs. While no one particular use should be favoured, satisfaction of some of the demand for residential parking, especially visitor and service/delivery parking, is a reasonable use for on-street parking.

In locations where there are existing parking facilities with capacity, arrangements can be made to provide parking off-**site** through contract. Where it is determined through a traffic management study that there is capacity in the on-**street** parking system, on-site parking requirements can be reduced.

6.4 DESIGN OF CAR PARKING SPACES (Clause 5.3.4 of R-Codes Volume 1)

GENERAL GUIDANCE

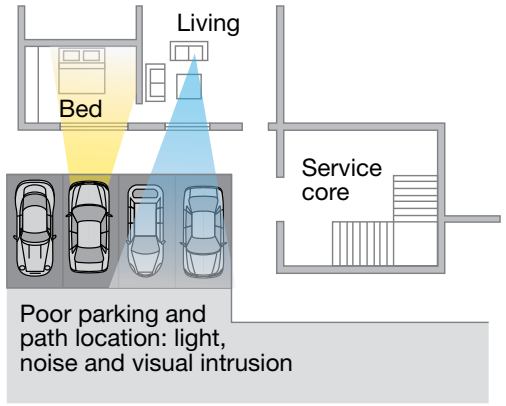
The design of parking and manoeuvring spaces is set out in AS/NZS 2890.1:2004, Parking facilities: Off-street car parking and AS 2890.1:2004/ Amdt 1:2005, Parking facilities: Off-street car parking. The R-Codes Volume 1 reference these standards in as much as they relate to residential properties.

Parking areas should be designed and located to minimise impacts on the residents of the **building** as well as **adjoining properties**. The location and design should have consideration for the impact of light (from both the headlights of vehicles as well as the fixed lighting of any parking areas), noise, odour and **stormwater** run-off. For external car parking areas and manoeuvring areas, acoustic **screen** fencing is effective in controlling the transmission of sound to adjoining properties (refer to **Figure 51**).

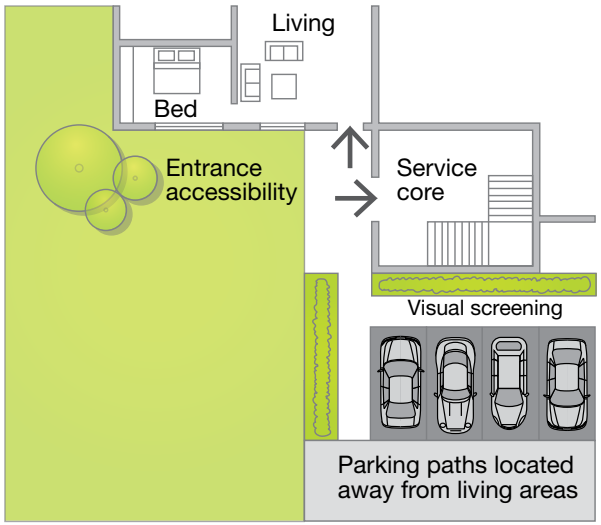
Visitor parking

Visitor parking spaces required by clause 5.3.3 **C3.2** of the R-Codes Volume 1 (section 6.3 of guidelines) shall be provided in a location that is accessible at all times, in addition to the **dwelling** parking requirement. Visitor parking should be clearly identified as visitors' parking bays and located in a location allowing unimpeded access.

Visitor parking spaces should not be located within a secured private or common parking **garage** that requires a key, handset or other electrical or mechanical device to gain access.



Location of parking is inappropriate and has adverse impacts on the residents.



Car parking is well located, reducing impact on residents and providing convenient building access.

Figure 51 Incorporate parking spaces and manoeuvring areas into the design of the building so they are not located in close proximity to habitable rooms and openings at ground level

6.5 VEHICULAR ACCESS (Clause 5.3.5 of R-Codes Volume 1)

GENERAL GUIDANCE

Location of parking spaces and crossovers

Car parking spaces, manoeuvring areas and access ways are potentially intrusive, physically, visually and acoustically. This is particularly evident for **grouped dwelling** and **multiple dwelling** developments where multiple parking spaces and access is required. Car parking consumes space and does not generally make a positive contribution to the **streetscape**. Consequently, location is a major factor in **amenity** as well as security and safety.

The issue of location of **carports** and **garages** in relation to the **primary street setback area** is dealt with in clause 5.2.1 of the R-Codes Volume 1. The advantages of not having vehicle access directly from the primary street are identified in clause 5.3.5 of the R-Codes Volume 1 and include:

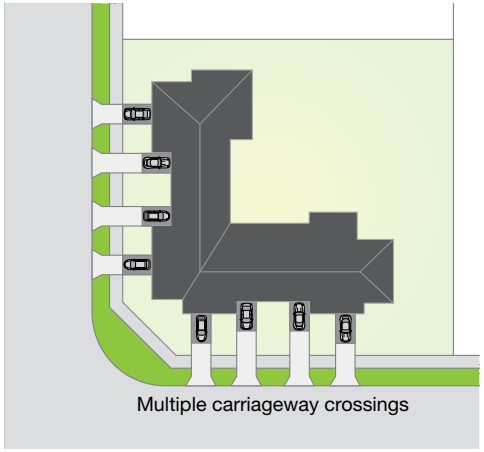
- the **streetscape** will be less dominated by carports, garages and parked vehicles;
- there will be fewer **driveways** and so more useable space for **street** trees and kerbside parking for visitors; and
- there will be fewer conflicting movements of vehicles, pedestrians and cyclists.

The number of driveway **crossovers** from **residential development** into the street affects the quality of a **streetscape** (refer to **Figure 53**).

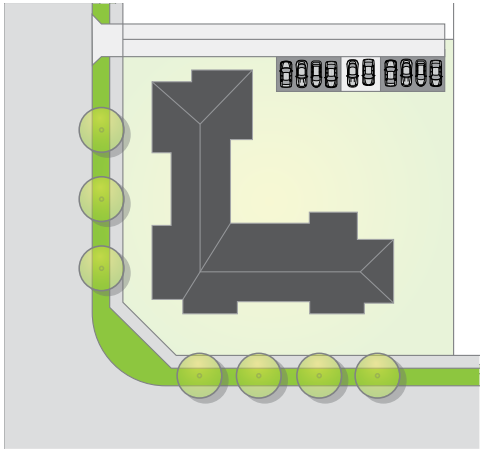
Too many **crossovers** cause a loss of kerbside parking space, lack of space for **street** trees and furniture, interruption to pedestrian use of footpaths and increased hazards for cyclists.

To achieve a good balance between on-**street** and off-street parking design it is important to reduce the number of driveway **crossovers** by integrative access design, especially for **multiple dwelling development**. This will allow a greater run of uninterrupted kerbside available for **street** parking, much of which can be used by visitors.

Access to on-**site** parking is encouraged to be from a **right-of-way** or **communal street**, where available for lawful use, or from a **secondary street**. Access is to be provided from the **primary street** only where there is no secondary street, communal street or right-of-way.



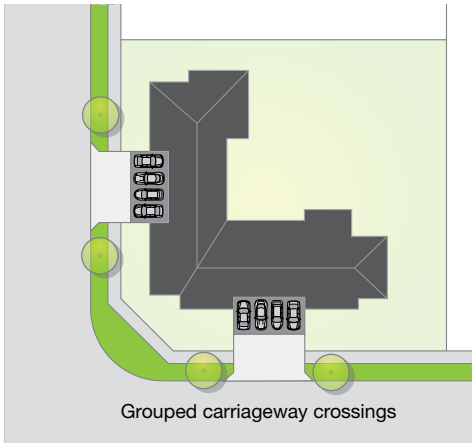
Individual crossovers should not be provided.



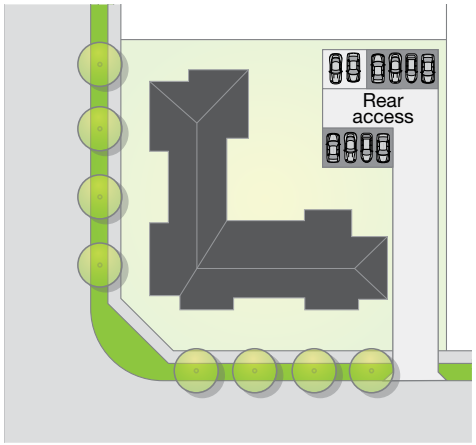
Part of the site is given up for the creation of a shared access way. Shared access arrangements with adjoining properties should be investigated where appropriate.

Figure 53 Vehicle access should be designed to minimise the impact on the street network and provide for safe ingress and egress from the site

6.5 VEHICULAR ACCESS (Clause 5.3.5 of R-Codes Volume 1)



Car parking is provided in a manner that increases the proportion of the frontage that is dedicated to vehicular access



Car parking is located away from view of the street and accessed via a single consolidated access point

Figure 54 Consolidate vehicular access points to reduce impact on streetscape.

Locate vehicle access and accommodation to the rear of the site where possible. Encourage shared access by utilising a single crossover with adjoining development

By minimising the number of vehicle access points along the **streetscape**, there is more opportunity for on-**street** parking and the retention or improvement of the streetscape character. Vehicle access should not double as pedestrian access. Pedestrian access arrangements should be provided in a location that is separated from vehicle movements (refer to **Figure 54**).

The location of the **crossover** should be provided in response to the nature of the **street**(**s**) onto which the **development** fronts. If there is more than one street **frontage** (including rear lanes), the vehicle access should be provided onto the street that carries the lowest volumes of traffic. However, the crossover should also be provided in a location that provides clear sight lines in both directions along the street, is separated as far as possible from any intersection, does not impact on on-street services such as public transport stops, accounts for posted speed limits, and is designed in accordance with any built-up median.

Vehicles can be slowed by creating a clearly different environment at the entry of the **site**. This can be achieved through the use of texture in the paving surface, creating a perceived narrowing of the carriageway, and use of planting and short access legs to limit the ability for cars to pick up speed across the area. Through appropriate design, the use of speed humps can be avoided.

SPECIFIC GUIDANCE

Vehicular access is required to include **driveways** of an adequate width to allow for the movement of vehicles as per 5.3.5 of the R-Codes Volume 1.

A driveway width of 3m is adequate for driveways serving four **dwellings** or less but a minimum of 4m that is designed to allow for two-way access is required for driveways serving five or more dwellings.

Note that a **driveway** is also required to be **setback** 0.5m from a side **lot boundary** for purposes not limited to **stormwater** management, **landscaping** and **utilities**. The total minimum width for vehicle access may therefore be required to be at least 4m or 5m to allow 0.5m on either side of a driveway between two **lot boundaries.**

For a proposed **battleaxe lot**, where vehicle access is within the battleaxe leg, the proposal will also be subject to the requirements of Development Control Policy 2.2 *Residential Subdivision*.

6.6 SITE WORKS (Clause 5.3.7 of R-Codes Volume 1)

GENERAL GUIDANCE

Retaining the natural topography and ground level

Variations in topography make an important contribution to **local character** and to a **sense of place**.

In many locations, the land form (topography) allows views out of the locality. These views are highly valued and can only be optimised, that is, shared by the maximum number of **dwellings**, by respecting the natural topography and maintaining a consistent scale in **building**. This also has an effect on the potential for privacy and overlooking, which is an issue dealt with in clause 5.4.1 of the R-Codes Volume 1 (refer to section 7.1 of guidelines).

The extensive earth working of residential **sites** removes remnant vegetation, disturbs soil profiles, expends energy and creates greenhouse gas emissions. It also adds to the cost of housing.

Development of land should avoid major interference with the natural or pre-existing **site** levels, to preserve the natural topography and minimise development costs. **Natural ground level** is the level of land before land development has occurred or that resulting from the pre-existing development.

Because much of the State's housing was built before accurate contour mapping was available, it is often not possible to know precisely the levels that preceded **development**. In these cases, it may be necessary to refer to other evidence in order to establish, as closely as possible, the relevant levels.

Housing design which proposes extensive excavation, fill and re-contouring of a **site**, without regard to neighbouring properties and their **amenity**, should not be supported. The R-Codes Volume 1 call for skillful and site-sensitive design to make the best of the natural terrain, in turn resulting in diversity of housing styles and a **sense of place** and neighbourhood identity.

Take advantage of the natural topography for view sharing and retention of the visual impression of the natural level of the site

By stepping a **building** to correspond with the natural topography, less cut and fill is required and the visual impression of the natural level of the **site** is retained (refer to **Figure 55**).

Changes to topography at subdivision

In cases where the original subdivision involved changes from the natural levels, the relevant levels to take are those established at subdivision, prior to **buildings** being erected.

It is common for new finished levels to be established through the **building** of retaining **walls** at boundaries. Where this occurs, and for the purposes of establishing boundary **setbacks** and heights, retaining walls may be regarded in the same light as natural topographical features.

Proposed changes of level at subdivision should be examined just as carefully as level changes via **development**.

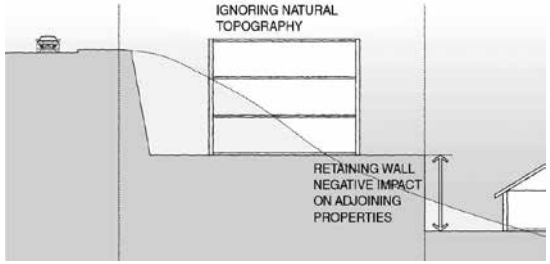
Excavation and retaining walls

Development below **natural ground level** only rarely affects neighbouring **sites**, although it may be necessary to take account of the location of essential services, particularly where protected by a registered easement. By contrast, filling above natural ground level, especially where, it results in replacing a natural slope with level ground and retaining **walls**, is usually visually prominent.

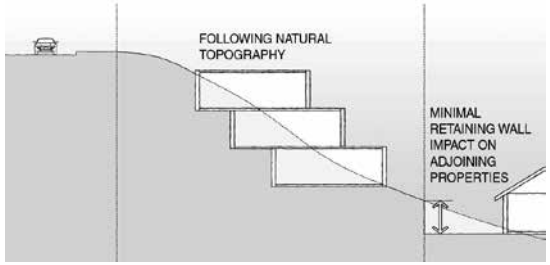
Excavation below natural level is not usually as visually obtrusive as filling above natural level. Consequently, excavation behind the **street setback line** is normally acceptable, provided the resulting spaces and rooms conform to BCA standards.

Minimise impacts on neighbours and public streetscape in the design and selection of materials for retaining walls

Where a **building** cannot be designed to correspond to the natural topography, the result is often retaining **walls** that are visually prominent. The design of these walls should minimise their height and length through terracing and articulation. Materials should be selected for the walls that are visually interesting and integrated into the surrounding **landscape**.



Development ignores the natural slope of the land, resulting in diminished character of the area and increased development impact



Development acknowledges the natural slope of the land and minimises impact on adjoining land.

Figure 55 Development on steep or undulating sites should be designed to minimise the amount of cut and fill required. **Buildings** should have a form that responds to the natural topography of the area

6.7 RETAINING WALLS (Clause 5.3.8 of R-Codes Volume 1)

Clause 5.3.8 Retaining walls deleted by amendment dated 2 July 2021.

GENERAL GUIDANCE

Filling of land

Any significant filling of land is likely to have a potential impact on **adjoining properties** concerning overlooking and overshadowing (clause 5.4.1 of the R-Codes Volume 1 and section 7.1 of the guidelines). For these reasons, retaining **walls**, unless they are 0.5m in height or less, should be treated as though they were **building** walls and should be set back from property boundaries accordingly.

Retaining **walls** that are provided as part of an approved subdivision or part of a previous **dwelling** which establish levels are excluded from these requirements. For the purposes of the R-Codes Volume 1, such walls are regarded as representing the finished level of the **site** prior to new **development**.

Calculating retaining wall or excavation setbacks

Clause 5.3.7 **C7.2** of the R-Codes Volume 1 requires retaining **walls** or excavation that alters the height of a **site** by more than 0.5m to be set back in accordance with **Table D**. The **deemed-to-comply** provisions also allow for retaining **walls**, fill and excavation located between the **street setback** and **street boundary** to exceed a height of 0.5m, where this is necessary to satisfy certain objectives including provision of **universal access**.

6.8 STORMWATER MANAGEMENT (Clause 5.3.9 of R-Codes Volume 1)

GENERAL GUIDANCE

Water-sensitive urban design is recognised as an important aspect of environmental conservation and **sustainable** development. It is critical to land subdivision, but also in relation to **development** of individual **sites**.

Important aspects that should be taken into account are:

- managing water balance by encouraging infiltration and groundwater recharge;
- ensuring that the quality of water leaving a **site** is acceptable; and
- encouraging water conservation, including re-use of **stormwater** and minimisation of mains supply water for **landscaping**.

At this stage, widespread re-use of recycled water is limited, however, third pipe systems are progressively becoming feasible in new **developments** and redevelopment areas. It is possible, nevertheless, to contain all **stormwater** on-site in almost all **residential developments**, ensuring both recharge of groundwater and the avoidance of discharge into public drainage systems.

Exceptions to this will be in:

- areas where soil conditions make on-site infiltration or absorption unachievable;
- some inner city areas where the density of **development** precludes on-site discharge; and
- areas where the intensity and duration of precipitation makes significant on-site absorption impractical.

Recover stormwater for use within the site where practical

Stormwater can be collected and stored on-**site** for irrigation or grey water systems (for example, for toilets). It can also be directed to root zones to reduce the need for additional irrigation. It is easier to plan for stormwater collection at the onset of planning a **building** rather than trying to retrofit a system afterwards (refer to **landscaping** provision 5.3.2 of R-Codes Volume 1 and section 6.2 of guidelines).

Minimise impacts of stormwater release on adjoining sites

Where it is not practical for **stormwater** to be recovered, stormwater should be slowly released from the **site** through retardation systems or returned to the ground via soak wells or leaching pits.

6.9 PEDESTRIAN ACCESS (Clause 5.3.6 of R-Codes Volume 1)

SPECIFIC GUIDANCE

Pedestrian and vehicular access points are to be adequately separated

There are many preventable injuries and fatalities which involve cars and children in **driveways**. The location of vehicular access points should be separated from pedestrian access points, to reduce the potential for conflicting movements.

Safe pedestrian access from the **street** or car parking to private **dwellings** is equally important for **single houses**, **grouped dwelling** and **multiple dwelling developments**.

Accordingly, the R-Code Volume 1 provisions are designed to encourage the provision of good sight lines, and ensure a smooth uninterrupted path of travel between car parking and the **building**.

7.0 BUILDING DESIGN

GENERAL (Clause 5.4 of R-Codes Volume 1)

This design element deals with matters that affect **building** design, including the protection of privacy and **solar access**, meaning primarily the prevention of areas being overlooked by neighbours or overshadowed by **buildings**, which has become a significant issue in recent years. In addition to the building itself, many forms of **incidental development** such as **external fixtures** and **outbuildings** can also have visual impacts.

The level of impact upon the character and density of the area is to be considered in relation to **building** design. The level to which a proposal meets other requirements (for example, height and **setback** requirements) might also assist in determining what reasonable action is needed in managing impacts on privacy and **solar access**.

With increases in density, there is an expectation that there will be a commensurate increase in impact of **buildings** on privacy and **solar access**. There is an expectation of greater tolerance, and therefore allowance, of these impacts at higher density. A level of impact not appropriate in an area of low density is likely to be more acceptable, and more tolerated, at higher densities.

SPECIFIC DESIGN ELEMENTS (Clause 5.4 of R-Codes Volume 1)

This element deals with the following provisions of Part B of the R-Codes Volume 1:

- 7.1 Visual privacy;
- 7.2 Solar access for adjoining sites;
- 7.3 Outbuildings;
- 7.4 External fixtures; and
- 7.5 Utilities and facilities.

7.1 VISUAL PRIVACY (Clause 5.4.1 of R-Codes Volume 1)

GENERAL GUIDANCE

It is recognised that side **setbacks** alone cannot achieve absolute visual privacy because the setback distances required are much greater than those which can be feasibly provided in an urban area.

Setbacks need to be complemented by thoughtful design and supplemented by various **screening** measures, as appropriate.

Privacy is a valid cause for concern and plays an important role in residential **amenity**. However, aside from cases of poor design, there is a large degree of subjectivity, often related to cultural perceptions and concerns.

A sufficient level of privacy must be reached by good design to satisfy reasonable concerns. It is not the intent of the R-Codes Volume 1 to require 100 per cent privacy at the expense of inconsistent **building** orientation, access to **daylight**, winter sun, ventilation, security or poor relationship to neighbours.

Sources of overlooking

Overlooking from areas on or close to **natural ground level** is not subject to control in terms of clause 5.4.1 of the R-Codes Volume 1. This applies equally to **outdoor living areas** and **habitable rooms** which are less than 0.5m above natural ground level. The basis for this is that the view from such areas can be readily limited by a standard 1.8m high boundary fence, and while this may not restrict sight lines in an upward direction, the impact of overlooking **major openings** to habitable rooms or **balconies** situated above natural ground level would be limited.

While it may be possible to overlook an **adjoining property** from many situations, clause 5.4.1 only seek to control overlooking between:

- **primary living space**, **active habitable spaces**, and **outdoor living areas** of the **development site**; and
- the **habitable rooms** and **o**utdoor living areas of the adjoining residential properties.

Overlooking and the cone of vision for privacy design

The impact of a particular **development** on the privacy of a neighbouring property can be assessed by applying the concept of a **cone of vision** at any point where a person is likely to be able to look on to that property, as illustrated by **Figure Series 10** of the R-Codes Volume 1.

The relevance of the **cone of vision** is readily apparent. The cone of vision is defined by the extent of the opening (**Figure 10a** of the R-Codes Volume 1). The concept of a cone of vision is a useful tool also for the design of **screening** devices.

For the purposes of assessing **setbacks** and privacy provisions, all **balconies**, **verandahs**, **terraces** and other **outdoor living areas** raised more than 0.5m above **natural ground level** should be regarded as **habitable rooms** with a **wall height** of 2.4m above the floor level. All such areas, together with active indoor spaces, should be designed to minimise overlooking of neighbouring properties.

Overlooking from bedrooms and studies, which may be occupied infrequently, mainly at night, without noise, and by relatively few people, is more easily tolerated than overlooking from active areas.

Of most concern are **active habitable spaces**, for example, living rooms, kitchens, activity rooms, **balconies** and **outdoor living areas** that are at levels higher than 0.5m above **natural ground level**.

Prevention of overlooking

There are four basic ways of preventing or ameliorating overlooking:

- designing windows, **balconies** and decks to face away from boundaries with neighbouring properties, especially side boundaries;
- providing greater than normal **setbacks**, to achieve an effective privacy separation distance;
- providing intervening **screening**; or
- ensuring that overlooking windows cannot be opened and are opaque or highlight windows.

Often the most effective results will come from a combination of these.

Effective location of **major openings** and outdoor **active habitable spaces** to avoid overlooking is preferred to the use of **screening** devices or obscured glass.

Where these are used, they should be integrated with the **building** design and have minimal impact on residents' or neighbours' **amenity**.

Where opposite windows are offset from the edge of one window to the edge of another, the distance of the offset should be sufficient to limit views into adjacent windows (refer to **Figure 56** and **57**).

7.1 VISUAL PRIVACY cont. (Clause 5.4.1 of R-Codes Volume 1)

Privacy separation distances

A desirable degree of privacy requires a significant separation between the areas concerned, in most cases greater than the **lot boundary setbacks** required under clause **5.1.3** of the R-Codes Volume 1. In practice, some degree of compromise is necessary.

Because it is not always possible to predict how a neighbouring **site** may be developed in the future, privacy separation distances can most realistically be applied between the proposed **development** and the property boundary, that is, as line of direct sight **setbacks**. The way in which setbacks should be determined is illustrated in **Figure 10c** of the R-Codes Volume 1 using the **cone of vision** (refer to **Figure 58**).

Screening devices used to provide for increased visual privacy between developments.

Figure 56 Angled louvre blades on balconies near the property boundary reduce the potential for overlooking while allowing natural daylight into the unit

Screening devices used to limit views between internal spaces of one dwelling and the balcony of the adjoining building.

Figure 57 Screening devices allows developments within close proximity to mitigate direct overlooking

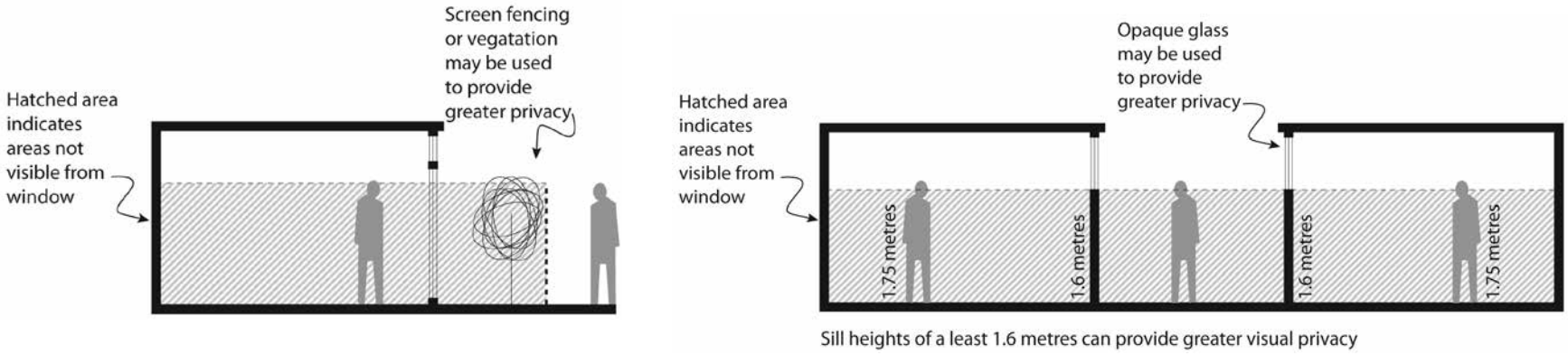


Figure 58 Privacy design

7.1 VISUAL PRIVACY cont. (Clause 5.4.1 of R-Codes Volume 1)

The R-Codes Volume 1 provide a set of privacy **setbacks**, based on these considerations, to operate in the absence of detailed and acceptable consideration of the use and **development** of affected properties. These are set out as **deemed-to-comply** provisions, which do not require the discretion of the **decision-maker**. For that reason, they are conservative, providing a relatively high level of protection from overlooking, but not absolute, protection.

In many cases, more effective and mutually beneficial outcomes can be achieved through the application of good design, directed at meeting the relevant **design principles** (Refer to **Figure 59**).

Acceptable point-to-point privacy distances can be calculated by aggregating the privacy **setbacks** of the **deemed-to-comply** provisions.

In the case of **primary living spaces**, **active habitable spaces**, including **outdoor living areas** and **balconies**, an effective privacy separation distance would be of the order of 15m or more. Clearly, this is not realistically achievable. An acceptable compromise **setback**, where intervening **screening** is not provided, would be in the order of 7.5m for active habitable spaces, 6m for living areas and 4.5m for bedrooms in areas coded R50 or less and 6m, 4.5m and 3m respectively in areas coded higher than R50.

The **deemed-to-comply** provisions for this design element provide for the **setback** of **major openings** in the **cone of vision** or permanent **screening**, as the alternative measure to protect the privacy of **adjoining property**. Measurement of **setback** distances is to be taken from the major opening to the boundary, and accordingly, should be measured from the external face of the opening.

This is illustrated in **Figure 10b** of the R-Codes Volume 1.

The measurement of privacy **setbacks** varies from that used for normal boundary setbacks only in that the line of the measurement in the case of privacy setback is to be based on the **cone of vision**. Accordingly, there will be situations in which the measurement is not at right angles to the boundary. It is important to understand that the setback distances included in the **deemed-to- comply** provisions represent minimum separation, which will be measured to the closest point of the boundary in the cone of vision.

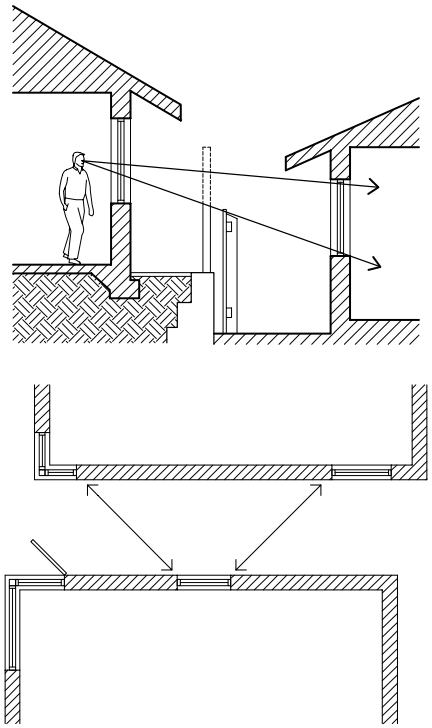


Figure 59 Increased fence heights or offsetting of windows are measures that may prevent overlooking

Where a proposed **development** involves a departure from the **deemed-to-comply** provisions with respect to the separation distances specified in clause 5.4.1, assessment should be undertaken in accordance with the **design principle**, as illustrated by **Figure 60**. This will involve consultation with potentially affected **adjoining property** owners, who should be requested to provide comment on the proposal, and information about the location of any **habitable room**, windows or **outdoor living areas** which may be affected.

Assessment of applications which involve a proposal that addresses the **design principles** generally will require plotting the position of the adjacent **dwelling**, the location of any **major openings** to **habitable rooms** and any associated **outdoor living areas**. This will enable identification of areas and openings which fall in the **cone of vision**.

Evaluation of proposals should take into account only the potential impact of sight lines within the **cone of vision** where separation distances do not meet the **deemed-to-comply** provisions. Where separation distances accord with the provisions with respect to the cone of vision, the standard of privacy protection is satisfactory.

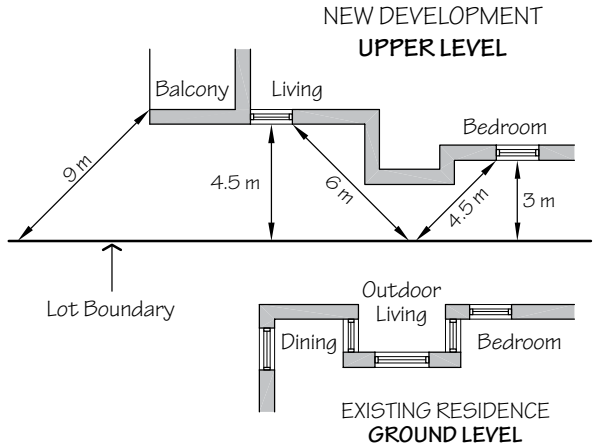


Figure 60 Example of a development that would not be deemed-to-comply, however, could meet the design principle

7.1 VISUAL PRIVACY cont. (Clause 5.4.1 of R-Codes Volume 1)

Screening for privacy

Screening can be employed to limit the **cone of vision**, and therefore, the privacy distances which otherwise would be required. However, it is important to note that in order for such screening to be taken into account for the purposes of the **deemed-to-comply** provisions, it must be regarded as permanent. Proposals that address the **design principles** would provide for alternative solutions from the deemed-to-comply provisions, and in such circumstances, alternatives to permanent screening may be considered, subject to appropriate consultation with relevant **adjoining property** owners.

