Building Future Homes

Adaptation guide

planning.vic.gov.au/policy-and-strategy/future-homes

VICTORIA
State Government

Acknowledgement

We acknowledge and respect Victorian Traditional Owners as the original custodians of Victoria's land and waters, their unique ability to care for Country and deep spiritual connection to it. We honour Elders past and present whose knowledge and wisdom has ensured the continuation of culture and traditional practices.

We are committed to genuinely partner, and meaningfully engage, with Victoria's Traditional Owners and Aboriginal communities to support the protection of Country, the maintenance of spiritual and cultural practices and their broader aspirations in the 21st century and beyond.

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Note: The Department of Environment, Land, Water and Planning (DELWP) also refers to the Planning Group' successor department, the Department of Transport and Planning (DTP).

Version	Date	Summary of Changes
2	05/09/2023	Technical corrections to address omissions
3	10/11/2023	Updates to reflect Future Homes expansion

Contents

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Introduction

The purpose of the *Building Future Homes - Adaptation guide* is to guide the successful adaptation of the Future Homes exemplar designs for access to a simpler and faster planning approval process.

1.1 About Future Homes and the exemplar designs

While Melbourne's metropolitan and major activity centres have dramatically increased in density in recent decades and outer ring housing growth is strong, it is increasingly clear that the suburbs are where more people want to live. Plan Melbourne supports new housing in established areas, to create 20-minute neighbourhoods with homes close to services, jobs and public transport.

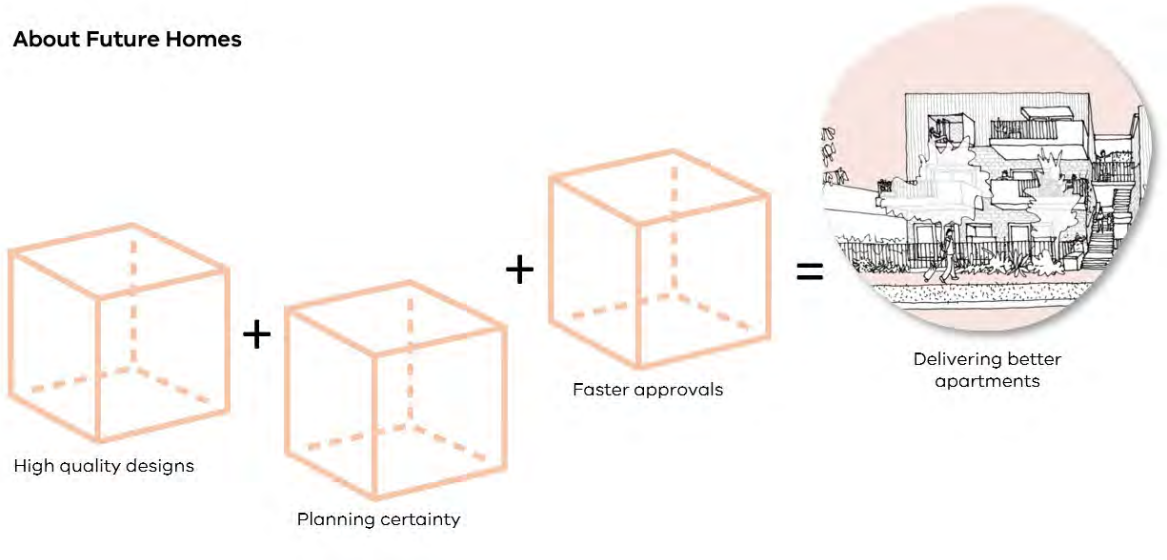
The redevelopment of the city's suburbs must be planned and managed sensitively. The suburbs have unique characters developed over decades by past and current residents. Therefore, changes to established residential areas must increase public and residential amenity.

In 2019, the then Department of Environment, Land, Water and Planning (DELWP) and the Office of the Victorian Government Architect (OVGA) jointly began the Future Homes project. The project's purpose is to increase housing diversity through gentle density increases. It will facilitate the building of apartment developments that are world-leading in their design quality, liveability and sustainability.

The Future Homes project began with an architectural design competition, open to all Victorian registered architects and building designers, to develop exemplar designs for apartment developments in the suburbs. The competition was designed to encourage innovative, design-led solutions to increase the density of the suburbs with liveable, sustainable apartments that contribute to the amenity and legacy of their locality. As a response to Victoria's predicted population growth, Future Homes aims to increase the density, diversity and quality of housing.

Four competition winners were selected to refine their entries and create the Future Homes exemplar designs. These are scalable, replicable and flexible designs for three-storey apartment developments that can be adapted to various sites and project requirements. They provide cost-effective apartment building designs that make good design available to more people. This means delivering design solutions that, under typical market conditions, are feasible and attractive to industry and home owners.

The Department of Transport and Planning (DTP) is making the exemplar designs available for purchase to all interested people and organisations. If an exemplar design is adapted correctly, a proposal could be granted a planning permit within four months of purchase. This compares favourably with the current processing time of a standard planning application for an apartment development, which could take between 12 and 24 months.



1.2 Purpose and contents of this guide

This guide supports all those involved in the Future Homes process, to ensure an adapted design fulfils the intent and ambitions of the Future Homes project: to build apartments that are great homes, great neighbours, and great for the environment. It:

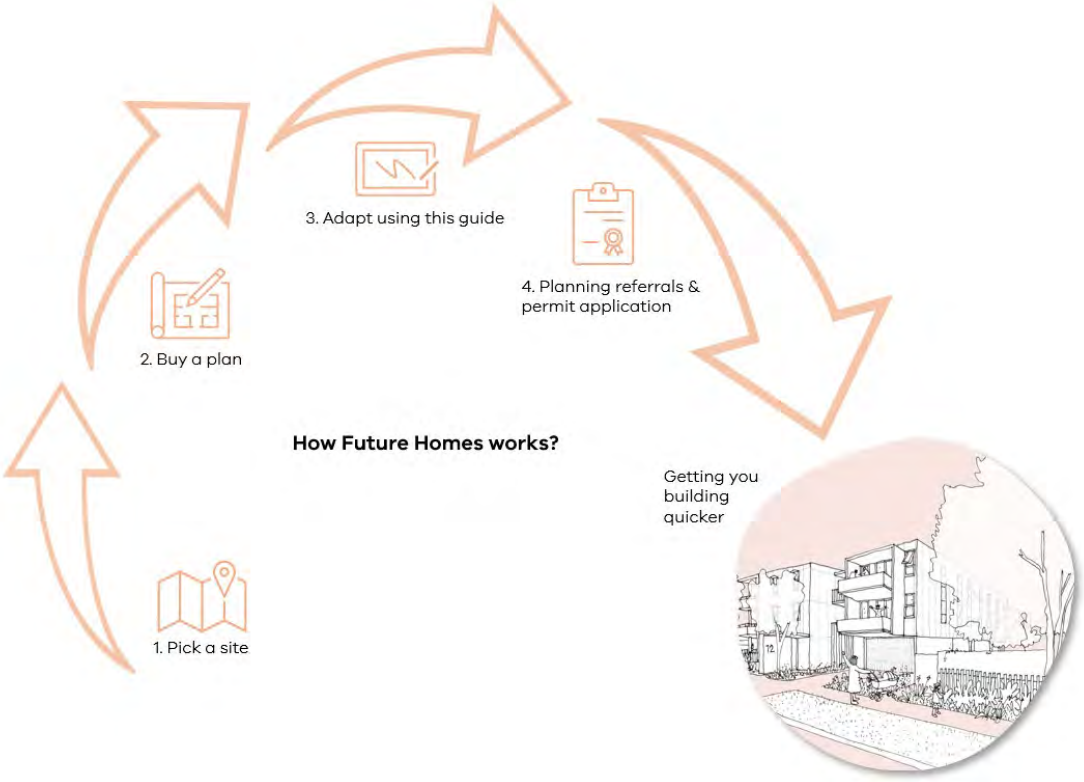
- guides designers to prepare a Future Homes adapted design that is high quality and respects the Future Homes project's objectives and principles
- helps decision-makers including DTP and council to understand what are acceptable approaches, outcomes and variations for a Future Homes adapted design
- provides best practice approaches to apartment design in a suburban context for people interested in improving and investing in the quality of residential development in Victoria
- gives the community clarity and confidence about what a Future Homes adapted design might look like and what it can achieve.

Clause 55 of the Victoria Planning Provisions (VPP) sets out the residential development standards with which a planning application for an apartment development would typically need to comply. A Future Homes adapted design does not need to consider Clause 55, instead it must:

- comply with the Future Homes provision at Clause 53.24 of the VPP, the requirements of which are set out under the **Mandatory requirements** headings in Part 1 of this guide
- consider the non-mandatory guidance in this guide
- satisfy DTP, as the determining referral authority, that the principles set out for each of the Future Homes objectives in this guide has been met.

This guide has four sections:

- Introduction
- Part 1: Objectives and principles for exemplar apartment designs
- Part 2: Adapting an exemplar apartment design
- Part 3: Appendices



About Part 1: Objectives and principles for exemplar apartment designs

Objectives

Future Homes is about developing apartments that are great homes for residents, great neighbours to those living next door, and great for the environment by achieving eight objectives shown in Table 1.1. These objectives provide the main organising structure for this guide.

Table 1.1: Future Homes objectives

Objective	A Future Homes development...
Responsive to need	is designed to respond to the needs of its residents
Liveable	has desirable homes with high-quality interior amenity, social spaces, natural light and a good outlook
Good neighbours	respects neighbours' amenity and enriches the street and surrounding public realm
Enduring	has apartments that are of a high-quality built standard, accepted by the community, adaptable to change, resilient, safe and family-friendly
Sustainable	demonstrates how apartment living can exceed current sustainability requirements and be zero-carbon ready
Adaptable	is adaptable and replicable on typical suburban lots in Victoria, meeting or exceeding planning, policy and environmental objectives
Viable	responds appropriately to market expectations, regulation and construction viability
Affordable designs	makes great design available to more people

Part 1 doesn't address the Affordable Designs and Viable objectives as the principles for these objectives are embedded in the exemplar designs.

Planning elements

Each Future Homes objective has planning elements. For example, the objective 'Responsive to need' has the planning elements 'Dwelling diversity', 'Garden area', 'Parking: car' and 'Parking: bicycle' included within it.

Each planning element comprises items shown in Table 1.2.

Table 1.2: Future Homes planning element items

Item	Content	Purpose
Rationale	The issue the objective addresses and how a Future Homes adapted design can respond to it	This provides context about the intent of the principles, performance targets and design considerations
Principles	The criteria that the adapted designs are to meet	Designers must ensure their adapted design meets these principles
Mandatory requirements	Specific layout or built form requirements, usually amenity-related	These are mandatory requirements set out in the Future Homes provision at Clause 51 of the VPP. Designers must ensure their adapted design complies with these requirements, which cannot be varied
Performance targets	Specific requirements for adapted designs; the Future Homes exemplar designs comply with these targets	Adapted Future Homes designs should achieve these targets. If there are no specific quanitifiable requirements, performance targets are considered to be met if the principles have been satisfied
Design considerations	Detailed guidance about preferred design approaches	These are ideas about good practices to achieve the performance targets
Alignment with VPP	The relevant planning requirements traditionally contained in Clause 55 of the VPP	This is a quick, visual reference to the relevant traditional planning requirements

About Part 2: Adapting an exemplar apartment design

Part 2 has four sections, one for each of the exemplar design options.

Part 2 provides:

- general adaptation guidance for the exemplar designs
- specific approaches to adapting an exemplar design for a particular site and context, by illustrating how a designer can manage common design challenges.

This guidance is not exhaustive, and other ideas may be appropriate depending on a development's particular circumstances.

Table 1.3 explains the structure of each section of Part 2.

Table 1.3: Part 2 structure

Item	Content	Purpose
General adaptation guidance	Guidance about how exemplar designs can be adapted to a range of different sites and contexts	• To be used by designers to understand how a plan can successfully adapt to a particular site scenario and maintain the principles and status of a Future Homes exemplar design • To outline approaches to adaptations for different conditions, such as lot sizes and shapes, orientation, topography, surrounding contexts, dwelling mixes and amenity impacts
Exemplar guidance	Guidance relevant to the exemplar design, authored by the architects	• To provide an overview of the designer's thinking and intent for adaptation

About Part 3: Appendices

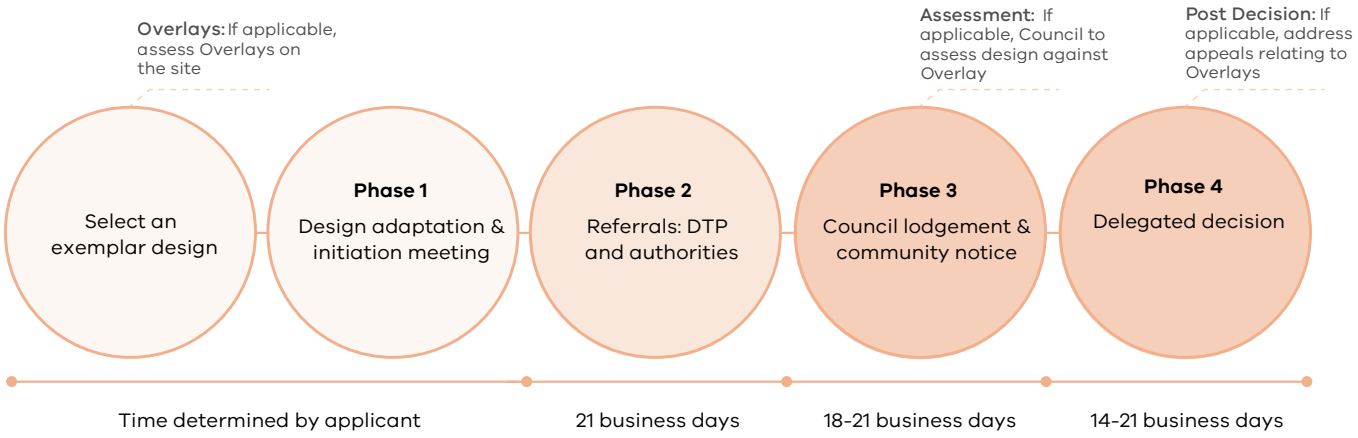
The appendices include technical information, compliance assumptions and opportunities to enhance and exceed the Future Homes mandatory requirements.
There are eight appendices:

- Appendix 1: Structure
- Appendix 2: Fire safety
- Appendix 3: Landscape
- Appendix 4: Waste
- Appendix 5: Services and equipment
- Appendix 6: Environmentally sustainable design
- Appendix 7: Construction cost rates
- Appendix 8: Accessibility

1.3 The Future Homes process

The Future Homes process is a faster, streamlined process that could result in a proposal being granted a planning permit within four months of purchase of an exemplar design. It has a preliminary step followed by four phases, which Figure 1.1 shows.

Figure 1.1: Future Homes phases



Timeframes provided are indicative. Sites affected by Overlays may increase timing

Determine site eligibility

Before Phase 1, there is a preliminary step: to determine if your site is eligible.

Future Homes designs are for three-storey apartment buildings that are scalable, replicable and adaptable. Future Homes can be built on an eligible site:

- that is of a size that typically results from the consolidation of two or more suburban blocks
- in the General Residential Zone and;
  - is within 800 metres of a pedestrian entrance to a railway station; or
  - is within 800 metres of a metropolitan major or neigbbourhood activity centre in Metropolitan Melbourne; or
  - is within 800 metres of a nominated activity centre outside of Metropolitan Melbourne and
- does not require a planning permit under a Heritage Overlay or Neighbourhood Character Overlay.

The Future Homes exemplar designs show how to deliver 14–17 apartments on two consolidated lots with a total site area of about 1,200 square metres. A different number of apartments may be achieved depending on other factors including number of consolidated lots, total site area and apartment type mix.

If you are unsure, you may check your site's eligibility on DTP's interactive maps at: https://mapshare.vic.gov.au/futurehomes or alternatively, send the Future Homes project team an email at: FutureHomes@delwp.vic.gov.au.

Phase 1 : Project initiation

The applicant determines the timing of this phase.

In this phase, the applicant:

- selects a design and pays for its use
- adapts the design to their site
- attends a 'design direction review meeting' with DTP and OVGA, with council also invited to attend.

Phase 2 : Referrals

The timing of this phase is 21 business days.

In this phase:

- The applicant undertakes upfront referrals to DTP and other determining referral authorities as required (Melbourne Water and Transport for Victoria).
- DTP:
  - assesses the adaptation against this guide and Future Homes provision at Clause 53.24
  - If applicable , DTP will also assess the adaptation against the overlays affecting the site
  - provides copies of the adapted design to OVGA and council for their review, internal referrals and initial comments
  - holds an internal 'general understanding meeting' with the OVGA, council and other technical consultants eg. sustainability consultant as required
  - provides consolidated comments to the applicant
  - holds a prescheduled 'referral meeting' with the applicant to resolve any outstanding matters with OVGA and council also invited to participate
- The applicant submits revised plans to DTP
- DTP reviews revised plans and issues formal referral sign off.

Phase 3 : Application lodgement

The timing of this phase is 18-21 statutory days (anticipated).

In this phase, the applicant lodges the adapted design and associated supporting material to the relevant council as the responsible authority. All major planning and design matters should have already been resolved through Phase 2, including any Council concerns. Once the application is lodged, council will undertake:

- usual planning application checks
- assessment against any applicable overlays
- internal referrals (if not already undertaken as part of Phase 2)
- third party notification.

If no overlays apply to the site, in its notification letter, council will identify that any objections received can only be considered against the requirements under the Future Homes provision at Clause 53.24 and that third party appeal rights are not possible.

However, if overlays do apply and trigger a permit, in its notification letter, council should identify that any objections received can be considered against the requirements under the Future Homes provision and the applicable overlays, and that third party appeal rights are only possible in relation to the applicable overlay (if not exempt under the overlay).

Phase 4 : Decision

The timing of this phase is 14-20 statutory days (anticipated).

In this phase, council:

- will undertake formal assessment against the Future Homes provision at Clause 53.24, including the mandatory provisions and decision guidelines
- undertake formal assessment against any applicable overlays
- will consider any objections received which have not been withdrawn
- if no overlays affect the site, issue a permit under delegation from council's Chief Executive Officer
- third party review rights are only applicable to Future Homes sites that are affected by overlays. Appeals can only be made in relation to those overlays.

Post permit issuing

Once a planning permit is issued there may be some changes required by council or by the applicant. A streamlined process has been established for the following:

- **Condition one plans:** amendments may be required before council can endorse the plans.
- **Secondary consent:** to modify minor details on the plans.
- **Amendment to the planning permit (section 72 of the Act):** DTP will be required to review the application as a determining referral. This will be done prior to formal lodgement of the amendment with council. DTP will review the request within 10 business days

1.4 Changes to planning requirements

There are a number of changes to existing planning requirements. Future Homes exemplar designs go above and beyond current planning rules by including mandatory requirements, as set out in the Future Homes provision at Clause 53.24 of the VPP for:

- above industry standard environmentally sustainable design features (section 6.1)
- accessibility enhancements so people can age in place gracefully (section 3.5)
- bedroom and living room depth (section 3.4)
- bicycle parking for residents and visitors (section 2.4)
- car parking (section 2.3)
- communal open space and solar access to communal open space (section 3.3)
- external windows to all bedrooms (section 3.1)
- functional layout (section 3.4)
- generous deep soil and canopy cover (section 5.2)
- natural ventilation for all apartments (section 6.4)
- storage for residents (section 3.4)
- wider building entry and circulation spaces (section 3.1) These requirements cannot be varied.

These requirements cannot be varied.

Future Homes also recognises the need to carefully balance high-quality, liveable and sustainable apartments with commercial viability. To enable this, some planning requirements have been adjusted. These include:

- streamlining the permit application process for a Future Homes adapted design, as explained above
- front setbacks guided by the predominant street setback rather than the two properties that directly adjoin
- increase to site coverage by 5 percent
- determining the side and rear setbacks by its impact on neighbouring amenity rather than by strict numeric compliance
- reducing requirements for on-site car parking.

1.5 Understanding site context

Under the Victorian planning system, understanding the context of a site and its surrounding neighbourhood is the starting point for designing apartment developments. A Future Homes adapted design must:

- provide a neighbourhood and site description
- provide a design response that explains how the design anticipates the future character of its area
- consider opportunities and challenges arising from the site context and how they will affect the adaptation of the exemplar design.

While the Future Homes exemplar designs were created for a typical suburban site, an adapted design must address its specific site and its surroundings. A Future Homes development does not need to mimic the form, height and character of its neighbourhood, but an exemplar design should not be adapted without a considered approach. Each site has individual characteristics that must be accounted for in the design process. This will ensure a Future Homes development makes a positive contribution to its neighbourhood.

Site conditions that may need to be considered include:

- different lot sizes, shapes and configurations
- the site orientation
- access points
- topography
- on-site assets or features including existing vegetation
- street assets including power poles and street trees
- the street setbacks of other buildings in the street
- sensitive interfaces and neighbouring uses
- other planning overlay controls.

Part 1

Objectives and principles for exemplar apartment designs

2 Responsive to need

A Future Homes development is designed to respond to the needs of its residents.

2.1 Apartment diversity

Rationale

Future Homes seeks to increase housing density and diversity, to respond to the state's population growth. For this reason, Future Homes exemplar designs deliver 14–17 apartments on two consolidated lots with a total site area of about 1,200 square metres. However, a lesser number of apartments are acceptable for design adaptations that cater for larger households and a greater number of apartments may be acceptable for larger sites or adaptations with different apartment type needs and mix.

Future Homes provides housing options for various households, inlcuding families with children, who have typically relied on single, detached dwellings in suburban locations. The outcome should be that households of all compositions can choose to live in an apartment and not be restricted to detached homes and townhouses to have their needs met.

Principles

A. The development supports a greater density than that of a typical suburban townhouse project.

B. The development comprises a range of apartment sizes and types, to cater for a range of households.

C. Apartments suit a range of age groups and households including singles, couples, elderly people and families.

Performance targets

1. The development should provide a range of apartment sizes and types including family-sized apartments, as Table 1.4 shows.

Alignment with VPP: Standard B3 Dwelling diversity (55.02-3)

Table 1.4: Minimum apartment sizes

Apartment type	Minimum size
Studio	35 sqm
1 bedroom	50 sqm
2 bedrooms	75 sqm
3 bedrooms	87 sqm
4 bedrooms	105 sqm
5 bedrooms	125 sqm

Note: For the purposes of calculating the minimum apartment size, net saleable area (NSA) is used. NSA is the total floor area of a building measured from the external face of external walls (façades) and/or the centreline of all inter-tenancy walls, to the face of any structural walls, where adjacent to a common lift, common service risers and common stair shaft. This includes the corridor face of all corridor walls and all engaged columns, internal stairs and mullions to glazed façades. Balconies should be measured separately to internal areas.

2. All apartments should have generous bench space beside the stove and sufficient fridge and pantry space.
3. Apartments with two or more bedrooms must include family-friendly features such as:
    - a bathtub separate to a shower recess; a shower above a bathtub may be acceptable if there is a second shower elsewhere in the dwelling
    - a laundry trough.

Design considerations

1. Where possible, locate larger apartments at ground level and/or with convenient access to open and green space.
2. For three-bedroom apartments, consider including an additional toilet separate from the main bathroom. A separate toilet is not required if there are two full bathrooms.
3. To support family-friendly living, use the spatial requirements in Table 1.5 as a guide when designing a kitchen.

Table 1.5: Kitchen spatial requirements

Type	Furniture and fittings to be accommodated
One bedroom	• Minimum single bowl sink and cupboard • Adequate clear benchtop of 600 mm minimum depth (including sink area) ranging from 2.5 m to 3.9 m in length, including cupboards with drawers • Pantry face dimension with 450 mm to 600 mm minimum width • Cooking appliances with 400 mm minimum length adjoining bench space on both sides • Minimum 1.2 m wide circulation space between bench tops • Provide space for refrigerator 900 mm wide • The recommended minimum width of a kitchen should be 2.7 m
Two or more bedrooms	• As above, with clear benchtop increased to 2.8 m to 4.2 m in length • The recommended minimum width of a kitchen should be 2.7 m

2.2 Garden area

Rationale

The green, open garden character is an appealing amenity aspect of Victoria's suburbs. A Future Homes adapted design will provide a high-quality garden area and landscaping, contributing to the liveability of the development and the wellbeing of residents and their neighbours.

Principles

A. The development is green, leafy and has an open-garden character that also contributes to the street.

Mandatory requirement

1. A development must provide a minimum garden area equivalent to at least 35 percent of the total site area. This does not apply if:
    - a schedule to the General Residential Zone exempts a development from the garden area requirements
    - the site is designated as a medium-density housing site in an approved:
        - precinct structure plan
        - equivalent strategic plan
        - development plan
    - the site is designated as medium-density housing in an incorporated plan.

For additional guidance on landscaping, refer to Appendix 3: Landscape.

Performance targets

There are no performance targets for this planning element.

Design considerations

There are no design considerations for this planning element.

2.3 Parking: cars

Rationale

Car parking is a significant determinant of the layout, built form and viability of a development. At the same time, transport options and preferences are changing, particularly to more sustainable transport options and more active transport.

A Future Homes adapted design is a good neighbour and will accommodate residents' cars on site. The adapted design will consider changes to resident's transport preferences over time. It will not allow car parking to dominate the appearance or amenity of the site.

Principles

A. The development provides sufficient, convenient car parking on-site for residents.

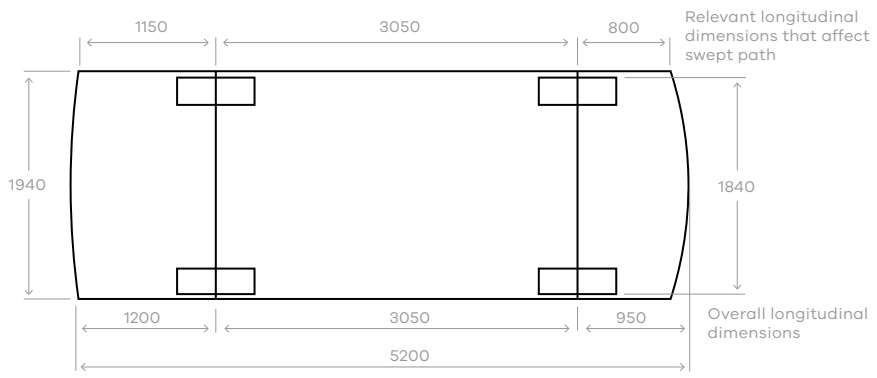
B. The development supports the short- and long-term adaptation of car parking areas for more sustainable transport options.

C. The development supports sustainable transport alternatives to fossil-fuel-based cars.

Mandatory requirements

1. One car parking space per apartment must be located on site. If a parking overlay specifies a lesser parking requirement, the lesser amount applies over the mandatory requirement.
2. Where used, mechanical parking must meet the dimensions and requirements for a B99 vehicle as per AS2890.1 2004 (off street), which Figure 1.2 shows.

Figure 1.2: B99 (99.8th percentile) vehicle



Performance targets

Alignment with VPP: Clause 52.06 (Car parking)

Car parking

1. Car parking facilities should:
   - be reasonably close and convenient to dwellings and residential buildings
   - be secure
   - meet minimum exhaust extraction requirements if enclosed.
2. If vehicle access is provided from a road in a Transport Zone 2, an adapted design must comply with the relevant design guidelines to the satisfaction of Transport for Victoria (TfV).
3. Height clearance of at least 2.1 metres must be provided under all overhead obstructions such as fire sprinklers, lighting fixtures and signs.
4. Where mechanical parking is used, designs may need swept paths to show all spaces are accessible by an Australian Standard B85 vehicle.

Accessways

5. Accessways should:
   - be at least 3 metres wide, with an internal radius of at least 4 metres at changes of direction or intersections; or be at least 4.2 metres wide
   - allow vehicles parked in the last space of a dead-end accessway to exit in a forward direction with one manoeuvre
   - provide at least 2.1 metres headroom beneath overhead obstructions, calculated for a vehicle with a wheel base of 2.8 metres. Clearances shall be measured to the lowest projection from the roof including fire sprinkler and pipes in accordance with Figure 3.2 of AS 2890.1:2004 Parking facilities Part 1: Off-street car parking (off street) Part 1: Off-street car parking

- be designed so a car can exit the site in a forward direction, if the accessway serves four or more car spaces or connects to a road in a Transport Zone 2 or 3
- provide a passing area at the entrance at least 6.1 metres wide and 7 metres long, if the accessway serves ten or more car parking spaces and is either more than 50 metres long or connects to a road in a Transport Zone 2 or 3
- have a corner splay or area at least 50 percent clear of visual obstructions extending at least 2 metres along the frontage road from the edge of an exit lane and 2.5 metres along the exit lane from the frontage, to provide a clear view of pedestrians on the footpath of the frontage road. The area clear of visual obstructions may include an adjacent entry or exit lane where more than one lane is provided, or adjacent landscaped areas, provided the landscaping in those areas is less than 900 mm high.

6. If an accessway to four or more car parking spaces is from land in a Transport Zone 2 or 3, the access to the car spaces should be at least 6 metres from the road carriageway.
7. If entry to the car space is from a road, the width of the accessway may include the road.
8. If located on an arterial road, provide left-in left-out access with clear directional signs.

Car parking spaces

9. Car parking spaces and accessways should have the minimum dimensions shown in Table 1.6. The table does not apply to accessways for mechanical parking, as alternate requirements apply. Where mechanical parking is proposed, a traffic engineer will be required to assess the adequacy of the spaces, accessway width and swept path.

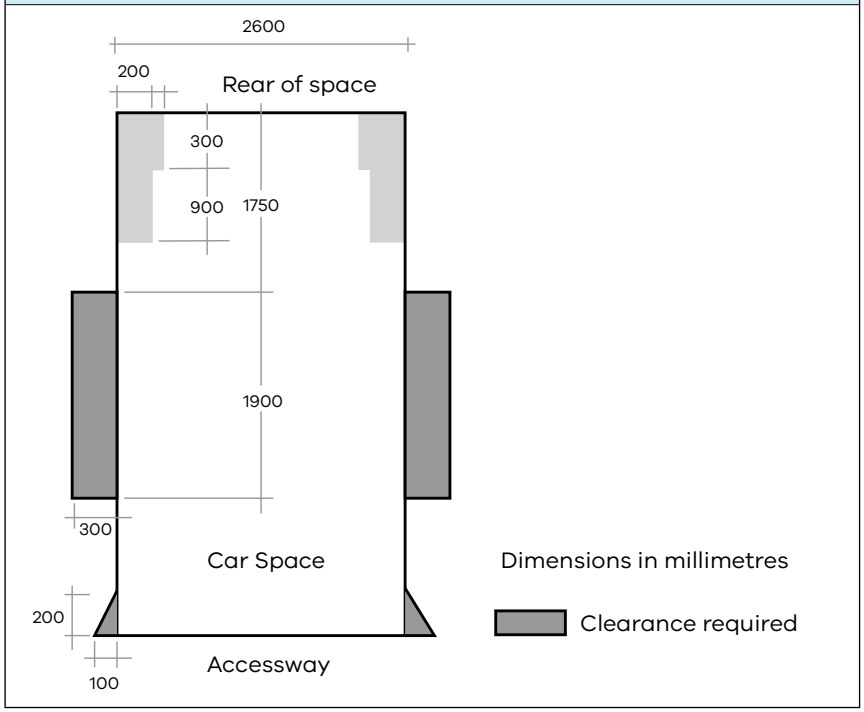
Table 1.6: Minimum dimensions of car parking spaces and accessways

Angle of car parking spaces to accessway	Accessway width	Car space width	Car space length
Parallel	3.6 m	2.3 m	6.7 m
45°	3.5 m	2.6 m	4.9 m
60°	4.9 m	2.6 m	4.9 m
90°	6.4 m	2.6 m	4.9 m
	5.8 m	2.8 m	4.9 m
	5.2 m	3.0 m	4.9 m
	4.8 m	3.2 m	4.9 m

Note: Some dimensions in Table 1.6 vary from those shown in AS 2890.1:2004 Parking facilities Part 1: Off-street car parking. The dimensions in Table 1.6 allocate more space to aisle widths and less to marked spaces, to provide improved operation and access. The dimensions in Table 1.6 are to be used in preference to AS 2890.1:2004 Parking facilities Part 1: Off-street car parking, except for disabled spaces which should achieve AS 2890.6:2009 (Parking facilities Off-street parking for people with disabilities).

10. A wall, fence, column, tree, tree guard or any other structure that abuts a car space should not encroach into the area marked 'Clearance required' on Figure 1.3 other than:
    - a column, tree or tree guard, which may project into a space if it is within the area marked 'Tree or column permitted' on Figure 1.3
    - a structure, which may project into the space if it is at least 2.1 metres above the space.

Figure 1.3: Clearance to car parking spaces



11. Car spaces in garages or carports should be at least 6 metres long and 3.5 metres wide for a single space and 5.5 metres wide for a double space, measured inside the garage or carport.
12. Where parking spaces are provided in tandem — one space is behind the other — an additional 500 mm in length should be provided between each space.
13. 50 percent of car spaces provided, excluding mechanical parking spaces, should have a vertical clearance over the parking space of at least 2.5 metres in accordance with the accessibility requirements in Table 1.13 in section 3.5 Accessibility. Disabled car parking spaces should be designed in accordance with AS 2890.6:2009 (Parking facilities Off-street parking for people with disabilities) and the Building Code of Australia. Disabled car parking spaces may encroach into an accessway width specified in Table 1.6 by 500 mm.

Gradients

14. Accessway grades should not be steeper than 1:10 (10 percent) within 5 metres of the frontage, to ensure the safety of pedestrians and vehicles. The design should have regard to the wheelbase of the vehicle being designed for, pedestrian and vehicular traffic volumes, the nature of the car park and the slope and configuration of the vehicle crossover at the site frontage. This does not apply to accessways serving three apartments or less.
15. Ramps (except within 5 metres of the frontage) should have the maximum grades shown in Table 1.7 and be designed for vehicles travelling in a forward direction.

Table 1.7: Ramp gradients

Type of car park	Length of ramp	Maximum grade
Private or residential car park	20 m or less	1:4 (25%)
	Longer than 20 m	1:5 (20%)

16. Where the difference in grade between two sections of a ramp or floor is greater than 1:8 (12.5 percent) for a summit grade change, or greater than 1:6.7 (15 percent) for a sag grade change, the ramp should include a transition section of at least 2 metres to prevent vehicles scraping or bottoming.
17. Plans should include an assessment of grade changes of greater than 1:5.6 (18%) or less than 3 metres apart for clearances, to the satisfaction of the responsible authority.

Mechanical parking

18. Mechanical parking may be used to meet the car parking requirement provided:
    - spaces meet the dimensions and requirements for a B99th percentile vehicle (shown in Figure 3)
    - aisles and swept paths meet the requirements for a B85th percentile vehicle
    - at least 25 percent of the mechanical car parking spaces can accommodate a vehicle height of at least 1.8 metres, although a higher percentage is encouraged
    - mechanical parking spaces that require the operation of the system are not allocated to visitors, unless used in a valet parking situation
    - the design and operation of the mechanical parking facility is to the satisfaction of the responsible authority
    - drainage is resolved as part of the site stormwater drainage strategy.
19. Where mechanical parking is proposed, consider the design and material of the parking structure including sight lines, potential blind spots and acoustic treatment.

Urban design

20. Ground-level car parking, garage doors and accessways should not visually dominate public space.
21. Car parking within buildings (including visible portions of partly underground basements) should be visually screened or obscured where possible, including through the use of, but not limited to:
    - occupied tenancies
    - landscaping
    - architectural treatments
    - artworks.
22. The design of a car park should consider its use as an entry point to the site.
23. Where applicable, the design of new internal streets in the development should maximise on-street parking opportunities.

Safety

24. Car parking should be well-lit and clearly signposted.
25. The design of a car park should maximise natural surveillance and pedestrian visibility from adjacent buildings.
26. Pedestrian access to car parking areas from the street should be convenient.
27. In high-activity parking areas, pedestrian routes through car parking areas and building entries and other destination points should be clearly marked and separated from traffic.

Landscaping

28. The design of car parking areas should provide for Water Sensitive Urban Design (WSUD) treatment and landscaping.
29. Landscaping and trees should be planted to provide shade and shelter, soften the appearance of ground-level car parking and aid in the clear identification of pedestrian paths.
30. Ground-level car parking spaces should include trees planted with flush grilles. The spacing of trees should be determined considering the expected size of the selected species at maturity.

Disabled spaces

31. Spaces allocated as disabled parking spaces must be in accordance with AS 2890.6:2009 (Parking facilities Off-street parking for people with disabilities) and the Building Code of Australia.

Design considerations

1. Visitor car parking may be provided on-site.
2. Vehicles must enter and exit the site in a forward direction.
3. Limit vehicular noise and exhaust, to protect residents and neighbours.
4. Locate most of the car parking and driveway underneath the building footprint, to maximise deep soil and the garden area. In areas where the car park extends outside the building footprint, a permeable surface should be used for future adaptation and to reduce stormwater run-off.
5. Avoid locating basements near the front boundary where in-ground services are concentrated and sensitive to ground settlement because of construction.
6. Consider the safety implications of one-way access driveways, where visibility is limited.
7. Any mechanical parking system that meets the minimum dimensions and standards specified in the exemplar designs can be adopted.
8. Some councils might prohibit a ‘wet’ drained basement, so consider the on-site treatment of drained groundwater.
9. Consider how car parking spaces can be utilised for other purposes, temporarily and for future adaptive re-use.
10. Consider providing space for the future installation of electric vehicle charging infrastructure to each car park including conduit of adequate capacity and charging stations. An appropriate size to allow for the provision of electric vehicle charging is 550 mm high, 350 mm wide and 200 mm deep, with 600 mm of free space in front, on a wall adjacent to each car parking spot.

2.4 Parking: Bicycles

Rationale

Bicycles have become a viable alternative transport option, particularly with different bicycles for different needs being widely available.

A Future Homes adapted design will accommodate a range of bicycle types on site by providing high-quality bicycle parking facilities.

Principles

A. The development provides sufficient, convenient bicycle parking on site for residents and visitors.

B. The development supports the provision of charging areas for electrical bicycles and secure parking for larger bicycles.

Mandatory requirements

1. Bicycle parking must be provided at a rate of one space per apartment for residents and one space per five apartments for visitors.
2. A minimum of 20 percent of residents' bicycle parking must be provided as horizontal spaces.
3. All visitor bicycle parking must be provided as horizontal spaces and conveniently accessible.
4. Bicycle parking dimensions must be a minimum of 1.8 metres long, 500 mm wide and provide 1.5 metres aisle for horizontal spaces or 1.2 metres clearance behind the bicycle for vertical spaces.

Alignment with VPP: Clause 52.34 (Bicycle facilities)

Performance targets

1. At least 5 percent of bicycle parking locations should have a general-purpose outlet conveniently located nearby, for charging electrical bicycles.
2. A bicycle space should:
    - be secure
    - be located so the bicycle can be ridden to within 30 metres of the bicycle parking space
    - be located to provide convenient access from surrounding bicycle routes and main building entrances
    - be covered to encourage residents to leave their bicycles outside
    - not interfere with reasonable access to doorways, loading areas, access covers, furniture, services and infrastructure
    - not cause a hazard
    - be adequately lit during periods of use.
3. A bicycle rail should:
    - be securely fixed to a wall or to the floor or ground
    - be in a highly visible location for bicycle security (when not in a compound)
    - be of a shape that allows a cyclist to easily lock the bicycle frame and wheels
    - be located to allow easy access to park, lock and remove the bicycle.

4. Where provided, a bicycle compound or a bicycle locker should:
    - be located to provide convenient access to other bicycle facilities
    - be able to be locked
    - if outside, provide weather protection for the bicycle
    - include wall or floor rails for bicycle parking
    - provide an internal access path at least 1.5 metres wide
    - not be unsightly if visible from the street.

Design considerations

1. Bicycle parking dimensions should comply with AS 2890.3:2015 Parking facilities Bicycle parking.
2. The location and design of bicycle parking should be based on visual amenity, safety, security, ease of use and a convenient location.
3. If bicycle parking is provided in a basement car park or on an upper level, the lift should be designed to accommodate a bicycle at least 1.8 m long.
4. Bicycle parking should be of a type to encourage all residents to use it, including people with limited mobility or upper body strength.
5. Consider the spatial requirements of emerging types of vehicles such as electric bicycles, cargo bicycles and electric scooters.

3 Liveable

A Future Homes development has desirable homes with high-quality interior amenity, social spaces, natural light and a good outlook.

3.1 Site and building layout

Rationale

The site layout and orientation of a development are elements fundamental to the amenity of residents. They largely determine solar access, by maximising useful solar penetration in winter and mitigating direct solar penetration in summer, as well as views, safety and security. Ease of movement through the development and relationships with the street and existing neighbours are also determined by site layout and orientation.

A Future Homes adapted design will ensure the development is oriented so the built form, open spaces and adjoining developments have good solar access, visual privacy and amenity.

Principles

A. The building and site layout promotes the safe, functional, accessible and efficient movement of residents.

B. The building and site layout promotes passive surveillance and contributes to a positive interface between the private and public realms.

C. Designs are adapted to respond to the site's orientation to optimise solar access, views and natural landscapes and to provide a sense of communal security.

D. Solar access is maximised in winter and unwanted solar penetration is minimised in summer.

E. The site layout ensures each apartment receives adequate sunlight during the day and mitigates the impact on solar access of neighbouring dwellings and their private open space.

F. Buildings and private open spaces are oriented to maximise views, without compromising visual privacy.

G. The development and apartments are provided with their own sense of entry and identity.

H. The development provides for the safety and security of the residents and their property.

I. The site layout creates a convenient pattern of pedestrian movement within the site and connects seamlessly to external movement networks.

J. Built form and open space are designed harmoniously and as a whole.

Mandatory requirements

1. Common corridors and passageways providing access to apartment entries must be at least 1.2 metres wide.
2. Entries to apartments and buildings must:
   - be visible and easily identifiable from the street and internal accessways
   - provide shelter, a sense of personal address and a transitional space around the entry.
3. The layout and design of buildings must:
   - clearly distinguish entrances to residential and non-residential areas
   - provide windows to building entrances and lift areas where enclosed, to encourage passive surveillance
   - provide visible, safe and attractive stairs from the entry level, to encourage use by residents
   - provide common areas and corridors that:
     - include at least one source of natural light and natural ventilation
     - avoid obstruction from building services
     - maintain clear sight lines.
4. Habitable rooms must have a window in an external wall of the building.
5. A window may provide daylight to a bedroom from a smaller, secondary area within the bedroom where the window is clear to the sky. The secondary area must:
   - be at least 1.2 metres wide
   - have a maximum depth of 1.5 times the width, measured from the external surface of the window.

Alignment with VPP: Standard B12 Safety (55.03-7), Standard B19 Daylight to existing windows (55.04-3), Standard B42 Accessibility (55.07-8) & Standard B48 Windows (55.07-14)

Performance targets

1. Planting that creates unsafe spaces along streets and accessways should be avoided.
2. Developments should be designed to provide good lighting, visibility and surveillance of car parks and internal accessways.
3. Private spaces within developments should be protected from inappropriate use as public thoroughfares.
4. A window in a habitable room should be located to face:

   a. an outdoor space clear to the sky, or a light court with an area of at least 3 square metres and a minimum dimension of 1 metre clear to the sky, not including land on an abutting lot or

   b. a verandah provided it is open for at least one-third of its perimeter or a carport or circulation space provided it has two or more open sides and is open for at least one-third of its perimeter.

Alignment with VPP: Standard B27 Daylight to new windows (55.05-3)

Design considerations

1. Increase opportunities for movement and circulation between the development and surrounding areas.
2. Consider opportunities for glazing at entries, within doors and adjacent to entry spaces, to enable light and surveillance.
3. Maximise north-facing living spaces and north-facing glazing generally while minimising south-facing living rooms and balconies, unless there is a clear benefit. Generally, bedrooms should be located to the south, east or west to allow living spaces to be located to the north.
4. Provide operable shading to all east- and west-facing glazing, and minimise the extent of the glazing where possible.
5. Where provided, fixed shading should account for a range of sun positions at different times of day and in summer.
6. Avoid heavily tinted glazing to provide solar control- it may compromise the useful daylight performance of the space.

3.2 Private open space

Rationale

Private open space is a 'must have' for most homeowners, but apartments have less open space than a traditional detached dwelling. Maximising the amenity of the open space that is provided is very important.

All apartments within the Exemplar designs contain private open space which must be retained throughout the adaptation process. Future Homes adapted design will carefully integrate an apartment's private open space with its internal layout and provide access to an attractive outdoor area.

Principles

A. Adequate private open space or a suitable alternative is provided for each apartment, for the reasonable recreation and service needs of its residents.

B. The amenity for private open space is maximised through its location, integration with the apartment, landscape elements and optimised solar access.

Performance targets

1. An apartment should have private open space consisting of at least one of the following:
    - an area at the ground level of at least 25 square metres, with a minimum dimension of 3 metres and convenient access from a living room
    - a balcony with at least the area and dimension shown in Table 1.8 and convenient access from a living room; if a cooling or heating unit is located on the balcony, the minimum balcony area shown in Table 1.8 should be increased by at least 1.5 square metres
    - an area on a podium or other similar base of at least 15 square metres, with a minimum dimension of 3 metres and convenient access from a living room
    - an area on a roof of at least 10 square metres, with a minimum dimension of 2 metres and convenient access from a living room.

Alignment with VPP: Standard B43 Private open space (55.07-9) & Standard B29 Solar access to open space (55.05-5)

2. The private open space should be located on the north side of the apartment or residential building, when possible.
3. The southern boundary of any ground-level secluded private open space should be set back from any wall on the north of the space at least 2 metres plus 0.9 times the height of the wall.

Table 1.8: Balcony size

Apartment orientation	Apartment type	Minimum balcony area	Minimum balcony dimension
North (between north 20 degrees west to north 30 degrees east)	All	8 sqm	1.7 m
South (between south 30 degrees west to south 20 degrees east)	All	8 sqm	1.2 m
Any other orientation	Studio or one bedroom	8 sqm	1.8 m
	Two bedrooms	8 sqm	2 m
	Three or more bedrooms	12 sqm	2.4 m

Design considerations

1. Consider visual privacy and acoustic separation when locating and designing private open space.
2. Manage visual privacy without using excessive screening.
3. Orient balconies for northern light as a priority.
4. South-facing balconies may be appropriate where balconies have good east and west aspects and if being good neighbours is prioritised through softening the built form.
5. Manage internal overlooking into and from private open spaces through site layout and other design techniques which do not affect internal amenity. Excessive screening should be avoided.
6. Encourage views from private open space into communal open space areas, to foster a sense of community interaction.
7. Fences enclosing private open space within the front setback should be no higher than 1.5 metres and set back from the title boundary, to enable meaningful planting in front of any fencing.

3.3 Circulation and communal open space

Rationale

In denser apartment developments, residents particularly want and need high-quality communal open space, shared facilities and circulation spaces. Common areas including circulation spaces and shared facilities enable residents to meet with neighbours, space for children to play, and opportunities to build social connections.

A Future Homes adapted design will provide high-quality communal open space, shared facilities and communal circulation spaces that are integrated with the rest of the development.

Principles

1. Social gathering spaces for residents and their visitors are provided in internal and/or external areas.
2. Communal open space is integrated with the rest of the development, enhances amenity for residents and meets their recreation needs.
3. Communal open space has good solar access and provides opportunities for landscaping, particularly with canopy trees in deep soil.
4. Communal open space is accessible, functional, easily maintained and strategically located, to ensure access and views from as many apartments as possible.
5. Shared facilities are provided, to improve the amenity and enjoyment of the development and to foster a sense of community. Shared facilities include recreational areas, indoor or outdoor multi-use spaces, clothes drying, communal gardens, barbecue areas, tables and chairs.
6. Communal circulation spaces are provided, and they have adequate access to daylight and natural ventilation.
7. Landscape schemes support multiple purposes including neighbourhood greening, biodiversity, climate change adaptation and shade.

Mandatory requirements

1. A development of ten or more apartments must provide a minimum area of communal outdoor open space of 30 square metres.
2. A development of 13 or more apartments must also provide an additional minimum area of communal open space of 2.5 square metres per apartment, or 220 square metres, whichever is the lesser. This additional area may be indoors or outdoors and may consist of multiple separate areas of communal open space.
3. Each area of communal open space must be:
    - accessible to all residents
    - a useable size, shape and dimension
    - capable of efficient management
    - located to:
        - provide passive surveillance, where appropriate
        - provide outlooks for as many apartments as practicable
        - limit overlooking into the habitable rooms and private open spaces of new dwellings
        - minimise noise impacts on new and existing dwellings.

Alignment with VPP: Standard B36 Communal open space (55.07-2) & Standard B37 Solar access to communal open space (55.07-3)

4. Any area of outdoor communal outdoor open space must be landscaped and where possible include canopy cover and trees.
5. At least 50 percent or 125 square metres — whichever is the lesser — of the primary communal outdoor open space should receive a minimum of two hours of sunlight between 9 am and 3 pm on 21 June.