Privacy **screening** can occur in various forms, including:

- vegetation
- permanent elements such as fences, balustrades and louvres
- translucent or opaque (that is, non-transparent) glazing and other similar materials (refer to **Figure 61**).

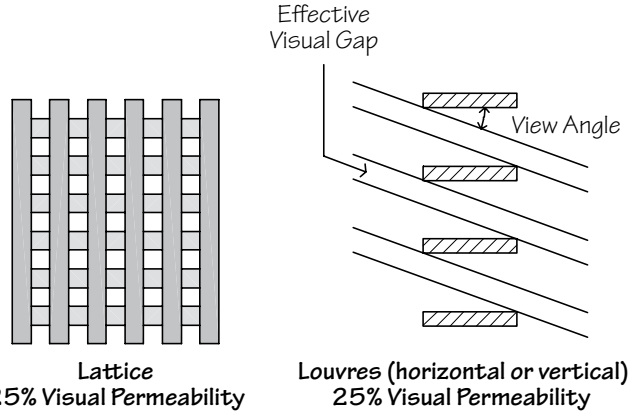


Figure 61 Example of screening by which visual permeability can be limited. Note that a view angle of 45 degrees to the side is the limit of the cone of vision as defined in the R-Codes Volume 1, and no screening is required outside these limits

Vegetation

Vegetation in the form of **screen** planting or selective placement of suitable trees or shrubs can provide effective screening for privacy control, and also can enhance **development** and residential **amenity**. A drawback of this mitigation is that potentially affected property owners and occupiers may need assurance that the vegetation will remain in place, and any such screening should be assessed in terms of the **design principle** and in consultation with relevant property owners.

Subject to consultation with the adjoining owner, the necessary planting may be located on the **development site**, and would be the subject of a condition of development approval to run with the land. As an alternative, arrangements might be made for the developer to provide or contribute towards the cost of **screen** planting on the affected property, which would then become the responsibility of the affected property owner to maintain.

Fences and balustrades

Fences and balustrades are effective forms of **screening** and require little further explanation where they take the form of a solid **wall**. The design and location of such features must not infringe on other relevant requirements for **development**, such as **setbacks**, shading, **daylighting** and in the case of fences, the requirements of the Dividing Fences Act 1961, and associated local laws.

Screening may be perforated to some degree to allow the circulation of air, providing it meets the objective of protecting visual privacy. Because of the absence of a prescriptive standard applicable to partial screening, such proposals generally should be assessed in terms of the **design principles** and in consultation with any potentially affected property owners.

Perforations should constitute no more than about 20 per cent of the total surface area, with an upper limit of 25 per cent. However, it also is important that the size of individual gaps are not such as to prejudice the visual privacy of adjoining properties, and a maximum 50mm visual gap is suggested as reasonable. This compares with a minimum gap of 50mm referred to in the definition of **visually permeable**.

In the case of lattice **screening**, the **visual permeable** definition would be met by 50mm slats at a spacing of 50mm (that is 75 per cent coverage with gaps no greater than 50mm). Where fixed louvres are used either for vertical or horizontal screening, the spacing required to meet the same visual permeability standards will depend on the angle of view and the width of the louvre blades (refer to **Figure 62**).

Louvres, which are proposed to be relied on for **screening**, must be fixed or have a physical and permanent limitation on opening, to ensure the level of **visual permeability** does not exceed the specified standard. Such standards may be subject to a discretionary variation taking into consideration any comment and/or agreement from the relevant **adjoining property** owner.

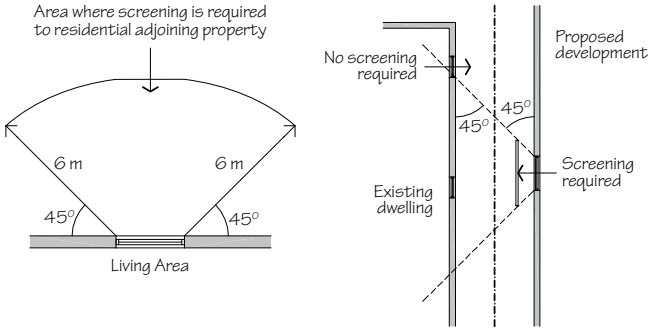


Figure 62 Horizontal screening

7.1 VISUAL PRIVACY cont. (Clause 5.4.1 of R-Codes Volume 1)

Translucent or opaque

The use of this form of **screening** generally does not involve the exercise of any discretion on the part of the **decision-maker**. However, where such measures take the form of sheet glass of the type which could be easily replaced, as distinct from glass block work for example, it generally would be appropriate to apply a condition to ensure the screening remains in place (for example, in the event of breakage, it is replaced to meet the same specification). Because of the limitations on the use of planning conditions through the **building** permit process, this necessitates an application for development approval.

Building to boundaries

Privacy may be enhanced, for both the **development** and its neighbour, by **building** a portion of the **dwelling** up to the common boundary as provided in clause 5.1.4 of the R-Codes Volume 1. This overcomes the problem of overlooking from that **wall**, and in most cases allows more freedom of design on the **site** to ensure privacy for **outdoor living areas** and windows. However, the use of **boundary walls** does need to consider other aspects of design and neighbour **amenity**, such as the possibility of overshadowing neighbouring dwellings or outdoor living areas.

SPECIFIC GUIDANCE

Location of protected areas

Habitable rooms and **outdoor living areas** are identified in clause 5.4.1 of the R-Codes Volume 1 being the areas which are to be the subject of privacy protection. In the case of habitable rooms, **major openings** should be the focus of attention, while in the case of outdoor living areas, priority should be given to areas required to be allocated for this purpose under clause 5.3.1 of the R-Codes Volume 1 (an area of **open space** directly accessible from a living area and having a minimum dimension of 4m).

Protection from overlooking is not required for **open space** other than that defined as **outdoor living areas**. Protection from overlooking generally is not necessary for extensive areas of garden which are well separated from the **dwelling** to which they relate. Those outdoor areas likely to be occupied for extended periods of time, and where it is reasonable to expect a relatively high degree of privacy, should be the focus of attention in terms of any restrictions to be applied to overlooking from **adjoining properties**.

A lesser need for privacy protection is usual in the case of front gardens and areas visible from the street, and this principle should also be carried over to other public places, such as parks. The basis for this acceptance is that control of overlooking for areas visible from public places would be largely ineffective in terms of privacy protection and also could limit outlook over, and surveillance of, the public places themselves, thus compromising safety and security.

The **deemed-to-comply** provisions are limited to protection of areas of any **adjoining property** behind its **street setback line**.

While the **deemed-to-comply** provisions do not seek to protect areas in front of the **adjoining property's street setback line**, a proposal that addresses the **design principles** may need to be considered in the case of corner **lots** adjacent to a **development site**.

Prior to **development** of a corner **lot** in a greenfield area, the determination of **primary** and **secondary streets** will generally be unknown and, therefore, **deemed-to-comply** provisions which relate to the location of the **street setback line** will be undefined. This indicates the need for the exercise of discretion, and in these circumstances, a proposal that addresses the **design principles** would be appropriate. In such cases consultation with the relevant **adjoining property** owners may be required to inform the **decision-maker.** In circumstances where an **outdoor living area** (associated with a corner lot) is situated adjacent to the secondary street **frontage** and where the **street setback line** (generally taken to be the line which delineates the **street setback area**) is only 1.5m from the **street** alignment, some difficulty would be encountered in meeting the deemed-to-comply provisions. Similar difficulties may arise where the **dwelling** on a corner **site** is built up to the secondary street setback (1.5m) with **major openings** facing the side boundary and subject to overlooking from an adjoining dwelling situated at its standard **setback**.

Where there is an **outdoor living area** adjacent to the **secondary street**, or **major openings** in an area which otherwise might have been the **primary street setback area**, application of the normal **deemed-to-comply** provisions could impose unreasonable constraints on the adjoining **development**, for example, no front **balconies** or major openings to habitable spaces above ground level. In such circumstances, consideration should be given to the **design principle**, with a view to limiting potential conflicts, however, the concessional provisions which allow for reduced **secondary street setbacks** for corner **lots** should not be allowed to unduly prejudice development of **adjoining property**.

7.1 VISUAL PRIVACY cont. (Clause 5.4.1 of R-Codes Volume 1)

Taking neighbouring properties into account

The proponent and the **decision-maker** should take into account the effect of the new **development** on existing or proposed **dwellings** on **adjoining properties**.

Design of new **development** should avoid overlooking into adjacent **habitable room** windows, especially of living rooms, balconies, **terraces** and other outdoor living spaces which are frequently occupied.

Protection from overlooking has high priority where the proposed **dwelling** has limited **outdoor living space**, and especially where its location is fixed, for example, adjacent to indoor living areas. Protection from overlooking is not necessary for extensive areas of garden, especially where these can provide their own vegetation **screening** (refer to **Figures 63** and **64**).

Application of design principles

Minimisation of overlooking should not be interpreted as an absolute prohibition on visual interaction. The objective for this element is to minimise the impact of **development** on the visual privacy of nearby residents. It is clear that absolute protection of privacy is not realistically achievable. Limits to the protection of privacy are also borne out by reference to the general approach to separation, as an alternative to the interruption of sight lines, to achieve an acceptable compromise.

With reference to the application of the **design principles** the focus should be on what constitutes a reasonable level of privacy in the circumstances, and what is realistically achievable. This may vary depending on the circumstances, with generally higher levels of visual privacy achievable in low-density areas than is practical in higher-density areas. Differing community expectations in different situations should also be kept in mind.

In some cases, there may be mutual benefit to be gained by a relaxation of the privacy standards, and subject to consultation with potentially affected property owners, alternatives should be considered in this light. For example, where adjoining **sites** are orientated east to west with views or outlook to the north, relaxation of privacy standards may enable a better design outcome in which **solar access** to, and views from, the north side of the site are maximised.

Applicants seeking approval through an application for a proposal that addresses the **design principles** are required to provide a written submission in support of the proposal. Where a **major opening** to an **active habitable space** is proposed closer to the nearest point of common boundary in the **cone of vision** than the **setbacks** specified in **deemed-to-comply** clause 5.4.1 **C1.1i** of the R-Codes Volume 1, the following additional information is to be provided, in accordance with clause **3.3.1**(**b**) of the R-Codes Volume 1:

- The position and dimensions of any **balcony** or major openings to any active habitable space in any **wall** of an adjoining **building** which is visible from the **development site** and is located within 6m of a boundary of the development site.
- The position and level of any accessible area (for example, lawn, paving, decking, **balcony** or swimming pool) on any **adjoining property** and within 6m of a boundary of the development site.
- Provision of additional or marked-up plans and sections showing the cone of vision and critical lines of sight from those major openings as they relate to the adjoining property.
- Details of **screening** or other measures proposed to be used to reduce overlooking.

Figure 63 Upper windows facing the rear garden are generally acceptable

Figure 64 Upper windows facing a neighbouring property are generally not acceptable

7.2 SOLAR ACCESS FOR ADJOINING SITES (Clause 5.4.2 of R-Codes Volume 1)

GENERAL GUIDANCE

Western Australia encompasses a variety of regions with different climates, ranging from temperate in the south-west to hot-arid in the interior to hot-humid in the north (refer to **Figure 65**). Consequently, it is not possible for the R-Codes Volume 1 to adopt a uniform set of climatic design requirements for **residential development**. It is possible, however, to express general guidelines and principles and to allow local planning as the most appropriate avenue to introduce this aspect of design control to suit local conditions.

A majority of new **development** occurs in, or close to, the Perth metropolitan region and so there is some value in establishing standards suitable for the Perth coastal climate.

Accordingly, much of the guidance regarding **solar access** applies directly to the Perth metropolitan region, and appropriate adjustments need to be made for other regions.

While specific **deemed-to-comply** requirements for **solar access** are provided in the R-Codes Volume 1, solar access guidelines have been included in these explanatory guidelines and may be taken into account in the consideration of applications according to the **design principles**.

Codifying climate-sensitive design

In terms of **residential development**, the three main aims of climate-sensitive design are to reduce energy consumption, optimise on-site **solar access** and protect solar access for neighbouring properties.

However, it is difficult to translate these aims into **development** provisions. This is not because the issues are subjective but because conditions vary greatly from one situation to another, making it difficult to establish universally valid rules. To give an obvious example, a narrow east-west oriented **lot** on the south side of a **development site**, especially where the terrain slopes to the south, is highly vulnerable to being overshadowed, even by a relatively low **building** set back from the common boundary. By contrast, where lots are oriented north-south, even tall **buildings** built up to the common boundary have little potential for overshadowing. In other cases, the shadows cast may largely fall on blank **walls** or roofs.

Site location, orientation and topography must be taken into account by the proponent in the design of the development.

Because it is impossible to adequately codify and enforce good design practice, the R-Codes Volume 1 deal with the issues in three ways:

- by setting out relevant factors for design of a **development**;
- by setting down conservative **deemed-to-comply** limits to overshadowing, which should be satisfactory for most developments, especially for **single houses** in low to medium-density range areas; and
- by encouraging proponents and **decision-makers** to use the **design principle** approach in difficult or complex cases.

Figure 65 Extracted from Climatic Zone map of Australia published by ABCB (last amendment August 2015)

7.2 SOLAR ACCESS FOR ADJOINING SITES cont. (Clause 5.4.2 of R-Codes Volume 1)

Protecting solar access for neighbouring properties

Development should be designed so that it does not seriously affect **solar access** for neighbours. The R-Codes Volume 1 include maximum allowable percentages of overshadowing of:

- **adjoining properties** generally; and
- the north facing **major openings** to **habitable rooms** and roof mounted **solar collectors** of adjoining properties.

In most cases this means avoiding very tall **walls** close to southern boundaries, so that excessive shadows are not cast across the north-facing openings adjacent. In some cases, overshadowing by west or east-facing **walls** may also be important (R-Codes Volume 1 **Figure 11a**).

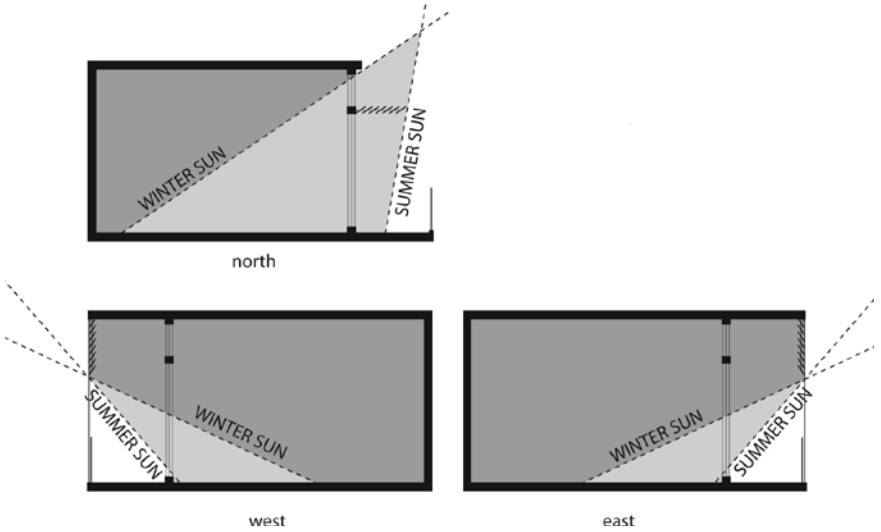
As with overlooking, but even more so, the potential for a **building** to overshadow a neighbouring **site**, or be overshadowed itself, varies enormously from case to case. The variables are several and complex and include:

- the density of **development**;
- the height of **buildings**, existing and proposed;
- the position of buildings, existing and proposed, in relation to boundaries;
- the orientation of the **development site** and its neighbours, that is, the relative position of the sun;
- the relevant dimensions and shape of the **development site** and of affected neighbouring **sites**; and
- the degree and orientation of slope of the land.

It is clear that the **sites** most vulnerable to overshadowing are narrow east- west orientated sites, on the south side of a **development site**, especially if they are also lower or on a south facing slope. In such cases, even a relatively low **building** may cast mid-winter shadow over a greater proportion of the site than allowed under **deemed-to-comply** provisions. In some instances, such a **lot** may abut two or more properties to the north, and would be subject to overshadowing by two or more properties. The deemed-to-comply provisions of the R-Codes Volume 1 therefore reduce the amount that some lots can overshadow proportionate to the property boundary they share (R-Codes Volume 1 **Figure 11b**). It is possible, however, that some overshadowing is unavoidable. In these cases, careful consideration as to what is being overshadowed, rather than the extent of overshadowing, should be judged on merit and the **design principle** applied (refer to **Figure 67**).

In other cases a shadow cast by a proposed **building** may exceed the allowable limits in theory, but in practice may simply be casting a shadow onto a **boundary wall** or roof or both, with minimal adverse effect.

A shadow may not exceed the limit but may fall over the only available **outdoor living area**, or living room window of an adjoining **dwelling**.



Note: These diagrams illustrate concept only. Actual summer and winter sun angles can vary greatly throughout the State and local information should be used for each development.

Figure 66 Orientating outdoor living areas and major openings to habitable rooms to the north maximises light penetration opportunities to reduce heating and cooling costs

7.2 SOLAR ACCESS FOR ADJOINING SITES cont. (Clause 5.4.2 of R-Codes Volume 1)

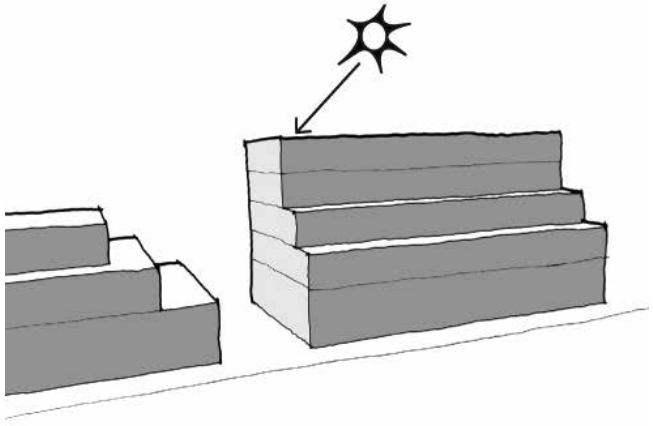
Calculation of overshadowing

The assessment of the shadow cast by a **building** at midday 21 June is straightforward, and shown in **Figure 11a** of the R-Codes Volume 1. The methodology for determining the shade cast can be found in the *Sunshine and Shade Australasia*, Phillips, R.O., Commonwealth Scientific and Industrial Research Organisation (Australia), Division of Building Construction and Engineering, Canberra, ACT 1992. Reference should be made to the specific tables in this document.

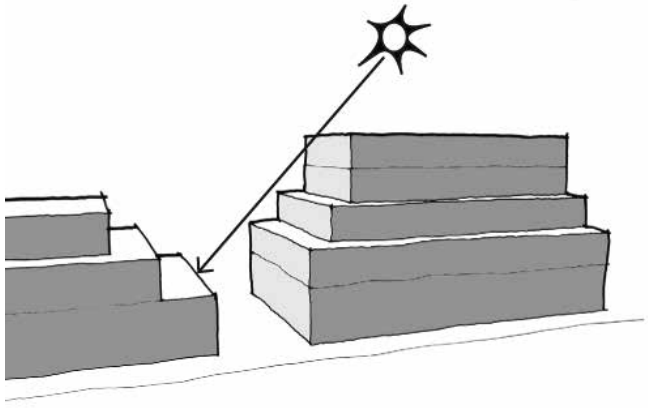
In general terms the shadow cast is calculated by:

- selecting the vertical sun angle from the following chart that lists the major urban centres from Albany to Wyndham;
- transposing the length of shadow on to the site plan, taking care to correctly orientate the **building** and allow for the slope of the land (R-Codes Volume 1 **Figure 11a**); and
- not including dividing (boundary) fences up to a height of 2m.

City/town	Latitude (S)	Vertical sun angle
Albany	35	31
Perth	32	34
Kalgoorlie	31	35
Geraldton	28	38
Carnarvon	25	42
Port Hedland	20	47
Broome	18	49
Wyndham	15	52



***Building** does not allow for solar penetration to adjoining property to the south.*



Amenity of the adjoining property is not adversely affected by the design of the building, allowing solar access into the adjoining building.

Setting taller elements back from common boundaries provides a more appropriate scale minimising the impact of the new development on existing built form.

Figure 67 By stepping the upper levels of a building back, adequate solar access to habitable rooms and open space on adjoining property is provided

7.2 SOLAR ACCESS FOR ADJOINING SITES cont. (Clause 5.4.2 of R-Codes Volume 1)

SPECIFIC GUIDANCE

Design for climate: energy conservation and comfortable living

The south of the State enjoys a climate suited to outdoor living and comfortable living indoors, throughout the year.

The important factors to take into account for the temperate south-west, and southern regions of the State, including the Perth metropolitan region, and also much of the State with hot dry climates (generally zones 4, 5 and 6 in **Figure 65**) are as follows:

- The sun is further north in winter than in summer, and its angle is much lower. This means that a simple, properly calculated, north-facing roof overhang will allow the winter sun in and keep the summer sun out.
- **Dwellings** should be laid out so that at least one living area, preferably the one used most of the day, faces north or within 15 degrees of north. An **outdoor living area** is also best located on the north side of the dwelling.
- **Pergolas** with removable, adjustable, solar-orientated awnings or deciduous vegetation can be designed and planted to provide **solar access** for desired times in the winter, while excluding solar access for desired times in summer.
- The sun is most fierce in summer in the afternoon. At this time it comes from the west or west-south-west, so areas of glass facing in that direction should be avoided. Protect the dwelling with trees or vegetation (preferably deciduous, so as to allow in the sun in winter), **pergolas** or **verandahs**.
- The morning sun comes more directly from the east in summer, but will generally have moved to the north and then west before the ambient temperature rises. Therefore, east-facing **walls** are not as critical as west-facing, but the use of glass should still be kept to a minimum, unless **screened**.
- The sun never hits the south face of a dwelling in winter: large areas of glass on the south will allow heat to escape in winter.
- Cooling breezes in summer come to the Swan coastal plain from the south- west; design should allow for letting these in while protecting windows from the sun, and avoiding crowding vegetation so close that they will hinder breezes.

All of these factors need to be verified for relevance to other regions. For example, sun angles vary significantly with latitude, and the time and direction of cooling breezes varies with proximity to the ocean and other factors. In the hot humid regions, thorough ventilation, and hence space around **buildings**, and shade are more important than solar penetration in winter (refer to **Figures 68 - 70**).

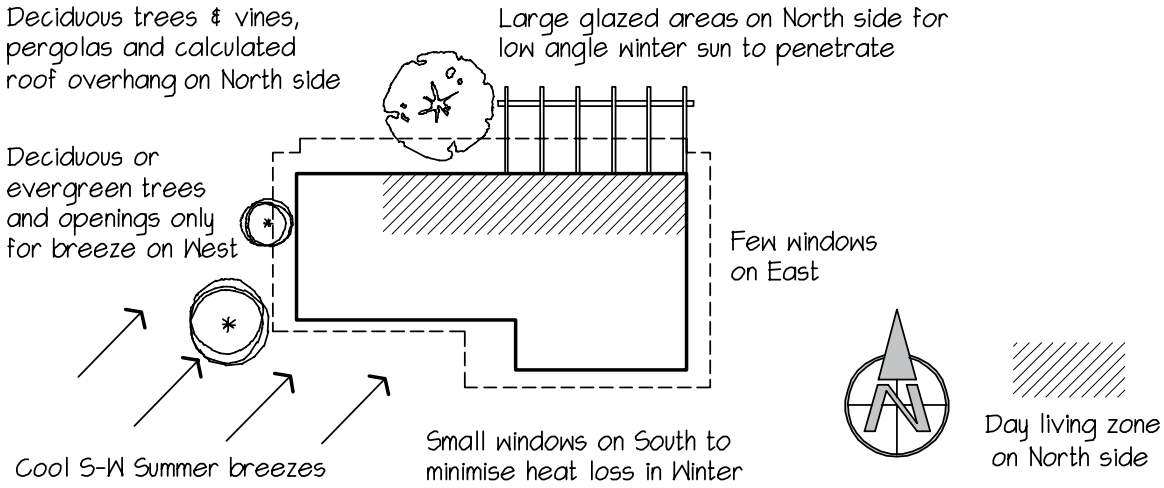


Figure 68 Some principles for the siting of a dwelling in the temperate zone

7.2 SOLAR ACCESS FOR ADJOINING SITES cont. (Clause 5.4.2 of R-Codes Volume 1)

Achieving solar access on site

The shape and orientation of **lots** sometimes makes it difficult to achieve optimum solar layout of a development. This may also conflict with the principle of **dwellings** facing the **street** and often a compromise will have to be made.

It should be the practice of **decision-makers** to assist, where necessary, by making concessions in particular cases, especially by modifying side **setbacks** to allow **solar access**, provided that neighbours' privacy or solar access is not affected. These concessions may include **building** up to a side boundary.

In other cases, the only available private north facing **open space** may be within the **street setback area**. The R-Codes Volume 1 recognise this, for example, by modifying the provision for fencing in the **street setback area** to allow for private **outdoor living space**.

Reflective roofs

Reflective roofs are useful and effective in reducing the heat absorbed by a **dwelling**. However, very highly reflective roofs sometimes cause glare and discomfort to neighbours.

In some situations it may be desirable or necessary to use a material or finish, such as Colorbond, in a light but less reflective colour. Conversely, dark roofs increase absorption of heat and should be avoided.

Energy-efficient design

The **WAPC** has made provision for energy efficient **lot** design in Liveable Neighbourhoods. For guidance on the requirements of energy efficient **design principles** and minimum construction standards, reference should be made to the BCA.

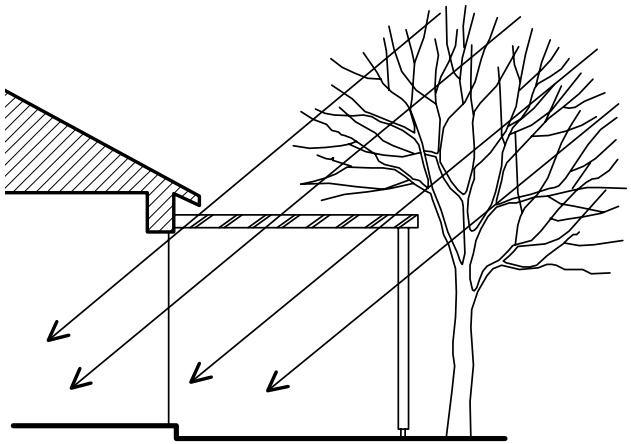


Figure 69 Solar pergola and deciduous trees

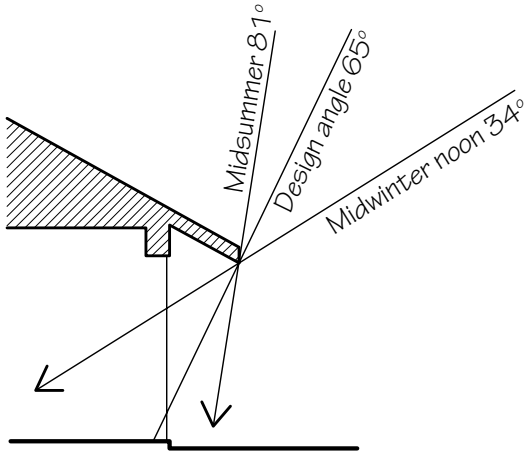


Figure 70 Calculated eaves overhang on north side, Perth

7.3 OUTBUILDINGS (Clause 5.4.3 of R-Codes Volume 1)

All **outbuildings** could, in theory, be regarded as **buildings** and made to comply with the same design guidelines as the main building or buildings. However, Australia has a long tradition of backyard sheds, workshops, **garages** and other similar buildings, including outside laundries and toilets, and these have always been regarded in a different light to the main buildings they serve. The tradition is changing because contemporary living standards have led to the demise of the outside laundry and toilet, in part because the spacious quarter acre block has since given way to smaller **lots**, and also because urban lifestyles have changed.

Nevertheless, there is a case for relaxed standards for some **outbuildings**. The criteria should be that they do not detract from the essential functions of **private open space**, the visual **amenity** of neighbours or the **streetscape**. This means that any outbuilding that is to be exempt from the residential or **dwelling** standards should be:

- relatively small in area;
- relatively low in height;
- sited so as to preserve the use and **amenity** of **open space**;
- set back sufficiently from boundaries;
- confined to **single houses** and **grouped dwellings**; and
- excluded from **street setback areas**.

Other common private garden or backyard constructions such as **pergolas**, cubby houses and play fixtures, and dog kennels have not been included in the definition of **building** and are exempted from planning control, although some **decision-makers** do have policies to control certain backyard constructions (for example, cubby houses).

Outbuildings are classified as either:

- small outbuildings; or
- large and multiple outbuildings.

This is to provide a **deemed-to-comply** pathway for both types. Smaller **outbuildings** may encompass two **boundary walls**, however, larger and multiple outbuildings are to be **setback** in accordance with **Table 2a**. The **lot boundary** setbacks required to large and multiple outbuildings are to manage cumulative impact, and bulk and scale of multiple or larger outbuildings.

Separate **building** code requirements may also be applicable for **outbuildings**.

7.4 EXTERNAL FIXTURES (Clause 5.4.4 of R-Codes Volume 1)

External fixtures include items attached to or emerging from **buildings**, including:

- **solar collectors**
- television, radio, other antennae and satellite dishes
- plumbing vents and pipes
- external hot water heaters
- air conditioners
- rain water tanks.

The BCA encourages water and energy efficiency of all housing in Australia. It is therefore an objective of the R-Codes Volume 1 to assist in the widespread adoption of technologies that may improve the **sustainability** of urban housing.