Performance target

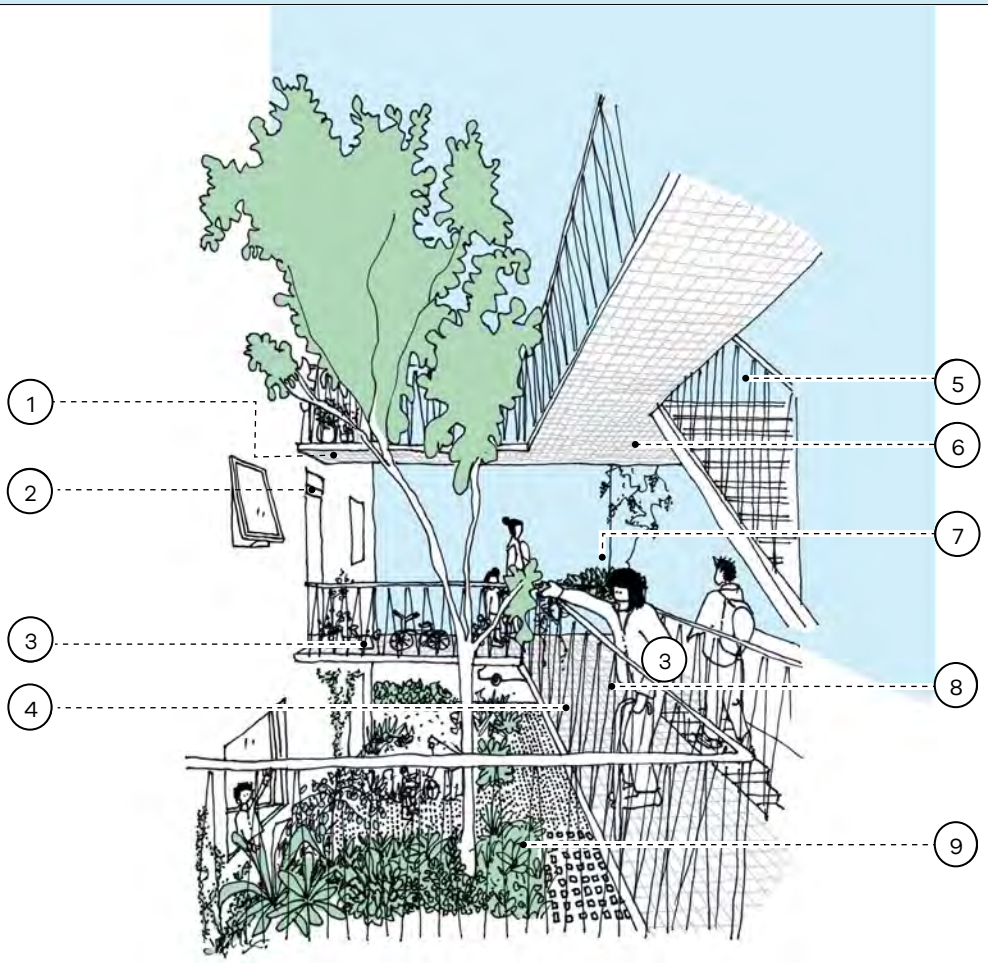
There are no performance targets for this planning element.

Design considerations

1. Open corridors and passageways improve natural ventilation and access to light. If corridors are fully or partially open, weather protection measures should be provided, particularly at the entrances to apartments.
2. Communal corridors and walkways should:
    - have direct access to daylight
    - allow people to socially distance where passing each other
    - include informal breakout and gathering spaces
    - provide protection from the prevailing wind direction.
3. Encourage the use of communal staircases, through generous dimensions and locations which support intuitive use and the movement of large items, rather than lifts being a default option.
4. Communal open space should:
    - be appropriately located and designed to manage noise and privacy, particularly considering the location of bedrooms
    - include canopy trees, consolidated areas for gardens and landscaping
    - be separated from cars, to enable children to play safely
    - provide areas with access to sunlight, particularly in the early morning and evening during winter
    - be sized and designed as flexible spaces that can serve diverse functions and provide opportunities for residents to interact, gather, relax and play such as space to grow fresh fruit and vegetables, long tables and chairs for gatherings of small groups or households, and canopy trees combined with seating facilities, and clothes drying.
5. If communal open space is provided in multiple locations, connections between these spaces should be clear, accessible and integrated with the development's wider circulation network to encourage residents to use and enjoy them.
6. Options for the extent and location of communal open spaces should consider cost and maintenance implications, particularly for spaces on upper-level terraces and roof areas.
7. Communal areas at roof level should consider the use of paving pedestals to allow for the easy collection of surface run-off and cleaning.
8. The development should include meaningful, consolidated areas for gardens and landscaping.

Figure 1.4 and Figure 1.5 illustrate examples of design treatments for shared spaces.

Figure 1.4: Example design treatments for shared spaces



1 - Entry covered by a walkway above

2 - Fly screen and window above entry door for light, air and privacy

3 - Space for belongings and individualisation

4 – Robust and durable materials

5 – External stairs with generous dimensions and a central location supports intuitive use, rather than defaulting to lifts

6 – Accessways at upper levels can be pulled away from the façade line to create private, separated entries and increased solar access to habitable entries

7 – Planters create opportunities for upper-level greening

8 – Accessways are wide enough to accommodate residents passing and stopping to socialise

9 – The void creates an area suitable for deep-root-zone planting. Within the zone, vegetation and small trees should be deployed as a visual privacy buffer between habitable rooms and communal access

Figure 1.5: Example design treatments for shared spaces

1 - Passive surveillance over communal space from balconies

2 - Planted climbers on a metal mesh frame reduce heat island effect

3 - Inbuilt planters reduce need for screens

4 – Deep façade reveals create occupiable space for reading and relaxing

5 – Extensive communal planting supports resident care, ownership and collaboration

6 – Planter boxes create opportunities for productive gardens

7 – Built-in seating and tables for communal meal sharing and activities to encourage interaction and connection

8 – Covered, planted communal walkways create weather protected spaces for mingling and quick catchups

9 – Voids create areas suitable for deep soil planting. Within this zone, small trees can be planted to create a privacy buffer between habitable rooms and communal zones

3.4 Comfortable living

Rationale

Apartments can offer an alternative to detached dwellings as a common form of housing in the suburbs. When they are designed well, they can offer similar levels of amenity, internal flexibility and comfortable living to accommodate a diversity of lifestyles.

A Future Homes adapted design will address the storage, dining, living space, bedroom and noise mitigation needs of tomorrow's apartment dwellers.

Principles

A. Apartments provide functional areas that meet residents' needs.

B. The development provides adequate storage for each apartment.

C. Dining and living spaces are large enough for a dining table and sofa commensurate with the number of bedrooms in the apartment.

D. Bedrooms are large enough for a bed, furniture and storage space.

E. Bedrooms receive direct access to daylight and natural ventilation.

F. Single-aspect habitable rooms receive adequate daylight.

G. The development contains its noise and protects residents and neighbours from external noise sources, now and in the future.

Mandatory requirements

Alignment with VPP: Standard B47 Room depth (55.07-13), Standard B46 Functional layout (55.07-12), Standard B44 Storage (55.07-10)

1. A bedroom must:
   - have an external window
   - meet the minimum internal room dimensions shown in Table 1.9
   - provide an area in addition to the minimum internal room dimensions, to accommodate a 600 mm deep built-in robe.

Table 1.9: Bedroom dimensions

Bedroom type	Minimum width	Minimum depth
Main bedroom	3 m	3.4 m
All other bedrooms	3 m	3 m

2. A living area (excluding a dining and kitchen area) must meet the minimum internal room width and area shown in Table 1.10.

Table 1.10: Living area minimum width and area

Apartment type	Minimum width	Minimum area
Studio and one bedroom	3.3 m	10 sqm
Two or more bedrooms	3.6 m	12 sqm

3. A single-aspect habitable room must not exceed a room depth of 2.5 times the ceiling height.
4. The depth of a single-aspect, open-plan, habitable room may be increased to 9 metres if **all of** the following requirements are met:
   - the room combines the living area, dining area and kitchen, **and**
   - the kitchen is located furthest from the window, **and**
   - the ceiling is at least 2.7 metres high, measured from the finished floor level to the finished ceiling level; this excludes where services are provided above the kitchen.

   The room depth should be measured from the external surface of the habitable room window to the rear wall of the room.
5. Each apartment must have convenient access to usable and secure storage space.

6. The total minimum storage space (including kitchen, bathroom and bedroom storage) must meet the requirements shown in Table 1.11.

Table 1.11: Storage requirements

Apartment type	Total minimum storage volume	Minimum storage volume within the apartment
Studio	8 m3	5 m3
One bedroom	10 m3	6 m3
Two bedrooms	14 m3	9 m3
Three bedrooms or more	18 m3	12 m3

7. All apartments with three or more bedrooms must have access to adequately sized external storage.

Performance targets

Alignment with VPP: Standard B41 Noise impacts (55.07-7)

1. Adaptations should mitigate noise and other pollution associated with mechanical services when these are located next to habitable rooms.
2. Buildings within a noise influence area shown in Table 1.12 should be designed and constructed to achieve the noise levels:
   - not greater than 35 dB(A) for bedrooms, assessed as LAeq,8h from 10 pm to 6 am
   - not greater than 40 dB(A) for living areas, assessed as LAeq,16h from 6 am to 10 pm.
3. Buildings or parts of a building screened from a noise source by an existing solid structure or the natural topography of the land do not need to meet the noise level requirements in Table 1.1.

   Noise levels should be assessed in unfurnished rooms with a finished floor and the windows closed.

Table 1.12: Noise influence area

Noise source	Noise influence area
Zone interface	
Industry	300 m from the Industrial 1, 2 and 3 Zone boundary
Roads	
Freeways, tollways and other roads carrying 40,000 annual average daily traffic volume	300 m from the nearest trafficable lane
Railway	
Railway servicing passengers in Victoria	80 m from the centre of the nearest track
Railway servicing freight outside metropolitan Melbourne	80 m from the centre of the nearest track
Railway servicing freight in metropolitan Melbourne	135 m from the centre of the nearest track

Note: The noise influence area should be measured from the closest part of the building to the noise source.

Design considerations

1. A bedroom or living room should not rely on borrowed light or borrowed ventilation.
2. Manage views from a bedroom by the placement of windows or fixed structures rather than by the excessive use of highlight windows, screening or obscured glass.
3. Where a bedroom has an outlook to a void, consider screening the void so the bedroom can have a full-sized window for light and air.
4. The dining area in a one-bedroom apartment should be large enough for a table for two to four people.
5. The dining area in a two-bedroom apartment should be large enough for a table for four to six people.
6. The dining area in an apartment with three or more bedrooms should be large enough for a table for six or more people.
7. Where external storage is not provided, consider the need to store bulky items within apartments.

3.5 Accessibility

Rationale

Apartments are designed to a high level of accessibility to provide homes for more people regardless of age, disability, background, or other factors. They enable residents to age in place, and enable people to live in the apartment throughout different stages of their lives.

A Future Homes adapted design will apply the principles of accessibility and a long term home to that is safe and liveable for our diverse community.

The term accessible has multiple meanings to different industries. In this instance, it relates to creating livable and more versatile homes with wider corridors, doorways, and more circulation space around entries, kitchens, laundry areas and in bathrooms.

Principles

A. The development is accessible to meet the needs of diverse types of residents, and apartments can be adapted in future to meet their changing needs.

Mandatory requirement

1. At least 50 percent of apartments must be designed to meet the design outcomes in Table 1.13. For the purpose of a planning application, plans must demonstrate compliance with Table 1.13 and clearly identify areas where compliance is achieved.

Alignment with VPP: Standard B42 Accessibility (55.07-8)

Table 1.13: Accessiblity design outcomes[1]

Item	Design outcome
Apartment access	• Slip resistant continuous step free pathway from the street and car parking area to the apartment entry door • Pathways with a minimum clear width of 1.2 m, no steps, a maximum gradient of 1:14 and a cross fall not steeper than 1:40 • Where ramps with landings are required as part of the pathway, landings must be no less than 1.2 m in length; gate and door swings must not overlap minimum landing requirements • Landings must be provided at the start and end of ramps • Where there is a change in height of 190 mm or less at an apartment entrance, a step ramp with a gradient not steeper than 1:10 can be used • Car parking spaces provide: - a level surface with a gradient not exceeding 1:40 in any direction - a vertical clearance over the parking space of at least 2.5 m free of obstructions; the 2.5 m clearance is not required where mechanical parking is used

Table 1.13: Design outcomes[1] (continued)

Item	Design outcome
Apartment entrance	• A clear opening width of at least 850 mm at the entrance to the apartment • A level, step-free transition and threshold • A level landing on the arrival side of the entrance door of at least 1.35 m by 1.35 m • A threshold ramp can be provided in compliance with AS1428.1
Internal doors and passageways	• A clear opening width of at least 850 mm at doorways to rooms • A level, and step-free transition and threshold • A level landing on the arrival side of the entrance door of at least 1.35 m x 1.35 m
Toilet	• At least one toilet on the entry level of the apartment with: - secure fixing surface to enable installation of grab rails at a future date; - a minimum 1.2 m by 1.2 m circulation area located in front of the toilet and that is clear of the basin and the door swing and - a room width of 1.2 m if located in a room separate to the bathroom; or - the toilet located in the corner of the room when in a bathroom with the centreline of the pan 450-650mm from the adjacent wall
Shower	• A least one bathroom on the entry with a hobless, step-free shower that has a removable shower screen • The hobless shower will: - have minimum clear internal dimensions of 900 mm by 900 mm - have a minimum 1.2 m by 1.2 m clear circulation area located in front of the shower - be located in the corner of the room to enable installation of grab rails at a future date
Future grab rails	• Provide a secure fixing surface for the installation of future grab rails at the toilet, shower and bath in accordance with Appendix 8 diagrams Note: Where walls are not constructed of solid masonry or concrete, provide additional wall framing and structural lining behind the finished wall surface
Kitchen and laundry	• A kitchen and laundry with a minimum 1.2 m clear circulation area in front of appliances and benches • Extend floor finishes under appliances and cabinets to allow for future modifications

1. *Future Homes accessibility requirements are equivalent to or exceed 'Gold Performance Level' under Livable Housing Australia's Livable Housing Design Guidelines*

See **Appendix 8: Accessibility** for diagrams.

Performance targets

There are no performance targets for this planning elements.

Design considerations

1. Consider applying universal design principles for common and private areas.
2. A lift should be provided to service all levels including the basement if proposed, or space should be provided so a lift can be included or retrofitted later.
3. Ensure shared spaces and services such as communal gardens, waste storage facilities and bicycle storage allow for safe, convenient access.
4. Consider obtaining certification of an adaptation design and/or the final as-built product with Livable Housing Australia.

4 Good neighbours

A Future Homes development respects neighbours' amenity and enriches the street and surrounding public realm.

4.1 Relationship to the street and neighbours

Rationale

While a street in a suburb typically has unique elements and a distinctive local character, most have things in common: buildings that sit within their landscape setting, address and engage with the street, reference rather than replicate aspects of the existing character and include materials that age well over time.

A Future Homes adapted design will respond to the valued characteristics of its street and neighbourhood. It will contribute to the emerging new character of its suburb with a high-quality appearance and garden character. It won't mimic established buildings, but rather contribute positively to its local area.

Principles

A. The development is a good neighbour and respects the privacy and amenity of adjoining dwellings.

B. The development acknowledges existing character and context but does not seek to replicate it.

C. The development creates a new, emerging character which includes higher, denser built form.

D. The development has a positive street presence and supports a safe public realm.

E. The development is integrated and activates the street frontages.

F. The development supports good connections to surrounding areas.

G. The development is attractive and enduring.

H. The development is inherently innovative, inclusive and sustainable.

Mandatory requirements

1. Unless a greater height is allowed under a schedule to a zone, the development must not exceed 11 metres or contain more than three storeys at any point. The height of the development is measured as the vertical distance from the natural ground level to the roof or parapet at any point. This distance does not include any plant equipment, service installations, lift and stairwell overrun or other ancillary building elements that protrude above the maximum height.
2. A building may exceed the applicable maximum building height or contain more than the applicable maximum number of storeys if:
    - it replaces an immediately pre-existing building and the new building does not exceed the building height or contain a greater number of storeys than the pre-existing building

Alignment with VPP: General Residential Zone (32.08) and Standard B7 Building height (55.03-2)

- there are existing buildings on both abutting allotments that face the same street and the new building does not exceed the building height or contain a greater number of storeys than the lower of the existing buildings on the abutting allotments
- it is on a corner lot abutted by lots with existing buildings and the new building does not exceed the building height or contain a greater number of storeys than the lower of the existing buildings on the abutting allotments
- it is constructed pursuant to a valid building permit that was in effect prior to the introduction of this provision.

3. An extension to an existing building may exceed the applicable maximum building height or contain more than the applicable maximum number of storeys if it does not exceed the building height of the existing building or contain a greater number of storeys than the existing building.
4. A building may exceed the maximum building height by up to 1 metre if the slope of the natural ground level, measured at any cross-section of the site of the building wider than 8 metres, is greater than 2.5 degrees.
5. A basement is not a storey for the purposes of calculating the number of storeys contained in a building.

Performance targets

Alignment with VPP: Standard B51 Integration with the street (55.07-17), Standard B32 Front fence (55.06-2) and Standard B18 Walls on boundaries (55.04-2)

1. The development should be oriented to front existing and proposed streets.
2. Along street frontages, the development should:
   - incorporate pedestrian entries, windows, balconies or other active spaces
   - limit blank walls
   - provide low and visually permeable front fences, where proposed; planting should be used to further soften the appearance of fencing
   - conceal car parking and internal waste collection areas from the street.
3. If next to existing public open space, the development should complement the open space and facilitate passive surveillance.
4. The front fence, unless it is enclosing secluded private open space, should be no higher than 1.2 m. On a main road, the front fence can be up to 1.8 metres high.
5. If the front fence encloses an area of secluded private open space, it should not be higher than 1.5 metres on a local road. Planting in front of the fence is encouraged.
6. A new wall constructed on or within 200mm of a boundary of a lot constructed within 1 metre of a boundary should not abut the boundary for a length of more than:
   - 10 metres plus 25 per cent of the remaining length of the boundary of an adjoining lot, or
   - where there are existing or simultaneously constructed walls or carports abutting the boundary on an abutting lot, the length of the existing or simultaneously constructed walls or carports whichever is greater.
7. A new wall or carport may fully abut a side or rear boundary where the effective height of a wall or carport is less than 2 metres on the abutting property boundary.
8. A building on a boundary includes a building set back up to 200mm from a boundary.
9. The height of a new wall constructed on or within 200mm of a side or rear boundary constructed within 1 metre of a side or rear boundary should not exceed an average of 3.2 metres with no part higher than 3.6 metres.

Design considerations

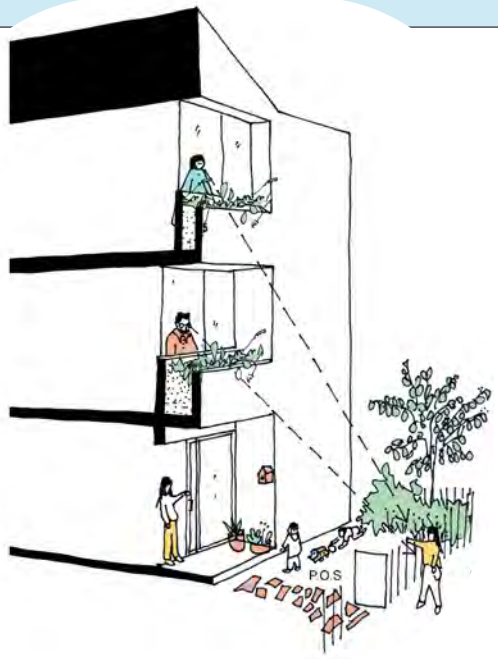
Building height

1. The development can be located next to an existing single-storey dwelling, but it should respect the amenity of neighbours, the street and the surrounding public realm.

Integration with the street

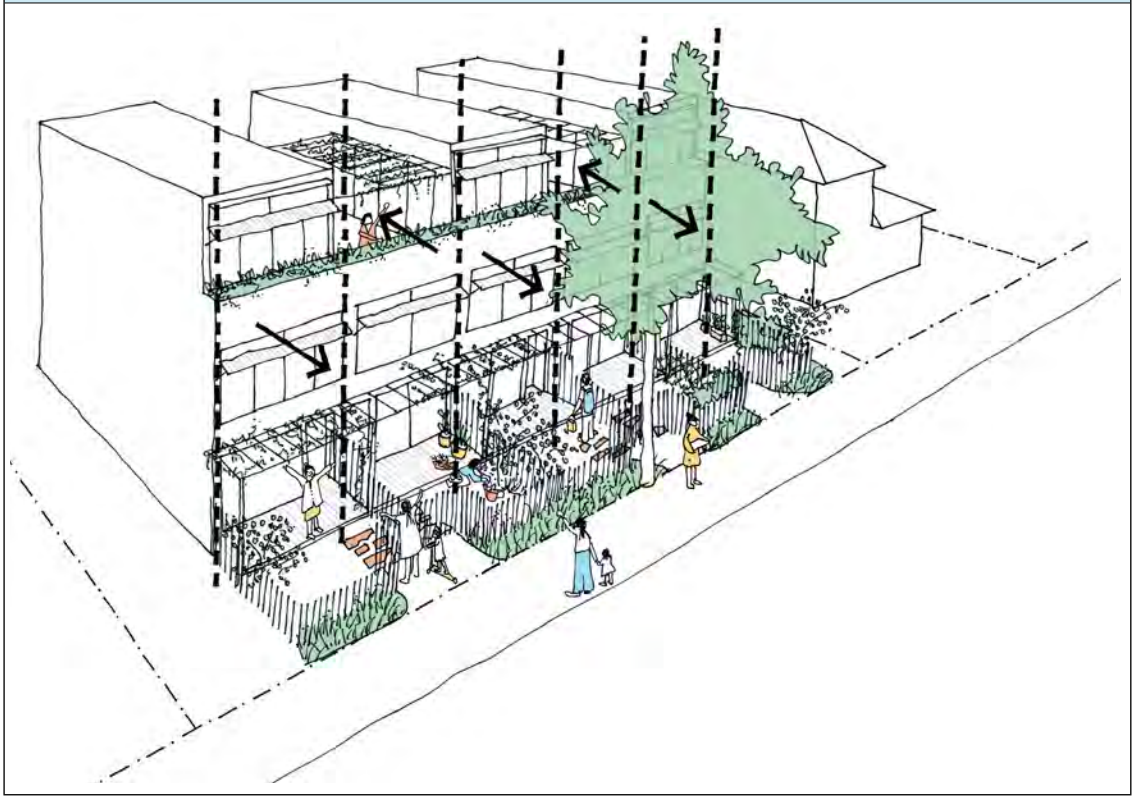
2. The development should directly address the street and avoid blank walls.
3. The building frontage should include landscaping and canopy tree planting, which contribute to the landscape character of the area, increase amenity and provide shade to support a more walkable neighbourhood.
4. The development should not seek to mimic the height and character of existing dwellings, particularly where the streetscape could change over time.
5. Buildings should encourage passive surveillance and maintain an interactive relationship with the street such as by using windows, balconies, building or apartment entries and communal landscaped recreation areas overlooking the street, as Figure 1.6 illustrates.

Figure 1.6: Passive surveillance and overlooking of private open space example



6. Provide required site services within the frontage, and integrate them within the building, fence and/or landscape design.
7. Consider articulating the building frontage to read as a townhouse/terrace typology, so it better responds to contexts with a finer-grain character, as Figure 1.7 illustrates.

Figure 1.7: Example articulated building frontage



Front fence

8. A front fence should:
    - complement the design of the building
    - enable passive surveillance
    - allow for a contribution of front setback landscaping to the public realm
    - provide a degree of privacy for areas of secluded private open space.
9. Privacy for secluded private open space within the front setback should not be achieved using high, solid front fences: these prevent passive surveillance.
10. Front fences used to protect secluded private open space at the ground-floor level should be sufficiently set back to enable boundary planting or seating. If planting is not possible in this space due to the location of site services, an appropriate landscape response should be provided.
11. In a north-facing site where secluded private open space is in the front setback, the setback should be generous enough to allow for outdoor recreation in the secluded open space.

Walls on boundaries

12. Ensure that the location, length and height of a wall on a boundary respects the preferred or emerging neighbourhood character and limits the impact on the amenity of existing dwellings.
13. The opportunity to minimise the length of walls on boundaries by aligning a new wall on a boundary with an existing wall on a lot of an adjoining property.
14. Consider the extent to which the slope and retaining walls or fences reduce the effective height of the wall.

4.2 Building envelope

Rationale

Existing neighbours will naturally be interested in how any new development fits in with their street, which in an established residential area typically comprises mostly one- or two-storey buildings.

A Future Homes adapted design will ensure the development's siting and design does not overwhelm its surrounds including through sensitive, sympathetic interface treatments such as landscaping and a high-quality façade.

Principles

A. The building envelope and setbacks are tailored to respond to the site's characteristics and to manage the visual and amenity impacts on neighbouring properties.

B. Landscaped areas and canopy trees are used to support good outlooks, amenity and screening.

C. Front setbacks are guided by the predominant street setback typical along the length of the street and not by the two properties that directly adjoin.

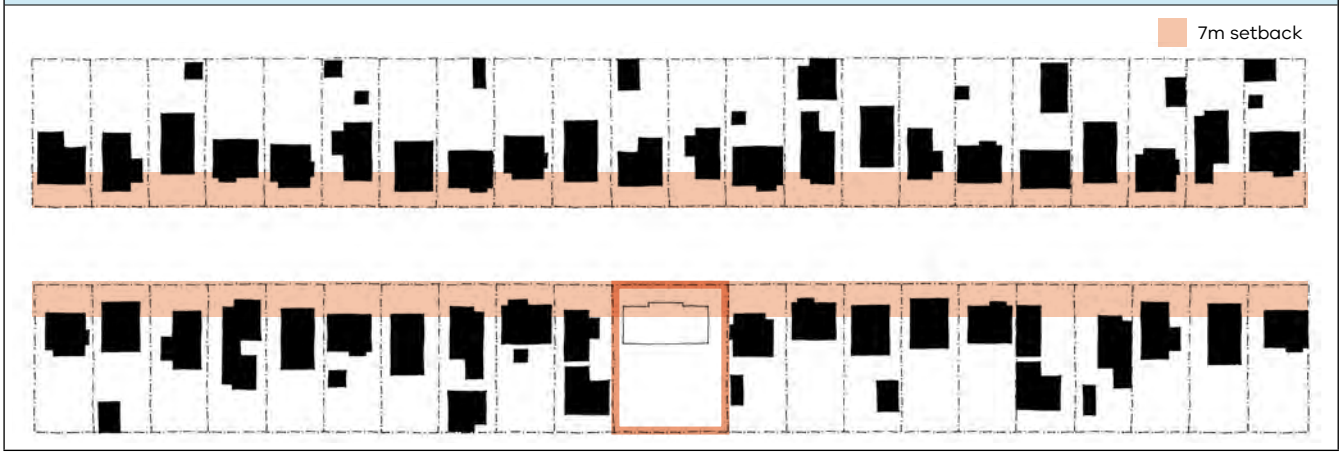
D. The development makes efficient use of the site.

Performance targets

1. The amount of site area covered by buildings should not exceed 65 percent.
2. At a minimum, the walls of the primary frontage of buildings (including those on a corner block) should be set back from the street(s) the average distance of building setbacks along the length of the street up to 150 metres on either side of the site or 7 metres, whichever is the lesser. This includes any corner block that provides multiple frontages.
3. Where the site is on a corner block and provides a secondary frontage, the building should be set back from this secondary frontage by either the distance typical of building setbacks along the length of the street up to 150 metres either side the site or 3 metres, whichever is the lesser.
4. The side walls of buildings on a corner site that address the primary frontage should be set back by either the distance typical of building setbacks along the length of the street up to 150 metres either side the site or 2 metres, whichever is the lesser.

Alignment with VPP: Standard B6 Street setback (55.03-1) Standard B8 Site coverage (55.03-3) and Standard D14 Building setback (58.04-1)

Figure 1.8: Example front setbacks guided by the predominant street setback



5. Upper-level balconies and awnings may be used to provide weather protection for apartments below, but they should not project more than 2 metres into the front setback. Projecting balconies should not come at the expense of canopy tree planting within the front garden.
6. Side and rear setbacks should be guided by the development's ability to limit its impact on the amenity of the habitable room windows and secluded private open space of existing dwellings.
7. Buildings should be set back from the side and rear boundaries and other buildings within the site to:
    - ensure there is adequate daylight into the habitable room windows of apartments
    - avoid direct views into the habitable room windows and private open space of apartments and existing dwellings
    - avoid the development relying on screening to reduce views.

Design considerations

Front setbacks

1. Front setbacks should include high-quality landscaping and canopy tree planting, increase street amenity and provide shade to residents.
2. For a site in a local street, consider the front setback of properties on the opposite side of the street, but not at the expense of the planting of canopy trees within the front setback.
3. Consider providing a staggered front setback to respond to streets, where front setbacks are varied.
4. Consider the setback of the existing dwelling on the site.

Other considerations

5. Side and rear setbacks need not comply with a predetermined formula or value, but rather should allow for adequate daylight to existing windows including north-facing windows, and they should limit overshadowing of adjoining dwellings. For more guidance, see section **4.4 Light and overshadowing.**
6. Avoid locating a basement close to the front boundary, to ensure there is space for deep-soil planting in the front setback. Avoid locations where in-ground services are concentrated and sensitive to ground settlement as a result of construction.

4.3 Internal and external overlooking

Rationale

Existing neighbours are often concerned about a new development overlooking their habitable room windows and private open space. In the past, these concerns have too often been managed by unattractive screening, to the detriment of both the appearance of buildings and the amenity of residents.

A Future Homes adapted design will manage the overlooking of neighbours primarily through the layout of apartments and private open space. Equally, overlooking into communal open space, circulation spaces and the public realm helps increase passive surveillance.

Principles

A. The design limits overlooking into the private open space and habitable room windows of existing neighbours and apartments within the development.

B. Overlooking is managed primarily through the layout of apartments and private open space, rather than with highlight windows and screening techniques, which can compromise internal amenity.

C. Excessive screening to limit internal and external views is avoided.

D. Design techniques to minimise overlooking are embedded within the overall façade composition and do not appear to be added on.

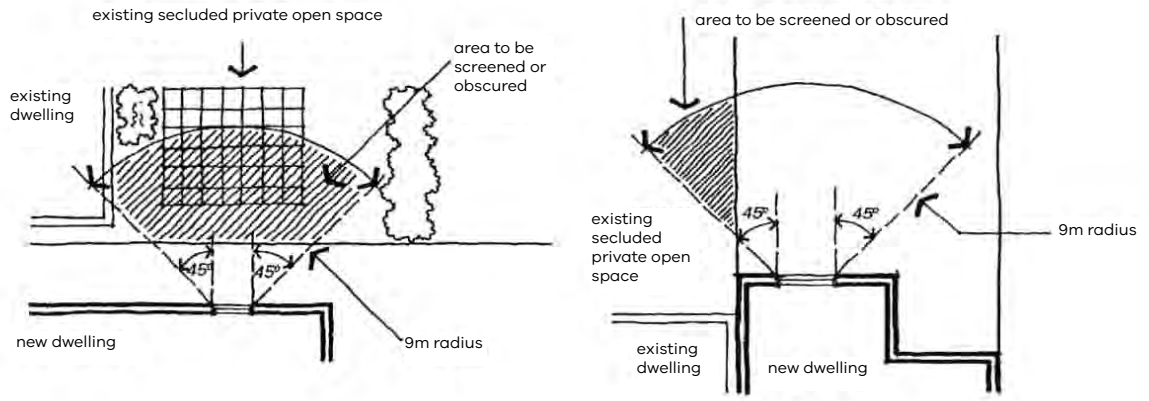
E. Overlooking is encouraged into communal open space, circulation spaces and the public realm, to increase passive surveillance.

Performance targets

1. A habitable room window, balcony, terrace, deck or patio should be located and designed to avoid direct views into the secluded private open space of an existing dwelling within a horizontal distance of 9 metres (measured at ground level) of the window, balcony, terrace, deck or patio. Views should be measured within a 45° degree angle from the plane of the window or perimeter of the balcony, terrace, deck or patio and from a height of 1.7 metres above floor level. Figure 1.9 illustrates this performance target.

Alignment with VPP: Standard B22 Overlooking (55.04-6) and Standard B23 Internal views (55.04-7)

Figure 1.9: Avoiding overlooking open space



2. A habitable room window, balcony, terrace, deck or patio with a direct view into a habitable room window of an existing dwelling within a horizontal distance of 9 metres (measured at ground level) of the window, balcony, terrace, deck or patio should be **either**:
   - offset a minimum of 1.5 metres from the edge of one window to the edge of the other, **or**
   - have a sill height of at least 1.7 metres above floor level, **or**
   - have fixed, obscure glazing in any part of the window below 1.7 metres above floor level, **or**
   - have permanently fixed external screens to at least 1.7 metres above floor level and be no more than 25 percent transparent.
3. Obscure glazing in any part of the window below 1.7 metres above floor level may be openable, provided there are no direct views as specified in this performance target.
4. Screens used to obscure a view should be:
   - perforated panels or trellis with a maximum of 25 percent openings or solid, translucent panels
   - permanent, fixed and durable
   - designed and coloured to blend in with the development.

   This performance target does not apply to a new habitable room window, balcony, terrace, deck or patio that faces a property boundary where there is a visual barrier at least 1.8 metres high and the floor level of the habitable room, balcony, terrace, deck or patio is less than 0.8 metres above ground level at the boundary.
5. Windows and balconies should be designed to limit overlooking of more than 50 percent of the secluded private open space of a lower-level apartment or residential building directly below and within the same development.

Design considerations

1. Internal views are not necessarily a negative design response: where appropriate, they can foster a sense of community interaction.
2. Consider limiting overlooking with:
   - orientations that direct views away from sensitive areas such as by offsetting the living room and balcony from bedrooms
   - window designs such as angled, hooded, butterfly and clerestory windows
   - setbacks at upper levels with recessed windows and balconies with fixed planting
   - internal layout planning
   - orienting balconies and habitable room windows to face non-habitable rooms, communal open space and the public realm.

3. When limiting overlooking, avoid screening techniques such as:
    - excessive highlight windows
    - full-height screening of windows and balconies that doesn't allow residents to have clear outward views and creates a sense of enclosure
    - monolithic screens
    - fixed windows and enclosures that limit fresh air for future residents.

Figure 1.10: Plan diagram showing window location and reveal determined by existing habitable room windows

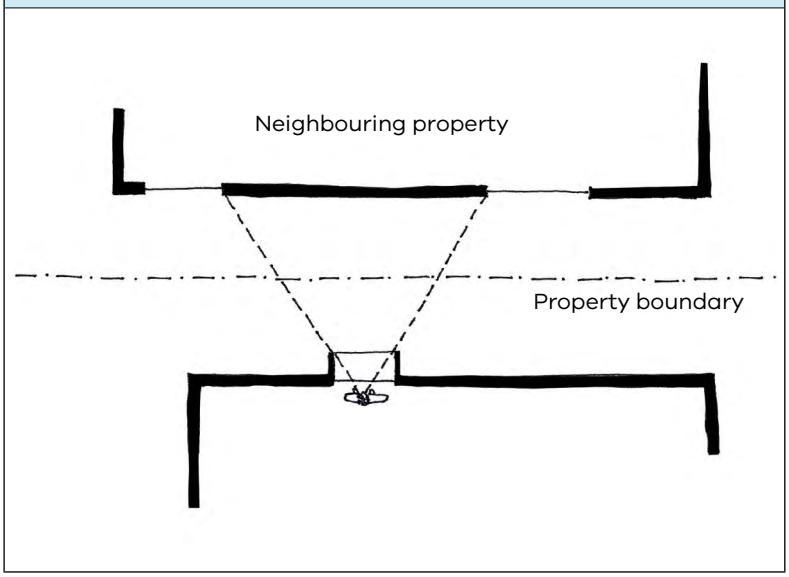
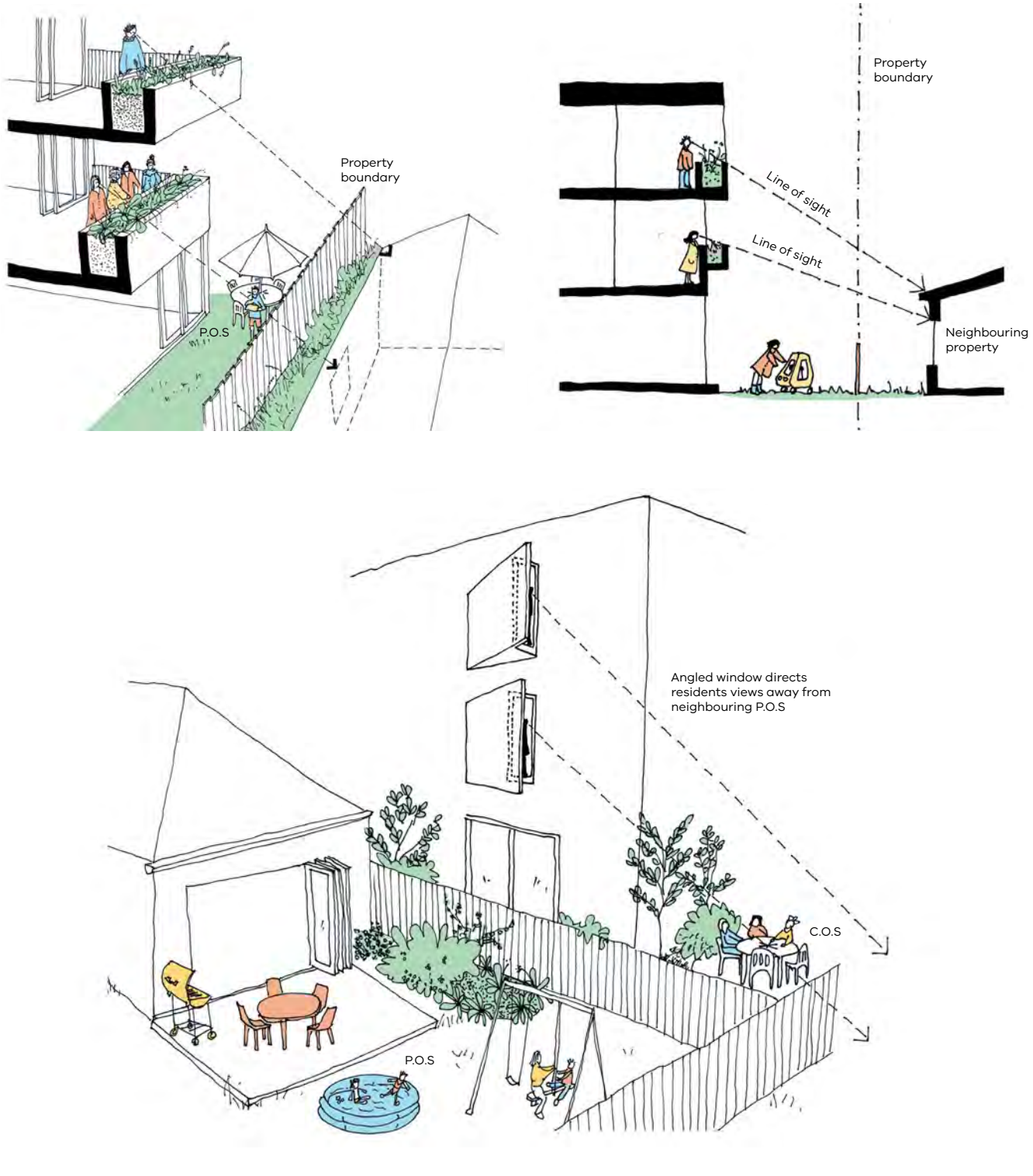


Figure 1.11: Approaches to screening to limit overlooking into neighbouring properties



4.4 Light and overshadowing

Rationale

Existing neighbours are often concerned about a new development overshadowing their habitable room windows and secluded private open space, reducing light and solar access.

A Future Homes adapted design will respond to these concerns by not significantly overshadowing the secluded private open space and habitable room windows of existing neighbours.

Principles

A. The development does not significantly overshadow existing secluded private open space.

B. The development allows adequate daylight and solar access to existing habitable room windows.

Performance targets

1. Where sunlight to the secluded private open space of an existing dwelling is reduced, at least 75 percent or 40 square metres with a minimum dimension of 3 metres, whichever is the lesser area, of the secluded private open space should receive a minimum of five hours of sunlight between 9 am and 3 pm on 22 September.
2. If the sunlight to the secluded private open space of an existing dwelling is currently not sufficient to meet the requirement in performance target 1 above, the amount of sunlight should not be further reduced.
3. A building opposite an existing habitable room window should provide for a light court to the existing window that has a minimum area of 3 square metres with a minimum dimension of 1 metre clear to the sky. The calculation of the area may include land on the abutting lot.
4. Walls or carports more than 3 metres high opposite an existing habitable room window should be set back from the window at least 50 percent of the height of the new wall if the wall is within a 55° arc from the centre of the existing window. The arc may be swung to within 35° of the plane of the wall containing the existing window.

   Where the existing window is above ground-floor level, the wall height is measured from the floor level of the room containing the window.
5. If a north-facing habitable room window of an existing dwelling is within 3 metres of a boundary on an abutting lot, the building should be set back from the boundary for a distance of 3 metres from the edge of each side of the window:
   - 1 metre **plus**
   - 0.6 metres for every metre of height over 3.6 metres up to 6.9 metres **plus**
   - 1 metre for every metre of height over 6.9 m.

Alignment with VPP: Standard B19 Daylight to existing windows (55.04-3), Standard B20 North-facing windows (55.04-4) and Standard B21 Overshadowing open space (55.04-5)

A north-facing window is a window with an axis perpendicular to its surface oriented north 20° west to north 30° east

Design considerations

1. Allow daylight into habitable room windows without the need for building cut outs and angle calculations.
2. Design built form massing to maximise sunlight to neighbouring secluded private open space.
3. Where detriment to the amenity of neighbouring properties can be limited with the siting of buildings, avoid applying a stepped massing solely to comply with the numbers in the performance targets.

Figure 1.12: Example staggered site layout to maximise sunlight to neighbouring properties

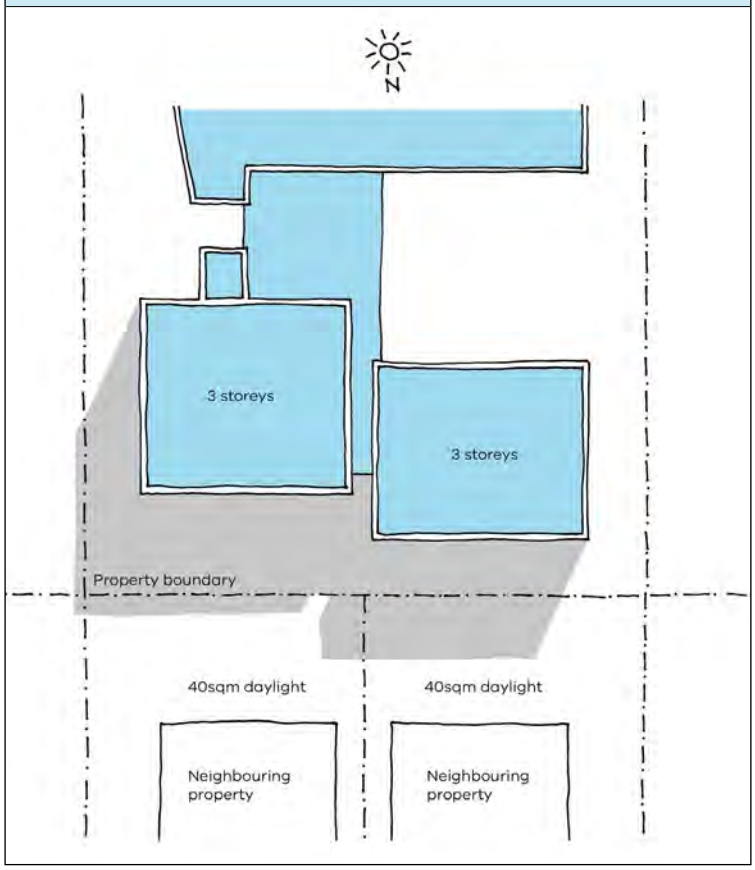
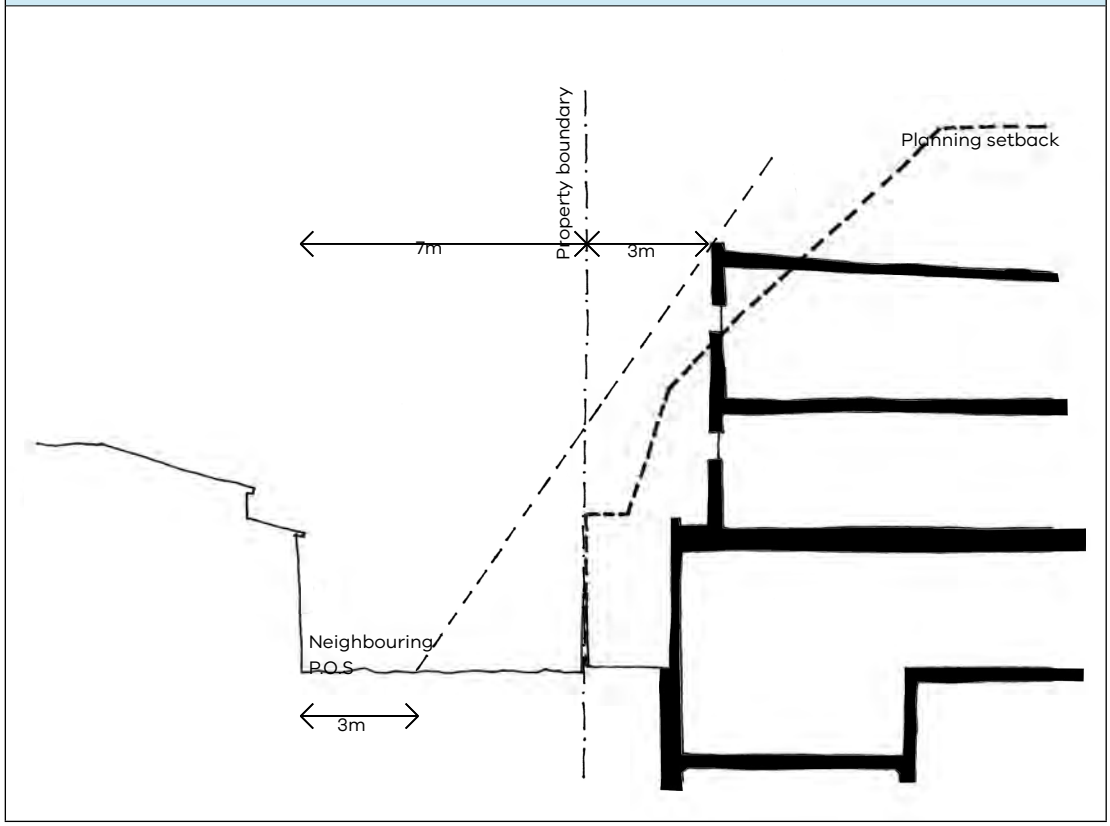


Figure 1.13: Approach to achieve satisfactory daylight to neighbouring private open space when the proposed building is outside the standard planning setback



4.5 Site access

Rationale

Characteristically in the suburbs, each site has a single vehicle crossover, and pedestrians have direct access between the street and their front door.

A Future Homes adapted design will respond to this characteristic by maintaining the landscape character of the street and ensuring a strong relationship between the building and the street, so access is safe and the visual and amenity impacts of access are minimised.

Principles

A. Provide safe, clear and separate access for pedestrians and vehicles.

B. Car movements, entries and exits should be located on the side or rear of the site, away from the main street frontage where possible. Driveway movements should comply with AS 2890.6:2009 (Parking facilities Off-street parking for people with disabilities).

C. Where shared access is proposed, ensure pedestrian space is clear and safe to use and pedestrians are given precedence over vehicles.

D. Minimise the visual and amenity impacts of vehicle access, crossovers and parking.

E. Support opportunities for greater neighbourhood walkability, if the site is adjacent to a park, laneway or reserve.

Performance targets

1. The development should have no more than one vehicle crossing.
2. Car parking entries should be minimised in size, integrated with the façade and where practicable located at the side or rear of the building.
3. Pedestrian and cyclist access should be clearly delineated from vehicle access.
4. The location of crossovers should maximise pedestrian safety and the retention of on-street car parking spaces and street trees.
5. The development must provide access for service, emergency and delivery vehicles.

Alignment with VPP: Standard B14 Access (55.03-9), Standard B40 Apartment Access (55.07-6) and Standard B52 Site Services (55.07-18)

Design considerations

1. A pedestrian pathway should be provided between car parking areas and the building's entrance. The pathway should be of adequate width, with generous space at high traffic and congestion areas, to ensure pedestrians' safety. Consider overflow areas or pop-out spaces for residents to pause and interact.
2. Encourage passive surveillance of pedestrian pathways.
3. Where shared pedestrian and vehicle access is planned, consider design approaches and paving treatments that visually and operationally support pedestrians' rights of way as the priority movement. This may call for:
    - kerb-free paving surfaces (with driveway surfaces sloped to drain towards the centre, with pits in the centre of the driveway)
    - the use of minimal road signage and fixtures
    - the use of tactile materials to delineate the different uses
    - visual street narrowing, trees, landscaping and changes in materials and colours to reduce the speed of traffic.