The location of **solar collectors** determines their efficiency, hence their positioning needs to be **site**-specific and is therefore permitted as of right. Television antennae of the standard type, essential plumbing vents above the roof line and external roof-water down pipes are accepted as minor and **deemed-to-comply**.

Any other **external fixtures**, which in the opinion of the **decision-maker**, may have greater potential to detract from **amenity** and **streetscape**, should be subject to planning control, and may be the subject of **local planning policies** (refer to **Figure 75**).

Rooftop plant and infrastructure dominates appearance of the building.

Figure 75 External fixtures can be unsightly and detract from the streetscape

7.5 UTILITIES AND FACILITIES (Clause 5.4.4 of R-Codes Volume 1)

For the purposes of the R-Codes Volume 1, **utilities** and facilities fall into two categories:

- essential facilities, such as clothes drying, general **storage** and rubbish bin storage; and
- optional facilities, such as a tennis court, swimming pool, gymnasium, gazebo, security fencing and gates, or below ground car parking.

Adequate provision for the above essential facilities is required in all **grouped dwelling** and **multiple dwelling developments** because they are important to the functionality of these developments.

8.0 SPECIAL PURPOSE DWELLINGS

SPECIFIC DESIGN ELEMENTS (Clause 5.5 of R-Codes Volume 1)

Part B of the R-Codes Volume 1 encompass three types of **special purpose dwellings**:

- 8.1 ancillary dwellings;
- 8.2 aged or dependent persons' dwellings; and
- 8.3 single bedroom dwellings.

These **dwelling** types may require discretionary approval under the relevant **scheme**.

The provisions for these sections are only applicable to Part B of the R-Codes Volume 1 and therefore only apply to all **single house**(**s**) and all **grouped dwellings** and **multiple dwellings** in areas coded less than R40.

8.1 ANCILLARY DWELLINGS (Clause 5.5.1 of R-Codes Volume 1)

SPECIFIC GUIDANCE

To encourage diversity in accommodation types, and to provide a means for residents to live in proximity but with autonomy, the R-Codes Volume 1 provide for **ancillary dwellings**, sometimes referred to as granny flats. This is essentially an independent **dwelling**, which may or may not be physically attached, on the same **lot** (with a minimum lot size of 350m2) as a **single house**. Such dwellings would include, for example, 'Fonzie Flats' (**studios** located above garages); separate rear studios; and self-contained quarters within a single house; for example, a second **storey** or separate ground floor wing that may have a shared lobby/entry or separate external access.

There is no longer a restriction regarding occupancy of **ancillary dwellings** by family members of the primary **dwelling**. Ancillary dwellings can however, support those living independently or semi-dependently, at various life stages. Ancillary dwellings should be designed to have a positive visual relationship with their surroundings. This includes ensuring that the dwelling design, and colours and materials selected are compatible with the main dwelling. Importantly, this does not imply replication or imitation of the main dwelling, but rather a compatibility that creates a positive design dynamic between both **buildings**. Substandard buildings such as sheds, dongas and shipping containers (that have not been re-purposed) would generally be considered incompatible.

While an **ancillary dwelling** is a self-contained **dwelling**, the extent of facilities provided would be at the discretion of the landowner. It is generally accepted that a separate kitchen and bathroom would be provided. The provision of a laundry would not be essential from a planning point of view. Meeting BCA requirements may, however, require the provision of laundry facilities.

Services also may be shared; the rental of an ancillary accommodation would function in a similar manner as a boarder; however, utility providers may have specific requirements for the separate provision of services, for example, separate water, power, sewer, gas and telecommunications.

Subdivision (for example, into **strata lots**, built-strata lots or **green-title lots**) is not permissible as specified by the definition of **ancillary dwellings** under the R-Codes Volume 1. The **single house** (primary **dwelling**) and ancillary dwelling are considered two dwellings on one **lot**. Subdivision could only occur subject to meeting minimum lot size requirements (and other R-Code Volume 1 provisions) of the density code of the **site** under a **scheme** as **grouped dwellings** or two single houses.

Ancillary dwellings are limited in size to 70m². **Development** is required to meet requirements set out in Part B – Design Elements for all **single house(s)**; all **grouped dwellings**; and, **multiple dwellings** in areas with a coding of less than R30, as they relate to single houses (for example, **setbacks**) or as specifically provided for (for example, parking and compatibility in design and finishes) with the exception of:

- 5.1.1 site area;
- 5.2.3 street surveillance (except where located on a **lot** with **secondary street** or **right of way** access); and
- 5.3.1 outdoor living areas.

The **development** of an **ancillary dwelling** should not preclude the **single house** from meeting the **open space** and **outdoor living area** requirements.

8.2 AGED OR DEPENDENT PERSONS' DWELLINGS (Clause 5.5.2 of R-Codes Volume 1)

SPECIFIC GUIDANCE

The intention of this provision is to encourage the **development** of small-scale specialised housing in local communities, as an alternative to larger scale, relatively segregated retirement village/nursing home-type complexes. Because aged or dependent persons' **dwellings** are generally smaller than conventional dwellings, and the occupants do not usually have a high car ownership ratio, the R-Codes Volume 1 under **deemed-to-comply** clause 5.1.1 **C1.4i** of the R-Codes Volume 1 allow the reduction of the **site area** by one-third of that provided for by the R-Code applying to the site and clause 5.3.3 provides for reduced car parking standards.

To prevent these concessions from being abused, for example as a back door way of increasing density for standard housing without re-coding an area, the concessions are subject to four constraints:

- there is a limit on the size of such **dwellings**;
- they must be purpose-designed;
- there is a minimum of five dwellings in a single **development**; and
- they are subject to a legal agreement to restrict occupancy.

The **development** of aged or dependent persons' **dwellings** is otherwise required to comply with all other R-Code Volume 1 provisions as relevant. Only clauses pertaining to the type (such as **grouped dwellings** or **multiple dwellings**) of development proposed are applicable.

In relation to the minimum number of **dwellings** in a single **development**, the **decision-maker** may make **local planning policies** that reduce the minimum number where it determines appropriate to facilitate additional aged or dependent persons' dwellings.

The design of aged or dependent persons' dwellings must incorporate, or at the very least, allow for future incorporation of features that are required to serve the special needs of aged or dependent persons, such as ramps and wider doorways and passageways to accommodate wheelchairs and handrails in bathrooms and toilets.

It is important that aged or dependent persons' dwellings are designed to allow for ageing in place, whereby **dwellings** cater for an individual to remain in their chosen place of residence even though their physical and sensory abilities may change in the future. Certain minimum standards, as set out in appropriate Australian Standards must be part of the original construction, or can be introduced (retrofitted) with ease in the future. In particular, this would include designs with minimal use of varying floor levels and stairs, adequate passageways and door widths, roofed car parking spaces, accessible **utilities** and slip resistant floors for kitchens, laundries, bathrooms and toilets as described in AS 4299:1995, *Adaptable Housing*. This would result in such dwellings being more flexible to accommodate the changing needs of older people.

In addition, it is necessary to stipulate an age threshold of 55 years in the case of **aged persons' dwellings**, however, there is no constraint on the dwelling type. The concessions apply equally whether they involve **single houses** or **grouped** or **multiple dwellings**.

It is also not necessary that the whole of any particular **development** comprise **special purpose dwellings**, or even consist of the same type of **dwelling**. It is possible, for a development to comprise a mix of dwelling types to cater for different ageing in place needs. An integrated facility may comprise a variety of dwelling types incorporating **aged persons**' dwellings for low-care/independent residents, serviced apartments for medium-care residents and nursing home type accommodation for high-care residents.

8.3 SINGLE BEDROOM DWELLINGS (Clause 5.5.3 of R-Codes Volume 1)

SPECIFIC GUIDANCE

One or two-person households now make up over half of all households in Western Australia. **Single bedroom dwellings** provide an important source of alternative and affordable housing for singles, students and couples. To encourage their **development**, and because **dwellings** of this nature result in a low population density per dwelling unit, they do not generate the same demands for car parking as two or three bedroom dwellings, and result in less building bulk. The R-Codes Volume 1 allow the same **site area** concessions as for aged or dependent persons' dwellings (clause 5.1.1 **C1.4i** of the R-Codes Volume 1), however, there are no constraints on the age of occupants and there is no requirement for special facilities to be provided.

To prevent these concessions from being abused, and to ensure that affordable housing options are provided through these concessions, it is important to ensure that floor area and site plans clearly propose a **dwelling** that would only support single or couple living arrangements in accordance with the definition of **single bedroom dwelling** under the R-Codes Volume 1.

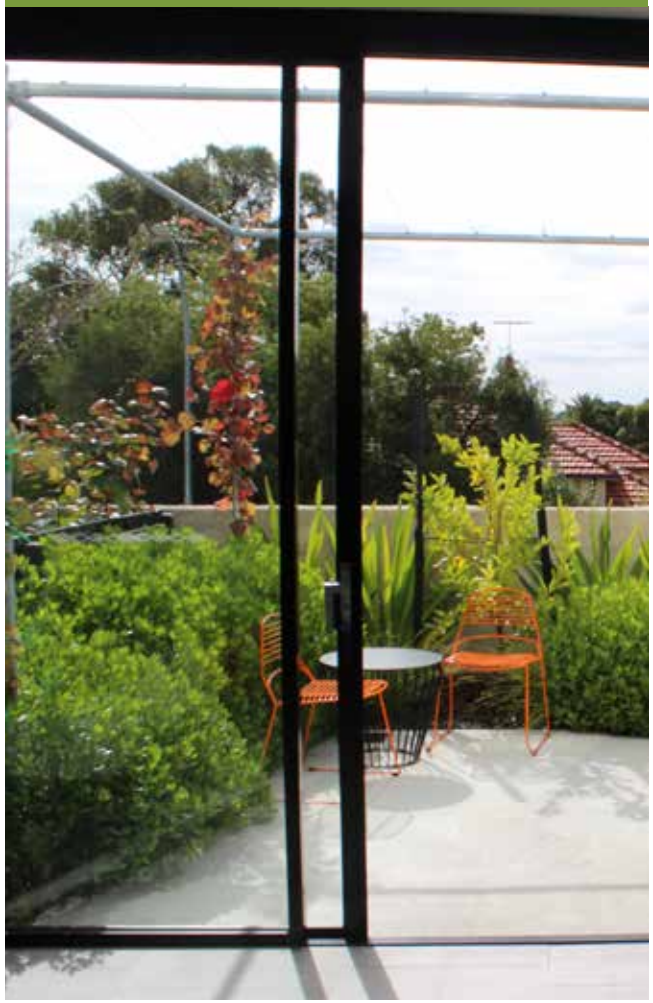
The development of **single bedroom dwellings** is required to comply with all R-Code Volume 1 provisions as relevant, except as specifically exempted (for example, **site area** concession of clause 5.1.1 of the R-Codes Volume 1). Only clauses relevant to the type of **development** proposed would be relevant, such as provisions related to either **grouped dwellings** or **multiple dwellings**, depending on the form of development proposed.

PART C
Medium density

1.0 THE GARDEN

The garden connects the home to the outdoors, bringing in sunlight, natural ventilation and an attractive outlook that contributes to the liveability and amenity of the dwelling. Gardens can be private, like a backyard, or communal space, such as a shared roof terrace or courtyard for apartments.

The elements in the garden section work together to encourage site planning that prioritises private open space and tree canopy.



1.1 Private open space
1.2 Trees and landscaping
1.3 Communal open space
1.4 Water management and conservation

1.1 Private open space

INTENT

Well designed and oriented **private open spaces** (including **courtyards**, **terraces** or **balconies**) connect occupants to the outdoors through outlook and connection to **landscape**. A private open space that is accessed from the **primary living space** extends the **dwelling's** living area. Private open spaces should be designed for functionality, **amenity** and to support good passive environmental performance of the dwelling.

*The **primary garden area** requirement applies to **single houses** and **grouped dwellings** only. For* **multiple dwellings**, *the **private open space** may be in different forms, such as **balconies** and **courtyards**. Where a **primary living space** is proposed on an upper level for a single house or grouped dwelling **development**, private open space (such as a **balcony** or a rooftop* **terrace***) is required (refer **C2.1.2**).*

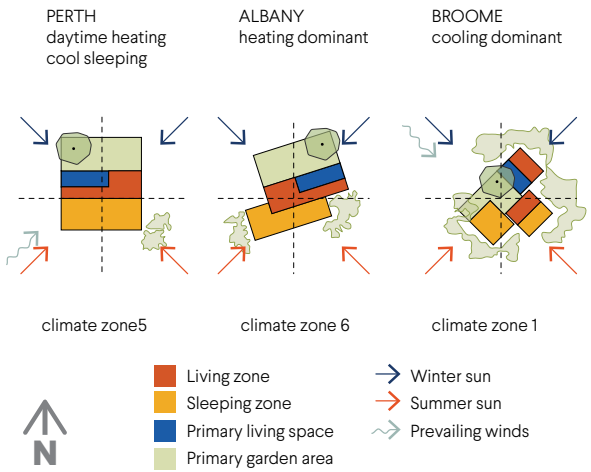


Figure G1.1a Optimum siting of the primary garden area for regional climate zones

DESIGN GUIDANCE

Responding to Climate - primary garden areas

The **primary garden area** should be located to respond to siting and orientation of the **dwelling** informed by the climate zone and **lot** orientation.

Locating the **primary garden area** between north-west and east of the **dwelling** in climate zones 4, 5 and 6 enables effective control of **solar access** to the dwelling through eaves and shading devices to an adjacent **primary living space**. This can facilitate passive solar heating and cooling and deliver energy efficient house designs. In climate zones 1 and 3, primary garden areas should be located to capture prevailing breezes and to enable **natural ventilation** through the dwelling, refer **Figure G1.1a.** Development should also consider additional covered areas and shading in climate zones 1 and 3.

Designing for comfort is important as **primary garden areas** may be used for extended periods and during different seasons and times of the day. Designing for comfort may involve providing weather protection and shading structures, such as **pergolas** (with or without planting), shade sails or **patios**. In climate zones 4, 5 and 6, these structures should be designed and located to maintain **solar access** into the **primary living space** of the **dwelling**.

Where maximum permanent roof cover is met and additional usable space is required, consider structures which permit **sunlight** into the **primary living space** such as **pergolas**, trellis, fixed open louvres and/or shade sails.

For some developments it may be appropriate to provide a secondary outdoor space to the **primary garden area**, such as a front **porch** or **verandah**. Multiple outdoor areas with different orientations allow use during different seasons and times of the day, as well as providing spaces for simultaneous use by different members of the same household.

Photo G1.1a A well located primary garden area contributes to the amenity and functionality of the home (PC)

1.1 Private open space (cont.)

DESIGN TIPS

The following design responses may assist in addressing a design principle(s):

- Where the ability to provide **private open space** is constrained due to a pre-existing **site** condition (for example, adapting a retained **dwelling** or apartments fronting busy roads), providing an alternative secondary living space and/or increasing the **communal open space** may be acceptable. A larger area of communal open space to offset decreased private open space may also be appropriate where the **development** aims to facilitate communal living, such as student, supported or co-operative housing.
- In cooler climates and for **buildings** exposed to extreme weather or noise, **balconies** may not be appropriate and providing winter gardens (glazed **enclosed** balconies) to apartments could be a suitable alternative.
- Where the **primary living space** is provided on an upper floor, it may be appropriate to reduce the size of the **primary garden area**, where a private open space area (such as a **balcony** or rooftop **terrace**) is provided in accordance with **Table 1.1a**. The reduced primary garden area should be 100% uncovered and open to the sky without restricting the site from achieving **deep soil area**, tree planting and **soft landscaping** requirements.
- For **single houses** and **grouped dwellings** where it is necessary to provide a primary garden area within the **street setback area**, it should be designed to facilitate street surveillance between the dwelling and the **street** and minimise the use of visually impermeable or solid front fences above 1.2m in height. Further levels of privacy can be achieved by **screening** portions of the space with **landscaping**, while maintaining **sightlines** to **major openings** and dwelling entrances.
- For primary garden areas where the **deemed-to-comply** maximum covered area has been met, additional covered areas may be provided where it can be demonstrated that required deep soil area, **solar access** to the primary living space, **site cover** and soft landscaping can be achieved.

Photo G1.1b A ground floor apartment may be provided with a courtyard garden that includes trees and productive garden beds

Photo G1.1c A generously sized balcony can function as an extension of an apartment's living space. This balcony retains a good external outlook from the primary living area

Functionality and use

The **private open space** should be of sufficient size and dimension to be used in a flexible way for different functions, including socialising, recreating and resting. The design of private open spaces, in particular **balconies**, should consider providing:

- a water tap for plants / pets, space for a barbeque, and power points for appliances; and
- additional space and **screening** for clothes drying, **storage** and air conditioning units.

An appropriate size, location and configuration for the **private open space** will depend on the **site** context, **dwelling** size, site orientation, as well as relationship to **landscape** and views.

For **balconies**, as a minimum, the dimensions should be enough for a table and chairs supporting use by the likely maximum number of **dwelling** occupants.

The extent of paved surfaces and **landscaping** of **private open space** should be apportioned to enable a range of uses and daily activities including paving for alfresco, **service areas**, access to carparking, **storage** and **utilities**.

Outbuildings are not to be included in the calculation of **primary garden area**.

An area of **private open space**, connected to the **primary living space**, should be provided for the exclusive use of each **multiple dwelling**. It may be in the form of a **balcony**, **terrace**, **courtyard** or equivalent.

Where possible, avoid locating air conditioning units on **balconies**. Where this cannot be achieved, orient the exhaust away and appropriately screen from the functional areas of **private open space**, especially seating areas.

1.1 Private open space (cont.)

Photo G1.1d Early planning can make private open spaces function well by making provision for a gas point for a BBQ, a screened space for laundry drying, and a tap for watering (PC)

Outlook versus privacy

The design of **balconies** should balance the need for occupant and neighbour privacy, while providing an outlook from the **dwelling** to external spaces. Consider orienting balconies to minimise the need for visual privacy **screening** as this can restrict **daylight** access and outlook from the **private open space** and adjoining **habitable rooms**.

C1.1.4 limits the extent of **screening** of **balconies** to a maximum of 75% of the total perimeter to ensure **solar access**, **natural ventilation** and outlook is maintained to the **dwelling**. For a recessed **balcony** with **walls** on three sides (which equate to ¾ of the balcony's perimeter), this provision requires that the remaining fourth side is unscreened. In this case, alternative effective methods need to be considered to satisfy the visual privacy provisions of element 3.10 *Visual privacy*.

Examples of unscreened balustrades include any balustrade below 1.6m in height, and any balustrade 1.6m, or greater in height with a material less than 75% obscure including clear glass panel, perforated metal and clear polycarbonate.

Walls 1.6m or greater above floor level, and are visually obscured through the use of textured, opaque and/or translucent materials are considered to be **screened**.

Design integration

For **multiple dwellings**, integrate **balconies** into the overall form and aesthetic of the **development**. For example:

- projecting **balconies** should be compatible with the **building** design, including the design and finish of soffits and fascias;
- operable screens, shutters, hoods and **pergolas** should complement the main building materials; and
- **balcony** drainage should be integrated within the building **façade**.

ASSESSMENT GUIDANCE

When calculating the **primary garden area**, the following spaces can be included*:

- **deep soil areas** and **landscaped** areas (refer **Figure 1.1a**);
- **pergolas**, **patios**, **unenclosed** alfresco dining/living areas, unroofed **terraces**, areas under eaves and **balconies**, decks and steps with a floor level not greater than 0.5m above **natural ground level**;
- **street setback areas** where functional, useable areas are proposed;
- swimming pools and spas; and
- **service areas** such as clothes drying, air conditioning units and the like.

**Provided that the minimum length and width dimension can be met.*

Spaces under eaves are included in the **primary garden area** (to a maximum 0.75m eave depth) as they allow for functional use of the space while performing an important role in achieving climate responsive design and shading of **walls**, windows and openings.

Where permanent roof cover is provided and attaches to an eave, the portion of eave is to be included in permanent roof cover calculations .

When calculating **private open space** for a **multiple dwelling**, exclude **service areas** such as bin storage, clothes drying, air conditioning units or other similar **utilities**. The private open space is required to have direct and physical access from the **primary living space**.

1.2 Trees and landscaping

INTENT

Landscape design that responds to climate, topography, soil conditions and existing significant **landscape** features allows **developments** to contribute positively to **local character** and neighbourhood **streetscape** appeal.

Retaining existing trees and providing space for new trees is a priority. Trees in the urban environment provide a range of important services including mitigating carbon pollution, improving urban air quality, reducing urban heat island impacts, and conserving energy. **Deep soil areas** provide for **sustainable** urban **stormwater** management. These services provide substantial qualitative and quantitative benefits for people and ecosystems. Trees provide shade and fauna habitat, enhancing **dwelling** outlook and can contribute to privacy.

*The R-Codes require a **landscaping** plan to be included with an application for five or more **grouped dwellings** or for a **multiple dwelling development**. Refer to Appendix 3 Application documentation of the R-Codes Vol.1 for full requirements. For a **single house** proposal, the extent location and species of trees and landscaping is to be illustrated on the site plan.*

DESIGN GUIDANCE

Trees and Deep Soil areas

Deep soil areas support and sustain the development of tree canopy and the retention of existing trees. A deep soil area is an area of soil that is free of built structure above and below, has sufficient area to support tree growth and enable the infiltration of water. **Site** planning should seek to locate deep soil areas in locations best suited for healthy tree growth.

Deep soil areas are to be located wholly on **site** and be of a sufficient dimension and area to protect and sustain healthy root systems for new and retained trees and to receive rainwater infiltration. Deep soil areas should be identified as part of initial site planning, with prioritisation given to co-locating **private open spaces** and/or communal spaces with retained trees.

Residential development that removes trees or diminishes the long-term growth of healthy trees creates negative **site** impacts as well as broader cumulative impacts for neighbourhoods. Ensuring the health and viability of trees (both new and retained) is a priority for housing design. Refer to relevant local government Urban Forest Strategies or species selection list (where available) for guidance on suitable species, planting locations and approaches to tree provision and retention.

Careful consideration should be given to the location of trees to limit tree roots and canopy from traversing **lot** boundaries while noting that the minimum dimension and **deep soil area** is required to be provided on **site**. Generally, tree canopy diameter at maturity is not intended to fall outside of the **development site**, particularly where this may impact a neighbours' **amenity** regarding **sunlight** and views.

Trees should be located to ensure canopy (at maturity) and root systems are clear of **buildings**, buildings over and footings to ensure healthy tree growth and reduce impact on structures. Where this cannot be achieved, consider species with an appropriate canopy and root system for the location.

Tree location, size and species selection should permit winter **sunlight** to enter into the **primary living space**. In climate zones 4, 5 and 6 where a **private open space** is located to the North-West to East of the primary living space careful consideration should be given to planting location. When retaining a **significant existing tree**, the primary living space should likewise be located to ensure sufficient **winter solar gain**.

Where a different quantity and size of tree is proposed to **Table 1.2a**, or where a **significant existing tree** is retained, ensure an equal or greater amount of **deep soil area** is provided to support sufficient tree canopy and healthy tree growth.

Where trees are proposed to be planted by others as part of a development application, **decision-makers** should condition the tree requirement.

Photo G1.2a Waterwise planting contributes to the streetscape and creates an effective transition between the public realm of the street and private realm of the apartment site

1.2 Trees and landscaping (cont.)

DESIGN TIPS

The following design responses may assist in addressing a design principle(s):

- Appropriate preparation of **site** ground/soil conditions is often needed to ensure good long-term health of planting. Considerations may include:
  - contouring of soil to ensure **stormwater** flows away from structures and towards **soft landscaping** areas;
  - soil stripping to loosen soil compacted during construction process;
  - preparation of sub-soil membranes and drainage;
  - conditioning of soil to enhance the water and nutrient retention capacity; and
  - use of structural cells for new trees adjacent to hard stand areas/structures with compacted soil.
- In climate zones 1 and 3, where it may be difficult to accommodate the **deep soil area** and tree requirements, alternative landscaping responses and shading devices may be appropriate.
- A reduction in overall deep soil area may be considered where one or more trees are proposed on the same site and are adjacent to each other. For example, where two trees are proposed in the **street setback area** for a **grouped dwelling**. This reduction should support the healthy growth of both trees with appropriate space for roots and tree canopy.

Retaining existing trees

Retention of **significant existing trees** should be prioritised, as small, newly planted trees are usually no substitute for the value of larger retained trees in terms of **amenity**, micro-climate, fauna habitat and ecological benefits.

Where an existing tree within a **site** (or an adjoining tree) is identified for retention or on-site relocation, advice from an arborist is recommended to ensure the tree is protected during and post-construction.

A tree protection zone (TPZ) should be established to protect an existing tree from the impacts of **development** and ensure that the tree remains viable. The radius of a TPZ is calculated for each tree by multiplying the trunk diameter (measured at 1.4m above ground) by 12 (refer **Figure G1.2a**). More detailed guidance is provided in Australian Standard 4970-2009 and covers tree protection on construction **sites** and outlines the recommended approach for protecting and retaining trees within developments.

To prioritise the long-term health of existing trees, TPZ's should be identified at the **site** planning stage and the subsequent location of all **building** services, footings, soakwells and structures should be avoided within the TPZ.

Where a retained **significant existing tree** dies during the **development** construction period, the required **deep soil area** must still be provided, and the local government may require a suitable replacement tree of similar size to be planted.

General landscaping

Landscape design and installation should have regard to the following:

- meeting occupant requirements, including the need for security and safety (**sightlines**, lighting), comfort and low maintenance;
- using durable and **sustainable** surface materials for vehicle **driveways** and parking areas; **primary garden areas**; **communal open spaces**; and **private open spaces** (examples include light coloured materials and permeable paving);
- minimising potential impacts on **amenity** (visual, odour, noise) from outdoor equipment such as barbecues and lighting;
- bushfire risk management where located in an identified bushfire prone area (refer *SPP 3.7 Planning in bushfire prone areas*); and
- safety, including incorporation of Crime Prevention Through Environmental Design principles.

Photo G1.2b Planting on structure – a green wall at the entry to an apartment building

1.2 Trees and landscaping (cont.)

Landscape should be designed to be **sustainable**, with consideration to enhancing the micro-climate and improve the thermal performance of **buildings**. Strategies to consider include:

- providing a balance between evergreen and deciduous trees for shading in summer and **solar access** in winter, and using shrubs and vines/creepers to shade east and west facing windows (climate zones 4, 5 and 6) to reduce heat load on buildings;
- locating trees to ameliorate building bulk and scale;
- incorporating shade structures, such as **pergolas**, to complement trees and enhance the microclimate;
- greening roofs or **walls**/**façade**s to shade and cool the building;
- using materials with high reflectivity and low heat conductivity;
- minimising turf (e.g. using loose aggregate, mulch and/or trafficable planting areas as alternatives) unless sustainable water harvesting, and reuse systems are used;
- maximising **permeable surfaces** to allow infiltration of rainwater and irrigation; and
- eco-zoning and hydro-zoning plants, and subsurface irrigation to minimise irrigation needs.

Water Corporation provides a range of online resources for waterwise **landscaping**. (www.watercorporation.com.au/Waterwise)

Semi-permeable surfaces and alternatives to impervious paving

The use of grass paver systems, permeable paving, porous concrete and loose aggregate surfaces is encouraged as an alternative to **impervious surface** areas to support water infiltration, moisture retention, improved plant health and the reduction in radiant heat. Appropriate soil profiling, sub-grade treatment and detailing is required for each of these permeable paving strategies.

Where loose aggregate is used as an alternative to paved surfaces, the type, depth and detailing (e.g. ground preparation, soil profile and edging/kerbing) of the loose aggregate should be considered to ensure that it supports the intended function of the **site**/garden area and enables safe access and efficient maintenance.

The use of loose aggregate, grass paver systems and porous concrete for **driveway** and car parking spaces is encouraged where the surface is appropriately durable and robust, and where planting areas can be provided directly adjacent to the space.

Planting and soft landscaping

Soft landscaping areas can include areas under eaves and **building** projections, planting on structure, and planting over sewers and services, and can be included in soft landscaping calculations where the planting area has a minimum dimension of 1m.

Soft landscaping can include planting, lawn and organic mulch. It does not include pools, rockeries and ornamental ponds. Semi-permeable surfaces such as grass pavers, decks, loose aggregate, permeable concrete paving systems and porous concrete systems, while providing some level of water permeability are not to be included in soft landscaping calculations.

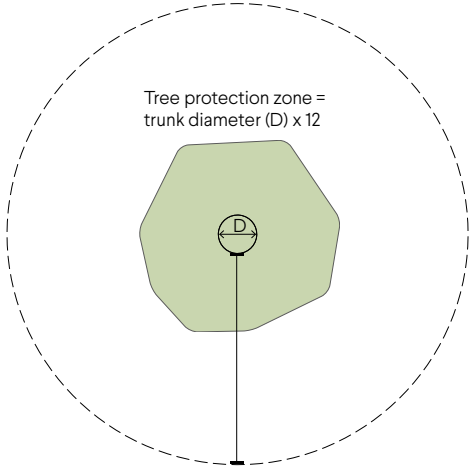


Figure G1.2a Establishing a tree protection zone

A range of planting of various scales, including shade trees, shrubs and groundcovers, should be identified on **landscape** plans. Local native plants are encouraged as they can benefit the local urban ecology and, once established, generally require less water and maintenance than exotic species. Refer to relevant local government species lists (where available) for guidance on suitable plant selection.

When considering the appropriateness of pools, rockeries and ornamental ponds these are not to impact the extent of required **soft landscaping**.

Planting design (including consideration of location, size, species, habit) should be coordinated with hydro-zoning (grouping of species or vegetation types with similar water requirements) and irrigation strategies, micro-climate and built form to ensure long-term viability and maximum benefit to the **amenity**, function and performance of the **dwelling**.

Photo G1.2c Soft landscaping and deep soil area provided to the primary garden area (PC)

1.2 Trees and landscaping (cont.)

Landscaping in the street setback area

Landscaping within **street setback areas** should enhance **streetscape** character and soften the built form. Aim to maximise planting areas and limit **impervious surfaces** (refer **Photo G1.2a**). This includes making provision for trees and landscaping in and around vehicle access and parking, while maintaining safe **sightlines**.

Consider tree planting and **landscaping** within the verge where **local planning framework**s allow this. This can make a significant contribution to community tree canopy targets, street micro-climate, water infiltration, and **streetscapes**.