4. Use landscaping along borders to soften accessways and provide buffers.
5. Locate accessways along side boundaries to reduce the impact of cars on adjacent dwellings. Where possible, accessways along boundaries should incorporate landscaping.
6. Crossovers should be located to avoid the need to remove street trees.
7. Contribute to permeable, walkable neighbourhoods by allowing for:
    - pedestrian access to adjacent streets, laneways, parks, landmarks and points of interest
    - possible future links into neighbouring developments that could allow for cross-block access
    - basement ramps that require at least a 150 mm freeboard above the surrounding entry to avoid the ramp collecting rainwater run-off, but ensure the freeboard doesn't create a hump at the front footpath.

5 Enduring

A Future Homes development has apartments that are of a high-quality built standard, accepted by the community, adaptable to change, resilient, safe and family-friendly.

5.1 Adaptability and flexibility

Rationale

How and where people live changes with time. Households shrink and expand; the balance between home, schooling and work-life shifts; and the need for space — and different spaces — changes over an apartment's lifetime.

A Future Homes adapted design will ensure apartments are easy to adapt to changing needs and circumstances, particularly to one or more people working from home.

Principles

A. Apartments can be adapted to suit different household compositions over time.

B. Apartments have flexible spaces such as spaces for play, work, study or storage that households can adapt to best suit their needs.

Performance target

1. Apartments should have the ability to have one or more spaces for work or study from home.

Design considerations

1. Consider apartment structures and the location of services that would allow smaller apartments to be merged to create larger apartments.
2. Generous, well-lit spaces are the most adaptable spaces to accommodate multiple uses such as relaxing, working or studying.
3. Flexible furniture such as a retractable bed or sliding walls can provide additional flexibility, so the same space can be used differently at different times of the day and night.
4. Avoid load-bearing walls within apartments where possible, to enable future adaptation with the exception being for wet areas.

Further guidance on adaptability can be found within **Part 2 Adapting an exemplar apartment design.**

5.2 Greening

Rationale

Landscaped spaces should surround the developments with healthy planted species to improve health and wellbeing and contribute to environmental performance.

Principles

A. The development is green and leafy. It contributes to the garden character of Melbourne's suburbs and increases the net tree canopy.

B. The development improves its suburban microclimate and environment, and it supports amenity and cooling.

C. Water sensitive urban design (WSUD) principles are integral to the landscape and civil drainage design, making landscapes more resilient, improving the quality of stormwater and reusing water.

D. The development retains and protects existing canopy trees, and it provides for the planting of new trees and canopy cover if established and mature trees cannot be retained.

Mandatory requirement

1. The development must:
   - provide the canopy cover and deep soil areas shown in Table 1.14; existing trees can be used to meet the canopy cover requirements in the table
   - provide canopy cover through canopy trees that are:
     - located in areas of deep soil shown in Table 1.15; if deep soil cannot be provided, trees should be provided in planters as shown in the table
     - consistent with the canopy diameters and heights at maturity shown in Table 1.16
     - located in communal outdoor open space, common areas or street frontages
   - be supported by an irrigation system that uses alternative water sources such as rainwater, stormwater or recycled water
   - take into account the soil type and drainage patterns of the site.

When calculating mandatory deep soil areas, structures with permeable finishes and surfaces (below and above ground) including decking, boardwalks and fences, that have no continuous footings may encroach into the deep soil calculation.

Alignment with VPP: Standard B38 Landscaping (55.07-4)

Table 1.14: Canopy cover and deep-soil requirements

Site area	Canopy cover	Deep soil
1,000 sqm or less	• 5% of the site area • Include at least one Type A tree	• 5% of the site area or 12 sqm, whichever is greater
1,001–1,500 sqm	• 50 sqm plus 20% of the site area above 1,000 sqm • Include at least one Type B tree	• 7.5% of the site area
1,501–2,500 sqm	• 150 sqm plus 20% of the site area above 1,500 sqm • Include at least two Type B trees or one Type C tree	• 10% of the site area
2,500 sqm or more	• 350 sqm plus 20% of the site area above 2,500 sqm • Include at least two Type B trees or one Type C tree	• 15% of the site area

Table 1.15: Soil requirements for trees

Tree type	Tree in deep soil	Tree in planter	
	Area of deep soil	**Volume of planter soil**	**Depth of planter soil**
A	12 sqm (min. plan dimension 2.5 m)	12 m3 (min. plan dimension of 2.5 m)	800 mm
B	49 sqm (min. plan dimension 4.5 m)	28 m3 (min. plan dimension of 4.5 m)	1 m
C	121 sqm (min. plan dimension 6.5 m)	64 m3 (min. plan dimension of 6.5 m)	1.5 m

Table 1.16: Tree types

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

Performance targets

1. At least 20 percent of the site should be covered in permeable surfaces. To calculate permeability, only garden beds are included and permeable paving is not. A garden bed planted on a roof top, terrace or basement must have a soil depth of at least 600 mm (excluding drainage material) to count towards permeability.
2. The development should retain existing trees and canopy cover.
3. The development should provide for the replacement of any significant trees that were removed in the 12 months before the application was made.
4. The development should:
    - utilise established or mature trees at the time of planting
    - comprise smaller trees, shrubs and ground cover including flowering native species
    - include landscaping such as climbing plants or smaller plants in planters along the street frontage and in outdoor areas including communal outdoor open space
    - shade outdoor areas exposed to summer sun with landscaping or shade structures and use paving and surface materials that lower surface temperatures and reduce heat absorption
    - protect any predominant landscape features of the area
    - provide a safe, attractive and functional environment for residents
    - specify landscape themes, the location and species of vegetation, irrigation systems, paving and lighting.

Alignment with VPP: Standard B9 Permeability and stormwater management (55.03-4) and B38 Landscaping (55.07-4)

Design considerations

1. When calculating mandatory deep soil areas, structures with permeable finishes and surfaces (below and above ground) including decking, boardwalks and fences, that have no continuous footings may encroach into the deep soil calculation.
2. The landscape scheme should be integrated with the development by:
    - providing high-quality front gardens and green spaces with canopy trees to create a strong landscaped street presence
    - utilising spacing between buildings to provide visual and physical relief for residents and existing neighbours
    - providing for a rear corridor of landscaping including tree planting.
3. Landscaping materials should be durable, resilient, safe and fire-resistant. They should be easy to maintain and be consistent with the Future Homes materials schedule included in the exemplar design package.
4. Public, communal and private landscape spaces should be interconnected, to promote a sense of community. These spaces should incorporate productive gardens, good access to light and comfortable benches and seating, to encourage use and social interaction.
5. Deep soil planting should be preferred to the excessive use of planter boxes.
6. The development should provide green surfaces and support biodiversity with a diverse landscape structure including green walls, a shrub storey, groundcover and planting that thrives under the site conditions.

For additional guidance on landscaping, refer to Appendix 3: Landscape

7. Landscaping should be resilient, climate change adaptive, drought-tolerant, functional and reduce urban heat by:
    - avoiding excessive use of hard surfaces at ground level, to the detriment of landscape and permeability
    - planting canopy trees in deep soil and communal areas, to support their longevity and avoid the excessive use of planter boxes
    - providing automatic irrigation systems to all communal landscapes except vegetable gardens, to ensure plants establish properly and are drought-tolerant
    - retaining stormwater, to provide water for irrigation and so minimise the use of potable water
    - using grass areas that are appropriately sized and designed for children to play, people to relax and socialise, and for similar purposes, rather than just for visual amenity
    - managing sun-exposed areas by using landscaping, shade structures, light-coloured roofs and paving materials that lower surface temperatures.
8. Provide infrastructure to support gardening such as space for a tool shed, a potting bench, compost facilities and external taps.
9. Provide an outdoor tap and drainage for each apartment, to allow for irrigation for gardening and for maintaining planting.
10. Landscaping materials should be durable, resilient, designed for safety, fire-resistant and easy to maintain; and they should be consistent with the Future Homes materials schedule included in the exemplar design package.

Climbers and cascading plants

11. A climber or cascading planter fixed to an external wall, pergola, balcony or verandah should be of a species that retains its leaves and remains green year-round. Where used, a performance solution with respect to combustibility and fire safety will be required.
12. Climbers should be grown from a deep-soil area where possible. If grown in a planter box, the box should be at least 500 mm wide and 700 mm depth excluding drainage materials.
13. Easy access should be provided to climbers and planters, for maintenance.
14. Balconies with planters should be designed so people can't use them to climb over the balustrade, as the National Construction Code requires.
15. Planters on balconies should avoid a heavy load on the edge of the cantilever that could deflect the floor and result in poor drainage.

5.3 Integrated landscape

Rationale

The site layout and architectural planning should integrate landscape to create high-quality, usable spaces that complement the architectural design and create good growing conditions for plants.

Principles

A. The siting and landscape approaches are integrated in the overall design strategy.

B. Views into communal open space and the public realm are encouraged, to increase passive surveillance.

C. The landscape design is coordinated with site services to optimise conditions for tree canopy and planting. WSUD, services infrastructure and trenching are designed to avoid compromising deep soil areas.

Performance target

There are no performance targets for this planning elements.

Design considerations

1. Landscaping should be provided in outdoor communal areas and private gardens.

2. Public, communal and private landscape spaces should be interconnected, to promote a sense of community. These spaces should incorporate productive gardens, good access to light and comfortable benches and seating, to encourage use and social interaction.

5.4 Materials and maintenance

Rationale

The look and feel of a development is influenced by choices of materials, textures and colours. These choices also affect the development's climate impacts, the comfort and safety of its residents and its long-term appearance and maintenance requirements.

A Future Homes adapted design will choose materials, textures and colours that mitigate climate impacts, promote comfort and safety, are durable and look good in the long term as well as minimise initial and ongoing maintenance costs. From a neighbourhood character perspective, choices will contribute to the residential function of the building and highlight or mitigate the impacts of some building elements.

Principles

A. Materials and products are safe for occupants, construction workers and the environment.

B. External materials and finishes support adaptation to the local context and retain their attractiveness and resilience.

C. Building materials are high-performing, enduring, durable and easy to maintain.

Performance targets

Alignment with VPP: Standard B53 External walls and materials (55.07-19)

1. External walls should be finished with materials that:
   - do not easily deteriorate or stain
   - weather well with time
   - are resilient to the wear and tear from their intended use.
2. The design of external walls should facilitate safe, convenient access for maintenance.

Design considerations

1. Materials should be durable, to minimise the need to maintain and replace them.
2. Materials should be capable of being recycled and repurposed at the end of their lifecycle.
3. Servicing or maintenance that needs specialist contractors or equipment should be minimised.

Embodied impact

4. The development should reduce the embodied energy, carbon and water of the materials it uses through:
   - the use of low impact materials such as sustainably sourced timber, recycled bricks and products that have been proved to have lower embodied impact **and/or**
   - careful, efficient design — particularly of the structure — to use less material overall than is standard practice.
5. The environmental impact of building materials should be reduced by ensuring:
   - common uses of polyvinyl chloride or PVC (as set out in Green Star PVC Credit) either do not contain PVC or comply with the Green Building Council of Australia's Best Practice Guidelines for PVC[1]
   - all timber used on site (including hoarding and the like) will be from sources certified by either the Program for the Endorsement of Forest Certification (PEFC) or the Forest Stewardship Council (FSC), or it is re-used

- all steel used on site is sourced from a Responsible Steel Maker (as set out in Green Star[2]); the manufacturer of the steel must comply with AS/NZS 5131:2016 Structural steelwork - Fabrication and erection, and test certificates may need to be produced if requested
- the use of concrete such as for footings, piles, pits and the transfer slab is minimised. Fly ash and recycled aggregate are examples of suitable replacement material.

Toxicity

6. All materials and finishes should be of very low toxicity, such that:
   - all engineered wood products used on site meet the total formaldehyde limits set for Green Star
   - all internally applied adhesives, sealants and carpets meet Green Star limits on volatile organic compound (VOC) content
   - all internally applied paints are zero-VOC or contain a total VOC content of less than 5 g/L.

5.5 Site services

Rationale

A Future Homes adapted design will make planning for services an integrated part of the development, to avoid creating visually unappealing interfaces. Facilities including waste are planned to maximise opportunities for sustainability.

Principles

A. Common property, where provided, should be functional and capable of efficient management and maintenance.

B. The location and spatial requirements of site and utility services minimise their visual impact.

C. Site services are coordinated with the landscape design, to optimise opportunities for greening.

D. The development is connected to reticulated services including reticulated sewerage, drainage and electricity, and it does not use fossil fuels including gas.

E. The development does not unreasonably overload the capacity of utility services, infrastructure and roads.

F. Waste facilities are integrated, convenient and facilitate sustainable waste management.

G. There are communal collection bins in a centralised waste storage area to accommodate receptacles for four waste/recycling streams.

H. There are compost facilities on site, to encourage and enable residents to compost their kitchen and garden organics.

I. Bin transfer paths are designed for convenient waste collection.

[1] https://new.gbca.org.au/pvc/

[2] https://www.steel.org.au/focus-areas/environmental-sustainability/environmentally-aware-steelwork-fabrication-and-pr/how-is-a-green-star-point-obtained-via-the-esc/

Performance targets

1. There is provision for site services within the frontage, and services are integrated with the design of the building, fence and/or landscape design.
2. In an area where utility services or infrastructure have little or no spare capacity, the development should provide for the upgrading of — or the mitigation of its impacts on — services or infrastructure.
3. The size of a waste storage area should be in proportion to the number of apartments it serves. Table 1.17 provides a guide, but more space might be required, depending on the design and layout of the bin storage area.

Alignment with VPP: Standard B4 Infrastructure (55.02-4), B33 Common property (55.06-3), Standard B45 Waste and recycling (55.07-11) and Standard B52 Site services (55.07-18)

Table 1.17: Waste storage area requirements

Number of apartments	Waste storage area required (including circulation)
8–9	11 sqm
10–11	13 sqm
12–17	16 sqm
18	17 sqm

Design considerations

General

1. Services including storage, waste and parking areas should be consolidated to improve utility, reduce costs and use robust materials and finishes.

Services

2. Site service requirements vary, and their spatial requirements and conditions should be considered. This includes fire pumps and associated tanks.
3. Site services should not dominate the building's façade and should be designed as an integrated component of the building or landscape.
4. Heat-rejection plant should be in an external area (to avoid units overheating), easy to access for maintenance and not visually intrusive.

Waste

5. Consider the implications of on-site private waste collection (where used) in the car park layout and access.
6. Bin and hard waste storage areas should be easily accessible and conveniently located for people with limited mobility.
7. A waste storage area should have hard surfaces (of concrete or similar) that is finished to a smooth, even surface.
8. Kitchen cabinetry should have receptacles of sufficient size for rubbish, mixed recycling, kitchen organics and glass recycling, to encourage and enable residents to separate waste and recyclables at their point of generation.
9. There should be facilities for the on-site treatment of organics.
10. A hard waste storage area should be undercover and raised or bunded, so rain and water from bin-washing don't interfere with hard waste and e-waste items.

11. Waste storage areas and bins should have Sustainability Victoria (or equivalent) signage telling residents how to dispose of each waste stream.
12. Ventilation openings should be protected from flies and vermin, and waste storage areas should be well ventilated, to minimise smells.
13. The exit point of air flowing from a waste storage area should not be close to apartments.
14. A waste storage area or bin room should:
    - be located within 10 metres of the collection point
    - be graded to an approved drainage outlet and provided with a tap for washing bins
    - be ventilated in accordance with the requirements of the Building Code of Australia and AS 1668.2 – Mechanical Ventilation of Buildings
    - have a minimum door-opening width of 1.2 metres, to allow for the entry and exit of 660 L and 1100 L bins
    - have artificial lighting inside and outside the area or room
    - be large enough to accommodate the required communal collection bins (including sufficient space for future glass recycling collection bins), a hard waste storage area, bin-washing facilities and sufficient circulation space to ensure bins are accessible and there is minimal handling of bins.
15. If an on-site bin room is more than 10 metres from the collection point, there should also be a temporary waste holding area within 10 metres of the collection point.

Temporary waste holding area design

16. A temporary waste holding area should have a hard surface (including permeable paving and another compacted, durable surface) that supports the weight of 1100 L bins and allows bins to be easily transferred in and out of the holding area.
17. For private waste collection, a temporary waste holding area should be large enough to hold one waste stream. For council collection, it should be large enough to hold one week's waste.
18. A temporary waste holding area should be integrated into the landscape, to minimise its impact on the street and residents.
19. A temporary waste holding area should be screened so bins are not visible from the public realm.

Composting facilities

20. There should be a communal composting unit such as a tumbler system near communal garden areas, and it should be efficiently managed.

Bin-washing facilities

21. A waste storage area should have a graded floor that is connected to a drain fitted with a litter trap, in accordance with the relevant authority's requirements.
22. A waste storage area should have a wall-mounted hot and cold mixing tap and a hose for washing bins.

Access

23. A bin transfer path — a path between a waste storage area and a collection point — should:
    - be at least 1.5 metres wide
    - have a maximum gradient of less than 1:14
    - be free of lips, steps and other obstacles.

24. If the bin transfer path has a gradient greater than 1:14, a bin tug should be provided in the waste storage area to help transfer bins to and from the waste collection point.
25. If the waste storage area is located on the basement level and on-site waste collection is not feasible, a bin tug should be provided in the waste storage area to help transfer bins to and from the waste collection point.
26. To enable on-site waste collection with a private waste-collection vehicle, there should be a turnaround area determined through a swept path analysis and headroom clearance at the collection point of at least 2.5 metres.
27. Waste-collection points should have a headroom clearance of 2.5 metres, so 1100 L bins can be collected.

Hard waste storage areas

28. A hard waste storage area should:
    - include dedicated areas for e-waste and household chemicals
    - should be suitably screened, so hard waste items can't be seen from the public realm
    - should be undercover and raised or bunded, so rain and water from bin-washing don't interfere with hard waste and e-waste items.

6 Sustainable

A Future Homes development demonstrates how apartment living can exceed current sustainability requirements and be zero-carbon ready.

6.1 Environmentally sustainable design

Rationale

Victoria is moving strongly to mitigate climate change and adapt to its impacts including through the Climate Change Act 2017[3] and Victoria's Climate Change Strategy[4].

A Future Homes adapted design will produce a development that is energy-efficient, uses less fossil fuel, makes good use of sunlight, is thermally efficient and is resilient to climate change impacts.

The sustainability of the exemplar designs is assessed through the mandarory and non-mandatory requirements in the **Environmentally Sustainable Design (ESD)** checklist in **Appendix 6**. The requirements achieve a minimum Built Environment Sustainability Scoreboard (BESS) overall score of 70 percent (Excellence) or an equivalent score using an equivalent ESD assessment tool such as Green Star (minimum certified, 4 Star). A consultant must prepare a report to demonstrate that a proposal achieves the equivalent of a 70 percent (Excellence) BESS score, the report must be signed and demonstrate how each criterion is met based on the design and specifications as submitted for planning approval.

Principles

A. The development achieves excellent sustainability outcomes.

B. The development's buildings and apartments are energy-efficient.

C. The development protects, where feasible, the photovoltaic (PV) systems of existing dwellings.

D. The development's orientation and layout reduce the use of fossil-fuel energy and make good use of daylight and solar energy.

E. Apartments have adequate thermal efficiency.

F. The development is highly resilient to climate change impacts, particularly extreme heat events.

G. The development optimises on-site renewable energy generation and is ready for net-zero- operation by excluding all fossil fuels on site.

Mandatory requirements

1. The development must be oriented to make appropriate use of solar energy.

[3] https://www.legislation.vic.gov.au/in-force/acts/climate-change-act-2017/005

[4]. https://www.climatechange.vic.gov.au//__data/assets/pdf_file/0025/522169/Victorian-Climate-Change-Strategy-Accessible.pdf

2. The development must at a minimum:
    - achieve a 7.5 star NatHERS average rating — area-weighted across all apartments — with no individual apartment less than 6.5 stars
    - achieve a minimum BESS overall score of 70 percent (Excellence) or an equivalent score using an equivalent ESD assessment tool such as Green Star (minimum certified, 4 Star). Where a consultant prepares a report to demonstrate that a proposal achieves the equivalent of a 70 percent (Excellence) BESS score, the report must be signed and demonstrate how each criterion is met based on the design and specifications as submitted for planning approval.
    - achieve a 100 percent Stormwater Treatment Objective - Relative Measure (STORM) rating for the site.

Performance targets

1. The development should:
    - meet the annual cooling energy limits shown in Table 1.18
    - be sited and designed so the energy efficiency of existing dwellings on adjoining lots is not unreasonably reduced
    - sited and designed so the performance of rooftop solar energy systems on existing dwellings on adjoining lots in a General Residential Zone, Neighbourhood Residential Zone and Township Zone is not unreasonably reduced. The existing rooftop solar energy system must exist at the date the application is lodged.
2. Living areas and private open space should face north, if practical. If being good neighbours (by reducing visual bulk and providing visual relief) is prioritised, south-facing private open space can be acceptable if the apartment will have good solar access.
3. The development should be designed so solar access to north-facing windows is optimised through appropriate window size, shading and location.

Alignment with VPP: Standard B35 Energy efficiency (55.07-1)

Table 1.18: Cooling load

NatHERS climate zone	NatHERS maximum cooling load (MJ/M2 per annum)
Climate zone 21 Melbourne	30
Climate zone 22 East Sale	22
Climate zone 27 Mildura	69
Climate zone 60 Tullamarine	22
Climate zone 62 Moorabbin	21
Climate zone 63 Warrnambool	21
Climate zone 64 Cape Otway	19
Climate zone 66 Ballarat	23

Note: Refer to NatHERS zone map, Nationwide House Energy Rating Scheme (Commonwealth Department of Environment and Energy)

Design considerations

There are no design considerations for this planning element.

Appendix 6: Environmentally sustainable design sets out requirements and provides background information about how the exemplar designs meet the performance targets. Appendix 6 and the accompanying technical report(s) outline specific requirements, outcomes of modelling and guidance about when the provided data is applicable.

6.2 Energy efficiency: passive systems

Rationale

Good design makes homes comfortable throughout the year passively, which reduces the need for active systems: active systems can be costly and can contribute to greenhouse gases.

A Future Homes adapted design will use best practice passive design.

Principles

A. The building's envelope provides comfortable internal conditions and minimises the use of active systems.

B. The development uses best practice passive design.

Performance target

1. The building should:
    - use high-performance window frames — thermally broken, timber or uPVC — as standard, even if it is not required to meet the NatHERS target
    - be as airtight as possible.

Design considerations

There are no design considerations for this planning element.

6.3 Energy efficiency: active systems

Rationale

To mitigate climate change and its impacts, active systems in all new developments will be highly efficient and minimise carbon emissions.

A Future Homes adapted design will generate its energy rather than only use fossil fuels, and its active systems will be highly efficient.

Principles

A. The development does not have plant or equipment that can only operate on fossil fuels.

B. The development should generate renewable energy on site and distribute it throughout the building(s).

C. The development's active systems are highly efficient.

D. The development's active systems are integrated into the design, and there is adequate space for them.

Performance target

1. Locate and set out equipment to reduce the length of refrigerant pipe runs and loading, and support the use of refrigerants with low Global Warming Potential.
2. Split system Energy Star ratings should be within one Star of the best available for the given capacity in heating mode.

Design considerations

There are no design considerations for this planning element.

6.4 Natural ventilation

Rationale

Natural ventilation increases oxygen levels and flushes out unwanted humidity, carbon dioxide and other pollutants. It also provides cleaner and healthier air for the wellbeing and health of residents.

A Future Homes adapted design will include an effective ventilation strategy for apartments.

Alignment with VPP: Standard B49 Natural ventilation (55.07-15)

Principles

A. All apartments have effective natural ventilation.

B. Residents can effectively manage the natural ventilation of their apartments.

C. If an apartment does not have effective natural ventilation or there is a strong argument (in terms of feasibility or better outcomes) to support doing so, apartments may have mechanical ventilation with heat/energy recovery.

Mandatory requirements

1. The design and layout of apartments must maximise openable windows, doors or other ventilation opportunities in external walls.
2. 100 percent of apartments must provide effective natural ventilation as per the definition in Appendix 6 – ESD. Key requirements for effective natural ventilation include, but are not limited to:
    - for cross-ventilation:
        - a maximum breeze path of 18 metres between ventilation openings, with a minimum distance of 5 metres
        - ventilation openings located either in opposite or adjacent (perpendicular) external walls or an external wall and an operable skylight
        - no more than one doorway or opening of less than 2 square metres between the ventilation openings
    - for single-sided ventilation, a maximum permissible room depth of 5 metres.

For additional guidance on mechanically asisted natural ventilation, refer to Appendix 6: Environmentally Sustainable Design

Performance targets

There are no performance targets for this planning element.

Design considerations

There are no design considerations for this planning element.

6.5 Heat island effect

Rationale

The heat island effect is the localised heating of open space, suburbs and cities due to heat absorption and radiation by thermally massive concrete or other heavy materials.

A Future Homes adapted design will mitigate the heat island effect by its choices of external materials and with planting and shading.

Principles

A. The development includes measures to minimise the impact of the heat island effect, and it provides places of refuge during extreme heat events.

B. The building, shading and roof are generally a light colour.

Performance targets

There are no performance targets for this planning element.