Photo G1.2d Provision of trees in the street setback area enhances the streetscape character and softens built form (PC)

Landscaping in the communal street

Landscaping of **communal streets** should incorporate appropriate planting and provide a high-quality landscape environment, giving consideration to:

- appropriate interface of the communal street with **primary living spaces** and **habitable rooms**, by providing privacy and acoustic attenuation
- legible definition and separation of **dwellings** from the communal street
- shading of the communal street with **soft landscape** areas adjacent to, and/or integrated with, the communal street
- opportunity for semi-permeable paving surfaces including use of grass paver systems, porous concrete and loose aggregate surfaces to **driveways**
- integrated features and elements that encourage slower vehicle speeds and safe, shared-use with pedestrians.

Planting on structure

Planting on structure can assist with **landscaping** constrained spaces (refer **Photo G1.2b**) and includes:

- **wall** supported planting (including trellis structures attached to walls);
- green roofs, particularly where roofs are visible from the public domain or other parts of the **development**;
- large scale planter boxes suited to small or medium trees; and
- green walls, living walls and/or vertical gardens.

Planting on structure solutions need to respond to local climatic conditions, as some solutions may not be viable. Plant species selection should have regard to micro-climates and plant longevity. Soil profile and volume should facilitate good plant growth. Consider modifying depths and widths to suit plant species and irrigation frequency, and providing sufficient volume for tree anchorage.

Depending on scale, successful planting on structure may require technical expertise. Planters may need to be supported by reinforced structures to deal with additional saturated soil weight.

ASSESSMENT GUIDANCE

Trees

Development is to provide sufficient space for healthy tree growth and tree canopy. Where trees are proposed to be planted, the submitted plans are to clearly identify the corresponding **deep soil areas** consistent with the dimensions specified in **Table 1.2b**. The deep soil area is to be free from all encroachments and underground structures, including soakwells and any semi-permeable surfaces.

Deep soil areas

A **deep soil area** can be an irregular shape, provided the relevant minimum required dimension is achieved. Minimum dimensions relate to tree size and refer to the minimum length and width of all areas that contribute to the deep soil area.

LOCAL PLANNING FRAMEWORK CONSIDERATIONS

Local governments are often able to provide more regionally and climate-specific guidance on appropriate species selection and soil conditions. They can also identify locally significant trees that are critical to retain for both the ecological benefits as well as the community value they contribute.

*The following matters may assist when considering modifications through a **local planning framework**:*

- Establish species selection lists that are responsive to the region, considering factors such as:
  - Soil and climate conditions
  - Waterwise planting
  - Endemic species
- Establish a local significant tree register in order to identify and protect locally **significant existing trees**.

1.3 Communal open space

INTENT

Communal open space provides occupants of grouped and **multiple dwelling developments** with space for recreation and socialisation beyond their **private open space** and **primary garden areas**. It also creates room between buildings for trees and **landscaping**.

DESIGN TIPS

The following design responses may assist in addressing a design principle(s):

- Where a **development** is located close to a high **amenity** area (within approximately 100m) that offers a choice of accessible recreation and community facilities for the residents of that development, it may be appropriate to reduce the required amount of **communal open space**. In such instances, at least one useable communal open space area should be provided within the **development site**.
- Where all **dwellings** within a development are provided with larger **private open space** a reduction in communal open space may be appropriate.

DESIGN GUIDANCE

Communal open space may include outdoor spaces that are **unenclosed**, semi-enclosed and/or partially covered. Spaces can be located at ground or on upper levels and should be sized and designed to be functional, attractive and accessible to all occupants of the **development**.

Communal open space may include improvements such as:

- seating, shared BBQs, and play areas connected to high amenity **landscaping** and **deep soil area**s;
- vegetable gardens;
- planting on structures; and
- recreation facilities.

For smaller **sites**, **communal open space** should be provided as a single consolidated area to maximise its functionality. On larger sites, a series of well-integrated, communal **open spaces** offering complementary uses may be more appropriate.

Communal open space should be well-lit for evening use (with consideration given to potential light impacts to **dwellings** and adjacent properties) and be open to **passive surveillance** from adjoining dwellings and/or the public realm. The cost for maintaining communal open space is typically shared by owners. The design of communal open space should therefore have regard to ongoing maintenance costs and programming.

Photo G1.3a A rooftop communal open space to an apartment building provides opportunities for social interaction between residents and guests (PC)

ASSESSMENT GUIDANCE

Communal open space should promote gathering and social interaction. It does not include primary external circulation areas for vehicles or pedestrians however a seating niche or small gathering space within a circulation area could be included. Covered communal facilities connected to **open space** and publicly accessible communal open space within the **development site** (if provided) can contribute to communal open space requirements. Communal open space may be co-located with **deep soil area**s and **soft landscaping**. Public open space contributed as a requirement of other **WAPC** policies is not included in communal open space calculations.

Communal open space may be provided in multiple areas, provided the minimum dimension of 4m is achieved. Minimum dimension refers to the minimum length and width of all areas that contribute to the communal **open space**.

For larger **sites** with more than one **multiple dwelling building** on the site, the **communal open space** should be evenly distributed or provided as a consolidated central space, whichever provides greater benefit to the residents.

Photo G1.3b Communal open space with landscaping and trees

1.4 Water management and conservation

INTENT

Water sensitive urban design (WSUD) measures should be considered at all stages of the **development** process, from **site** planning for on-site or off-site **stormwater** disposal, through to **building** design to capture and recycle stormwater for gardens and occupant use. WSUD measures should also respond to regional variations.

Photo G1.4a Compact rainwater tanks can be neatly located within the primary garden area

DESIGN GUIDANCE

Due to the wide variation in rainfall patterns and **site** conditions across Western Australia, water management solutions must respond to local conditions. In all instances it is necessary to plan for **stormwater** management at the onset of planning a medium density **development**, as this will be easier than retrofitting a system post-development.

In locations where on-site **stormwater** retention is required, designs should maximise **deep soil area**s for infiltration and groundwater recharge at the source. Consideration should also be given to diverting and recovering stormwater for use within the **site**, such as for garden areas and rainwater tanks, rather than directing runoff to soakwells. Refer to the Department of Health for guidance on the use of rainwater tanks (https://www1.health.gov.au/internet/main/publishing.nsf/Content/ohp-enhealth-raintank-cnt.htm).

Where climatic, local soil or groundwater conditions are insufficient to support on-**site** retention, consider the use of rainwater storage tanks (e.g. infiltration cells and soakwells).

Stormwater should be directed to a district or local stormwater drainage system where permitted by the local government. This approach limits unnecessary fill on **site** and ensures that stormwater is managed to avoid potential flooding. For **development** within Perth, refer to the Department of Water and Environmental Regulation's Perth Groundwater Map (https://www.water.wa.gov.au/maps-and-data/maps/perth-groundwater-atlas).

Photo G1.4b Permeable pavers planted with hardy waterwise plants can provide trafficable areas

Where off-**site** disposal is required, **stormwater** management should ensure that the quality of water leaving the site is equivalent to, if not improved from, the quality of water received, with particular consideration given to potential sources of pollution and sediment control.

When designing a **development**, consider opportunities to incorporate WSUD measures, including within **buildings**, gardens, vehicle access areas, and verges. Effective WSUD may include:

- incorporating raingardens, tree pits and vegetated swales into the **landscape** design for infiltration and groundwater recharge at source;
- reducing runoff and peak water flows by minimising **impervious surfaces** and/or substituting impervious surfaces with permeable paving (refer **Photo G1.4a**) and landscaping; and
- minimising potable water use through water efficient appliances and irrigation, low-water gardens, rainwater tanks and greywater re-use.

Greywater re-use systems must be approved for use in Western Australia and comply with the *Code of Practice for the Reuse of Greywater in Western Australia 2010* (Department of Health).

The Department of Water and Environmental Regulation and Water Corporation provide online resources for urban water management. (https://www.water.wa.gov.au/urban-water/urban-development/urban-water-design) (https://www.watercorporation.com.au/Our-water)

ASSESSMENT GUIDANCE

The water management and conservation requirements will vary between local government jurisdictions and may depend on soil type, climatic conditions or the capacity of local drainage and water management systems. For some localities it will be appropriate for **stormwater** to be retained on-**site**, however in other jurisdictions, drainage to off-site stormwater systems may be required. The **deemed-to-comply** provisions provide for both scenarios.

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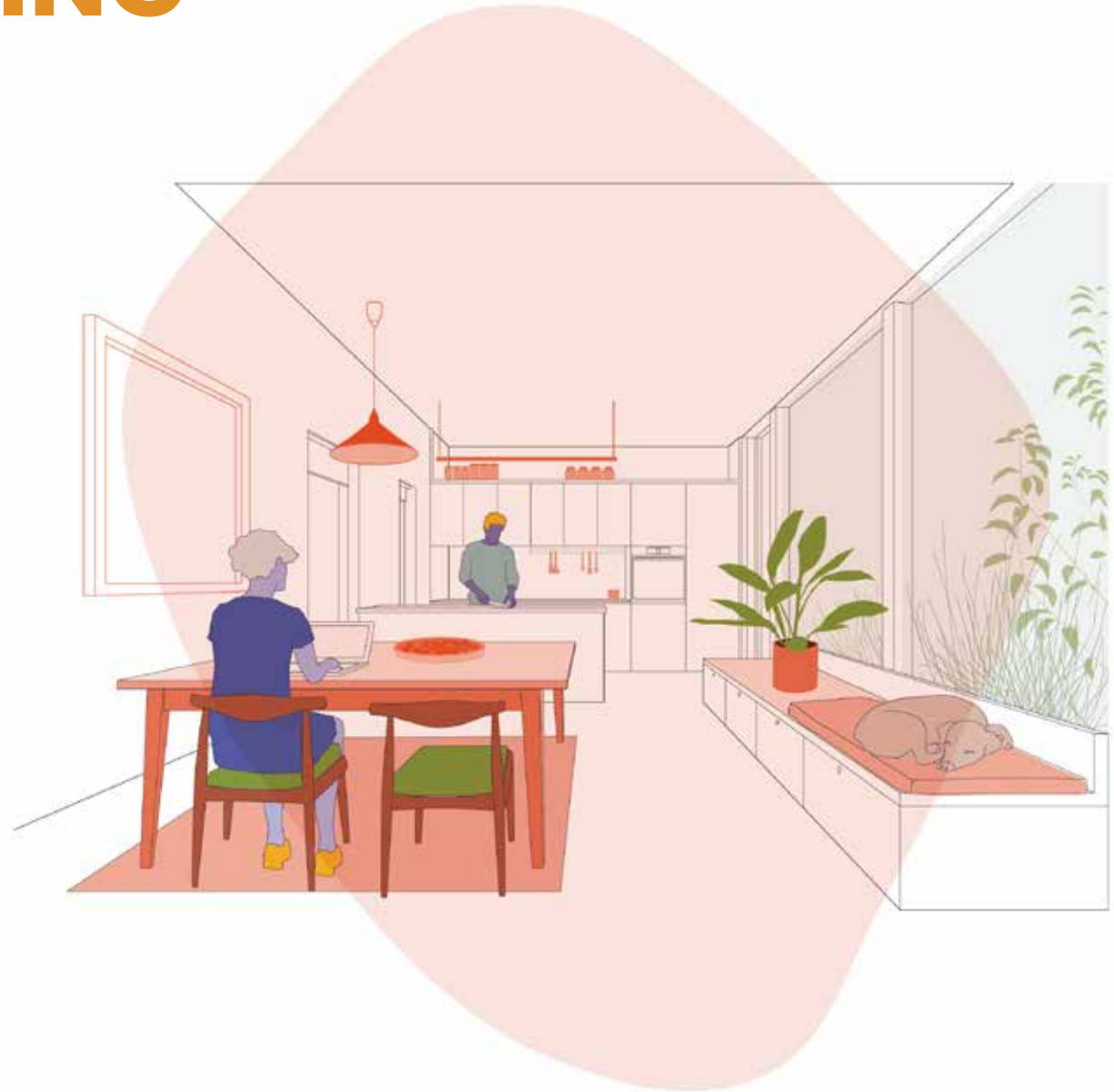
2.0 THE BUILDING

'The building' includes the dwelling and the associated structures that make up a home. The elements in the building section of the R-Codes Volume 1 work together to guide the design of dwellings so that they perform well, feel good, and allow occupants to use their homes flexibly.

Designing the building to ensure living spaces have optimal orientation and connection to the outdoors, bringing in sunlight, winter solar gain, natural ventilation and providing an attractive outlook, contributes to the liveability, amenity and sustainability of a home.

As lot sizes decrease the need for efficient and flexible dwelling design increases and providing spaces that can do more than one thing and can adapt to changing needs, becomes more important.



INDOOR AMENITY

2.1 Size and layout of dwellings
2.2 Solar access and natural ventilation

The elements within this sub-section promote internal dwelling spaces that are well-proportioned, functional and integrated with gardens and outdoor space. These attributes contribute to occupant amenity and support climate responsive dwellings that are comfortable throughout the year.

FUNCTION

2.3 Parking
2.4 Waste management
2.5 Utilities
2.6 Outbuildings

As lots get smaller, the spaces within and around dwellings need to be more efficient and work harder to ensure functionality while supporting amenity. Designing functional dwellings means considering how spaces and uses can work simultaneously or adaptively, depending on the need, time of day, week or year.

HOUSING DIVERSITY

2.7 Universal design
2.8 Ancillary dwellings
2.9 Small dwellings
2.10 Housing on lots less than 100m^2

The R-Codes aim to diversify housing to broaden the choice for Western Australians, supporting affordability, ageing-in-place, alternative housing types and accessible and adaptable dwellings.

2.1 Size and layout of dwellings

INTENT

The size and dimensions of **habitable rooms** should be adequate for functional use of the space. Minimum room areas / dimensions and **dwelling** sizes are introduced to ensure each dwellings can accommodate required furnishings and provide for flexible use and occupant amenity. Guidance regarding the location of habitable rooms away from sources of noise, light spill and odours will help protect occupant amenity.

The location of the **primary living space** adjacent to **private open space** ensures sufficient **solar access**, **natural ventilation** and connection between internal and outdoor living.

Storage requirements help preserve living spaces, reduce the need for off-**site** storage, and enable residents to pursue hobbies and lifestyle choices.

DESIGN GUIDANCE

Primary living space

The floor area of the **dwelling** and the dimensions of individual rooms should allow for different furniture arrangements based on occupant needs. Location of doors, windows, circulation spaces and electrical fittings should support flexible and functional use of spaces and enable privacy.

The shape and dimensions of the **primary living space** should consider the functionality of the space and furniture placement, including kitchen cabinetry and lounge / dining areas.

The **primary living space** should be located for **natural ventilation** and optimal orientation for the climatic zone, and have physical and visual access (e.g. sliding glass door, bi-folds or alternative suitable **major opening**) to the **primary garden area** or **private open space** (refer **Photo G2.1a**). See also design guidance in 1.1 *Private open space – Responding to climate – primary garden areas*.

For **multiple dwellings**, ceiling height contributes to the perceived spaciousness of interiors. Room width, depth and height should be considered together to create well-proportioned spaces. Correct proportions, along with generous sized windows can improve **daylighting**, thermal performance and facilitate good **natural ventilation**.

Where minimum dimensions for the **primary living space** cannot be achieved, additional ceiling height should be considered to ensure the living space is proportionate to the type and size of the **dwelling** and provides adequate **amenity**.

The maximum depth of a **single aspect primary living space** can be increased where it can be demonstrated that appropriate levels of **daylighting** can still be achieved e.g. the extent of glazing is increased such as through the provision of full height glazing.

Avoid geometries, dimensions and proportions for **open plan** living areas that create functional inefficiencies and are impractical to furnish.

Transitions between internal spaces should be considered to enable separation of functions, privacy and mitigation of acoustic impacts where appropriate. Door swings and alignment should be appropriately considered to ensure that the functionality and use of spaces is not compromised.

Limiting internal **dwelling** circulation (while meeting **universal access** requirements) can allow better use of spaces. Strategies may include:

- integrating circulation spaces into the functional layout of rooms; and
- zoning rooms or areas within the dwelling that have compatible functions to minimise passageways.

Photo G2.1a This well-proportioned and planned primary living space has been designed to flow to the private open space (PC)

2.1 Size and layout of dwellings (cont.)

DESIGN TIPS

The following design responses may assist in addressing a design principle(s):

- Where minimum **deemed-to-comply** floor areas of **C2.1.1** and **C2.1.5** cannot be achieved, applicants should demonstrate that the **dwelling** and rooms are functional, provide **amenity** and can be adequately furnished. A floor plan should be submitted demonstrating sufficient space for accurately scaled furniture arrangements.
- Where direct access between the **primary living space** and **primary garden area** cannot be achieved, visual access using a **major opening** should be demonstrated. The major opening should have at least 50% transparent glazing, of sufficient dimensions and be located to provide an outlook to the primary garden area. This may be of benefit for **dwellings** where a view may be desired from the primary living space and the primary garden area is not located in the orientation of the view.
- Where there are no other alternatives available for a **grouped dwelling**, an outlook may be provided to the **communal open space** or other **landscaped** area (including landscaped **street setback area**) subject to achieving the **solar access** requirements of **C2.2.4**.
- The splitting of a **storage** area to provide smaller spaces over separate locations is discouraged. Where multiple storage locations are unavoidable, the total area should exceed that shown in T**able 2.1b** to ensure that the spaces are functional and appropriate. Where minimum dimensions cannot be met, the applicant should demonstrate that a dedicated storage area can be provided for the use of each **dwelling** and is of adequate size to enable the storage of bulky items such as sporting and gardening equipment to address **P2.1.5**.

Habitable rooms

The minimum bedroom dimensions are necessary for ensuring a functional and useable room size. The minimum bedroom area includes robes and built-in cabinetry.

Major openings to ground floor **multiple dwellings** are not permitted to open directly onto carparking areas unless provided with a sufficient setback. This is to minimise the impact of potential noise sources and light spill.

Where this cannot be achieved, the window may be provided with **landscaping** (e.g. trees and/or shrubs) to separate the window from the carparking area. **Screening** is not considered appropriate.

Where access to a **dwelling** is directly from a carpark area, the design should mediate the transition to the dwelling's internal areas utilising strategies including:

- a **landscape** buffer
- a covered entry point
- a recess in the built form (e.g. alcove entrance)
- vertical separation (where easy access for pedestrians can still be ensured).

Storage

Storage areas are to be provided for all **dwelling** types, including **single houses**, grouped, multiple and **ancillary dwellings**. Storage should be readily accessible and can be located either internal or external to the dwelling – for example either in a **garage**, or accessible from the **balcony** and **screened** from view or adjacent to a dwelling entry.

Storage areas should be proportionate to the size of the **dwelling** and capable of accommodating larger items, such as sporting equipment, bicycles and barbeques. Storage should be fit for purpose, weatherproof, secure, and easily and safely accessed.

Within a grouped or **multiple dwelling development**, **storage** areas should be located away from the main activity areas/ communal areas. The location of and access to storage should have good **passive surveillance** and be well lit.

Photo G2.1b and **c** This storage area has been neatly integrated into the design of the balcony, is conveniently located, is of useful size and proportions, weatherproof, and screened from view

2.1 Size and layout of dwellings (cont.)

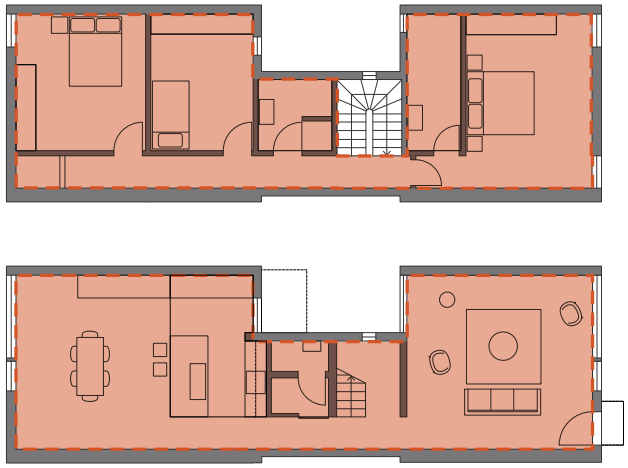


Figure G2.1a Measuring internal floor area

ASSESSMENT GUIDANCE

When measuring internal **dwelling** and room floor areas, measurements are taken from the finished internal surface of the **wall** (refer **Figure G2.1a**).

A **single aspect open plan primary living space** would have most of the source of **daylighting** from a window or openings on one **wall**. Where another window is provided on an alternative wall and provides an alternative source of daylighting to the open plan primary living space, it would not be considered as single aspect. **Balconies** are excluded when measuring the maximum depth for single aspect open plan primary living spaces.

Designated primary living space

Where a **dwelling** has multiple living spaces, one of these areas should be designated as the **primary living space** and shown as such on the **development** drawings.

The minimum dimension required for **primary living space** is exclusive of built-in cabinetry along **walls** that reduce the size of the space, for example cabinetry such as pantries, shelving and the like. However other cabinetry internal to the room that does not impede the usable space, such as island benches, are excluded.

Storage

When locating **storage** in a **garage** or **carport**, the plans should show a clear and dedicated storage space in addition to any space dedicated to parking. The storage (and its adjacent circulation space) should not serve as an additional parking space where the maximum parking limits of **Table 2.3a** have been reached. Where storage is located within a garage or carport, careful consideration should be given to the manner and ease of accessibility to the storage area when the garage or carport is occupied.

Where **storage** is proposed on a **balcony**, the balcony is measured exclusive of that storage area.

Functional utilities and services can be co-located with **storage** areas, provided they do not impact on the minimum dimensions and volume required for the storage (refer **Table 2.1b**).

2.2 Solar access and natural ventilation

INTENT

Designing for the climate creates comfortable and more energy efficient living spaces. For medium density **dwellings**, **building** orientation, **solar access** and **natural ventilation** can offer the most affordable and effective way to manage indoor air quality, lighting and temperature, reducing or removing the need for mechanical ventilation and air-conditioning.

Requirements however vary according to **climatic zones**, and this must be factored into the design process.

*The **climate zones** referred to in the R-Codes are those used by the Australian Building Codes Board (ABCB) for thermal design and published in the National Construction Code (**NCC**), available for download: https://www.abcb.gov.au/Resources/Tools-Calculators/Climate-Zone-Map-Western-Australia.*

*Western Australia has vastly different climate regions, leading to locations around the State having varied heating and cooling requirements. To account for these differences, the **NCC** energy efficiency provisions vary from location to location and, for simplicity, locations with approximately similar climates are combined to create eight **climate zones** across Australia. For ease of use, the climate zone boundaries are aligned with local government areas and may be amended from time to time by the ABCB.*

*The **deemed-to-comply** provisions of Part C respond to the different **climate zones** by differentiating between climate zones 1 and 3, and climate zones 4, 5 and 6. No locations within Western Australia fall within climate zones 2, 7 or 8.*

DESIGN GUIDANCE

Solar access and **natural ventilation** requirements are dependent on climate:

- in **climate zones** 4, 5 and 6, the objective is to maximise **winter solar gain** and to minimise **sunlight** in summer, while maintaining good natural ventilation.
- in climate zones 1 and 3, the objective is to minimise solar access during all seasons, while maintaining **daylighting** and prioritising natural ventilation to keep **dwellings** cool and minimise internal humidity levels.

Solar access in climate zones 4, 5 and 6

Passive heating can be readily achieved by orienting living areas and windows to the northern aspect to allow low-angle winter **sunlight** and using horizontal shading to exclude high-angle summer sunlight. As a general rule, the preferred orientation for living area windows is within 15 degrees west of north and 25 degrees east of north to allow for passive **solar access**. However consideration should be given to local climate and conditions including prevailing breezes, colder temperatures and how the house is intended to be used.

Photo G2.2a Adjustable louvres are an effective way to control sun, glare, privacy and ventilation through the day and year (PC)

Generally, to maximise **winter solar gain** to the **building**, orientate the **dwelling** primarily to the north and prioritise north facing **major openings**. Consider also:

- dual aspect dwellings or dwellings with shallow layouts to maximise the benefits of northern orientation;
- high ground floor ceilings and mezzanines;
- tall north facing windows, bay windows, clerestory windows and skylights; and
- planting deciduous trees and shrubs to allow winter solar gain to dwellings and to provide shade in summer.

To minimise summer sun entering the dwelling consider:

- horizontal shading devices such as eaves, shutters or hoods to openings;
- locating **patios**, **carports** and **garages** to the west of the dwelling;
- tree planting and **landscaping** to the west and east of the dwelling; and
- minimising openings to the west and/or providing vertical shading devices to mitigate heat gain.

Shading in climate zones 1 and 3

To minimise sun entering the **dwelling** consider:

- deep eaves, awnings and **verandahs** to shade all windows and openings;
- climatically appropriate trees and **landscaping** to shade the dwelling and openings;
- minimising glazing and providing vertical shading to the east and west of the dwelling; and
- locating verandahs and **carports** east and west of the dwelling.

2.2 Solar access and natural ventilation (cont.)

DESIGN TIPS

The following design responses may assist in addressing a design principle(s):

- Where a **primary living space** does not meet the orientation requirements of **C2.2.4** and **C2.2.5** in order to capture a view/ outlook or to address quiet house requirements (refer *SPP 5.4 Road and rail noise*), a clerestory window or similar may be an appropriate alternative to capture northern **solar access**.
- Where **single houses** and **grouped dwellings** aren't able to meet **C2.2.4**, proponents should use solar access diagrams to demonstrate solar access is being achieved through **P2.2.1** & **P2.2.2**. Refer Technical Guidance Sheet 4.1 *Solar and daylight access* on how to demonstrate solar access for **multiple dwellings**.
- In most instances an openable window should be provided for **habitable rooms**. However, in some exceptional circumstances such as fire separation in the **NCC**, or bushfire areas, windows to habitable rooms may be required to be fixed. In this instance assessment would need to consider the requirements of the **building** codes and/or relevant local and state planning frameworks such as *SPP 5.4 Road and rail* noise and *SPP 3.7 Planning in bushfire prone areas*.

Natural ventilation

Appropriate layout and depth of a **dwelling** will facilitate good **natural ventilation**. Generally, as a room or **building** gets deeper, effective airflow reduces. Reducing the dwelling depth can improve natural ventilation.

To allow for **natural ventilation**, **habitable room** windows need to be openable.

Natural ventilation can be enhanced by locating openings towards prevailing breezes and providing dual aspect **dwellings** designed for cross-flow ventilation (refer **Figure G2.2a**).

For **climate zones** 1 and 3, including openings, louvres and breezeways oriented towards prevailing breezes assists with natural cooling. Consider also elevating the finished floor level of the **dwelling** and permeable fencing to allow breezes to enter the **site**.

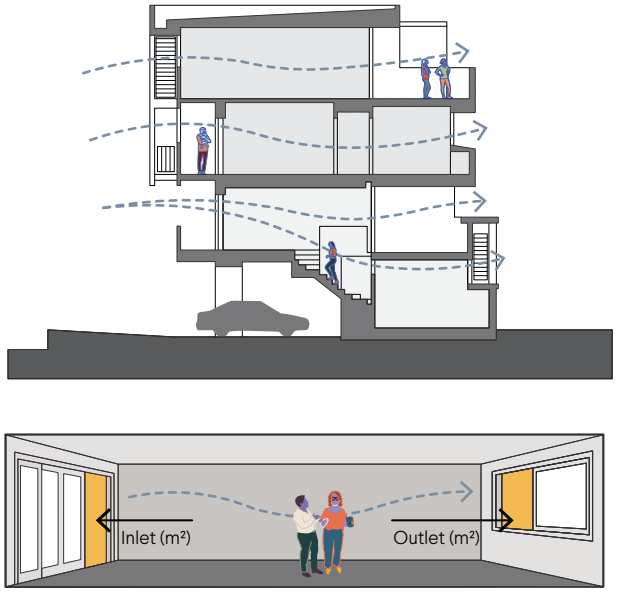


Figure G2.2a Natural ventilation for passive cooling

Bathrooms should be located and designed to have at least one openable window for **natural ventilation**. For bathrooms that do not have an external **wall**, an openable skylight or **lightwell** and/or mechanical ventilation may be necessary.

Where the only external **wall** to a bathroom adjoins a covered **unenclosed** area (for example a communal circulation space), this wall should have an openable window where appropriate.

Courtyards

Courtyards are useful in providing adequate **solar access** and **natural ventilation**, so long as they are proportionate to the **building height** and provide adequate privacy and building separation. **Lightwells** are not suitable as a primary source of **daylight** to a **habitable room**, however, may provide a suitable option for a secondary source of daylight and natural ventilation. The key differences between **courtyards** and **lightwells** are:

- Courtyards can be **enclosed** on three or four sides and generally have proportions where the width is at least half the height.
- Lightwells are enclosed on four sides and have proportions where the width is less than half of the height (Refer **Figure G2.2b**).

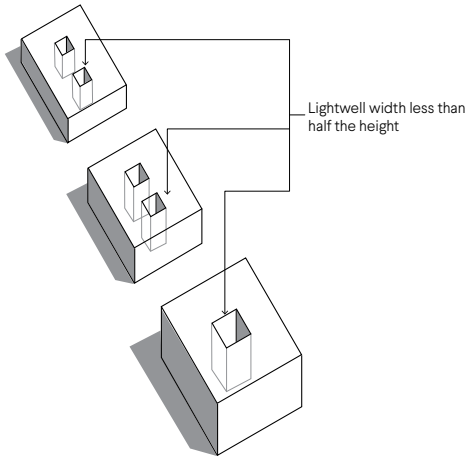


Figure G2.2b Lightwell width to height ratio

2.2 Solar access and natural ventilation (cont.)

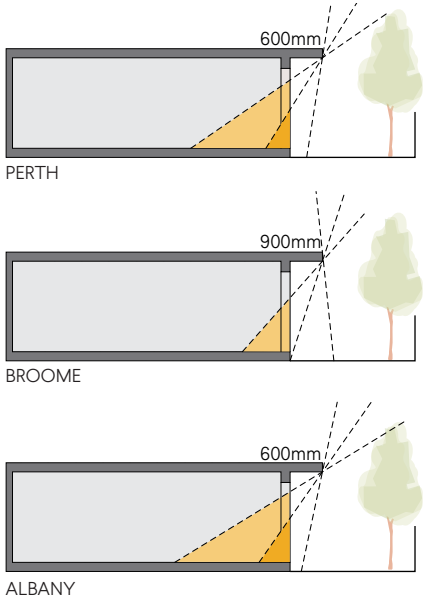


Figure G2.2c Regional variation of eave depths to achieve solar access and shading

Table G2.2a Midday winter solstice (approximately 21st June) vertical sun angles by latitude

City/Town	Latitude (S)	Vertical Sun Angle
Albany	35	31
Esperance	34	32
Bunbury	33	33
Perth	32	34
Kalgoorlie	31	35
Geraldton	28	38
Carnarvon	25	42
Karratha	21	45
Port Hedland	20	47
Broome	18	49
Wyndham	15	52

ASSESSMENT GUIDANCE

The size of glazed area in aggregate may be calculated across more than one openable external window to a **habitable room**. This may be necessary for larger (master) bedrooms.

Solar access

In **climate zones** 4, 5 and 6, covered **patios**, alfresco or equivalent within **primary garden areas** or **private open space** areas need to be located and/or designed to allow the **solar access** requirements of **C2.2.4** for **primary living spaces** to be achieved.

As **sunlight** angles can vary greatly throughout the State, local information should be used for each **development** proposal (refer **Table G2.2a** and **Figure G2.2c**).

No orientation requirements apply to primary living areas located in **climate zones** 1 and 3.

For **climate zones** 4, 5 and 6 optimum **solar access** is achieved through at least two hours of **sunlight** into key living spaces of the **dwelling** measured between 9am and 3pm on the 21st June.

Photo G2.2b A trellis for deciduous creepers provides an alternative to a patio while permitting solar access to the primary living space (PC)

Photo G2.2c Orienting windows to the north provides effective winter passive heating to primary living spaces (PC)

2.3 Parking

INTENT

Parking for medium density **development** should cater for a range of transport modes, including cars, bicycles and scooters / motorbikes, and be commensurate with occupant and visitor needs.

Being efficient with how parking is designed, provided and used are important considerations for all **developments**, as the space allocated to parking can be significant and compromise how much room is left for internal living, outdoor areas, trees and gardens.

*The R-Codes adopts the basic position of requiring adequate on-**site** provision of parking to be proportionate to the assessed need.*

*There is a long-accepted principle that the demand for car parking generated by a **residential development** should generally be accommodated on the **development site**. However, the space allocated to vehicles (for both parking and manoeuvring) occupies a significant proportion of a **site** and can be detrimental to the overall design and living quality of the dwelling as well as the **amenity** and attractiveness of the broader neighbourhood. Extensive use of **garage** doors and wide **driveways** can adversely affect **streetscapes**, neighbourhood character and pedestrian safety. Reducing private vehicle use by promoting the use of alternative transport modes (including public transport and cycling) has both environmental and financial benefits.*

DESIGN GUIDANCE

The design, layout and provision of parking should balance and respond to considerations including:

- built form typology and tenure ;
- occupant and visitor needs;
- access to available public transport and active transport infrastructure;
- topography (e.g. sloping **sites** may be more conducive to **basement** parking);
- impact on **streetscape** and resident amenity;
- site planning, in particular the preferred location and orientation of **dwellings** and associated **primary garden areas** and **private open space**.

On-**site** car parking requirements may be provided underground in **basement** parking, as uncovered above-ground bays, or in **carports** or **garages**. All parking layouts, bay sizes and design should be based on relevant Australian Standards.

Photo G2.3a Undercroft parking reduces the visual impact of parking on the street and provides an opportunity for flexible use of the space when not required for car parking

Strategies to consider when reducing the amount of space given over to car parking include:

- designing **unenclosed** parking spaces for multiple purposes, such as locating parking adjacent to **primary garden areas** to extend available outdoor space;
- combining parking spaces into a consolidated parking area and unbundling parking from tenure (unbundling parking refers to the practice of selling or leasing parking spaces separate from the **dwelling**);
- providing tandem parking;
- providing car stackers; and
- **building** over parking, for example undercroft, semi-**basement** or basement parking.

Consolidating parking into a single area away from **dwellings** reduces the amount of space needed to accommodate vehicles in **garages**. The parking area may also be used flexibly for other uses when cars are not parked.

Tandem parking allows car parking areas and vehicle manoeuvring to take up a smaller area. They may be a suitable option when developing a front-loaded **lot** with a narrow **frontage**.

Photo G2.3b The visitor parking is easy to find and is located outside the development's security gate for accessibility

2.3 Parking (cont.)

DESIGN TIPS

The following design responses may assist in addressing a design principle(s):

- For **grouped** and **multiple dwellings**, parking is generally not supported in the **primary street setback area**. However, this may be acceptable where the application demonstrates a better design outcome will be achieved and the parking will not dominate the development or **streetscape**.
- In Location B it may be appropriate for a development to provide less than the minimum parking requirements of **Table 2.3a** where parking is communal and shared between **dwellings**, recognising the efficiencies this arrangement can provide.
- Some local governments may support a reduction in on-**site** car parking spaces where parking may be located off-site. An agreement should be made between the proponent and the local government.

Integrating parking with development

Where communal parking or visiting parking is provided, consider adequate **screening** or locating car parking away from **major openings** to ground floor **habitable rooms** to avoid light and noise pollution.

Parking should be integrated with the **landscape** design by extending planting and materials into the parking areas, planting shade trees, and incorporating permeable paving systems.

Ventilation grills or **screening** devices for car park openings or **basement** parking that protrude above ground should be integrated into the **façade** and **landscape** design of the **development**.

Address climate considerations in the location and design of parking. This may include weather protected walkways between visitor parking and **building** entrances, and in the warmer climates it may be appropriate to locate visitor parking centrally on the **development site** to reduce walking distances.

Visitor bays are readily accessed from the primary vehicle entry. Where located inside security gates intercom controls to facilitate visitor access must be provided.

When proposing visitor car parking bays consider visibility from access points into the **site** or **lot**. It is preferable to enable visitors to see whether visitor parking is available/occupied to minimise the need for additional traffic systems or dedicated turning bays.

Photo G2.3c Providing a carport rather than a garage reduces the visual impact of vehicles on the street or communal area, is usually less expensive to construct, and can be located in the front setback area

Photo G2.3d Incorporating EV charging stations and share vehicles in larger developments can contribute to reduced greenhouse gas emissions and reduced demand for car parking spaces

2.3 Parking (cont.)

Bicycle parking and supporting alternative transport modes

The design and location of bicycle parking should respond to the type and intensity of **development**. For example, smaller medium density developments may make provision for bicycle parking within the **dwelling**, whereas for larger developments, shared bicycle parking in communal areas may be preferable.

Bicycle parking is to be additional to **storage** requirements. Bicycle parking is best provided in communal areas, on the ground floor level and should be as accessible as possible to encourage their use.

Where no occupant parking is proposed consider providing an exclusive space for bicycle parking.

Consider incorporating or making provision for future electric vehicle (EV) charging points for resident / visitor parking. Also consider providing **universally accessible** charging points for electric bikes and mobility scooters.

Photo G2.3e Bike parking is provided in a covered, accessible location that is accessible to visitors and residents of the development

Considerations for on-street parking

Where narrow **lot frontages** are proposed with vehicle access from the **primary street** ensure on-**street** parking can still be achieved. This is particularly important where narrow lot development is proposed along the length of a street as extensive hardscaping for **driveways** and **crossovers** prevents **landscaping** and parking of vehicles on the street.

Parking in mixed use development

For **mixed use development** residential parking should be separate from non-residential tenant and visitor parking or designated as resident parking.

It may be appropriate for tenants in a non-residential component of **mixed use development** to share access to a **building**, however individual access to residential lobbies and non-residential entries should be separate.

ASSESSMENT GUIDANCE

A tandem **garage** is considered to be two car parking spaces.

Where a car parking space is provided vertically above another car parking space (for example through a car stacker) this is considered an additional car parking space.

The maximum requirements of **Table 2.3a** are for **garages** and **carports** only. There are no maximums for uncovered parking spaces.

When measuring a **walkable catchment**, refer *Liveable Neighbourhoods* walkable catchment technique (*Appendix 3*).

LOCAL PLANNING FRAMEWORK CONSIDERATIONS

Carefully consider local context and access to alternative modes of transport when increasing or decreasing parking requirements.

*The following matters may assist when considering modifications through a **local planning framework**:*

- The need for on-**site** car parking can relate to the availability of parking on the **street**. Consider whether the road reserve (including verges) is wide enough to contain on-street parking without impacting the functionality of the street (for example waste collection and emergency service vehicles). This may assist in established urban areas, where narrow **lots** and small **street setbacks** may constrain on-site parking, and where verge and street parking is already permitted as an alternative to on-site parking.
- Proximity to public transport which provides access to places of work as well as essential services.
- Frequency of public transport during peak and off peak period.
- Proximity to cycling and pedestrian infrastructure, allowing for active transport to essential services.

2.4 Waste management

INTENT

Storage areas for rubbish and recycling bins are to be located for convenience and accessibility, while limiting potential visual impacts.

The Waste Avoidance and Resource Recovery Strategy 2030 sets targets to reduce the amount of waste going to landfill, the amount of waste generated per person and Western Australia's overall footprint.

*For Perth and Peel, a three bin Food Organics and Garden Organics (FOGO) system will be implemented for all **dwellings** by 2025. This is the preferred kerbside waste collection system and is considered the most suitable for achieving the target of 65% diversion of waste from landfill by 2030.*

DESIGN GUIDANCE

Storage areas for rubbish and recycling bins should be addressed as part of early **site** planning to be integrated into the design. Proponents should engage with the local government to establish the requirements that apply in the relevant jurisdiction.

Waste and recycling storage should be located in positions that support easy, direct and convenient access for occupants. They should be located for easy transfer of bins for convenient collection. Suitable locations for bin storage may include:

- within **garages** (where dedicated space is provided in addition to the area required for vehicle parking);
- in a **screened** enclosure that is compatible with the **building(s)**;
- close to building exits (for **multiple dwellings** in particular); or
- in **basement** car parks.

For single and small **grouped dwellings**, kerbside pick-up is preferred as it minimises the need for large vehicles to enter and manoeuvre within the **site**, which can have a negative impact on residential **amenity** and safety.

For large grouped and **multiple dwellings**, kerbside pick-up may not be possible or available. Where internal pick-up is required, a clear path of travel should be provided with sufficient clearance distances (horizontal and vertical) and **sightlines**.

Presentation points are the locations in which the bins containing waste and recyclables are presented for collection by waste service providers. Consideration should be given early on in the design process to how bins will be collected. As a general rule 1 square metre should be allocated for each 240L bin at a presentation point. When designing for presentation points consideration should be given to the required number of bins and access (which may be limited by **crossovers** and **lot frontage** width). Also consider potential limitations or obstructions (such as verge trees and light poles) which may impact the presentation of bins to the street and potential collection.

Where **buildings** are built to both side **lot** boundaries and accessed from the **primary street**, **screened** waste storage areas should be integrated into the design of the **development**.

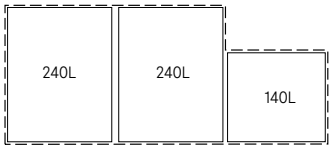
Refer to *WALGA WasteNet Planning for Waste Management* for further advice.

Photo G2.4a and b This conveniently located bin storage area is neatly integrated into the service area and screened from view

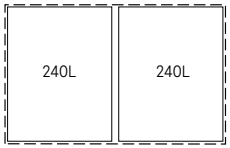
2.4 Waste management (cont.)

ASSESSMENT GUIDANCE

Plans should show a dedicated area for the storage of either a communal bin(s) or the required number of rubbish and recycling bins (depending on local government requirements). The area needs be sufficient in size, accessible, **screened** from public view and located in a secure and convenient location for residents and collection. Refer **Figure G2.4a** for examples of bin storage sizes. Plans should also show suitability of presentation point. Where a waste management plan is required, the proponent should submit the plan to the satisfaction of the local government to establish compliance with the relevant requirements.



3-bin system
Minimum depth - 0.74m
Minimum length - 1.66m
Minimum area - 1.13sqm



2-bin system
Minimum depth - 0.74m
Minimum length - 1.16m
Minimum area - 0.86sqm

Figure G2.4a Approximate bin storage requirements for different sized bins

LOCAL PLANNING FRAMEWORK CONSIDERATIONS

Local governments often have different waste bin requirements, varying in size and number of bins.

*The following matters may assist when considering modifications through a **local planning framework**:*

- The types of bins the waste collection vehicles are able to service.
- Whether sufficient space is provided for the required number of bins.

2.5 Utilities

INTENT

Quality medium density **development** ensures that **utilities** are integrated into the design of the **building** and **landscape** to minimise the impact on the **streetscape**.

Early planning, coordination and design of **utilities** will ensure the siting and appearance of functional and **service utilities** does not compromise the amenity of the **development** and that infrastructure can be safely accessed, maintained and used.

*Refer to the definition of **utilities** which includes the below sub-categories:*

- *service utilities;*
- *functional utilities; and*
- *external fixtures.*

DESIGN GUIDANCE

Integrating service and functional utilities with dwelling design

Where **service utilities** are located in the **street setback area**, ensure they are within or behind **landscaping** or street **walls**, beneath **driveways** with trafficable covers, or wall mounted in vehicle access ways, while making sure required clearances are adhered to.

Design solutions for the location of air conditioning units include:

- on roofs, where not visible from the public realm;
- within **lot boundary setbacks**, where not visible from the public realm; or
- within **screened** recesses.

Air conditioning units may be located within the **private open space** where this will not have a detrimental impact on the **amenity** or useability of the space.

Downpipes should be integrated with the façade of the **building**.

Photo G2.5a and **b** Effective screening of water meters within the front setback area of this development reduces visual impact and allows for easy access and maintenance when required

Sustainability infrastructure

The **NCC** encourages water and energy efficiency of all housing in Australia. It is therefore an objective of the R-Codes to assist in the widespread adoption of technologies that improve the **sustainability** of housing.

The positioning of **sustainability infrastructure**, such as **solar collectors**, roof vents and **rainwater tanks**, is **site**-specific and should maximise functionality and performance.

Roof design, orientation, pitch and area should support optimal arrangements of roof mounted services such as photovoltaic solar arrays and solar hot water systems. In addition, roof finishes and colour should be selected to minimise heat gain of the **dwelling** and urban heat island effects for the neighbourhood.

Fire service infrastructure

Where fire service infrastructure is required, engagement with the Department of Fire and Emergency Services (DFES) should occur prior to development application lodgement to identify a suitable location. The fire service infrastructure should not impede access to or egress from a **building** and must be located at the front or on the approach to the building. There should be unobstructed access between the booster and where the emergency vehicle needs to access the **site** (refer GL-11: DFES site planning and fire appliance specifications on DFES website).

2.5 Utilities (cont.)

Photo G2.5c Landscaping effectively screens the essential service utilities in this communal street, whilst maintaining convenient and safe access

ASSESSMENT GUIDANCE

Where located on a **balcony**, the space that is required for the air conditioning unit and associated **screening** should be excluded from the minimum area and dimension calculations required for the balcony under **C1.1.3**.

Service utilities and **functional utilities** may be located in the **primary garden area**.

LOCAL PLANNING FRAMEWORK CONSIDERATIONS

Any other **external fixtures**, which in the opinion of the **decision-maker**, may have greater potential to detract from **amenity** and **streetscape**, should be subject to planning control, and may be the subject of local planning policies.

2.6 Outbuildings

INTENT

Outbuildings are an optional part of a **development** that may be constructed to provide additional space for **storage**, a workshop or equipment. The location and design of outbuildings should not detract from occupant, neighbour and **streetscape** amenity.

*Australia has a long tradition of backyard sheds, workshops, **garages** and other similar **outbuildings**. In a medium density **development**, the space available is more constrained and therefore the need to accommodate outbuildings is best addressed at the design stage with the overall development.*

LOCAL PLANNING FRAMEWORK CONSIDERATIONS

Regional local governments often modify **outbuilding** provisions to cater for resident's different lifestyles and hobbies to residents within metropolitan local governments.

*The following matters may assist when considering modifications through a **local planning framework**:*

- It may be appropriate to have a larger **outbuilding** or multiple outbuildings, which would not meet **deemed-to-comply**. In these circumstances, local government should be satisfied that the amended provisions are consistent with community expectation and not have a detrimental impact on the amenity of the **streetscape** and neighbouring properties.
- Amended provisions should not reduce **private open space**, **soft landscaping**, and tree and **deep soil area**.

DESIGN GUIDANCE

The **outbuilding** should be sited to maximise functional use of the **primary garden area** and other outdoor spaces. For **site** efficiency, consider integrating outbuildings with **boundary walls** between sites (refer **Figure G2.6a**).

Design and positioning of **outbuildings** should not detract from the visual **amenity** of neighbours or the **streetscape**. An outbuilding should be relatively small in area, low in height and should generally not be located in the **street setback area**.

Refer **C2.6.2**. Where a proponent is considering increasing the **wall height** for the **outbuilding**, the level of quality of the construction should be compatible with the primary **dwelling**. 'Compatible' does not mean the outbuilding must 'match' the dwelling design, but should be constructed of sufficient quality, materials and finish to warrant being permitted the additional height. (It is not intended to be an off-the-shelf product). The outbuilding may also respond to the design intent of the dwelling, local context and/or **streetscape**.

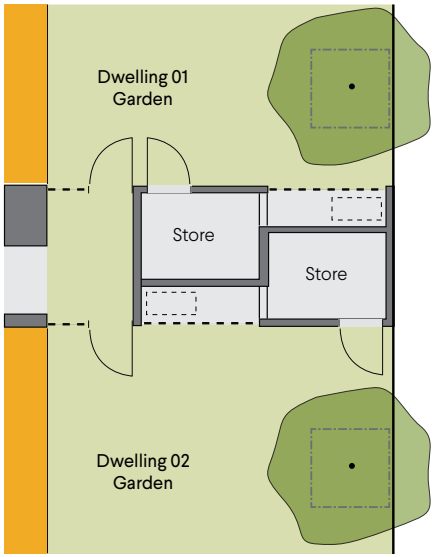


Figure G2.6a Outbuilding as a boundary wall

ASSESSMENT GUIDANCE

Other common private garden or backyard constructions such as cubby houses, play fixtures, and dog kennels have not been included in the definition of **building** and are not subject to the **deemed-to-comply** provisions. Refer to cl.61 in Schedule 2 of the *Planning and Development (Local Planning Schemes) Regulations 2015* for works that does not require planning approval.

Where **garages** are detached from the **dwelling**, for example for rear-loaded **lots**, they are to be assessed as **outbuildings**. **C2.6.2** allows increased **wall heights** for this scenario subject to the detached-garage (outbuilding) being consistent in colour and materials of the dwelling. Provisions of *3.7 Access* (for example **sightlines**) apply.

Where a proponent proposes a form of **development** that does not require a **building** permit and reduces the **primary garden area**, **soft landscaping**, trees and **deep soil area** or other landscaping provisions; **development** approval is required.

Other common private garden or backyard constructions such as **pergolas**, cubby houses and play fixtures, and dog kennels are not included in the definition of '**building**' and are exempted from planning control, although some **decision-makers** do have policies to control certain backyard constructions.

2.7 Universal design

INTENT

There is a growing demand for **dwellings** that incorporate design features for people with limited mobility. Accessible and **adaptable dwellings** enable people of all abilities to continue to live well in the their own homes by ensuring that dwellings can meet the ongoing needs of occupants. Accessible and adaptable dwellings benefit all members of the community, including older people, visitors and those with a permanent or temporary disability.

*While the **universal design** provisions apply to grouped and **multiple dwellings**, designers are encouraged to incorporate the principles of **universal design** in all dwellings.*

Photo G2.7a This development, designed for adaptability and universal access, has a considered entry sequence with a wide, obstacle free path to the entry

DESIGN GUIDANCE

The **deemed-to-comply** standards and accompanying checklist (Appendix A4) refer to minimum Silver and Gold requirements from the publication, *Livable Housing Design Guidelines,* prepared by Livable Housing Australia (http://www.livablehousingaustralia.org.au/) and the *Australian Building Codes Board Livable Housing Design Standard 2022*.

The **design principle** pathway allows the option of accessible or **adaptable housing** (or a combination of the two), with the minimum number of **dwellings** to be proportionate to the size of the **development**. The expectation is that the greater the development dwelling yield, the more accessible or adaptable dwellings should be provided.

Adaptable housing is different to accessible housing and is specifically designed to allow for the future adaptation of a **dwelling** to accommodate an occupant's changing needs. Refer to *Australian Standard 4299 - Adaptable Housing* for design standards.

ASSESSMENT GUIDANCE

More information on accessible and **adaptable dwellings** can be found on the Livable Housing Australia website (http://www.livablehousingaustralia.org.au/).

The application of **C2.7.1** only applies where a **development** application is lodged for 10 or more grouped or **multiple dwellings**. Demonstration of silver level universal design is not required at subdivision stage. However, where proposed in a development, plans should clearly indicate which **dwellings** are designed to Silver level universal design.

Where Livable Housing Design certification is not provided, applicants are to demonstrate how compliance with Element 2.7 has been achieved. To assist assessment, the checklist (Appendix A4) should be completed and plans annotated and accompany application drawings.

In the application of **C2.7.2** where a proponent is seeking a gold level **site area** variation as per **C1.1.6** or **C1.1.7**, a restrictive covenant should be applied at the subdivision stage and should allocate the subject **site** and/or **lots**.

2.8 Ancillary dwellings

INTENT

An **ancillary dwelling** is an additional small, self-contained dwelling on the same **site** as a **single house**, grouped or a **multiple dwelling strata lot**. Ancillary dwellings are self-contained (containing kitchen and bathroom facilities) to allow occupants to live either independently or semi-dependently to the occupants of the main **dwelling**. This can assist in meeting different housing needs by providing for dwelling diversity, housing affordability and ageing in place.

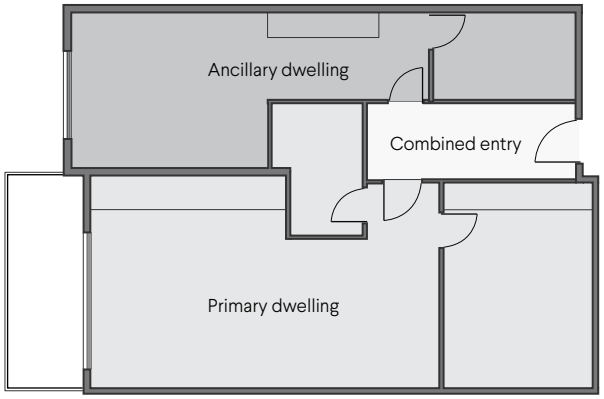


Figure G2.8a Dual key apartment

DESIGN GUIDANCE

Ancillary dwellings should capitalise on existing **amenity**, with openings, views and direct access to the **primary garden area**, **private open space**, or **communal open space**.

Ancillary dwellings may be either attached or detached. Detached ancillary **dwellings** include 'granny flats' developed as separate structures to the main house; 'Fonzie flats' located above a **garage** and re-purposed garages (subject to necessary approvals). **Dual key dwellings** (sometimes referred to as 'dual occupancy') are attached ancillary **dwellings** that are integrated into the design of a main dwelling.

For **lots** with **laneway** access, an **ancillary dwelling** above a **garage** with its own **street** entrance may be a suitable option.

When siting an **ancillary dwelling**, consider impacts on the **amenity** of the **development** including occupant access to prevailing breezes and **solar access**. This becomes more critical for ancillary types such as Fonzie flats which are two **storey**.

A **dual key dwelling** as part of a **multiple dwelling development** can offer an alternative living arrangement for multi-generational living (refer **Figure G2.8a**).

An **ancillary dwelling** may be a self-contained **dwelling**, with the extent of facilities provided being to some extent at the discretion of the landowner. For example, the provision of a laundry would not be essential, however, a separate kitchen and bathroom would typically be provided. Meeting **NCC** requirements must also be considered.

Services may also be shared. The rental of an **ancillary dwelling** would function in a similar manner as a boarder, however, utility providers may have specific requirements for the separate provision of services, for example, separate water, power, sewer, gas and telecommunications.

2.8 Ancillary dwellings (cont.)

Photo G2.8a This ancillary dwelling is built above the garage (Fonzie Flat) and is independently accessed from the laneway (PC)

ASSESSMENT GUIDANCE

Application plans must clearly identify an **ancillary dwelling** and its relationship to the primary **dwelling** on the **site**.

A **single house** or **grouped dwelling** (primary dwelling) and **ancillary dwelling** are considered two **dwellings** on one **lot**. Subdivision (for example, into **strata lots**, built-strata lots or **green-title** lots) to contain the ancillary dwelling on a separate lot or **site** from the main dwelling is not permitted under the R-Codes. Subdivision could only occur subject to the **development** meeting minimum **site area** requirements and other relevant R-Code provisions applicable to the density code of the site, with the resultant development being regarded as two grouped dwellings or two single houses.

For **multiple dwelling developments**, only **dual key dwellings** are permitted. Dual key **dwellings** may provide shared areas such as a lobby/entry, kitchen and laundry. Similar to the above, a dual key dwelling must be shown on the built **strata plan** on the same built **strata lot** as the related dwelling and cannot be individually strata titled.

Refer **Table 2.8a**. For **multiple dwellings** the maximum number of **ancillary dwellings** permitted includes:

- 1-19 **dwellings**: 1 per **development**
- 20 or more dwellings: 2 per development plus an additional 1 ancillary dwelling for each additional 10 dwellings above 20 dwellings. For example, for 29 dwellings a maximum of 2 ancillary dwellings would be allowed, for 30 dwellings 3 would be allowed, and for 35 dwellings 3 would be allowed.

There is no restriction limiting occupancy of an **ancillary dwelling** to a family member that is related to the occupants of the primary **dwelling**. They are a useful form of accommodation for carers, young people, downsizers or ageing relatives.

Ancillary dwellings are not to be included when calculating dwelling yield using average **site area**.

2.9 Small dwellings

INTENT

One or two-person households now make up more than half of all households in Western Australia (ABS 2016). **Small dwellings** provide an alternative approach to meeting different housing needs, including providing for more affordable options and facilitating 'downsizing' opportunities. To encourage uptake, the R-Codes allows a **site area** concession to support the **development** of small dwellings.

*In earlier editions of the R-Codes, provision was made for **single bedroom dwellings**. Changing lifestyles, demographics, working habits and other needs has meant that space that could be used for a second bedroom or study is becoming more desirable in single bedroom dwellings. The removal of the single bedroom limit for medium density housing provides greater flexibility for these homes to provide for the needs of the occupants. Efficient planning and design is required to achieve additional habitable spaces and functions within the same **dwelling internal floor area**.*

*This element applies to **small dwellings** that are using the **site area** concession of Part D, **C1.1.6** or **C1.1.7**. Other small dwellings may be proposed but would not need to meet the requirements of this element when not applying for the concession.*

DESIGN GUIDANCE

When selecting a suitable **site** and designing a **small dwelling**, consider the following:

- small dwellings should diversify the housing choice available within a given locality and should not be the only or predominant **dwelling** type fronting the same **street** or within the same street block;
- small dwellings should be located in areas with good access to public transport, **open space**, retail uses and community facilities;
- small dwellings should capitalise on and contribute to existing **local character** and amenity, such as views to open space and **streetscape**; and
- small dwellings should include flexible and adaptable spaces.

The **internal floor area** limit of 70m^2 allows for a single or two-bedroom **dwelling**.

ASSESSMENT GUIDANCE

A **small dwelling** can be provided in the form of a **single house**, grouped or **multiple dwelling**.

Small dwellings should comply with all elements of the R-Codes Part C as they apply to the dwelling type (**single house** or **grouped dwelling**).

The size of a **small dwelling** is limited by definition. For **sites** created for small dwellings, appropriate measures (such as a notification under section 70A *Transfer of Land Act 1893* registered on the Certificate of Title) to limit **development** of the site to a small dwelling should be considered.

Photo G2.9a Small dwellings may provide an opportunity to retain existing dwellings and trees

2.10 Housing on lots less than 100m²

INTENT

Housing on lots less than 100m² provides an affordable option for buyers that would prefer to live in a single house, rather than a grouped or multiple dwelling.

*Housing on **lots** less than 100m² have been selectively developed as a way to meet different housing needs, to assist in providing for housing affordability, create **dwelling** diversity and facilitate 'downsizing' opportunities. Provision of housing on lots less than 100m² in Western Australia has been increasing.*

*Previous editions of the R-Codes did not provide provisions for housing on **lots** less than 100m². As a result of this **local development plans** were used to coordinate development. The R-Codes now provide specific provisions for housing on lots less than 100m² on **sites** coded R100-SL, ensuring the **development** of smaller, constrained sites deliver good **streetscapes** and built form consistent with the intent of the R-Codes.*

*Housing on **lots** less than 100m² need to be integrated with the **streetscape** and surrounding **development** but must not be the predominant housing type in a **street**. Its location needs to be undertaken as part of comprehensive planning carried out for new urban areas and redevelopment of existing urban areas through the **scheme** or through a precinct or **standard structure plan**. Refer to the **WAPC's** Position Statement – Housing on lots less than 100m² for locational criteria.*

DESIGN GUIDANCE

Where housing on **lots** less than 100m² adjoin each other and are front loaded, vehicle access points should be consolidated to reduce **crossovers** to the **street**, allowing for verge trees and street parking (refer to **Figure G3.7a** and **Photo G2.10b**).

Refer to Part D, *1.1 Site area* of these guidelines for more information on the subdivision component of housing on **lots** less than 100m².

If modifications to design elements are sought refer to the **design principles** in the corresponding element. For example, when varying **site cover** refer to the design principles of the site cover element.

Photo G2.10a An attached terrace house is an efficient built type for lots less than 100m²

ASSESSMENT GUIDANCE

Lots that are suitable for this type of **development** are identified with a coding of R100-SL. Modified **deemed-to-comply** standards applicable to housing on lots less than 100m² are set out in **Table 2.10a** of **C2.10.1**. Where a deemed-to-comply requirement does not apply, consideration against the relevant **design principle** is not necessary.

LOCAL PLANNING FRAMEWORK CONSIDERATIONS

*The following matters may assist when considering modifications through a **local planning framework**:*

- If further modifications are sought to **Table 2.10a** the **design principles** of the relevant element should be addressed.
- The respective design and assessment guidance, and local planning framework considerations of the relevant element should be considered.

Photo G2.10b Consolidated vehicle access points reduce crossovers to the street and allow for street parking

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3.0 NEIGHBOURLINESS

Residents of medium density housing live closer to their neighbours than they do in lower density development. Well-designed medium density housing can foster social interaction and good neighbourhood amenity. It provides choice of housing that, when well located, benefits residents by providing access to high amenity areas, public transport, employment and community infrastructure.