Design considerations

There are no design considerations for this planning element.

6.6 Water management

Rationale

In recent years, Victoria has moved from the traditional drainage-engineering approach to stormwater management to WSUD approaches that help create and maintain urban landscapes that use water efficiently; are green, cool, pleasant places for people; and have healthy waterways, wetlands and coasts.

A Future Homes adapted design will adopt best practice for stormwater management, making good use of precious water resources and minimising the impact of run-off and its associated harms. It will also minimise the use of potable water with storage, distribution facilities and efficient fixtures.

Principles

A. Minimise the on-site use of potable water through fixtures, fittings, appliances, landscaping and by providing on-site storage for rainwater for use in toilets and irrigation.

B. Minimise the site's impact on downstream stormwater infrastructure and contribute to replenishing the water table such as by providing permeable surfaces, rainwater tanks or raingardens.

C. Encourage the use of alternative water sources such as rainwater, stormwater and recycled water.

D. Facilitate the collection, use and infiltration of stormwater within the development.

E. Reduce the impact of stormwater run-off on the drainage system, and filter sediment and waste from stormwater before it is discharged from the site.

Alignment with VPP: Standard B39 Integrated water and stormwater management (55.07-5)

Performance targets

1. Buildings should be designed to collect rainwater for non-drinking purposes such as for use in toilets, laundry appliances and gardens.
2. Buildings should be connected to a non-potable dual-pipe reticulated water supply, where the relevant water authority provides one.

3. The stormwater management system should be designed to:
    - meet the best practice performance objectives for stormwater quality set out in the *1999 Urban Stormwater Best Practice Environmental Management Guidelines*[5]
    - maximise the infiltration of stormwater, water and drainage of residual flows into permeable surfaces, tree pits and treatment areas.

Design considerations

1. The rainwater tank should be sized and located in line with council requirements.
2. Tanks should be located in an area that is unobtrusive but which minimises the pumping needed to get the water to where it is used.
3. External ramps and stairs should have trench grating.
4. Retaining walls should be built with passive drainage methods that can be cleaned regularly. Weep holes at the bases of retaining walls should be adequately drained away from the wall.
5. Encourage discussing the proposal with the relevant water utility provider for advice on any new initiatives for onsite water savings and reuse.

[5]https://www.publish.csiro.au/ebook/download/pdf/2190

7 Adaptable

A Future Homes development is adaptable and replicable on typical suburban lots in Victoria, meeting or exceeding current planning, policy and environmental objectives.

7.1 Buildability

Rationale

Good design and considered construction methods can make building apartments more efficient and cost-effective by reducing labour costs and material waste and by maximising space and build quality.

Future Homes make high-quality, well-designed apartments available to more people. Future Homes exemplar designs have been designed to a competitive construction rate commensurate with similar products on the market.

A Future Homes adapted design will strike a balance between conventional approaches to construction and new ways of building such as prefabrication, modularisation and off-site construction.

There is further information about construction cost rates in Appendix 7.

Principles

A. The development is adaptable for changes in use over time.

B. The development's design addresses whole-of-life-cycle costs such as for energy, maintenance, user comfort and environmental outcomes.

Performance target

There are no performance targets for this planning element.

Design considerations

1. Use efficient construction approaches and explore opportunities for prefabrication.
2. Align façade finishes and joints, consistent with industry-recognised modules and accounting for construction joints.
3. When detailing wall construction, avoid a build-up of multiple layers or finishes.
4. Reduce the extent of structural transfer, structural-level changes and complex service runs. Doing so can reduce the need for bulkheads and simplify the design of the framing.
5. Use efficient grids and typical modules to simplify framing design. Standardisation, repetition and prefabrication of framing can reduce material waste and on-site labour and streamline fabrication and transportation.
6. Align wet areas to simplify and reduce plumbing reticulation and infrastructure.
7. The sizes and layout of windows, doors, bathrooms, kitchens, laundries, robes and other components should be grouped into types that can be repeated across apartments and in different combinations.

7.2 Operations

Rationale

The ongoing costs of operating and maintaining a completed building over time are considerations for apartment owners.

A Future Homes adapted design will contribute to the affordability of the development's apartments over time by using systems and materials that need less ongoing care and maintenance to keep them in good order.

Principles

A. Systems and materials require minimal ongoing maintenance to keep them in good order.

B. There is an integrated approach to architecture, landscape, services and structure incorporating active and passive systems for energy reduction.

Performance targets

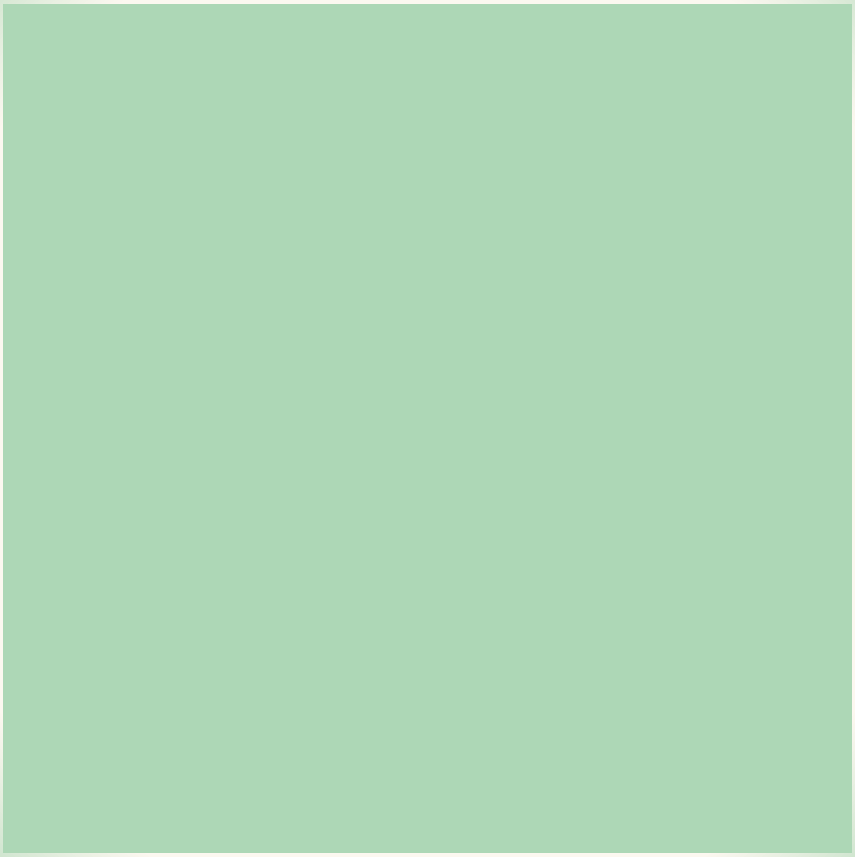
There are no performance targets for this planning element.

Design considerations

1. Consider whole-of-life costs including energy consumption, user comfort, longevity and safe replacement when choosing fittings and fixtures.
2. Locate services where they are accessible from common areas.

Part 2

Adapting an exemplar apartment design



Introduction

Part 2 is divided into four sections, one for each of the exemplar design options.

Part 2 provides:

- general adaptation guidance for the exemplar designs
- specific approaches to adapting an exemplar design for a particular site and context, by illustrating how a designer can manage common design challenges.

This guidance is not exhaustive, and other ideas may be appropriate depending on a development's particular circumstances.

Table 2.1 explains the structure of each section of Part 2.

Table 2.1: Part 2 structure

Item	Content	Purpose
General adaptation guidance	Guidance about how exemplar designs can be adapted to a range of different sites and contexts	• To be used by designers to understand how a plan can successfully adapt to a particular site scenario and maintain the principles and status of a Future Homes exemplar design • To outline approaches to adaptations for different conditions, such as lot sizes and shapes, orientation, topography, surrounding contexts, dwelling mixes and amenity impacts
Exemplar guidance	Guidance relevant to the exemplar design, authored by the architects	• To provide an overview of the designer's thinking and intent for adaptation

Part 2A

Exemplar Design A
Design Strategy Architecture
with IncluDesign

Design Statement

Prepared by Design Strategy Architecture with IncluDesign

Exemplar Design A by Design Strategy Architecture with IncluDesign comprises a series of urban, architectural, landscape, environmentally sustainable design and cost-effective design strategies, that work together to generate high-quality, medium-density living.

The scheme consists of three key design elements: a well-sized *communal courtyard*, a welcoming *threshold garden* and strategically located *communal stairs*. All elements are designed to support interactions between the residents and neighbourhood, and respond to contextual conditions.

Siting strategy

In addition to the three core design elements noted above, this exemplar brings together the following massing considerations to provide a well considered interface to the neighbouring properties, and support high-quality internal amenity for the new apartments.

- The scheme is composed as three separated blocks articulated through the courtyard and the vertical circulation elements. By breaking down the built form, this exemplar allows for high levels of access to daylight and cross-ventilation for all apartments. The strategy also speaks to the gentler integration of a new development in a predominantly single-storey context.
- The exemplar is designed to provide sufficient setback and landscape buffers along the boundaries including areas for deep soil. This encourages a greener interface with existing neighbours.
- The massing approach provides a ‘corner-lot aspect’ to most apartments, ensuring ample access to daylight and cross-ventilation for all apartments.
- The design optimises opportunities for passive surveillance and activation through careful placement of openings and ‘habitable façade' elements.

Common space

- The communal courtyard has been designed to support daily activities of the residents. It is protected from the street and provides opportunities for the residents and the community to share, meet and interact at different times.
- It is intended to promote the gathering of groups and households with spaces for relaxation, play areas for children, and gardening production and education.
- The building is separated a minimum of 9 metres across the courtyard, to minimise interlooking and maximise solar access.
- Planter boxes and climber guides are designed to be a suitable medium for vegetation and food production.
- The threshold garden is the main pedestrian entry into the heart of the site. Seating elements, mailboxes and planting are integrated into the journey.
- Key design elements in and around the threshold garden in the north-south schemes include a medium tree that can grow to full height, planter boxes with climbers and cascading foliage on balconies, vertical climbers against the wall and a permeable ground surface to promote stormwater filtration.
- The central *communal stairs* are a core architectural element. They are designed to promote passive surveillance, community interaction and intuitive wayfinding.

Design and materiality

The apartments have been carefully designed to maximise internal amenity and take advantage of the 'corner-lot aspect' achieved by the building massing.

- All apartments are dual-facing, with access to light and cross-ventilation. Most apartments have a corner aspect, with living areas focused towards the north, east and west.
- The entry doors have an integrated transitional space, heightening the sense of arrival into the apartment and providing utility for storage and hanging.
- The apartment's access to daylight and sunlight is prioritised, including skylights over staircases and on the upper-floor living areas.
- The material strategy focuses on cost-effective and low-maintenance options on the upper levels, balanced with tactility on the lower level. Colorbond of fibre-cement sheet is paired with brick or timber to provide a contrast.
- Environmentally sustainable design initiatives are considered including recycled, locally sourced and high-performance materials, to minimise the carbon impact.

Operations

Further cost and effort minimisations are considered, including the following:

- Maintenance access and safety such as windows are able to be cleaned from the interior, and use of lightweight, durable cladding to reduce the need for scaffolding
- Common areas are proposed to be very durable, consisting of concrete structure, metal handrails and steel mesh
- On-site photovoltaic and rainwater harvesting is prioritised, and there is space allowance for battery storage.

1 Introduction

This chapter guides designers adapting Exemplar Design A for a particular development site. Authored by the architects who designed the exemplar, the chapter is organised according to the six Future Homes objectives that adapted designs need to address: Responsive to Need, Liveable, Good Neighbours, Enduring, Sustainable and Adaptable.

For each objective, the chapter sets out:

- how to adapt the design to fit different sites and contexts
- preferred and discouraged approaches to adaptation
- ideas to adapt the design to suit particular needs such as a different bedroom configuration or a main road location
- ideas to achieve better development and design outcomes by adapting the design if the opportunity arises.

The guidance in this section is not exhaustive, and there is no adaptation guidance for some planning elements. It is up to the designer to process or interpret the exemplars. The assessment process will treat all adaptations on their merits.

2 Responsive to need

2.1 Apartment mix and size

General adaptation guidance

Apartment designs need to respond to the changing patterns of living, including an increasingly diverse household mix and size.

The apartment should be sufficiently adaptable to allow:

- the ability to upsize or downsize: for example, by having the space and services configuration to combine smaller apartments to create a larger apartment and vice versa
- multi-purpose spaces for work and study from home
- internal functions to be rearranged over time: for example, bathrooms, kitchens and laundries that can be reconfigured or be combined differently.

Preferred approaches include:

✔ the layout is easy to change

✔ open-plan living spaces cater for flexible furniture arrangements

✔ floor space is used efficiently.

Discouraged approaches include:

✘ excessive corridors and passageways

✘ excessive use of built-in joinery without sacrificing storage.

Exemplar Design A adaptation guidance

This adaptation can accommodate:

- a different mix of apartments based on market demand
- merging apartments to provide different bedroom mixes and configurations.

Figure 2A.1: Examples of internal layout adaptation to suit different apartment mix

2.2 Parking: cars

General adaptation guidance

If it is acceptable to have fewer car parking spaces, the design should be adapted to avoid the need to use mechanical parking. The development should also allow for future adaptation of car parking spaces to alternative uses to support changes in use, personal preferences and technology over time.

Measures to support future adaptation include sufficient floor-to-ceiling height to allow future habitable spaces to be inserted with access to natural light.

Exemplar Design A adaptation guidance

Figure 2A.2: Parking at grade (non-mechanical option)

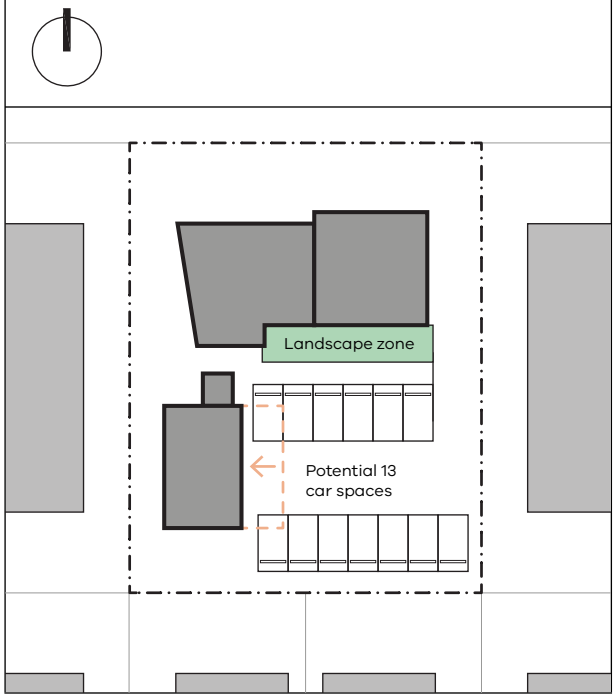
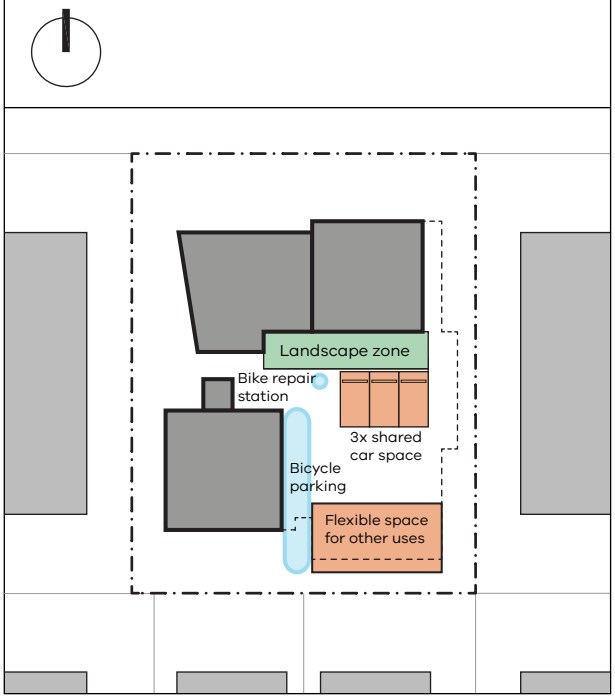


Figure 2A.3: Reduced car parking and other uses



Note: Potential uses could include workshops or co-working office space.

Figure 2A.4 shows how other uses may emerge on the ground level to activate the street in an adaptation to have no car parking spaces on the site. Figure 2A.5 shows how additional car spaces can be accommodated by mixing at grade car parking with mechanical parking.

Figure 2A.4: No car parking

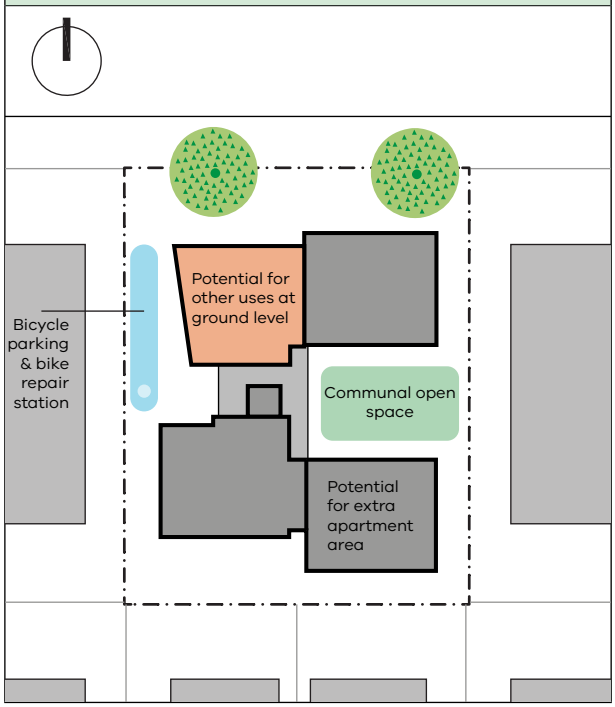
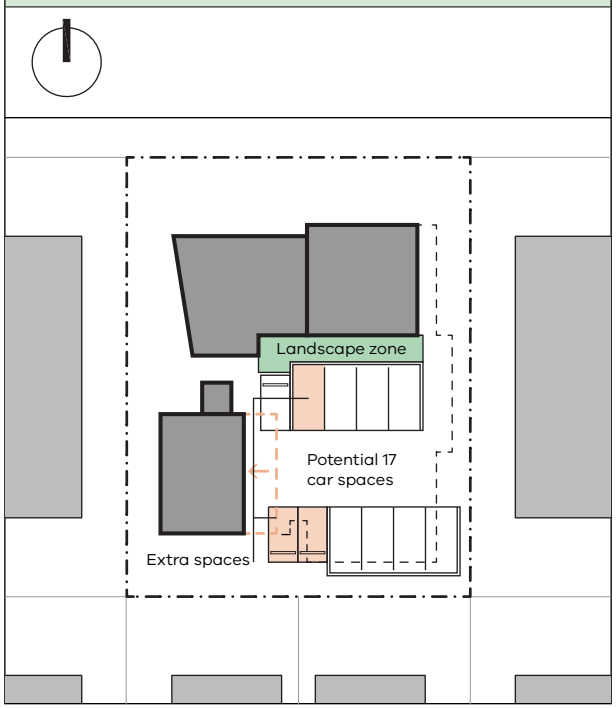


Figure 2A.5: Additional car parking spaces



2.3 Parking: bicycles

General adaptation guidance

Consider locating bicycle parking within enlarged balconies, without compromising useable space for residents' recreation.

Bicycle parking provided on enlarged balconies will require the provision of a bicycle-accessible path from the ground floor. Where bicycle parking is provided on upper floors, lifts and/or stairs should be designed to provide ease of access.

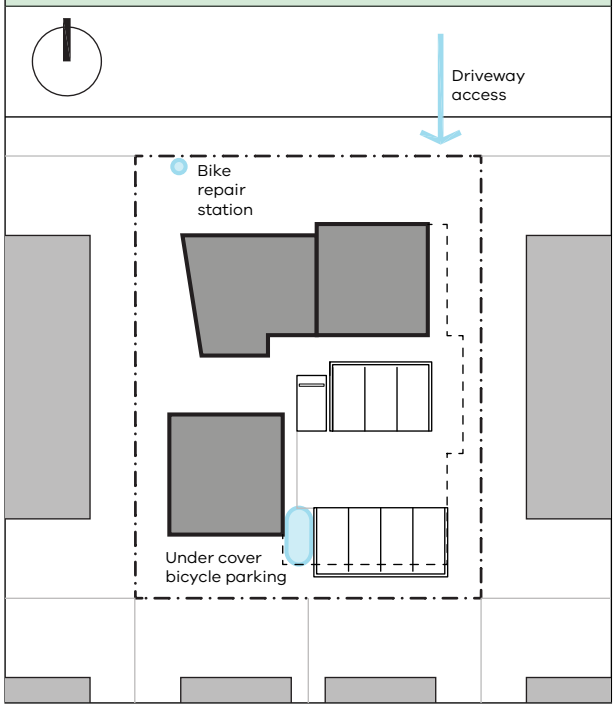
Preferred bicycle parking spaces are those that are covered from the weather and secured.

Exemplar Deisgn A adaptation guidance

Undercover bicycle parking

Figure 2A.6 shows the area designated for bicycle parking, with a vertical, wall-mounted system. More or other bicycle parking spaces could be created by providing fewer or no car parking spaces.

Figure 2A.6: Undercover bicycle parking



3 Liveable

General adaptation guidance

There is no general adaptation guidance for the Liveable objective, but that does not mean alternative solutions are not acceptable. Where one is proposed, the objectives, principles and mandatory requirements in Part 1 must still be met.

4 Good neighbours

4.1 Front setback

General adaptation guidance

Front setbacks need to be adapted to the street context. The starting point should be the predominant street setback along the length of the street up to 150 metres (or about ten properties) on either side. Within a site, the building setback may be staggered, forward or behind the predominant street setback having regard to the local context, design outcome and impact on the streetscape.

When determining the front setback or setbacks, the considerations should be:

- the wider streetscape and urban block pattern
- whether an adjoining building sits forward of the predominant street setback
- opportunities to use articulation to transition between neighbouring sites
- whether the approach responds to the emerging or future character of the area
- opportunities to provide suitable canopy tree planting.

Preferred approaches include:

✔ upper-level projections including balconies that provide weather protection for the spaces below

✔ where a lesser front setback is appropriate, consider increasing the rear setback and/or providing additional internal breathing space between buildings.

Discouraged approaches include:

✘ monolithic setbacks without breaks or variations

✘ balcony projections that will limit the planting of canopy trees.

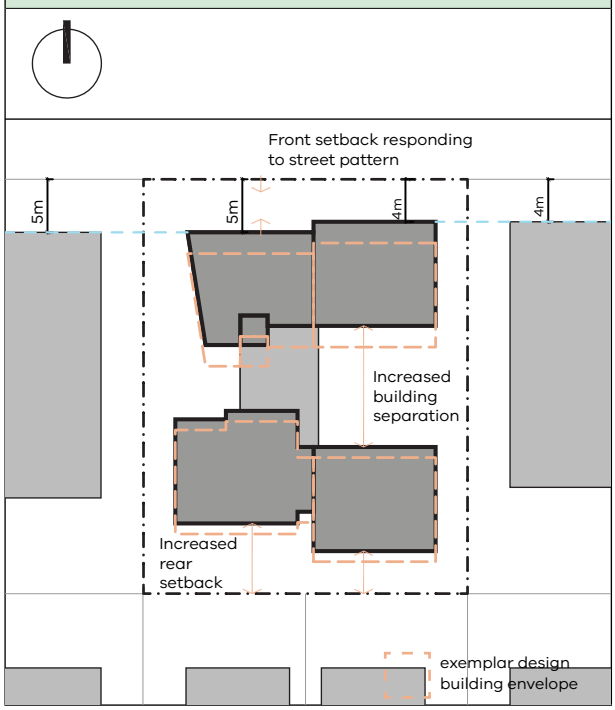
Exemplar Design A adaptation guidance

Reduced front setback, increased building separation and rear setback

In this adaptation, the front setback is less than the exemplar design because the wider street character allows for reduced setbacks.

This in turn creates an opportunity to increase building separation and communal open space — a courtyard — in the centre of the site. It also allows for an increased rear setback, as Figure 2A.7.

Figure 2A.7: Reduced front setback, increased building separation and rear setback



4.2 Height

General adaptation guidance

Where the responsible authority permits, the exemplar design can be adapted to add another storey. A fourth storey may reinforce the existing character of the wider urban context or respond to the agreed future character of the local area.

An adaptation to increase building height should consider:

- impacts on solar access and articulation to the scale of the specific neighbouring context
- the siting of the additional storey, to minimise overlooking and overshadowing
- transitions to lower, neighbouring built form
- additional fire egress and services requirements
- access and circulation
- additional car and bicycle parking requirements, if the number of apartments is increased
- additional communal open space and landscaping requirements.