The elements in this section work together to place the building within its neighbourhood context, having regard to the local streetscape and neighbourhood character, residents' amenity and community connection.

BUILT FORM

3.1 Site cover
3.2 Building height
3.3 Street setbacks
3.4 Lot boundary setbacks
3.5 Site works and retaining walls

The elements considered within the built form sub-section address the primary controls for development. Site cover, building height and setback controls determine the maximum extent of development on a site. These elements operate together to ensure the building responds well to the site and its context.

CHARACTER

3.6 Streetscape
3.7 Access
3.8 Retaining existing dwellings

The elements within the character sub-section establish and control the relationship between the building and the street. This relationship is of critical importance for well-designed places. The cumulative effect of a positive streetscape interface at each site leads to streets, precincts, neighbourhoods, towns and cities that are enjoyable to live in, walk through and visit.

COMMUNITY

3.9 Solar access for adjoining sites
3.10 Visual privacy

The community sub-section of the R-Codes Vol. 1 is aimed at balancing the impact of new medium density development with the amenity of adjoining properties, including in relation to solar access and privacy. As density increases in an urban context, it is important these aspects are adequately resolved through well considered site planning, building layout and design.

3.1 Site cover

INTENT

Site cover is the extent of **building** that covers a **site**. Limiting site cover allows **open space** between **buildings** for **natural ventilation**, **daylight** and **solar access**, as well as space for gardens.

Site cover controls should respond to the desired character of the **streetscape** and neighbourhood and inform the bulk and scale of **development**. Maximum **deemed-to-comply** site cover percentages increase with density, leading to more urban **building** forms and streetscapes.

DESIGN TIPS

The following design responses may assist in addressing a design principle(s):

- Where an application for **grouped dwellings** includes all **sites** within the same **parent lot**, it may be appropriate to provide some flexibility enabling **site cover** to be redistributed between grouped dwelling sites, provided that the total site cover across the combined sites (excluding **common property**) does not exceed the maximum percentage for the applicable density code in **Table D**. This allows flexibility for some sites within a grouped dwelling **development** to have greater site cover than others. Refer to **Table G3.1a** for an example of how this can be applied.

DESIGN GUIDANCE

Proposed **site cover** should be compatible with the desired **streetscape** character and achieve adequate space between **buildings** for **natural ventilation**, **solar access**, **landscape** and outdoor use.

Planning and design strategies that limit **site cover** are encouraged, recognising that over the lifecycle of a **development** it is probable site coverage will increase. Strategies include:

- limiting **building** footprints through multi-**storey** development;
- efficient building design and internal layouts;
- use of **pergolas,** operable louvres or shade sails in lieu of **patios**; and
- replacing **garages** and **carports** with open car parking spaces.

Where an application does not meet the **deemed-to-comply** provisions for **site cover**, a careful assessment of the variation is required. Generally, variations should be minimal, respond to a **site** constraint, and trees and **soft landscaping** should be maintained. A variation should achieve:

- adequate consolidated **open space** to accommodate the requirements of a **primary garden area** (where applicable), trees and soft landscaping;
- well performing **solar access** and **natural ventilation** for each **dwelling**; and
- mitigation of negative impacts on the **amenity** of neighbouring properties.

Photo G3.1a This grouped dwelling development with a retained dwelling has carefully managed site cover to create useable outdoor spaces around each house (PC)

3.1 Site cover (cont.)

ASSESSMENT GUIDANCE

Development should not exceed the maximum **site cover** of **C3.1.1**.

Calculating the percentage of a **development's site cover** is achieved by dividing the sum of all areas defined as site cover (as per the definition) by the site area and multiplying by 100.

See equation below:

$$\frac{\textit{areas defined by site cover}}{\textit{site area}} \times 100 = \textit{percentage of site cover}$$

For **grouped dwelling developments**, the area of **common property** (**communal street**) is excluded from **site cover** calculations.

The **site cover** requirement has been established and balanced with other **open space** and **landscaping** requirements. Therefore a proposal that seeks to exceed the site cover requirement will likely require a creative and innovative design response to meet the objectives of the element.

LOCAL PLANNING FRAMEWORK CONSIDERATIONS

*The following matters may assist when considering modifications through a **local planning framework**:*

- **Site cover** may be increased through a local planning framework where the **primary garden area**, **soft landscaping**, trees (and **deep soil areas**) and **solar access** and **natural ventilation** requirements can still be achieved.
- It may be appropriate to decrease site cover and restrict the **building** footprint to force multi-**storey** development and more compact typologies.

Table G3.1a Example of applying site cover where distributed between grouped dwelling sites (see Design Tip).

Lot characteristics	**Site area calculations**				
			Site area	Site cover area	Site cover %
Coded R40 Parent lot area of 728m² 3 survey-strata lots with common property Maximum 65% site cover permitted	One development application lodged for 3 grouped dwellings. *Application of design tip mentioned above*	Dwelling 1	180m²	95m²	$\frac{95m^2 + 140m^2 + 140m^2}{610m^2} \times 100 = 61\%$
		Dwelling 2	210m²	140m²	
		Dwelling 3	220m²	140m²	
		Common property	118m²		
		Parent lot	728m²		
		Parent lot less common property	610m²		

3.2 Building height

INTENT

The height of medium density **development** should be appropriate to the intended **streetscape** and neighbourhood character and be responsive to topography.

Building height should also be used to define **street** edges and the proportions of streets and public spaces. It should also have regard to the visual and physical **amenity** of the public and private realms, with consideration to the potential for negative impacts such as overlooking and overshadowing.

*The height of new **development** sometimes dominates discussions about planning; however, it is not the most significant factor impacting neighbourhoods. Well-designed taller **buildings** with good siting, **setbacks**, **open space** and articulation can be significantly better for neighbourhoods than poorly-designed low-rise buildings with maximised site coverage and poor consideration of context.*

*Earlier editions of the R-Codes measured **building height** in metres without mention of **storeys**. However, this can result in attempts to include additional storeys within the overall height limit which compromises the appearance and the **amenity** of a **building** while reducing internal amenity. To address this issue, building height is now measured in both metres and storeys. By measuring in storeys, it allows more flexibility for designers and encourages generous floor to ceiling heights for improved internal amenity. The maximum height and storey in metres (**Table 3.2a**) provides certainty for community and clarity for assessors.*

DESIGN GUIDANCE

Consider orientation, prevailing breezes, views and outlook when determining the preferred height for a **building**, including the potential impact on adjacent properties in terms of **solar access** and visual privacy.

Where **development** is proposed for a sloping site, consider stepping the **building height** along the slope (refer **Figure G3.2a**).

For **development** of three or more **storeys**, consider increasing the **lot boundary setbacks** for the upper level to reduce the impact of **building** bulk and overshadowing (where applicable) on **adjoining properties**, particularly where surrounding existing **development** is predominantly single storey and unlikely to change in the near to medium term (refer **G3.2a**).

For corner **lots**, placing the highest **building** elements towards the **street** corner can create a defining edge to the street and have less impact on the **amenity** of **adjoining properties**.

Photo G3.2a Where narrow lots are proposed it may be appropriate for building heights to increase. This example sets back the third storey to minimise impact on adjoining properties

DESIGN TIPS

The following design responses may assist in addressing a design principle(s):

- Increasing maximum **building heights** may be acceptable in locations where the proposed **development** would not unreasonably impact on the **amenity** of **adjoining properties** and **streetscape** character. This may include the following circumstances:
  - larger **development sites** (such as amalgamated sites) where taller **buildings** can be set back sufficiently from adjoining properties;
  - development sites that abut non-residential **lots**;
  - to enable an innovative and creative design response to a **site**;
  - where the development would provide an appropriate transition in scale from existing or planned tall, multi-**storey** development;
  - where the development would contribute to a unifying streetscape character; and/or
  - where the development is compatible with a steeply sloping site.

3.2 Building height (cont.)

ASSESSMENT GUIDANCE

Development should comply with the **building height** limits (expressed in metres and **storeys**) set out in **Table 3.2a**, except where modified by the **local planning framework**, in which case development is to comply with minimum and/or maximum building height limits set out in the applicable local planning instrument.

The maximum total **building height** is the sum of the **wall** and roof height (refer T**able 3.2a**), and varies according to the following roof types:

- Concealed, gable or skillion roof – these roofs typically locate their highest point towards the **lot boundary**.
- Pitched or hipped roof – these roofs typically locate their highest point towards the centre of the **building**, hence why more building height allowance is provided for these roof types.

Roof design can vary and may not conform with the nominated types in the **deemed-to-comply**. The **decision-maker** should determine the most appropriate roof type for assessment of a particular **development** and consider the above points regarding the impact of roof design on adjoining neighbours.

A **building** that complies with the height (in metres) while exceeding the number of **storeys** requires assessment against the relevant **design principles**.

Measuring building height

The calculation of **wall height** and total **building height** is to be measured as the vertical distance from **natural ground level** to the highest point at any part of the **building**.

To determine **building height** on sloping sites, the height of a building is taken as the highest point of the **development** immediately above **natural ground level** (refer **Figure G3.2a**). On a sloping site, the building form should correspond to the natural ground level with separate **storeys** complimenting the slope of the land without exceeding the maximum height in **Table 3.2a**.

Where the slope of the site is not uniform, the natural contours should be interpolated so as to modify or smooth out any anomalies in order to establish the deemed **natural ground level** (refer **Figure 3.2a**).

Minor projections and plant equipment (including overruns for lifts) are excluded from the measurement of **building height**.

Habitable rooms within a roof space are a **loft** and, as per the definition of **storey**, are not counted as an additional storey.

Unroofed rooftop **terraces** are not counted as a **storey**, however provisions such as maximum **wall height**, **lot boundary setbacks** and visual privacy apply.

Where rooftop **terraces** propose open structures such as canopies or **pergolas**, a **design principle** pathway should consider the **amenity** impact (e.g. visual privacy, overshadowing) of the structure on neighbouring properties and the **streetscape**.

Where covered areas such as **patios**, BBQ areas, or roofed **communal open spaces** are proposed this should be considered an additional **storey**. Total **building heights** of **Table 3.2a** apply.

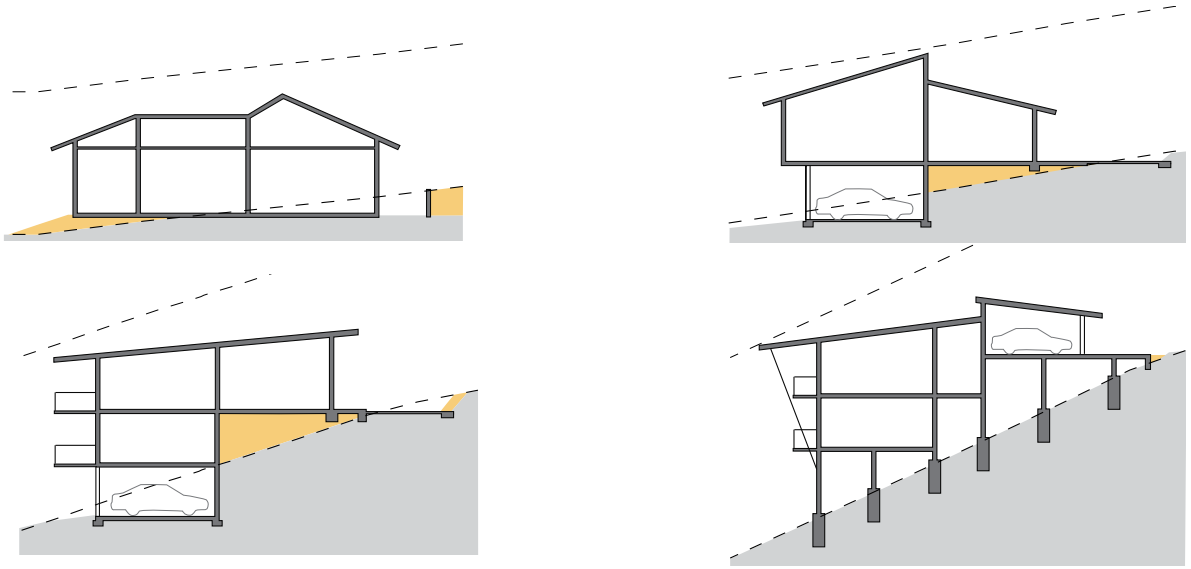


Figure G3.2a Building height for sloping sites

3.2 Building height (cont.)

LOCAL PLANNING FRAMEWORK CONSIDERATIONS

*The following matters may assist when considering modifications through a **local planning framework**:*

- Express **building height** provisions in **storey**s and metres to:
  - provide flexibility for design solutions at ground and roof levels
  - promote generous floor to ceiling heights
  - provide opportunities for future building adaptability.
- When adjusting height controls, test in tandem with other primary controls to ensure the settings are well aligned.
- **Site**-specific **building** envelopes and heights can be developed within a local planning framework, including for large or complex sites such as those on steep slopes and those with variable topography.
- Ensure the maximum building height allows for architectural roof features such as articulated roof planes, and/or the provision of **communal open space** at the roof top.
- Where rooftop **open space** is desired, ensure adequate maximum height is provided and consider secondary height controls for lift/stair access and shade structures.
- It may be appropriate to determine heights by relating them to features within the existing **streetscape** or locality such as topography or heritage elements. This may include:
  - defining an overall height or **street wall heights** to key datum lines, such as key architectural features
  - aligning floor to floor heights of new **development** with existing built form.
- 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 R-codes.
- Take into account the viability of development types and efficient use of land when setting height controls. The **NCC** has certain requirements based on the effective height of a building, such as fire protection systems, fire resistance and vertical transportation. When setting height controls, consider these thresholds as they impact on the feasibility of a development.
- It may be appropriate to increase building heights to facilitate **terrace** typologies which support efficient **lot** layouts and reduced **site cover**. This may assist in supporting retention of significant trees, increasing **landscaping** and desired future residential character.

3.3 Street setbacks

INTENT

Consistent **street setbacks** help to establish a consistent, legible **streetscape** with space for trees and other **landscaping**. As residential densities increase, street setbacks typically reduce to reinforce a more urban character.

*The purpose of **street setbacks** (in accordance with **Table 3.3a**) is to:*

- *enable a clear view between the **dwelling** and the **street**;*
- *provide a transition between the public and private realm;*
- *provide an area for **landscaping**; and*
- *promote a consistent and harmonious **streetscape** reflective of the urban intensity.*

*For established residential areas with valued **streetscapes**, there is often a consistent pattern of street setbacks. New **development** should respond to the established pattern. Where the pattern varies, a setback mid-way between that of the **buildings** on either side may be appropriate. The **decision-maker** may stipulate setbacks for a particular area in the **local planning framework**. The R-Codes street setback requirements apply in all other cases.*

*In areas undergoing transition from low to medium density, street setbacks should respond to the intended future character of the **street**.*

*In the case of new residential areas, the desirable street setback may be fixed as part of **structure plan(s)** or **local development plan(s)**.*

DESIGN GUIDANCE

While **Table 3.3a** provides a minimum **street setback line** with no averaging requirement, designers should aim to avoid blank and/or flat **façades** through the incorporation of:

- **verandahs**, **porches** and **balconies**;
- **building** articulation (see below); and
- entries and windows.

Carports, **patio**, **porches**, **verandahs** and **balconies** built forward of the **street setback line** should be designed and built from materials compatible with the **dwelling**.

Building articulation can be achieved through the coordination of built form elements and visual interest in the building **frontage**. **Dwellings** should not present to the **street** as a flat **façade** and should demonstrate articulation through:

- well-defined entry points;
- appropriate, well-detailed materials;
- consideration of rhythm, proportion and scale of built form elements within the context of the building frontage and the broader **streetscape**;
- coordination of vertical and/or horizontal building elements (e.g. **minor projections** and shading elements); and
- integrating aspects of daily household activity within the design of the building frontage (e.g. site entries, letter box, access path, **verandahs**).

ASSESSMENT GUIDANCE

Refer to **Figure G3.3a** for annotation of **street setback**, **street setback area** and **street setback line**. Where the actual street setback of a **dwelling** is greater than the minimum street setback line prescribed in **Table 3.3a**, the street setback area is measured to the street setback line.

Where the **street setback** is 1.5m or greater, the area can support tree planting and associated **deep soil area**s (refer to **Tables 1.2a** and **1.2b**).

Setback of garages and carports

The **setback** of **garages** in areas coded R30 and R35 is designed to enable a vehicle to park in the **driveway** in front of the garage and minimise obstruction of an adjacent footpath (refer **C3.3.4**).

The **setback** of **garages** in areas coded R40 and above is in accordance with the minimum **street setback** requirements of **Table 3.3a**. The **deemed-to-comply** setback for garages in R40 is minimum of 3m. This distance is not intended to have a vehicle parked in the setback area as it may have the potential to overhang a footpath.

The **street setback area** should generally be open and free from structures that obstruct views and **passive surveillance** of the **street**. However, **carports** may be acceptable in the **street setback** (refer **C3.3.5)** as they allow a clear view between a public **street** and a private **dwelling**. When assessing carports, gates are not to be considered as doors.

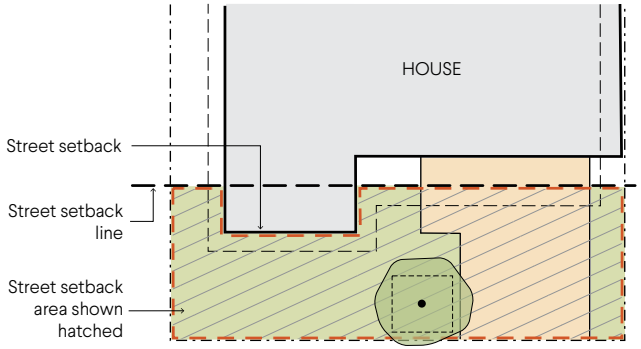


Figure G3.3a Street setbacks, street setback areas and street setback lines

3.3 Street setbacks (cont.)

DESIGN TIPS

The following design responses may assist in addressing a design principle(s):

- **Buildings** forward of the **street setback line** may be appropriate where consistent with **adjoining properties** and the **streetscape**, or where necessary to retain an existing tree.
- With respect to corner **lot** truncation setbacks (**C3.3.3**), it may be appropriate to reduce the **setback** for an upper **storey** subject to the **development** not restricting **sightlines**.

Photo G3.3a Street setbacks include landscaping and articulation to the dwelling facade (PC)

LOCAL PLANNING FRAMEWORK CONSIDERATIONS

Providing a consistent **street setback** is an important aspect of creating or retaining a distinct **streetscape** character. The **decision-maker** may stipulate **setbacks** for a particular area in the **local planning framework**.

Setting **street setbacks** for **buildings** should begin with consideration of the desired or existing **streetscape** character. The proportions of a **street** are established by the distance between opposing building **frontages** in combination with the height of buildings, with this aspect of streetscape character directly affecting how the street will be perceived and used.

*The following matters may assist when considering modifications through a **local planning framework**:*

- Determine **street setback** controls relative to the desired **streetscape** and character, for example:
  - define a future streetscape in a transitional area:
  - consider existing **development**:
  - provide appropriate setbacks to maintain views towards significant **buildings**:
  - retain significant trees: and
  - use a setback range where the desired character is for variation within overall consistency, or where **lot** boundaries are at an angle to the **street**.
- Consider parameters for articulation of building frontage through **balconies**, **landscaping**, porticos, awnings etc. where these elements are included in the street setback.
- Identify the quality, type and use of **open space** and landscaped areas facing the street so **setback** areas can accommodate landscaping and **private open space**.
- In conjunction with height controls, consider street setbacks for upper levels to:
  - reinforce the desired scale of buildings at street level: and
  - reduce overshadowing of the street and other buildings.
- Where **dwellings** are likely to front a rear **right-of-way** or **laneway**, consider additional setback requirements to improve the quality and **amenity** of housing facing laneways.
- Ensure provisions for street setbacks respond to local government policies regarding on-street parking.

3.4 Lot boundary setbacks

INTENT

Lot boundary setbacks help govern the extent of the **building** footprint and are scaled according to **building height** to address perceptions of bulk and scale. Lot boundary setbacks are important for maintaining separation between buildings for **solar access** and **natural ventilation**, and for managing **amenity**, including overshadowing and the visual privacy of neighbouring properties. They are also important for moderating the visual impact of building bulk on a neighbouring property, creating usable outdoor space and preserving **deep soil area**s for trees, **landscape** and outdoor use.

Smaller **lot boundary setbacks** are typical for medium and high-density residential character, compared to larger setbacks in suburban contexts.

DESIGN GUIDANCE

The size and location of **setbacks** should ensure adequate **daylight**, **solar access** and **natural ventilation** for **primary living spaces** and **active habitable spaces** within **developments** and on **adjoining properties**.

Consider **boundary walls** (where appropriate) to maximise **site** efficiency and free up useable outdoor spaces for gardens and recreation. Boundary walls should be co-located with and match the alignment and extent of existing boundary walls to minimise the impact of overshadowing, visual privacy and to coordinate **building frontages** to **streetscapes**.

Greater **setbacks** may be required to retain trees within the **site** accommodating sufficient **deep soil area**. This could also be considered to accommodate adjoining tree/s.

Photo G3.4a When proposed in a coordinated manner, two storey boundary walls support efficient design and construction outcomes with minimal impact on adjoining properties

Lot boundary setbacks

A reduction to **lot boundary setbacks** should only be considered where it can be demonstrated that functional outdoor and indoor spaces can be achieved. The **decision-maker** should also be satisfied that the **amenity** of **adjoining properties** is not negatively impacted, particularly where the reduced setback may result in increased overshadowing, overlooking or lack of privacy. In these situations, the proposed **development** would need to address the **design principles** of this section.

DESIGN TIPS

The following design responses may assist in addressing a design principle(s):

- It may be appropriate to vary **lot boundary setbacks** and **boundary wall** provisions where the **development site** abuts non-residential land.
- Reduction in setbacks may be necessary due to the irregular shape or topography of the **lot**. In such instances the **decision-maker** should have regard to the **amenity** of **adjoining properties**, including potential impact on existing trees, overshadowing and visual privacy.
- Reduced lot boundary setbacks for single **storey dwellings** may be appropriate where this allows more functional use of the dwelling and a consolidated **primary garden area**.
- Where all dwellings in a **grouped dwelling** proposal are included in a single development application, it may be appropriate to increase the boundary wall length on **site** boundaries subject to the overall boundary wall length being no greater than two-thirds the length of the **parent lot** boundary.

3.4 Lot boundary setbacks (cont.)

ASSESSMENT GUIDANCE

Lot boundary setbacks

C3.4.3 enables structures including **carports**, **verandahs** and **patios** to be built to the **lot boundary** behind the **street setback line**, however **NCC** provisions may apply.

Where a **lot** has an angled boundary and the **wall** of the proposed **development** is not parallel to that boundary, the entire length of the wall must be set back the minimum required distance (refer **Figure G3.4a**).

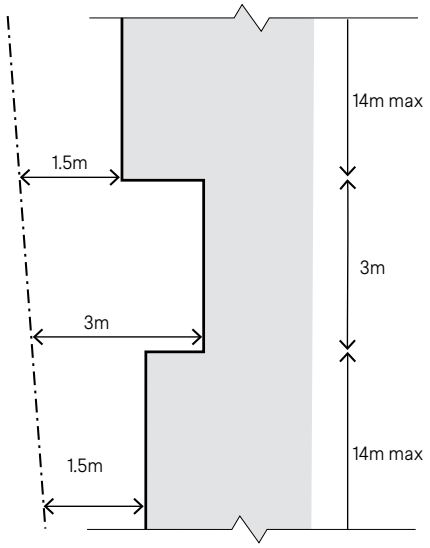


Figure G3.4a Lot boundary setbacks where walls are not parallel with the lot boundary

Boundary walls

Two **storey** (7m high) **boundary wall** provisions for R50-R100 **lots** (subject to **frontage** width) have been included in the **deemed-to-comply** to accommodate **development** of two or more **terrace** type **dwellings**.

The 14m maximum two **storey boundary wall** length (refer **Table 3.4b**), where separated by a **setback** of 3 x 3m can be continued with an additional boundary wall to the same **lot boundary** (refer **Figure 3.4h**). Notwithstanding **deemed-to-comply boundary walls**, overshadowing requirements still apply.

When measuring the maximum length of a second **storey wall** (refer **C3.4.2**), walls which are set back less than 3m from the **lot boundary** are to be included in calculations. (Refer **Figure G3.4b**)

In R50-R100 coded areas where a **boundary wall** abuts an existing boundary wall of similar or greater dimension the boundary wall is permitted to the extent of height and length of the existing boundary wall at which point it should be **setback** from the **lot boundary**.

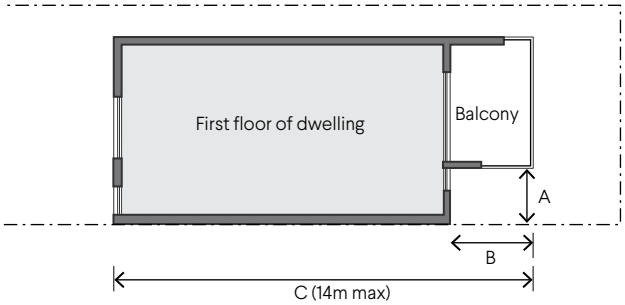


Figure G3.4b Measuring two storey boundary walls

Boundary wall provisions include any **wall** on or less than 600mm from a **lot boundary** (refer definition). Any wall 600mm or more from the lot boundary is required to meet the requirements of **C3.4.1** to **C3.4.3**.

Stand-alone pillars or posts located on the boundary with a horizontal dimension of 450mm or less should be excluded from the calculations of **boundary wall** length. Where supporting structures are greater than 450mm in dimension, the boundary wall provisions apply.

Where a **wall** is built on the boundary and does not abut an existing **boundary wall**, the surface of the wall facing a neighbouring property should be finished to the satisfaction of the **decision-maker** giving consideration to its visual impact, **amenity** and maintenance requirements (refer **C3.4.4(iii)**).

3.4 Lot boundary setbacks (cont.)

LOCAL PLANNING FRAMEWORK CONSIDERATIONS

Modifications to the **lot boundary setback** provisions through the **local planning framework** may be made to suit the local context and intended **development** outcome. These modifications may define specific setback provisions to promote particular built form outcomes or respond to site-specific conditions.

*The following matters may assist when considering modifications through a **local planning framework**:*

- Undertake testing of **lot boundary** setbacks with height controls to understand the impact on:
  - potential for overshadowing of the site, adjoining properties and **private open space**;
  - **streetscape**;
  - visual privacy; and
  - tree retention.
- Consider appropriate settings for streetscapes or neighbourhoods that respond to the distinctive **local character** including existing heritage, housing typologies and urban grain.
- In established streetscapes which largely contain boundary-to-boundary **development**, consider whether new **setback** constraints to **boundary walls** are appropriate.
- On sloping sites, consider increasing the lot boundary setbacks to minimise overshadowing (subject to orientation) and overlooking of lower sites.

3.5 Site works and retaining walls

INTENT

Development of sloping sites should respond to the natural topography and aim to minimise the amount of cut and fill required. This is because extensive site earthworks are resource intensive, removes vegetation, disturbs the soil profile and hydrology, and affects **local character**.

Photo G3.5a This row house development steps down with the slope of the site

DESIGN GUIDANCE

Development of land should be designed to correspond to the topography of the **site**.

Retaining walls can be visually prominent. Where retaining is unavoidable, the design of retaining walls should seek to minimise their height and length by responding to the slope of the **site** through terracing and articulation or by balancing the extent of excavation and fill. For sloping sites, a mix of cut and fill should be proposed as opposed to one method. The integration of **buildings** with retaining walls is encouraged to minimise resource consumption and visual impacts, and improve the efficiency of site planning. The materiality of retaining walls should complement and integrate with the surrounding **landscape**.

Significant fill and retaining walls above **natural ground level** can also be visually prominent. Where it is necessary, consideration should be given to potential privacy and overshadowing issues arising from the increase in height. Significant fill can in some circumstances impact localised soil and hydrological conditions which potentially limits future tree and plant growth.

Because much of the State's housing was built before accurate contour mapping was available, it may not be possible to know precisely the **natural ground level** that preceded **development**. Where there is evidence of ongoing **site** works over time, it may be necessary to refer to other evidence in order to establish as closely as possible the relevant natural ground levels.

Excavation may be beneficial to the **development** outcome, including allowing for undercroft / **basement** parking and **storage** areas. When excavation is proposed, it is necessary to address engineering requirements and account for essential services, particularly where protected by a registered easement.

ASSESSMENT GUIDANCE

Housing design which proposes extensive **site** works re-contouring the site without regard to neighbouring properties and their **amenity**, should not be supported.

The height of retaining walls, excavation and fill are to be measured directly from the **natural ground level** (above or below).

Visual privacy provisions under element 3.10 *Visual Privacy* should be applied for fill and retaining walls greater than 0.5m above **natural ground level**.

LOCAL PLANNING FRAMEWORK CONSIDERATIONS

Modifications to the site works and retaining walls provisions may be necessary for areas which contain sloping sites.

*The following matters may assist when considering modifications through a **local planning framework**:*

- Undertake testing of site works and retaining walls to understand the impact on:
  - **lot boundary** setbacks
  - **street setbacks**
  - potential for overshadowing of adjoining properties and **private open space**;
  - **streetscape**; and
  - visual privacy.

3.6 Streetscape

INTENT

A well-considered interface between **buildings** and the **street** ensures a successful transition from the public to private realm and contributes to the **sense of place** and character of the street. Attractive and pedestrian-friendly street **frontages** incorporate well-considered arrangements of planting, fencing, **screening** and site entries.

Street fences delineate the private realm from the public realm, and contribute to **streetscape** character. They can frame gardens within the **street setback area** and assist in balancing surveillance, privacy and impacts of noise.

Garages and supporting structures are potentially dominant and often imposing elements on the **streetscape**, impacting **dwelling** appearance as well as the visual connectivity between the dwelling and the **street**.

DESIGN TIPS

The following design responses may assist in addressing a design principle(s):

- When the optimal location for the **primary garden area** and/or **private open space** is in the **street setback area**, **walls** and fencing should provide a balance of visual permeability and visual privacy, utilising **screening** and **landscaping**.

DESIGN GUIDANCE

Building elevations fronting the **street** should be of a human scale and proportionate to the **streetscape**. This can be achieved by using the following design solutions:

- well composed horizontal and vertical elements;
- variations in floor heights to enhance the human scale; and
- design elements that are proportional and arranged in patterns.

Building entries should be readily identifiable and accessible. Where there are multiple **buildings** and/or entries, architectural detailing, materials, colours and **landscape** treatments can be used to differentiate **dwellings** and improve legibility for residents and visitors.

Blank **walls** facing the **street frontage** should be avoided where possible. Blank walls can be broken up with **major openings**, fencing, **landscaping** and other elements that provide visual interest and surveillance when viewed from the **street**.

Raising the ground floor height of a **dwelling** by 0.5m-1m from **natural ground level** at the **street boundary** can provide an appropriate balance between **passive surveillance** to the **street** and privacy for residents.

Incorporating **verandahs**, **porches** and **balconies** in the **street setback area** can provide residents with **passive surveillance** and interaction opportunities with the wider community, improving **sense of place**.

The integration of and access to essential services **utilities** such as power and water meters and fire service infrastructure requires careful consideration in the **building** design. Consult early with relevant authorities to resolve functional requirements through an integrated design solution. Refer to element 2.5 *Utilities*, for more information.

For **sites** that have more than one **street frontage**, it is important to address the **secondary street** through the built form and **landscaping**.

Where a **right-of-way** is proposed to be the **primary street frontage**, the **street setback area** should be treated in the same way as a primary **street setback** including provision of **landscaping** and clearly identifiable entries.

Impact on garages

Consider single or tandem **garages** and **carports** instead of double garages as they have less visual impact on the **streetscape**. Recessing garages behind the **dwelling alignment** reduces the visual dominance of the garage and may also provide additional parking space between the garage and **street boundary**. The use of porticos or **porches** in front of the supporting structures of garages may also assist in reducing the visual impact on the streetscape.

Photo G3.6a Trees and visually permeable fencing contribute to attractive streetscapes

3.6 Streetscape (cont.)

Street fences

Street fences include lightweight structures as well as masonry **walls** used to delineate between the public and private realm. All street fencing should be designed to balance the need for privacy and security with the promotion of strong community connection and **streetscape amenity**. This can be achieved through the use of low walls, **visually permeable** materials and limiting the extent of walls and fencing.

Consider the incorporation of low fencing and **walls** (less than 900mm) along the **street boundary** to clearly demarcate public and private space. Ideally low walls should be integrated with the **landscape**, letterbox design and access points such as gates and **driveways**.

For climate zones 1 and 3, permeable fencing should be used for **street** fences/walls for **natural ventilation**.

Where non-permeable fencing to the height of 1.8m is proposed to attenuate traffic noise or headlight glare, anti-graffiti material or paint coating should be considered.

Photo G3.6b Carports forward of the street setback line supporting visual connectivity between the street and dwelling

ASSESSMENT GUIDANCE

For **multiple dwellings**, it may not be possible for all **dwellings** to address the **street**, however, all dwellings which front the street are to address the street. Where **private open space** areas of ground floor apartments front the street, privacy can be achieved while maintaining a street presence as per the provisions of street **walls** and fences (**C3.6.7** to **3.6.9**).

When measuring the percentage of **garage** width and supporting structures, piers and **porches** proposed forward of the supporting structures are to be excluded from calculations (refer **Figure G3.6a)**.

Carports are roofed and **unenclosed** with a maximum of two **walls** behind the **street setback line**. When proposed forward of the **primary street setback line**, they are to be without walls (excluding post and pillars less than 450mm by 450mm). Carports are to be **developed** without doors to the **crossover/driveway**, to ensure visual connectivity between the **dwelling** and the **street** in perpetuity. Gates do not constitute a door but should not impact visual continuity to the street.(refer **Photo G3.6b**).

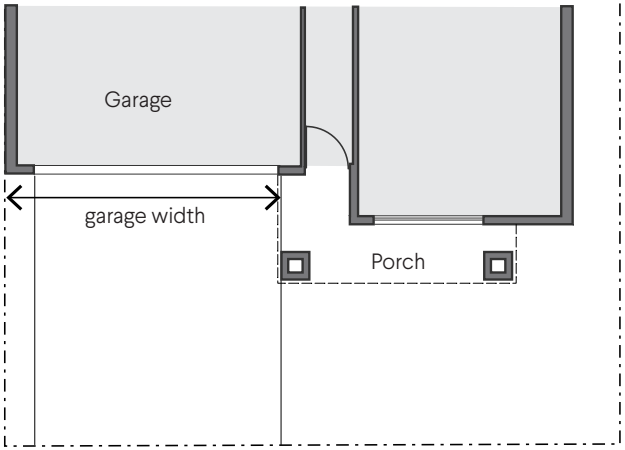


Figure G3.6a Piers and porches forward of garages excluded from garage width calculations.

Street fences

Where **street** fencing incorporates a retaining **wall**, the height of a retaining wall (measured from **natural ground level**) is to be included in the calculation of the total wall/fence height.

A **street** fence, including all footings, is to be located wholly within the **lot** boundaries.

LOCAL PLANNING FRAMEWORK CONSIDERATIONS

*The following matters may assist when considering modifications through a **local planning framework**:*

- The proportion of **garage** width to individual **lot** width may be increased where it can be demonstrated that the total proportion of garage width along the same side of the **street** does not exceed the requirements in **C3.6.5**. And should support the following:
  - **soft landscaping** and tree planting within the **street setback area**;
  - ability for parking within the street;
  - ability to provide street trees within the verge; and
  - suitable space for waste collection and **service utilities**.
- Where **development** adjoins public parks, pedestrian access ways, **open space** or bushland, the **dwelling(s)** should respond to this interface. Potential considerations include:
  - pedestrian paths connecting the dwelling(s) to the open space and clearly defined **building** entries;
  - low, uniform fences and planting that clearly delineate between communal and **private open space** and the adjoining public open space; and
  - minimising the use of blank walls, solid fences and ground level parking.

3.7 Access

INTENT

Access connects pedestrians and vehicles from the **street** into the **development**. The design of vehicle access points and common areas such as **communal streets** should balance the requirement for safe and efficient vehicle access with the needs of pedestrians, bicycle riders and other road users, and minimise the impact on the **streetscape**.

The **communal street** is a shared use area designed to balance the movement and access needs of pedestrians, bicycle riders and vehicles, and should limit the extent of paved **impervious surfaces**.

*Car parking spaces, manoeuvring areas and access ways are potentially intrusive – physically, visually and acoustically. This is particularly evident for grouped and **multiple dwelling** developments where multiple parking spaces and access is required. Vehicle access and parking consumes space and does not generally make a positive contribution to the **streetscape**. Consequently, location and materials of vehicle access and car parking areas are major factors in **amenity** as well as security and safety.*

***Communal streets** are created as part of a grouped or **multiple dwelling** development and are in private ownership common to a number of **dwellings**, whose owners are also responsible for maintenance.*

DESIGN GUIDANCE

Consider design solutions to minimise the visual impact of vehicle entries and circulation areas within the **site**, while allowing for appropriate **sightlines** and safety considerations, such as:

- locating and designing vehicle entries to minimise the number and length of **driveways**;
- where required, incorporating aesthetically pleasing and effective traffic calming devices that are integrated into the design, such as changes in paving material or textures;
- minimising the visual impact of unavoidable long driveways through changing alignments and screen planting; and
- minimising the interruption to the verge by consolidating vehicle access points (refer **Figure G3.7a**).

Where a separate pedestrian access is required (refer **C3.7.13(ii)**), consider using **landscape**, level changes and varied trafficable finishes, materials or patterns to clearly delineate from vehicle access.

Hardscaping across the site should be minimised and areas of **landscaping** maximised. The following strategies to reduce hardscaping are strongly encouraged:

- the use of strip paving or permeable paving in **driveways**;
- using impervious paving for the minimum area required for driveways, vehicle parking, circulation areas, and pedestrian access; and
- creating paths within garden beds from stepping stones or loose aggregate.

Minimising the number of vehicle access points along the **street** provides more opportunity for on-street parking and the retention or improvement of the **streetscape** character. When locating vehicle access points, consider the location of any street trees, infrastructure, and/or relevant obstructions. The distance of **crossovers** from street trees should ensure clear **sightlines** and viable tree growth (refer *WALGA Guidelines and Specifications for Residential Crossovers*).

Driveways must maintain adequate **sightlines** where they intersect **streets**, **rights-of-way** and footpaths to ensure visibility and safety. Sightlines must be kept clear from obstructions – including fences, walls, **landscape** features and vegetation.

Communal Streets

As a semi-public space, **communal streets** share some of the characteristics of public **streetscapes** including the need to address visibility, security and privacy. They should be designed to provide clear demarcation between private and communal space and to create a consistent, attractive streetscape through appropriate use of **landscape** and pavement treatments.

Communal streets should be clear and legible, and designed to prioritise the movement of pedestrians and bicycle riders and may use different surface treatments to manage shared space. For **developments** consisting of less than 10 **dwellings**, the communal street can be used for pedestrian access.

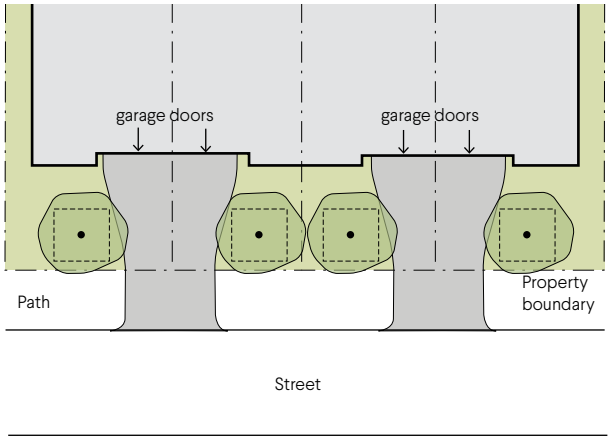


Figure G3.7a Pairing of vehicle access points

3.7 Access (cont.)

DESIGN TIPS

The following design responses may assist in addressing a design principle(s):

– Where it may be necessary to be reduce the width of the **communal street** and battleaxe leg (for example for retaining an existing **dwelling**), the **building setback** to the communal street and battleaxe leg may be reduced to nil provided that the minimum **driveway** width (3m) and clearances (0.3m either side) is maintained.

Photo G3.7a Incorporating landscaping contributes to attractive communal streets and outlook for residents, as well as providing environmental benefits

Dwellings should front the **communal streets** (where this is the principal **frontage**), in the same way they would address a public **street**.

For larger **development sites** or where existing block patterns are deep, **site** accessibility may be best served by introducing a network of new **communal streets** and **laneways**, rather than a continuous, long **street**.

Trafficable, semi-permeable, **permeable surfaces** or strip paving within **communal streets** are strongly encouraged.

Consider design solutions that provide multi-use opportunities, legible and comfortable access for pedestrians, and attractive outlook from adjacent **dwellings**. Surface treatments of **communal streets** should minimise heat gain and heat island impacts while supporting **stormwater** infiltration.

Where traffic calming devices are required within **communal streets**, ensure that they are integrated with **landscaping**, drainage, and allow for **continuous path of travel** for pedestrians.

Photo G3.7b This shared driveway space has been designed and constructed to be fully permeable, and includes planted areas and a gravel surface

ASSESSMENT GUIDANCE

Driveways can be provided as strip paving or permeable paving for vehicle access and manoeuvring areas.

For corner **lots** where the lowest hierarchy **street** is undefined, the **decision-maker** should determine which **street frontage** is most appropriate for vehicular access to the proposed **development**.

A **driveway** width of 3m is adequate for driveways serving four **dwellings** or less and does not require passing points.

C3.7.6 requires **driveways** for **grouped** and **multiple dwellings** to be 5.5m wide at the **street boundary**, this ensures a vehicle can safely enter the **development** off a primary distributor or integrator arterial at the same time a vehicle is exiting the **site**.

The minimum driveway width of 3m and 0.3m setback either side of the driveway aligns with Australian Standards AS2890.1. The setback is required for vehicle clearances. The combination of the driveway and clearances make up the **communal street** and battleaxe leg.

Landscaping features within the **communal street** such as lighting, pavement treatments and planting areas should be detailed in a landscaping plan, this may also include **deep soil areas** for tree planting where proposed.

LOCAL PLANNING FRAMEWORK CONSIDERATIONS

*The following considerations may assist when considering matters through a **local planning framework**:*

– Restricting the location and width of **driveways** may be a suitable option where proposing street parking bays via a **Local Development Plan**.

3.8 Retaining existing dwellings

INTENT

Retaining an existing **dwelling** can support housing diversity and reduce the embodied energy and waste impact associated with demolition and new construction. It may also help to maintain an established **streetscape** and **local character**, depending on the location and condition of the dwelling on the **lot**.

DESIGN GUIDANCE

Retaining an existing **dwelling** on a **development site** can be achieved through well-considered **site** and project planning. When retaining an existing dwelling, consider the following:

- the desired **streetscape** and **local character**;
- the quality (both design and structural) warrants its retention and/or upgrade;
- its location on a **lot** facilitates an integration into the broader **development**; and
- housing diversity in the locality.

Ensure that the location of strata subdivision permits the retained **dwelling** to meet the requirements of the R-Codes. In particular, ensure boundary **setbacks** internal to the **lot** are adequate to meet the requirements of **C3.4.1**.

Where it is not possible to meet all of the **deemed-to-comply** requirements of this element, a merit-based approach via the **design principle** pathway is encouraged. Achieving the **private open space** requirement for the retained **dwelling** should be prioritised.

ASSESSMENT GUIDANCE

Upgrading the appearance of the existing **dwelling** may be required as a condition of subdivision or **development** approval. **Decision-makers** may prepare a **local planning policy** to provide guidance on acceptable upgrade standards.

C3.8.1 does not apply where the existing **dwelling** is to be retained as a **single house** (either **green title**, strata or survey strata without **common property**) as there is no planning mechanism to require upgrading to a retained dwelling that is on a separate title (and potentially in different ownership) to that of the remainder of the **development**.

Lot boundary setbacks are to be calculated to the new proposed site or lot boundaries, not existing lot boundaries to **adjoining properties**.

LOCAL PLANNING FRAMEWORK CONSIDERATIONS

Retaining existing **dwellings** may be preferred where a specific **streetscape** character is recognised. Further modifications to this element may be required in order to ensure the existing dwelling maintains the existing streetscape character.

Community

3.9 Solar access for adjoining sites

INTENT

Siting and design of **dwellings** should respond to climatic conditions and have regard to resident **amenity** both within the **development site** and **adjoining properties**.

*In terms of **residential development**, the three main aims of climate sensitive design are to reduce energy consumption, optimise on-site **solar access** and protect solar access for neighbouring properties.*

Photo G3.9a This dwelling is designed to reduce the impact of development overshadowing primary garden area of adjoining lot (PC)

DESIGN GUIDANCE

Development should be designed so that it does not significantly impact **solar access** for neighbours, in particular:

- north facing openings to **primary living spaces**;
- outdoor **active habitable spaces**; and
- roof mounted **solar collectors**.

Similar to considerations for visual privacy, the potential for a **building** to overshadow a neighbouring site, or be overshadowed itself, varies from case to case. There are several variables which range in complexity, including:

- the density of **development**;
- the height of buildings, existing and proposed;
- the position of buildings, existing and proposed, in relation to **lot** boundaries;
- the orientation of the **development site** and its neighbours, that is, the relative position of the sun;
- the relevant dimensions and shape of the development site and of affected neighbouring **sites**; and
- the degree and orientation of the slope of the land.

Early design analysis should be undertaken to optimise the orientation of the **buildings** on a **site** to achieve the objectives and provisions of the policy as they apply to **solar access**.

Sites that are most vulnerable to overshadowing are narrow east-west oriented sites, on the south side of a **development site**, especially if they are also lower or on a south facing slope. In such cases, even a relatively low **building** may cast mid-winter shadow over a greater proportion of the site than allowed under **deemed-to-comply** provisions.

In some instances, a **lot** may abut two or more properties to the north and would therefore be subject to overshadowing by two or more properties. **C3.9.3** reduces the amount that some lots can overshadow proportionate to the **lot boundary** they share (refer **Figure 3.9e**).

C3.9.1 also limits overshadowing to diagonally adjacent **lots**, recognising that at certain lot orientations, both the **adjoining property** and the diagonally adjacent lot may be impacted by overshadowing (refer **Figure 3.9b**).

When calculating overshadowing where multiple **sites** are being proposed at differing stages (for example two out of three **grouped dwellings** issued for **development** assessment), consider whether the final site, when proposed, would exceed the limits of **Table 3.9a**.

In climate zones 4, 5 and 6, the siting and design of a **development** should aim to limit overshadowing of **adjoining properties**, particularly spaces used predominantly during the day (i.e. **primary living space** and outdoor **active habitable space**). Strategies can include:

- where possible, orientating and focusing **building height** so that it overshadows blank **walls**, car parking areas, **driveways** and roofs;
- increasing **setbacks** of upper levels; and
- breaking up building mass and orienting development perpendicular to the adjoining **lot boundary**.

In all climate zones, **development** should avoid overshadowing **solar collectors** within the development and on adjoining properties.

DESIGN TIPS

The following design responses may assist in addressing a design principle(s):

- Due to **lot** orientation, it may be necessary in some cases to exceed the overshadowing limits of **Table 3.9a**. In such cases, careful consideration should be given to the types of spaces being overshadowed when judging merit and applying **design principles**. **Solar access** should be prioritised for spaces on **adjoining properties** that are likely to be used most frequently during the day, such as **primary living spaces** and outdoor **active habitable spaces**.

Community

3.9 Solar access for adjoining sites (cont.)

ASSESSMENT GUIDANCE

The assessment of the shadow cast by a **building** at midday 21 June is shown in **Figure 3.9a**. The methodology for determining the shadow cast can be found in the *Sunshine and Shade Australasia,* Phillips, R.O., Commonwealth Scientific and Industrial Research Organisation (Australia), Division of Building Construction and Engineering, Canberra, ACT 1992. Reference should be made to the specific tables in this document. (Refer 2.2 *Solar access and natural ventilation*).

In general terms, shadow cast at midday 21 June is calculated by:

- selecting the vertical sun angle from the following chart that lists the major urban centres from Albany to Wyndham; and
- transposing the length of shadow on to the site plan, taking care to correctly orientate the **building** and allow for the slope of the land.

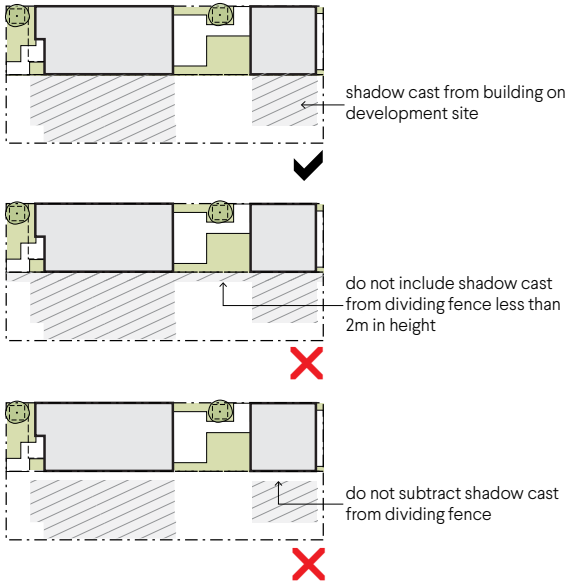


Figure G3.9a Dividing fences excluded from overshadowing calculations

Drafting software also provides capabilities for demonstrating **solar access** to adjoining **sites** in accordance with the requirements of this element. The use of such software is encouraged for accuracy and convenience, particularly in calculating shadow cast for multiple times across the day. (refer **Figure G3.9b**).

When measuring overshadowing to **adjoining properties**, the percentage of overshadowing is measured per **site**. For example, this would be the individual strata sites for **grouped dwellings**. Measuring overshadowing percentages on a per site basis supports **amenity** for each effective **site area**.

When calculating overshadowing from **grouped dwellings** onto a **parent lot**, all grouped dwellings should be included in the calculation.

LOCAL PLANNING FRAMEWORK CONSIDERATIONS

Where **development** is undertaken in a coordinated manner, it may be appropriate to reduce the requirements of **solar access** for adjoining **sites** for typologies such as **terraces** on narrow **lots**. In particular, east-west oriented sites, especially where the levels of the sites fall to the south.

*The following considerations may assist when considering matters through a **local planning framework**:*

- Likely subdivision layout of the site; and
- Likely **building** typology proposed within the site.

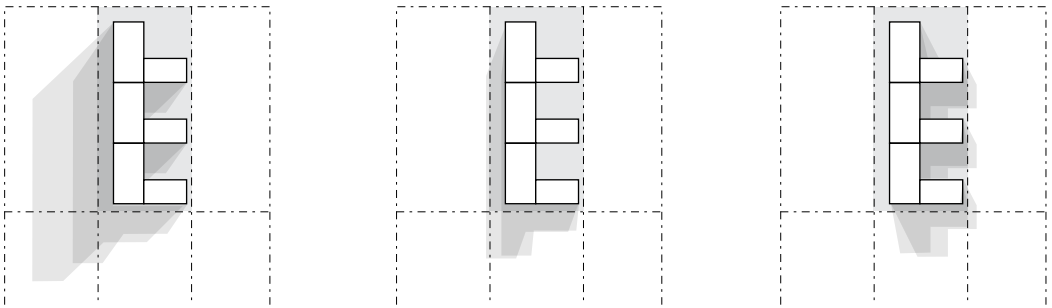


Figure G3.9b Software can assist when calculating overshadowing

Community

3.10 Visual privacy

INTENT

New **development** needs to balance the need and desire for outlook, **solar access** and **natural ventilation** from **major openings** with an appropriate level of visual privacy to the main living spaces of adjoining **dwellings**.

*Overlooking from areas on or close to **natural ground level** (0.5m or less) is not subject to control in this element. Overlooking at these levels can be readily limited by a standard 1.8m high boundary fence. While this may not restrict the line of sight in an upward direction, the impact of overlooking to **major openings** of **habitable rooms** or **private open space** would be limited.*

Photo G3.10a The upper level windows on this apartment have been oriented toward the communal space to help address visual privacy

DESIGN GUIDANCE

Setbacks alone cannot achieve absolute visual privacy as the setback distances required to achieve this are much greater than those that can feasibly be provided in an urban area. The design of **dwellings** should prioritise a sufficient level of privacy to satisfy reasonable concerns. It is not intended for the R-Codes to require 100 per cent privacy at the expense of **building** orientation, access to **daylight**, winter sun, **natural ventilation**.

Privacy setbacks should be accompanied by thoughtful design solutions, including the orientation, placement and design of openings to limit overlooking. **Screening** of openings may also be required but should be used carefully, as screens for privacy can create dark, constrained internal spaces that compromise resident **amenity**.

Overlooking from bedrooms, studies and other rooms that are used less frequently or mainly at night, without noise, and by relatively few people, can be tolerated more than overlooking from active areas. Design should limit overlooking from frequently used spaces including **active habitable spaces**, for example, living rooms, kitchens, activity rooms, **balconies** and **private open space** with a floor level 0.5m or more above **natural ground level**.

Recording the location of existing **major openings** and **active habitable spaces** on adjoining properties during the site analysis phase is required and will assist in planning for appropriate levels of visual privacy.

Outlined below are different approaches that are generally appropriate in addressing the visual privacy objectives and requirements.

Offsetting major openings

Windows may be offset rather than positioned directly opposite existing windows of an adjacent **dwelling** to limit overlooking from a bedroom or study. The distance between the edge of one window and the edge of other is considered to be sufficient to achieve visual privacy.

When offsetting windows to interrupt the line of sight on upper levels, it is important to ensure that any overlooking of lower level **major openings** and **active habitable spaces** in the **cone of vision** is also addressed.

Depending on the separation between **buildings** and size of the openings, the 1.5m offset (refer **C3.10.3**) may not completely interrupt the line of sight between windows. This intervention however will ensure the main outlook from a **major opening** is not directly into an adjacent window and is included as an acceptable **deemed-to-comply** solution for medium density housing.

Location and/or orientation of sources of overlooking

Where possible, **major openings** to **habitable rooms** and outdoor **active habitable space** should direct outlook away from other **dwellings**. Orienting windows away from the **lot boundary** can interrupt the line of sight while still providing **solar access** and **natural ventilation** for the **development** (refer **Figure G3.10a** and **G3.10b**).

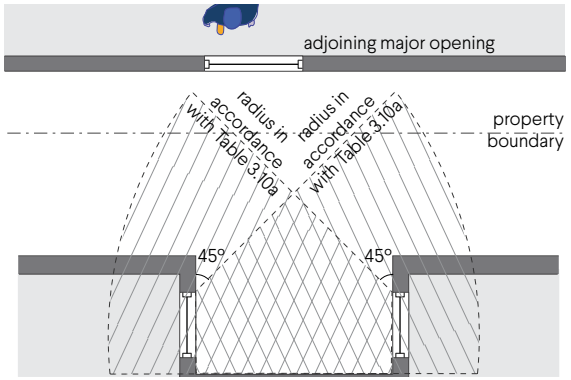


Figure G3.10a Window placement to avoid direct overlooking

3.10 Visual privacy (cont.)

Vertical or horizontal building elements, planter box or fins

The use of window hoods, vertical or horizontal fins, permanent planter boxes, wide bay windows and fixed angle louvres can minimise downward or horizontal overlooking of **adjoining properties** while maintaining an outlook for residents. These **screening** methods restrict the line of sight in specific directions. The dimensions and positioning of screening will depend on the size and location of adjoining **major openings** or **active habitable space**, and the angle of the line of sight (refer **Figure 3.10c**).

Planter boxes incorporated into the design of **walls** and **balcony** balustrades can effectively limit the line of sight to lower levels of an **adjoining property**, while providing an opportunity for additional **landscaping** (refer **Figure 3.10d**).

Landscaping

Landscaping in the form of planting or selective placement of suitable trees or shrubs can provide **screening** for privacy, whilst enhancing residential **amenity**. However, as landscaping can be temporary the **decision-maker** needs to be satisfied as part of a **design principle** pathway assessment that the landscaping will remain in-situ. This may entail consultation with the relevant property owner(s).

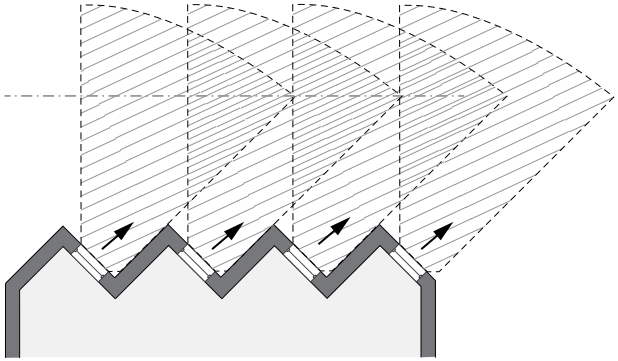


Figure G3.10b Angle windows to avoid direct overlooking

Fences, walls and balustrades

Fences (including dividing fences) and balustrades are effective forms of **screening** and require little further explanation where they take the form of a solid **wall**. The design and location of such features must not impinge on other relevant requirements for **development**, such as **setbacks**, shading, **solar access**, and in the case of fences, the requirements of the *Dividing Fences Act 1961*, and associated local laws.

Obscure glazing

Obscure glazing can be used to limit the line of sight while maintaining a level of **solar access** and **daylighting** into rooms, and when openable, **natural ventilation**. While obscure glazing can be an effective means for addressing visual privacy, it restricts outlook for residents, and therefore alternative design solutions may be more appropriate.

The area of obscure glazing should only be provided up to a height of 1.6m above floor level. It is preferable that any glazing above this height is transparent to maximise **daylighting** and maintain some outlook from the **dwelling**.

Photo G3.10b The privacy screening on this development has been effectively integrated into the building design

Where obscure glazing is proposed and an openable window is required, consider providing the openable portion above a height of 1.6m above floor level to ensure visual privacy is maintained.

Raised sill height

Raising the sill height of a window to a **habitable room** to at least 1.6m above floor level, means it is no longer considered a **major opening** as per the definition. This results in the visual privacy requirements no longer being applicable. While this can provide an effective measure for mitigating visual privacy issues, high windows limit outlook for residents, and alternative design solutions should be prioritised.

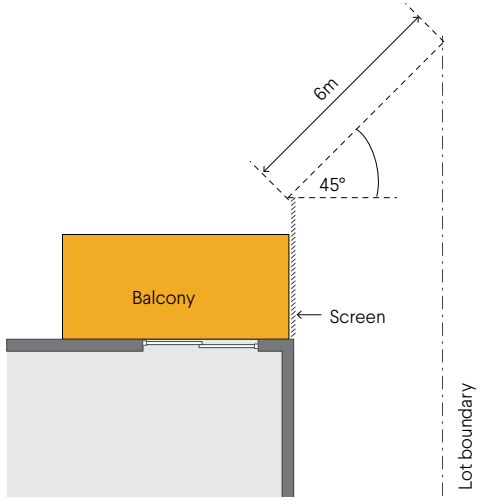


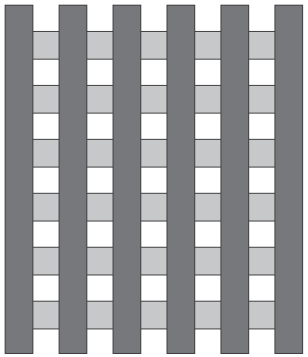
Figure G3.10c Screening considerations for future development of adjoining lots

3.10 Visual privacy (cont.)

DESIGN TIPS

The following design responses may assist in addressing a design principle(s):

- Suitable established trees, shrubs and other **screening** plants may provide an acceptable means of interrupting the line of sight into a **major opening** or **active habitable space** of an adjoining **dwelling** for the purpose of satisfying visual privacy **design principle** requirements. Subject to consultation with the adjoining owner, the necessary planting on the **development site** would be the subject of a condition of development approval to run with the land. Additionally, arrangements may be made between the proponent and landowner of the affected property for the proponent to also provide or contribute towards the cost of installing screen planting within the affected property.



Lattice
25% Visual Permeability

Figure G3.10d Permeability of screening

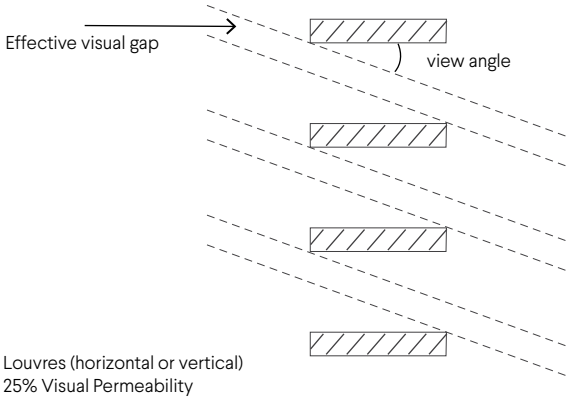
Screening

Where **screening** is proposed, it should be permanent, integrated with the **building** design and have minimal impact on the **amenity** of residents and neighbours. Screening devices do not always need to cover the entire window and should be made from durable materials.