Preferred approaches include:

✔ the use of design techniques to reduce visual bulk and break up the mass of the building such as articulation of built form, creating depth within the façade and the use of materials.

Discouraged approaches include:

✘ providing a fourth storey across the whole of the development

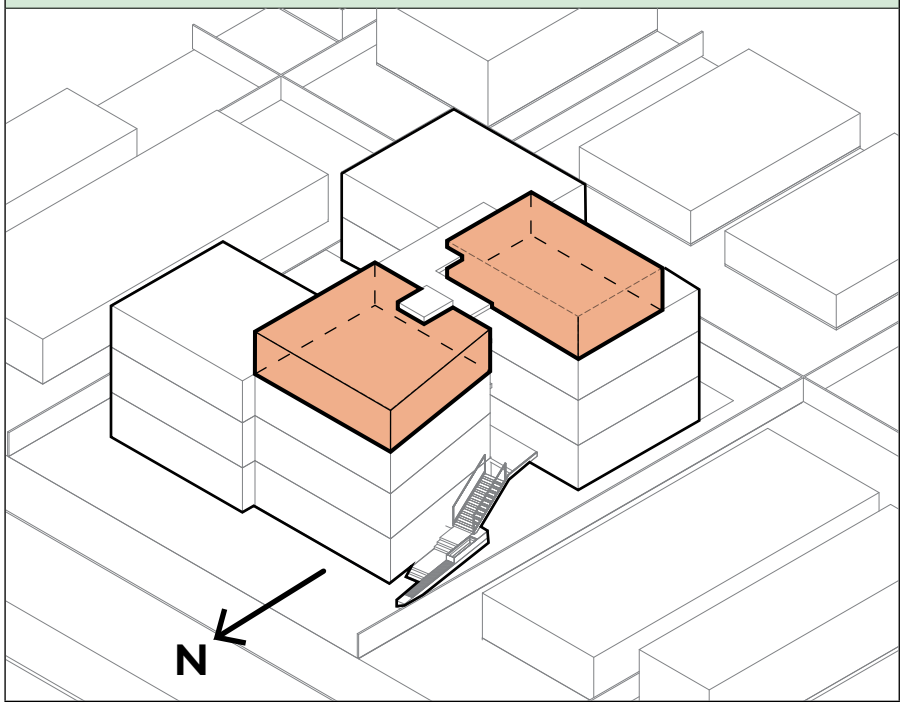
✘ overly dominant built form that does not respect the future character of the area.

Exemplar Design A adaptation guidance

North-south orientation, three and four storeys

This design can be adapted at grade, north-south, with a mixed built form height of three and four storeys, as Figure 2A.8 shows.

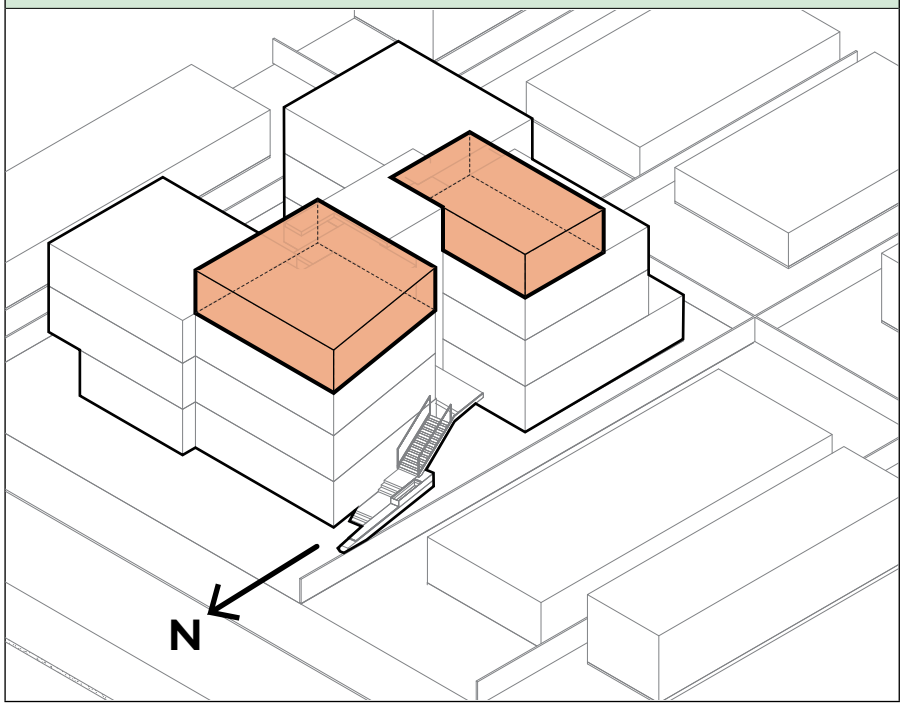
Figure 2A.8: North-south orientation, three and four storeys, 3D representation



North-south orientation, basement, three and four storeys

The north-south orientation can be adapted with a mix of three and four storeys, as Figure 2A.9 shows.

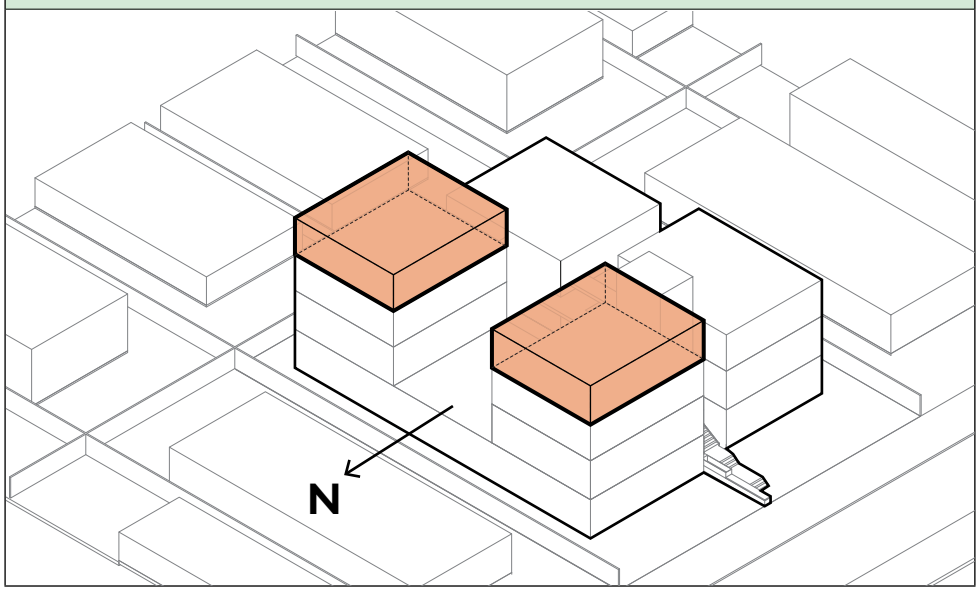
Figure 2A.9: North-south orientation, basement, three and four storeys, 3D representation



East–west orientation, at grade

The design can be adapted at grade, east–west, with a mixed built form height of three and four storeys, as Figure 2A.10 shows.

Figure 2A.10: East-west orientation, three and four storeys, 3D representation



4.3 Walls on a boundary

General adaptation guidance

Building to boundaries should be treated flexibly, depending on the site context and impacts on neighbouring properties.

Walls on a boundary may be appropriate where:

- there is an existing wall on the boundary of similar length and height
- the site abuts a laneway
- they improve the development's character such as by contributing to more landscape and open space opportunities on the site
- there are no sensitive interfaces on the neighbouring property.

Discouraged approaches include a wall on a boundary:

- ✘ that significantly exceeds the height or length of neighbouring walls
- ✘ if overshadowing, access to sunlight and daylight, noise or loss of vegetation or the visual amenity on the adjoining property cannot be adequately managed
- ✘ if there is a clear preference for a landscaped perimeter
- ✘ if a site abuts a public park.

Exemplar Design A adaptation guidance

North-south orientation, basement

This design can be adapted for a north-south basement orientation by increasing the area to the southern block, potentially adding about 30 square metres on the ground floor, as Figure 2A.11 and Figure 2A.12 show. This would mean reconfiguring the south-east apartment at the ground-floor level.

This adaptation only applies to the basement scheme, to comply with garden area requirements. On larger sites, there could be walls on the boundary for the at-grade schemes while still complying with garden area requirements.

Figure 2A.11: North-south orientation, basement, wall on the eastern boundary

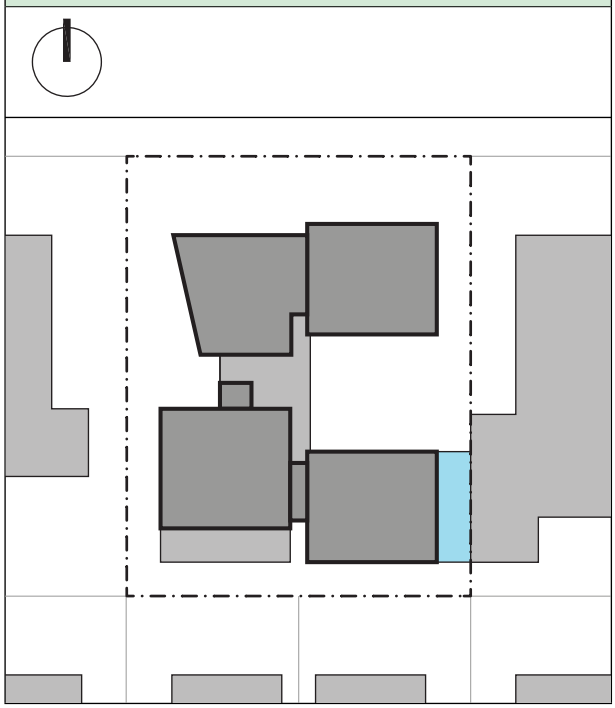
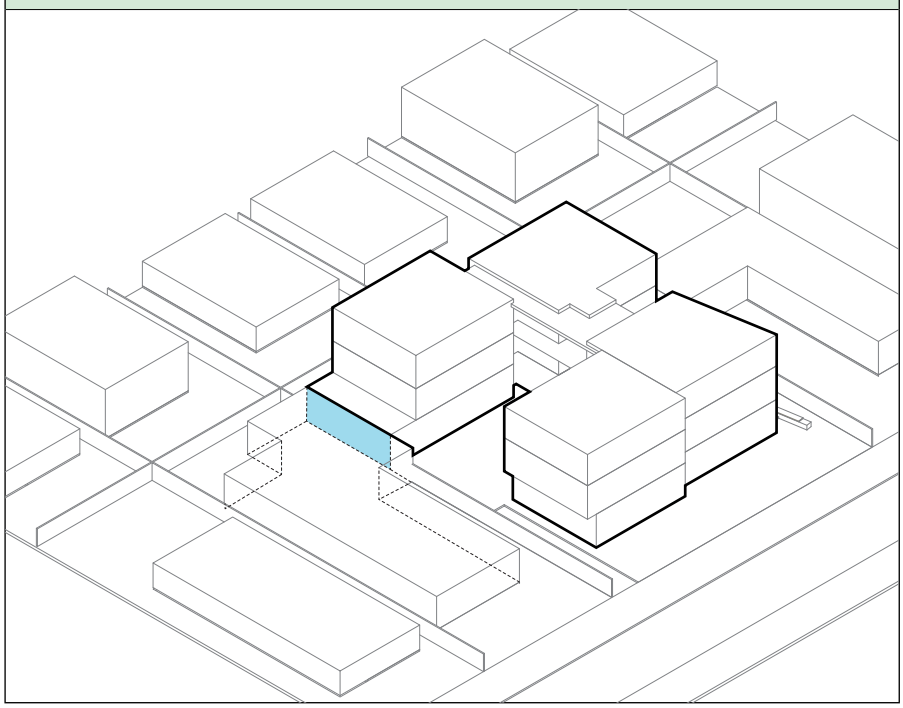


Figure 2A.12: North-south orientation, basement, wall on the eastern boundary, 3D view



4.4 Overlooking

General adaptation guidance

The principles in Part 1 set out general design considerations for this planning element.

The exemplar provides two design strategies to prevent overlooking that respond to the different orientations, while providing amenity to residents, allowing access to external views and daylight.

Adaptations should not hinder the amenity of residents. For example, highlight windows should be avoided as a standalone solution to overlooking.

Exemplar Design A adaptation guidance

Butterfly windows for sensitive interfaces to the north, east and west

The exemplar design uses butterfly windows to limit overlooking into private open space and the windows of neighbours' habitable rooms. Butterfly windows also allow access to external views and daylight. These windows may sometimes need to be supplemented with an additional highlight window to meet BESS daylight requirements.

If overlooking is not an issue, butterfly windows can be replaced with full-length windows with appropriate external shading.

Figure 2A.13 shows how butterfly windows can be used to limit overlooking into the habitable room windows of an adjoining property. Additional measures might be needed if the secluded private open space of the adjoining dwelling is located adjacent to the boundary fence. These measures can include strategic placement of the windows, orientation of the angled wall or adjusted window sill height.

Figure 2A.13: Butterfly windows to limit overlooking

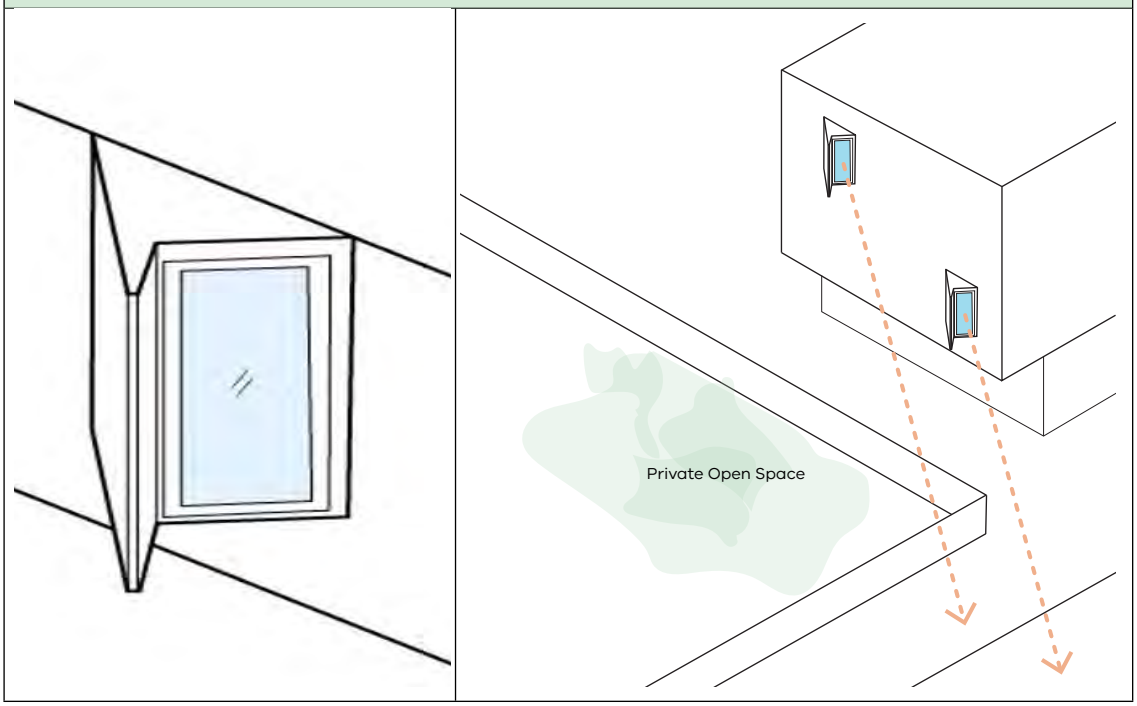
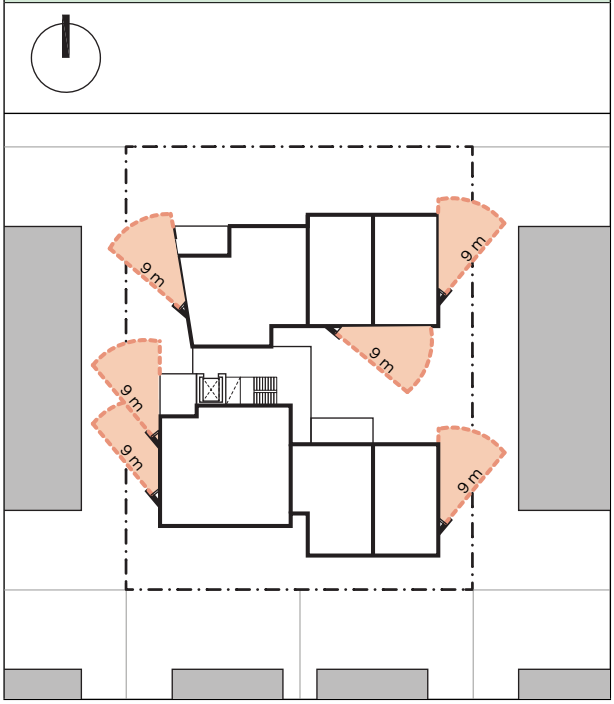


Figure 2A.14: Example of butterfly windows managing views to neighbouring properties

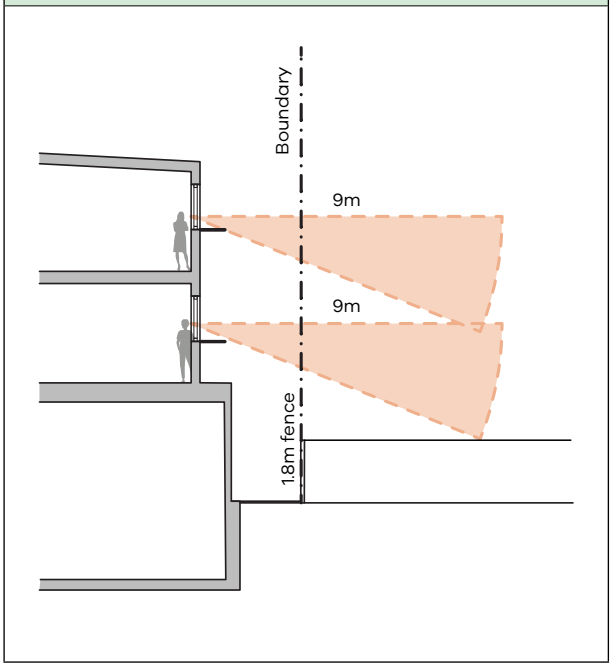


Protruded window sills for sensitive interfaces

Protruded windows sills can be used to limit overlooking into sensitive interfaces. Window sills should be no higher than 1.2 metres, to allow residents access to external views and daylight. Figure 2A.15 shows the adaptation.

A protruded window sill is not necessary if overlooking is not a concern.

Figure 2A.15: Protruded window sills to limit overlooking



4.5 Daylight to existing windows

General adaptation guidance

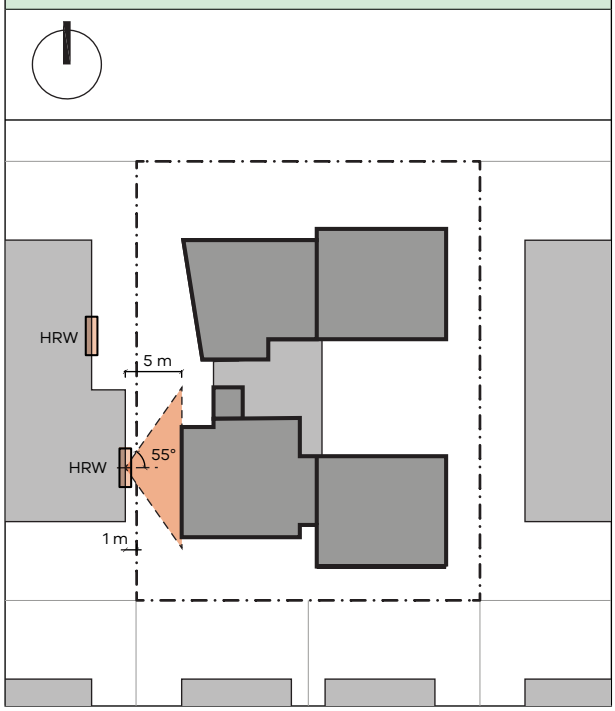
The exemplar design protects solar access to existing habitable room windows without the need for rigid numeric compliance. Designs can be reconfigured to provide adequate daylight through the habitable room windows of existing dwellings located close to the site boundary.

Exemplar Design A adaptation guidance

North-south orientation, at grade

This design can be adapted if there is an existing habitable room window 1 metre from the boundary, by reducing the area of the building, as Figure 2A.16 shows.

Figure 2A.16: North-south orientation, at grade, set back building to allow daylight to existing habitable room window (HRW)

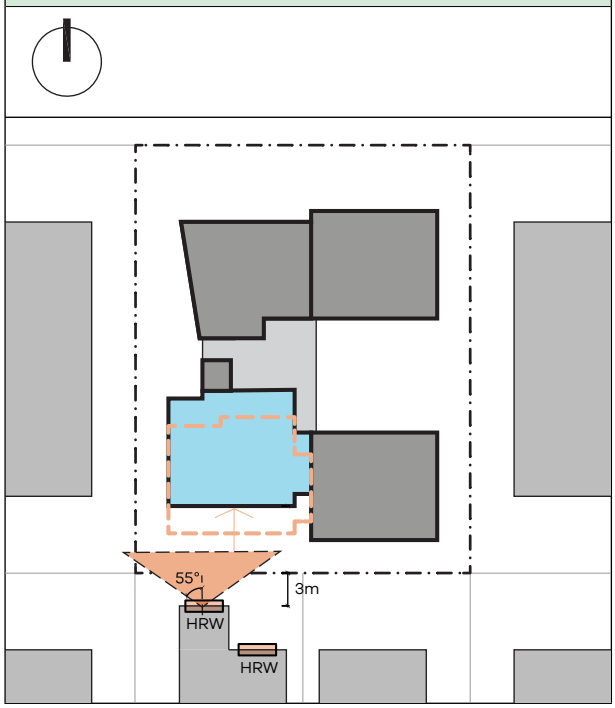


The above adaptation can also be mirrored to adapt to contextual conditions. However, consider the impact of mirroring the design on solar access and environmentally sustainable design modelling.

North-south orientation, at grade

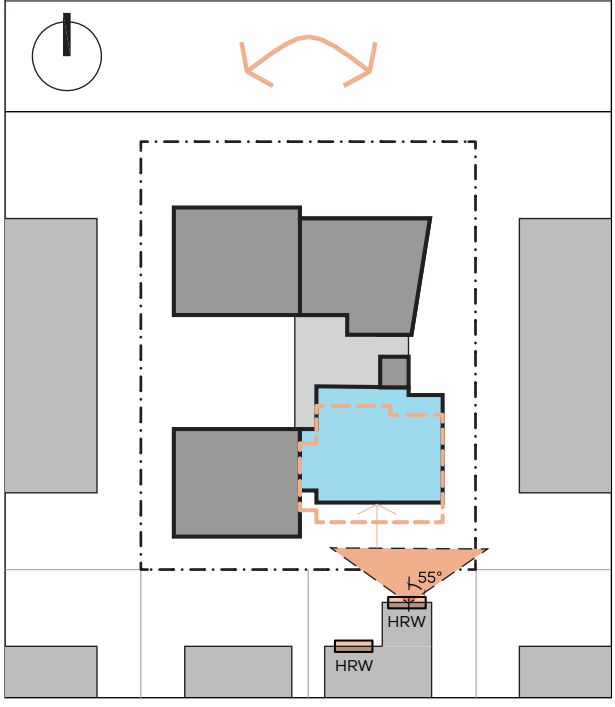
This design can be adapted if there is a north-facing habitable room window located within 3 metres of the boundary by increasing the setback of the building to the existing window. Figure 2A.17 shows how this can be achieved.

Figure 2A.17: North-south orientation, at grade, set back building to allow daylight to existing north facing habitable room window (HRW)



This orientation can also be mirrored to adapt to contextual conditions, as Figure 2A.18 shows. However, consider the impact of mirroring the design on solar access and environmentally sustainable design modelling.