Excessive visual privacy **screening** is strongly discouraged as it can result in negative impacts such as reduced outlook, **solar access**, **natural ventilation** and internal **amenity**.

Screening should be perforated to allow the circulation of air, provided that it meets the objective of protecting visual privacy. In the absence of a prescriptive standard for partial screening, such proposals generally should be assessed against the **design principles** and in consultation with any potentially affected property owners. However, it also is important that the size of individual gaps do not compromise the visual privacy of adjoining properties, and a maximum 50mm visual gap is suggested as reasonable. The definition of **visually permeable** can be used to guide what constitutes sufficient screening.

In the case of slatted or lattice **screening**, 50mm slats, spaced at 50mm, would be appropriate. Where fixed louvres are used, either for vertical or horizontal screening, the spacing required to achieve acceptable screening will depend on the view angle and width of the louvre blades, suitably interrupting the line of sight (refer **Figure G3.10d**).



Louvres intended for **screening** must be fixed or have a physical and permanent limitation on opening, to ensure the level of visual permeability does not exceed the specified standard. Such standards may be subject to a discretionary variation taking into consideration any comment and/or agreement from the relevant **adjoining property** owner.

Building to boundaries

Privacy may be enhanced for both the **development** and its neighbour by **building** a portion of the **dwelling** up to the **lot boundary** as provided in **C3.4.4** and **C3.4.5**. This overcomes the problem of overlooking from that **wall**, and in most cases allows more freedom of design on the **site** to ensure privacy for **private open space** and windows. However, the use of **boundary walls** does need to consider other aspects of design and neighbour **amenity**, such as the possibility of overshadowing **adjoining properties**.

Where **development** adjoins a vacant residential **lot**, it may not be known how the land will be developed in the future. Visual privacy should be addressed by **major openings** or outdoor **active habitable spaces** (excluding bedrooms) being:

- set back from a **lot boundary** in accordance with **Table 3.10a**;
- oriented at right angles to the lot boundary to direct outlook away from the **adjoining property**; or
- **screened**.

There are no **deemed-to-comply** provisions for bedrooms facing a **lot boundary** of a vacant residential **lot** as future **development** can respond to privacy considerations through **C3.10.1** to **C3.10.3**.

Where a previously vacant **adjoining property** is **developed** with a **dwelling(s)**, modifications to or the removal of **screening** may be appropriate in consultation with the **decision-maker**.

3.10 Visual privacy (cont.)

ASSESSMENT GUIDANCE

The provisions of this element are applied in context to whether the **adjoining property** is vacant or developed with **dwelling(s)**:

- where the proposed **development site** adjoins an existing dwelling, the **cone of vision** assessment of **C3.10.1** and **C3.10.2** should be applied.
- where the proposed **development** overlooks an adjoining vacant residential **lot**, the **setback**, design and **screening** requirements of **C3.10.6** should be applied.

When applying **Table 3.10a** and the **adjoining property** is dual coded, the lower coding will apply unless development has been approved or built to the higher coding.

Sources of overlooking

While it may be possible to overlook an **adjoining property** from multiple vantages, the provisions of this element only seek to control overlooking between:

- **active habitable spaces** and **habitable rooms** with a floor level more than 0.5m above **natural ground level** of the **development site**; and
- the active habitable space and habitable rooms of the adjoining property.

Visual privacy requirements do not apply in the **street setback area**. The basis for this is that control of overlooking for areas visible from public places would be largely ineffective in terms of privacy protection and also could limit outlook over, and surveillance of the public places themselves, thus compromising safety and security.

LOCAL PLANNING FRAMEWORK CONSIDERATIONS

Where **development** is undertaken in a coordinated manner, it may be appropriate to remove or reduce visual privacy requirements for typologies such as **terraces** (on narrow **lots**).

Active habitable spaces

The **deemed-to-comply** provisions aim to maintain an adequate level of privacy to **major openings** and **active habitable spaces** that are located behind the **street setback line** on **adjoining properties**. A site survey is required to include the location, dimensions and levels of major openings and **unenclosed** outdoor active habitable spaces on adjoining properties.

For the purpose of assessing visual privacy, adjoining **active habitable space** may include:

- **habitable rooms** with a floor area greater than 10m^2 – typically living rooms, kitchens, dining rooms and bedrooms; and
- outdoor **private open space** – typically swimming pools, decks, **patios**, **verandahs**, **courtyards**, **balconies** etc that are likely to be occupied for extended periods of time;

but excludes:

- **service areas** and areas for **functional utilities** such as clothes drying; and
- other areas of **open space** such as **lot boundary setbacks** containing blank walls and/or minor openings.

Cone of vision and line of sight

The impact of a **development** on the privacy of an **adjoining property** should be assessed by applying the **cone of vision** from the **source of overlooking**. The three-dimensional cone of vision is measured from the source of overlooking towards the affected site in accordance with **C3.10.1**.

The three-dimensional **cone of vision** is a wedge shape (refer **Figure 3.10a**) that captures the area being overlooked on the **adjoining property**. Privacy only becomes an issue for design and assessment where the cone-of-vision captures any portion of either a **major opening** or outdoor **active habitable space**.

The design of the **development** can then respond by limiting or interrupting the line of sight to the **major opening** or **active habitable space** within the **cone of vision** (refer **C3.10.2**). The line of sight refers to what a person can see from the **source of overlooking** within the cone of vision.

Measurement of the **cone of vision** and line of sight should be undertaken in accordance with **Figures 3.10a** to **3.10i**.

To demonstrate that the line of sight has been limited in accordance with **C3.10.2**, plans should include:

- clear identification of the **sources of overlooking** and the established **cone of vision**;
- the position and level of any **major openings** and **active habitable spaces** on the **adjoining property** within the established cone of vision;
- marked-up plans and elevations should show the established cone of vision and line of sight, measured from a standing position (1.6m above floor level) and/or seated position (1.1m above floor level), 0.5m in from the major opening (refer **Figure 3.10c** and **3.10d**), as they relate to the adjoining property; and
- any solution(s) (e.g. a horizontal fin) used to interrupt or limit the line of sight (refer **Figure 3.10a** to **3.10i**).

Photo G3.10c This window hood effectively restricts overlooking of the neighbouring property's rear garden without compromising amenity for the dwelling

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PART D
Land

1.0 LAND

The size, shape and configuration of lots has a bearing on built form outcomes. Consideration should be given to both subdivision and development design to improve development outcomes.

1.1 Site area

1.1 Site area

INTENT

The **site area** requirements are determined by the density coding allocated to land through the **local planning framework**. **Lots** and **strata lots** created through subdivision and amalgamation processes must comply with these requirements. This ensures that the density and type of **residential development** is appropriate for its context.

DESIGN GUIDANCE AND ASSESSMENT GUIDANCE

Lot design achieved through subdivision will influence yield and built form typology. For example, the creation of several lots with narrow **street frontages** could promote a **terrace** built form typology, whereas the creation of a wider frontage lot may be more suited to a low-rise apartment. It is therefore important that the desired built form outcome informs subdivision design and is considered prior to commencing the subdivision process.

Amalgamation is the process of combining two or more **lots** into a larger lot. This can have positive built form benefits including more coordinated **development** outcomes and design efficiencies, such as those achieved through shared vehicle access, communal spaces and the retention of **significant existing trees**. Larger, amalgamated lots are also capable of supporting diverse projects, including a combination of grouped and **multiple dwellings** or **mixed use development**.

Calculation of dwelling yield

The density coding applicable to a **site** and the corresponding **site area** provisions of **C1.1.1** determine the **dwelling** yield potential of a **development**.

The **dwelling** yield of a **lot** can be calculated by dividing the lot area by the average **site area** requirement for the relevant dwelling type and density coding (refer **Table D**).

$$\frac{\textit{lot area}}{\textit{average site area}} = \textit{dwelling yield*}$$

**rounded down to nearest whole number.*

Development can consist of a mix of **dwelling** types. For example, a development may include **grouped dwellings** and **multiple dwellings** on the same **lot**. To calculate the dwelling yield potential of a lot that includes both grouped and multiple dwellings, apply the following formula:

$$\text{lot area} \geq \left(\begin{array}{l}\textit{number of grouped}\\ \textit{dwellings}\end{array} \times \begin{array}{l}\textit{grouped dwelling}\\ \textit{ave site area}\end{array}\right) + \left(\begin{array}{l}\textit{number of multiple}\\ \textit{dwellings}\end{array} \times \begin{array}{l}\textit{multiple dwelling}\\ \textit{ave site area}\end{array}\right)$$

Table G1.1a provides scenarios for calculating **dwelling** yield for developments consisting of grouped and **multiple dwellings** on the same **lot**.

Multiple dwellings and mixed-use development

Table D provides an average **site area** requirement for calculating the yield of medium density **multiple dwellings** (R30-60). This is different to the **plot ratio** method used for higher density apartments in R-Codes Volume 2. Plot ratio can have the unintended consequence of delivering mostly smaller apartments (1 and 2 bedroom) to maximise **development** yield. The average site area approach allows consideration of a mix of apartment types, including larger apartments suitable for families, without foregoing yield.

The average **site area** approach also simplifies yield calculations for mixed **dwelling** type proposals consisting of grouped and **multiple dwellings** on the same **lot**; further encouraging diversity and affordability in the housing market.

The **site area** per **dwelling** requirement only applies to the residential component of a **mixed use development**. For any guidance on the floorspace of non-**residential development**, refer to the **local planning framework**.

1.1 Site area (cont.)

Measuring the minimum site area

The minimum area of a **development site** should be equal or greater than the minimum required in **Table D** and permit a useable area for **development**. Factors that should be accounted for that may reduce or increase its capacity to accommodate **residential development**, include:

- the area lost to corner truncations (to a maximum of 20m²), as these may be indistinguishable from the **lot** itself, and can be visually part of the development; and
- in the case of **battleaxe lots**, exclusion of some or all of the vehicle and **pedestrian access leg** and associated truncations.

For **grouped dwelling** developments, the minimum **site area** excludes areas of **common property** (although common property is included for the purpose of calculating average site area).

Site area variations

The minimum and average **site area** in **Table D** may not be varied except where the **WAPC** is satisfied that the proposal addresses **P1.1.2** and **P1.1.3** and approves the application. This provides some flexibility to accommodate minor reductions to minimum and average site areas and includes the creation of a **green title lot**, **survey-strata lot**, or **strata lot** for an existing authorised grouped and **multiple dwelling** development that does not meet the minimum and average area requirements specified in **Table D**.

As the **WAPC** is the only **decision-maker** that may approve a variation to the minimum or average **site area**, **multiple dwelling** development approved by the local government (including where a Joint Development Assessment Panel is the decision-maker), will need to comply with the average site area requirement. This is distinct from multiple dwelling development subject to the R-Codes Volume 2 where all decision-makers have discretion to vary the **plot ratio** requirements. **Grouped dwelling** development in advance of an approved subdivision is similarly required to comply with the minimum and average site area requirements where the local government is the decision-maker.

Notwithstanding this, there are a range of **site area** concessions available for proponents to use to gain additional **dwelling** yield, subject to meeting certain criteria.

The subdivision of land and ability to vary minimum and average **site area** requirements is also subject to other **WAPC** polices, in particular *Operational Policy 2.2. Residential Subdivision*.

Site area concessions (aged or dependent persons' dwellings or single bedroom dwellings) – Part B – low density

Single houses, **grouped dwellings** and **multiple dwellings** may be proposed as aged or dependent persons' dwellings and **single bedroom dwellings** and accordingly afforded **site area** concessions which apply to Part B – *low density* only.

A **site area** concession for an aged or dependent persons' dwelling and **single bedroom dwellings** is incorporated under **C1.1.5** of Part D – *Land* for **lots** coded R25 and below. The concession is calculated by reducing the minimum and/or average site area requirements by one-third and calculating the number of aged or dependent persons' dwellings or single bedroom dwellings accordingly. For example, under the R20 Code, each **dwelling** requires a site area of 450m². Application of the site area concession reduces this to 300m². In the case of a 1,200m² site coded R20, the concession could potentially allow four aged or dependent persons' dwellings or single bedroom dwelling units instead of the usual two.

The **site area** concession does not mean that the coding of a **lot** is amended, with consequences for other requirements. For example, application of the site area concession to a lot with an R-Code of R20 does not mean that the coding is increased to R30, or that the **street setback** or **open space** requirements of the R20 code are replaced by those of R30.

1.1 Site area (cont.)

Site area concessions (accessible dwellings or small dwellings) – Part C – Medium density

Single houses, **grouped dwellings** and **multiple dwellings** may be proposed as **accessible dwellings** and **small dwellings** and accordingly afforded a **site area** concessions which apply to Part C – *Medium density* only.

To promote **dwelling** diversity, **C1.1.6** and **C1.1.7** enables the minimum and average **site area** requirements of **Table D** to be reduced by up to 35% for **accessible dwellings** and **small dwellings**, subject to the development meeting the **deemed-to-comply** provisions and/or **design principles** of elements 2.7 *Universal Design* and *2.9 Small dwellings*.

The **site area** concessions recognise that these types of **dwellings** are typically smaller, have fewer residents, and less demand for parking. The 35% site area concession is limited to 50% of dwellings in the R30-R40 coding for **developments** of 4 or more dwellings. This is to ensure dwelling diversity and density appropriate to locality.

In R50 and above coded land, the **development** of **accessible dwellings** is not limited as this density coding is generally appropriately located in proximity to key services.

To calculate the minimum and average **site area** for **small dwellings** or **accessible dwellings**, apply the following formula:

$$\text{Concession min or ave site area} = \left(\textit{min or ave site area} \times 0.65 \right)$$

To calculate the **dwelling** yield of a **lot** that includes either **small dwellings** or **accessible dwellings**, together with non-concessional dwellings, apply the following formula:

$$\text{lot area} \geq \left(\textit{no. of concession dwellings} \times \textit{concession ave site area} \right) + \left(\textit{no. of dwellings} \times \textit{ave site area} \right)$$

Table G1.1b provides scenarios for calculating **dwelling** yield when including **site area** concessions.

Site area concession (retaining significant existing trees) – Part C – R30 to R60 multiple dwellings

A **site area** concession is afforded where retaining a **significant existing tree** on a **site** subject to a **development** proposal for a **multiple dwelling**. When proposed, the average site area may be reduced by 10%. However, the reduction cannot be applied to **dwellings** already subject to other site area concessions. It is recommended that the proponent and the **decision-maker** agree to a suitable arrangement for the ongoing protect of the tree, such as conditions of development approval.

Mixed use development sites

Part D applies to mixed use developments in areas coded up to R60. For areas coded R80 and above or R-AC, refer to R-Codes Volume 2.

Retained existing dwellings

In accordance with element *3.8 Retaining existing dwellings*, ensure strata subdivision allows the retained **dwelling** to meet the requirements of the R-Codes. In particular, ensure **lot boundary** setbacks meet the requirements of **C3.4.1**.

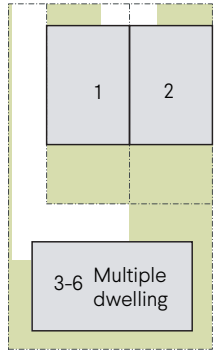
Housing on lots less than 100m²

Dwelling development on **lots** less than 100m² are to be selectively used as a transitional **building** typology between high-density urban environments (i.e. multi-**storey** commercial, mixed use and apartment **developments**) and low-density suburban environments (i.e. single and two-storey **single house** and **grouped dwelling** developments). They should be located close to public **open space** and other high **amenity** areas, with ready access to active transport modes.

Lots less than 100m² can only be created where the land is coded R100-SL in a **scheme** or approved **structure plan**. For further guidance, refer to *Position Statement - Housing on lots less than 100m²*.

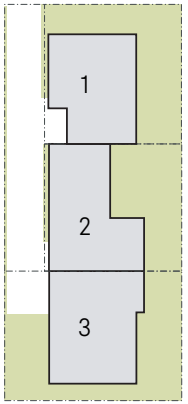
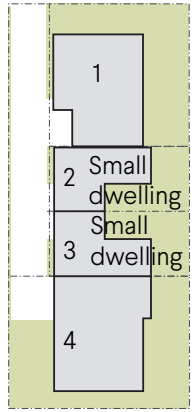
1.1 Site area (cont.)

Table G1.1a Calculating dwelling yield for mixed dwelling types

Lot characteristics	Single house or grouped dwelling yield
Coded R40 Lot area of 1,012m² 20m frontage	Grouped dwellings: Min = 180m² Ave = 220m² Multiple dwellings: Min = N/A Ave = 115m² Lot area required $\geq (2 \times 220m^2) + (4 \times 115m^2) = 900m^2$ As the lot area is 1,012m², this lot is able to accommodate a total yield of 6 including 2 grouped dwellings and 4 multiple dwellings.. 

1.1 Site area (cont.)

Table G1.1b Calculating dwelling yield with and without site area concessions

Lot characteristics	Development options	Single house or grouped dwelling yield	
Coded R40 Lot area of 728m² 20m frontage	**Scenario 1** Development without site area concessions	Grouped dwellings: Min = 180m² Ave = 220m² $\frac{728m^2}{220m^2} = 3.3 \text{ dwellings}$ Dwelling yield = 3 lots/dwellings (rounded down) Note: A mix of sites can be created provided they meet the minimum site area requirement of 180m².	
	Scenario 2 Development with site area concessions	35% concession (applied to 50% of total dwellings): Ave = 143m² Non-concession dwellings: Min = 180m² Ave = 220m² Lot area required $\geq (2 \times 143m^2) + (2 \times 220m^2) = 726m^2$ Dwelling yield = 4 lots/dwellings (rounded down) *2 x small dwellings (single house or grouped)* *2 x single house/grouped dwelling* Delivers one (1) additional dwelling compared to Scenario 1.	

APPENDICES

Appendix G1

THE R-CODES AND SCHEMES

The R-Codes apply to all residential development throughout Western Australia and provide a consistent set of design standards for residential development. The R-Codes refer to the State planning objectives and these are to be taken into account by the decision-maker in assessing a residential development proposal.

The R-Codes provide for an appropriate choice and distribution of housing types and densities to meet the needs of the community as a whole, appropriate to local conditions and amenity.

The design principles of the R-Codes should be considered by local planning or housing strategies, taking into account local context and planning issues and reflected in its objectives. Both State and local objectives may then be referenced in the assessment of a residential development proposal.

It is important for schemes and local planning strategies to provide the local context within which design and development proposals can be considered, and to ensure that they identify the best applicable R-Coding and provisions, after properly considering and addressing:

- lot size, shape and variation from the average lot area within each zone;
- capacity of infrastructure to service housing at the density proposed;
- community values, both protecting what has value from the past, and new opportunities for the future;
- access, transport and proximity to movement networks;
- access to social infrastructure such as open space, schools, hospitals, sporting and community facilities;
- mixture of housing types, density and social diversity; and
- proximity to economic activity such as employment centres, ports, and activity centres.

Although the R-Coding will be designated on the scheme map, the local planning strategy will explain the designation of the particular R-Coding for particular local areas in the scheme.

Where there are individual needs, the R-Codes may need to be supplemented by a local planning policy, structure plan, local development plan or a special control area which may be implemented through schemes.

G1.1 Local planning strategies

A local planning strategy provides the rationale and vision that underlies the regulatory provisions of the scheme, including the specific R-Code designations of the scheme.

The local planning strategy includes a section on housing within the Community, Urban Growth and Settlement theme. The issues that are relevant in the housing component of a local planning strategy, and the selection of the relevant R-Code for the various parts of the municipality, include:

- recognition of the regional demand for a range of densities/development intensity and dwelling types;
- socioeconomic and demographic profiles, both existing and likely in the future;
- existing lot sizes;
- current and future infrastructure, including the road network, sewerage, water supply, power, significant employment centres, social and recreational Facilities and public transport facilities;
- age and condition of existing housing stock;
- existence of sites suitable for new housing development, redevelopment or infill;
- trends and market demand for various forms of housing;
- heritage and streetscape values;
- existing and desired character of particular precincts; and
- land values and the effect of proposed density changes on them.

This list is not exhaustive or ranked in order of importance. The issues are useful for analysing the appropriateness of existing or proposed R-Codings.

G1.2 Local planning schemes

The R-Codes are implemented through local planning schemes and applied to zones that allow residential land use. There is flexibility in their application by providing a choice of R-Codings to facilitate a range of residential development types and densities (ranging from traditional low-density suburban development to higher-density activity centres).

The R-Codes aim to provide certainty for assessing development proposals and to increase flexibility to allow the consideration of good design and innovation, while meeting the objectives of the R-Codes and any relevant local planning objectives.

G1.3 Density control

The application of the minimum site area requirements of the R-Codes R-Codes Volume 1 will assist in the achievement of housing density targets determined during the strategic planning process. Before making a decision as to the R-Code to be applied to a particular area, the decision-maker should first examine the density targets and housing character specified in its local planning strategy for each precinct or locality. It will then be necessary to identify which R-Code is most likely to promote the density targets and reflect the desired housing character.

For existing urban areas the process of allocating an R-Code in a scheme requires careful assessment of the relationship between the lot sizes prevailing in a locality, current trends in demand for particular types of housing, and any adopted strategic planning policy relevant to residential density/ development intensity.

Appendix G1

G1.4 Changes in housing density

Sometimes planning and design problems arise from a change in the R-Code designation between different areas or neighbourhoods. Issues of setback, visual dominance, overlooking and privacy are often evident. Due consideration needs to be taken when identifying where an R-Code density will change.

Local planning provisions need to give due consideration to neighbourhood design. A scheme will need to carefully consider such factors when delineating R-Codes and changes from one R-Code density to another. Development sites should respect adjoining properties where land use or zoning differs, particularly where two residential lots with different R-Codings adjoin, or where a commercial zone (mixed use) adjoins a residential zone.

An R-Code boundary along the rear of a property boundary, aligned along a rear laneway or right-of- way, may in some cases be preferable. However, it is often the rear of existing housing developments (such as bedrooms, private spaces and courtyards) which generally has a higher need for privacy, daylight and overshadowing (refer to **Figure A1.4a**).

G1.5 Restricted coding

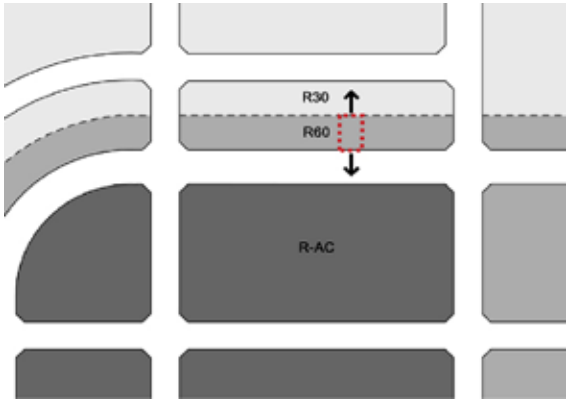
The assignment of a particular R-Code to a given area will normally mean that all the varying housing types (such as single, grouped and multiple) included in that R-Code under **Table D** will be permissible, or at the very least, discretionary within that area.

There may be areas where the decision-maker may wish to secure a given density but without permitting the full range of housing types available under the relevant density code.

For example, consider an area which contains **lots** of 1,000m² occupied by single houses. The decision- maker may decide that it wishes to allow for some increase in residential density, but retain the single house appearance and character of the area. It is prepared to see single houses or grouped dwellings on small lots, on a limited basis, where they have frontage to a public street.

To achieve this:

- the area is coded R25 on the scheme map; and
- a clause is inserted in the scheme text which reads: "Within the area bounded by (name the streets or otherwise clearly define the area) that is coded R25, a single house or grouped dwelling may not be constructed unless the frontage is at least 10m to a public street".



Site responds to the setting, adjoining the different residential densities that surround it.

Figure A1.4a Development needs to consider the surrounding development context

Appendix G1

G1.6 Expanded or dual coding

The opposite of restricted coding is an expanded coding where the decision-maker may wish to permit specific dwelling types not included in the selected code under **Table D** of the R-Codes Volume 1.

For example, in the case of expanded coding the **decision-**maker determines that a particular part of the residential zone should comprise primarily single houses on lots with a minimum lot area of 700m² but it is also prepared to consider, on its merits, applications for the construction of a pair of grouped dwellings, notwithstanding that grouped dwellings are prohibited in the zone as a whole, provided a lot has a minimum area of 1,000m².

To achieve this:

- the area is coded R12.5 on the scheme map; and
- a clause is inserted in the scheme text which reads: "Within the area bounded by (name the streets or otherwise clearly define the area) coded R12.5, the decision-maker may permit the construction of not more than two grouped dwellings in accordance with the standards of the R20 code on any lot of not less than 1000m²".

Examples of dual coding might include:

i. an area undergoing change and being redeveloped by the replacement of single houses on large lots by grouped dwellings at a higher density; or

ii. an area which has servicing constraints that is, reticulated sewerage and requires coordinated development with staged upgrading of servicing infrastructure.

Some of the older housing stock may be structurally sound and of a particular heritage or character that the decision-maker wishes to preserve. Although the existing lots are large for single houses (for example, 1,000m²), there would be positive planning advantages if two or more lots were amalgamated for redevelopment. The decision-maker determines that the R20 density code is generally appropriate but it would be prepared to accept the R30 code if certain criteria were met.

To achieve this:

- the area is coded R20/30 on the scheme map; and
- a clause is inserted in the scheme text which reads: 'Within the area coded R20/30, development to the density and standards of the R30 code shall be permitted only if the development: a) involves not less than four nor more than six grouped dwellings or single houses; b) retains any existing house(s) that the decision-maker considers worthy of retention; and c) is consistent with the requirements of the scheme and any local planning policy".

G1.7 Housing in non-residential zones

Most schemes provide for residential development to be possible in one or more non-residential zones, or zones which are not exclusively residential in nature.

Depending on the type of housing that is desired or acceptable, the decision-maker should designate the appropriate R-Code to apply within that zone or part of the zone, just as for the residential zone or zones. Where residential use is permitted in a zone but no specific R-Code is allocated, the R-AC3 code can be used as an indicative guide to assist in the absence of any other provision in the local planning framework.

G1.8 Short-term accommodation

Whether or not the provisions of the R-Codes apply to the development of short-term accommodation (including serviced apartments), will be determined by the way in which the scheme deals with this type of land use.

Short-term accommodation may be proposed where a density coding applies but should be assessed under the R-Codes based on the form of development proposed.

Short-term accommodation which is proposed where no density coding applies must be assessed under the provisions of the scheme and the relevant design elements of the R-Codes used to guide and inform the decision-making process, particularly, where the short-term accommodation is not serviced or attached to a hotel/motel (such as self-contained accommodation with integral cooking and laundry facilities for each dwelling unit.)

G1.9 Residential buildings

Where it is proposed to develop a residential building as defined by the R-Codes, the extent to which the provisions of the R-Codes should be applied to the development of the building will be determined by the scheme and relevant provisions under the Health Act 1911, relating to residential buildings or lodging houses.

A residential building may be proposed where no density coding applies and should be assessed under the provisions of the scheme. In this case the relevant provisions of the R-Codes could be used to guide and inform the decision-making process.

Appendix G1

G1.10 Heritage matters

Heritage and character are issues addressed in schemes and local planning strategies. The R-Codes therefore make no specific provisions related to heritage places and areas. Provision is made in clause 12 of the Deemed Provisions for the decision-maker to vary any site or development requirement specified in its scheme for the conservation of a heritage area. The decision- maker therefore has the ability to vary any site or development requirement within the R-Codes, where desirable, to enhance or preserve heritage values in a heritage area.

G1.11 Residential precincts or localities

Precinct or locality-based planning recognises key housing differences, for example, in density, type and style of housing, landscaping and streetscape. It is often these parameters which contribute to a sense of place and create neighbourhoods. This is a big contributor to the quality of life and experience offered in many residential areas.

Planning by precincts is particularly relevant in established residential areas, places where redevelopment or infill development is taking place or where there is a mix of land uses and activity which present valued living experiences for residents.

In such cases, precinct or locality-based planning provides the best basis on which to allocate R-Code density, as well as identifying local character differences and responding to these with focused objectives.

Greenfield housing development sites on the peri- urban fringe and large-scale urban infill sites (for example, former industrial sites) are more suited to comprehensive structure planning through Liveable Neighbourhoods and/or local development plans.

Some of the criteria that may be used in defining residential precincts include:

- well-defined areas with common existing and desired future characteristics;
- perception of precinct as an entity;
- broader than individual streets, but smaller than suburbs;
- recognisable similarities or patterns in terms of land use, age and period of development, subdivision pattern and lot sizes, and type, scale and style of housing;
- well-defined edges, defined by clear transition of use or character, busy streets, natural features such as a major park; or
- different land use and activities, divorced from surrounding areas of different density or character.

G1.12 Special control areas

In localities or precincts of distinctive character it may be appropriate for the decision-maker to designate a special control area by amendment to the scheme. Special control area provisions might typically deal with issues that aim to protect the special character of an area or to promote a particular development theme in order to establish and reinforce a sense of place. This may involve controls on the demolition of existing buildings, particular design or siting requirements or controls in relation to the materials of construction. Other matters may include seeking control of street setbacks, building heights, roof pitches, street fencing and external appearance.

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ACKNOWLEDGEMENT

The Department of Planning Lands and Heritage and the **WAPC** gratefully acknowledge the following contributors for allowing the use of these photographs to illustrate the document.

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G2.3d	97	DPLH	Donaldson Warn/Access Housing/DevelopmentWA	SHAC Apartments (Sustainable Housing for Artists and Creatives) Knutsford/Knutsford St Fremantle
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G2.5a and b	101	DPLH	-	Hastings Street Scarborough
G2.5c	102	DPLH	-	Mt Hawthorn
G2.7a	104	DPLH	Cameron Chisholm Nichol/Iris Residential	Empire East/Dynevor Rise Floreat
G2.8a	106	Jack Lovel	Meaghan White Architect	Marmion Street Cottesloe
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G2.10b	108	Nearmap	-	Ellenbrook
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G3.10c	133	DPLH	_	_
Land A	137	Nearmap	_	_
Land B	137	Nearmap	_	_
Land C	137	Nearmap	_	_