Figure 2A.18: North-south orientation, at grade, daylight to existing north-facing habitable room window (HRW), mirrored design



4.6 Site access

General adaptation guidance

Site access may need to be adapted if:

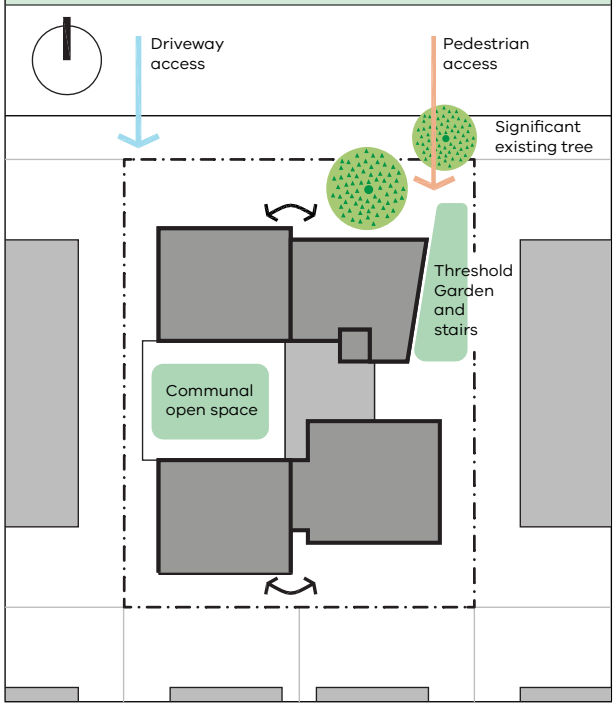
- street and public transport assets such as street trees, bus shelters, stay wire or electrical poles are located on nature strips
- a rear or side lane access is available and the rights to use the laneway for vehicle access are established.

Exemplar Design A adaptation guidance

Mirrored access

If there is a significant street tree on the nature strip where the driveway is located, this design can be mirrored to locate the pedestrian access along the eastern boundary and the driveway along the western boundary, as Figure 2A.19 shows.

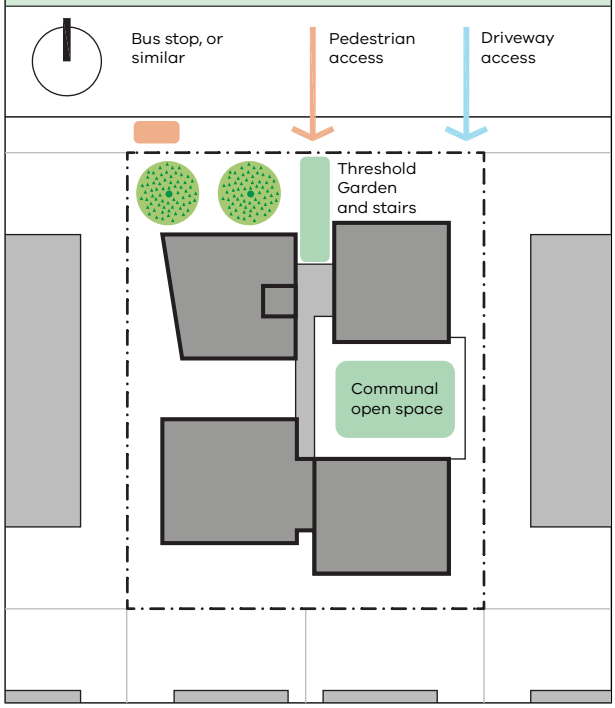
Figure 2A.19: Mirrored access



Central access

Locate the pedestrian access in the centre of the site if street assets on the nature strip or other site conditions do not permit side access. This adaptation would need to consider solar access to all apartments, particularly those in the south-west. Figure 2A.20 shows this adaptation. Note that the east–west exemplar design has pedestrian access in the centre of the site.

Figure 2A.20: Central access



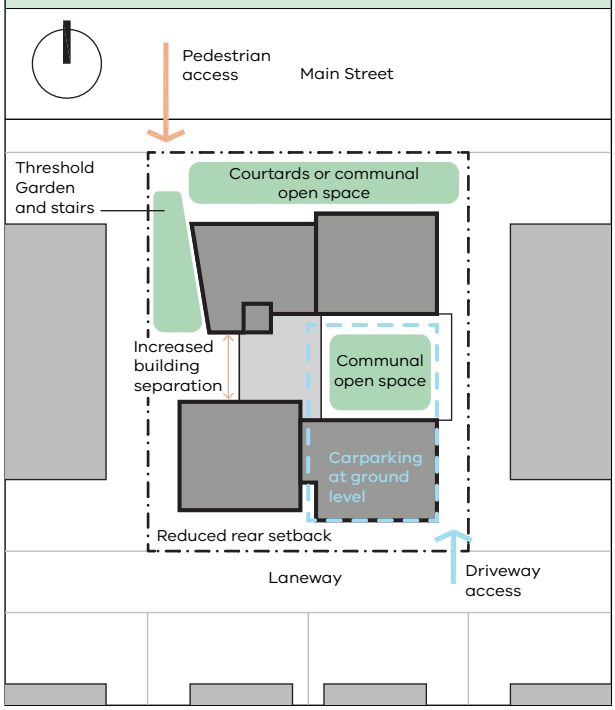
Laneway and rear access

If the site has rear access through a laneway that creates additional separation from neighbouring properties to the south, the design can be adapted by:

- locating the driveway towards the rear laneway
- reducing the rear setback of the south-western block.

This adaptation offers opportunities to increase the separation between the built form, to benefit the northern aspect to apartments in the south-western block and communal open space. Figure 2A.21 shows the adaptation.

Figure 2A.21: Laneway and rear access



4.7 Existing vegetation

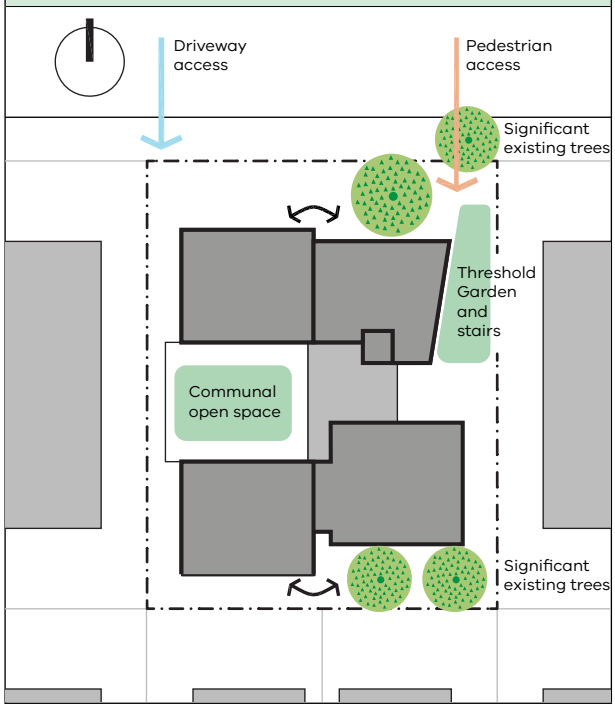
General adaptation guidance

Retain existing significant trees, particularly where they are located within the front and rear gardens. Seek guidance from an arborist, particularly where tree controls apply on site.

Exemplar Design A adaptation guidance

This design considers front and rear setbacks to preserve existing significant trees and vegetation. It can also be mirrored to adapt to the location of existing trees as Figure 2A.22 shows.

Figure 2A.22: Mirrored design to retain existing vegetation



5 Enduring

5.1 Greening and landscape

General adaptation guidance

Greening and landscaping could be increased if there is potential to:

- increase setbacks at the front, side or rear if site conditions allow, such as on larger sites and sites without sensitive interfaces or easements
- increase the separation between buildings in the development
- raise private and communal open spaces to the upper levels or create a roof terrace, while meeting the garden area performance targets
- abut an adjoining wall at the boundary
- use low-maintenance green walls to manage privacy and overlooking; such walls must comply with cladding regulations and be drought-tolerant and irrigated.

Preferred approaches include:

✔ adjusting layouts to integrate existing trees or vegetation

✔ adjusting layouts to improve access to sunlight throughout the day

✔ maximising areas of connected deep soil.

Discouraged approaches include:

✘ high-maintenance landscape elements

✘ excessive hard-ground surfaces

✘ excessive use of planter boxes at the expense of deep-soil planting.

Exemplar Design A adaptation guidance

Landscaping is an essential part of the exemplar design and must be coordinated with all architectural components and necessary services to ensure it is well integrated.

A key feature of this design is the main entry space and using planting to lead the pedestrian into the centre of the block. Trees, garden beds, climbers and planters should be provided to enhance this design intent.

Adaptations must integrate place-based greenery to maximise amenity, and they should consider adequate growing mediums, maintenance, pavement treatments and the selection of species, particularly for:

- the communal courtyard
- threshold garden and welcoming stairs
- productive gardens in the courtyard
- climbing vegetation and the necessary architectural elements to support and guide growing
- cascade gardens.

Refer to the Future Homes Landscape Concept Plans for further guidance.

6 Sustainable

General adaptation guidance

There is no general adaptation guidance for the Sustainable objective, but that does not mean alternative solutions are not acceptable. Where one is proposed, the principles and performance targets in Part 1 must still be met.

See Appendix 6: Environmentally Sustainable Design for further information.

7 Adaptable

7.1 Roof terraces

General adaptation guidance

Roof terraces increase communal open space and can be vibrant hubs where residents can socialise and build a sense of community.

Consideration of a roof terrace should include:

- the capacity of the structural system
- the maximum building height requirements, noting that lift and stair overruns and balustrades do not count towards building height.

Preferred approaches include:

- ✔ integrating the terrace design with the overall building form
- ✔ providing protection from the wind, sun and rain, noting maximum building height requirements
- ✔ using opportunities for cooling and greening
- ✔ having a well-designed drainage system that minimises unsightly services, staining and damage to the building
- ✔ creating a flexible design that caters for a mix of activities including vegetable gardens and hobbies
- ✔ providing infrastructure services and facilities such as lighting, barbecues, garden taps, outdoor furniture, sun shades and vegetable gardens
- ✔ protecting adjoining properties from noise and overlooking.

Discouraged approaches include:

- ✘ exposed, windy terraces
- ✘ designs that don't allow for more greenery
- ✘ overlooking into existing habitable room windows and private open space.

Exemplar Design A adaptation guidance

There is no specific adaptation guidance for this topic.

7.2 Orientation

General adaptation guidance

There is no general adaptation guidance for this topic.

Adaptations should address site planning requirements including daylight, ventilation and access.

Exemplar Design A adaptation guidance

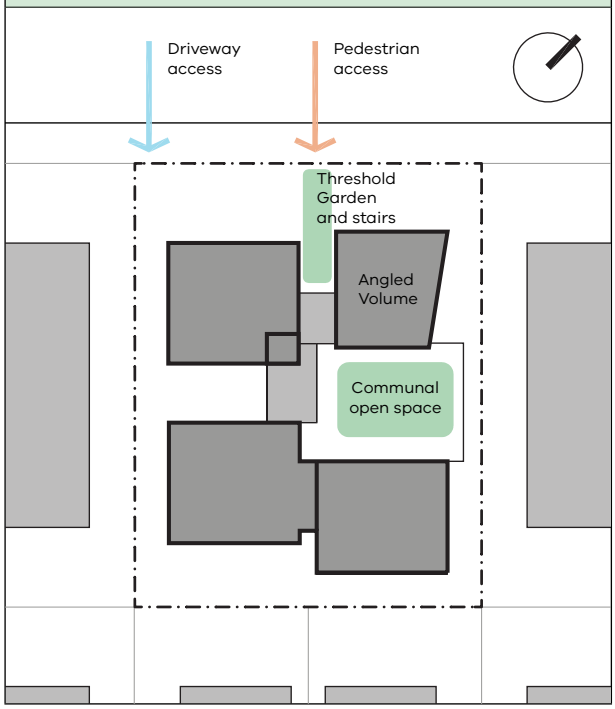
45-degree orientation from north

For a development oriented 45° from north, the design can be adapted by:

- angling the volume in the north-east area, to maximise solar access to communal open space
- locating pedestrian access and the threshold garden at the middle of the site, to maximise apartments' solar access
- for the south-western apartments, using clerestory windows on the upper levels to maximise solar access in winter.

Figure 2A.23 shows these adaptations.

Figure 2A.23: Orientation 45° from north



Irregularly shaped sites

For irregularly shaped sites, the design can be adapted by:

- responding to the site's angle
- enlarging the south-western apartments towards the western boundary, which could increase the floor area by approximately 15 square metres per level
- enlarging the south-eastern apartments towards the southern boundary, which could increase the floor area by approximately 30 square metres per level.

Consideration would need to be given to reconfiguring apartment layouts.

Figure 2A.24: Irregularly shaped site

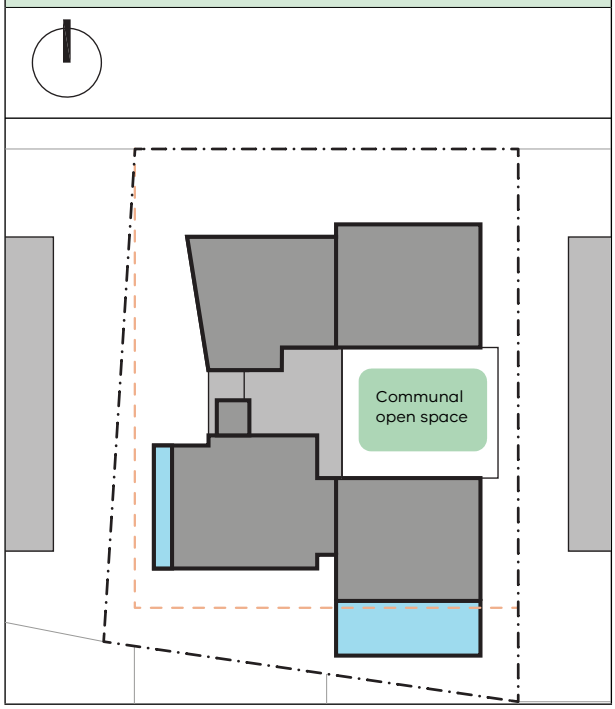
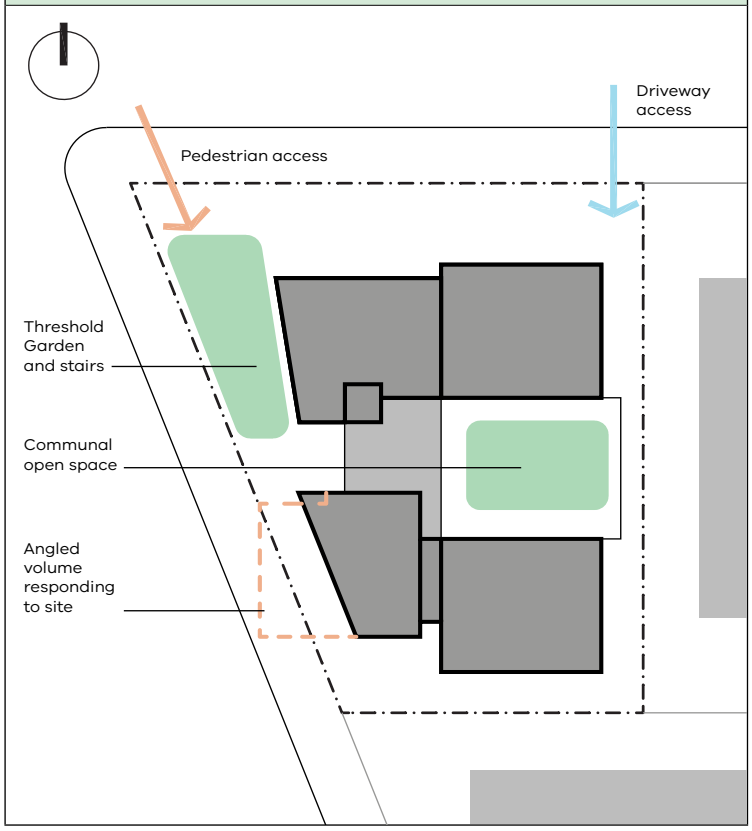


Figure 2A.25: Irregularly shaped site with reduced floor area to accommodate a shorter southern boundary



7.3 Site on a main road

General adaptation guidance

If a site is on a main road, designs should be adapted to address traffic movements, noise, pollution and privacy issues. Main road sites may also need expert advice from acoustic and traffic consultants.

Designs can be adapted:

- with landscape treatments to mitigate noise and soften the harsh road environment
- by building a front fence up to 1.8 metres high
- by positioning the main communal areas away from the main road
- with acoustic treatment such as double-glazed windows
- by providing balconies with solid balustrades
- by providing for a vehicle passing area.

Preferred approaches include:

✔ a frontage that contributes to the streetscape character, by screening with trees.

Discouraged approaches include:

✘ long, blank walls with no visual connection to the street.

Transport for Victoria (TfV) requirements for main road sites

TfV requires plans to be prepared in accordance with the following:

- A feature survey plan must be submitted, showing all features of the road including street trees, utility poles, pits, bus stops, line-markings, slip lanes, medium strips and traffic / pedestrian lights in proximity to the site
- Where tram lines exist, access to the property should be confined to left-in and left-out only arrangements
- Crossovers must be set back:
  - at least 1.5 metres (with no part closer than 1.0 metres) from any public transport assets
  - at least 1.0 metres from infrastructure/ utility poles
  - at least 9 metres from an intersection
- Accessways must:
  - Provide a passing area at the entrance at least 6.1 metres wide and 7 metres long where an accessway serves:
    - 10 or more cars and is more than 50 metres long or
    - connects to a road in a Transport Zone 2 (TRZ2)
  - Be designed so that cars can exit the site in a forward direction, if the accessway serves four or more car spaces or connects to a road in a TRZ2
  - Have a corner splay or area at least 50 per cent clear of visual obstructions extending at least 2 metres along the frontage road from the edge of an exit lane and 2.5 metres along the exit lane from the frontage, to provide a clear view of pedestrians on the footpath of the frontage road. The area clear of visual obstructions may include an adjacent entry or exit lane where more than one lane is provided, or adjacent landscaped areas, provided the landscaping in those areas is less than 900mm in height
  - Be set back a minimum of 7 metres inside the property boundary for any security boom, barrier, gate, or similar device controlling vehicular access to the premises, to allow vehicles to stay clear of the road pavement and footpath
  - Provide clear directional signs on the arterial road frontage if one-way access is proposed
- If an accessway to four or more car parking spaces is from land in a TRZ2, the access to the car spaces must be at least 6 metres from the road carriageway
- If entry to the car space is from a road, the width of the accessway may include the road
- Ensure car parking spaces are in accordance with the dimensions in Table 1.6: Minimum dimensions of car parking spaces and accessways. Where mechanical parking is proposed, refer to **Chapter 2.3 Parking: Cars** for guidance on dimensions and aisle widths.

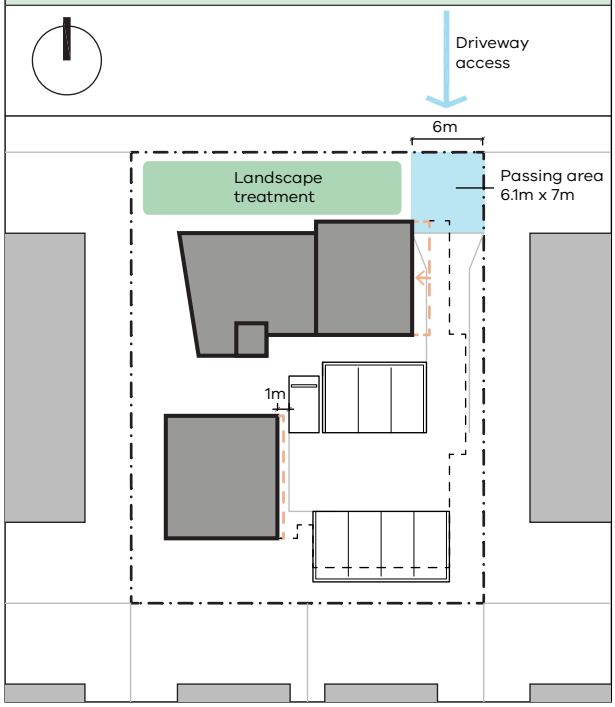
If a Future Homes adaptation does not address the requirements above, TfV may ask the permit applicant to do so.

Exemplar Design A adaptation guidance

For a site located on a main road, this design can be adapted by:

- reducing the ground-level apartment area to accommodate a passing area for cars
- providing a landscape treatment, to mitigate and soften the main road environment
- secluding the main communal area from the main road
- ensuring appropriate acoustic treatment.

Figure 2A.26: Site on a main road



7.4 Corner site

General adaptation guidance

A development on a corner site must locate crossovers in accordance with council and/or TfV requirements and accommodate any existing street services and assets.

Preferred approaches include:

- ✔ clear sightlines
- ✔ crossovers appropriately set back from street corners, to avoid vehicle conflict
- ✔ developments that face the street on both frontages
- ✔ buildings that offer passive surveillance of the street
- ✔ use of landscape elements to maintain visual permeability
- ✔ vehicle access from the local road.

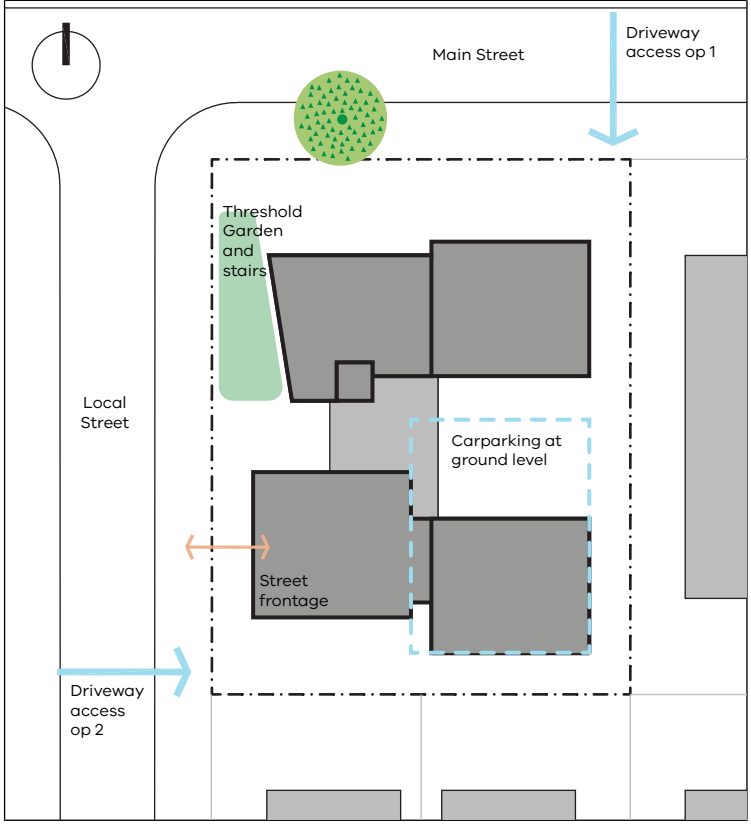
Discouraged approaches include:

- ✘ high, long, blank walls at street frontages.

Exemplar Design A adaptation guidance

This design can be adapted by providing driveway access to the south-western corner of the site. Apartments in the south-western block could be rotated or reconfigured to be street-fronting, facilitating passive surveillance Figure 2A.27 shows the adaptation.

Figure 2A.27: Corner site



7.5 Varied site dimensions

General adaptation guidance

For a deep site:

- ensure equitable access to circulation including stairs and lifts
- avoid a long, continuous built form without breaks in the massing.

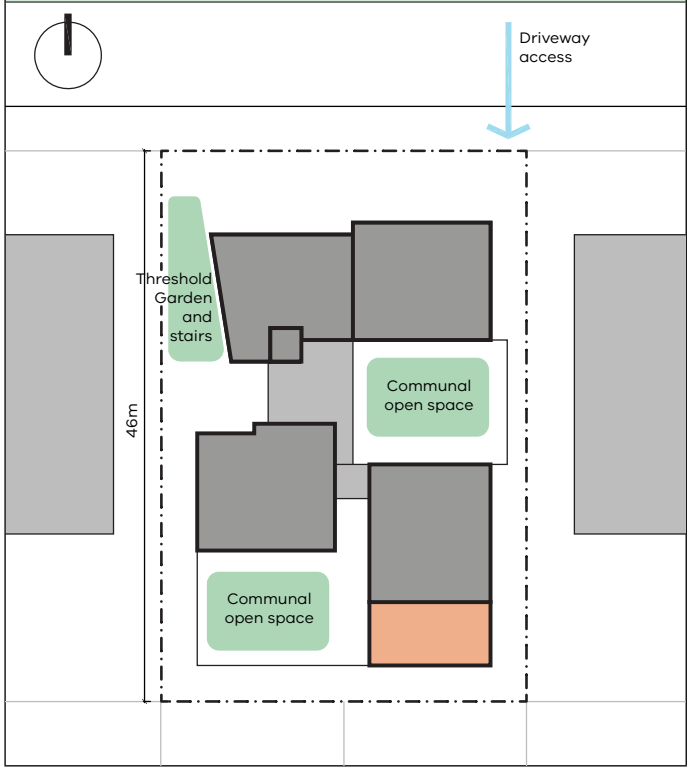
Exemplar Design A adaptation guidance

For a deep site — a site that is 46 metres or longer — the design can be adapted by:

- extending part of the building and providing more communal open space
- locating another module towards the south-east corner, to accommodate two or three more apartments.

This adaptation should consider its impact on other apartments — their solar and daylight access and shading — and comply with the sustainability and good neighbours principles. Additional stairs may also be needed, to comply with the requirements of fire services.

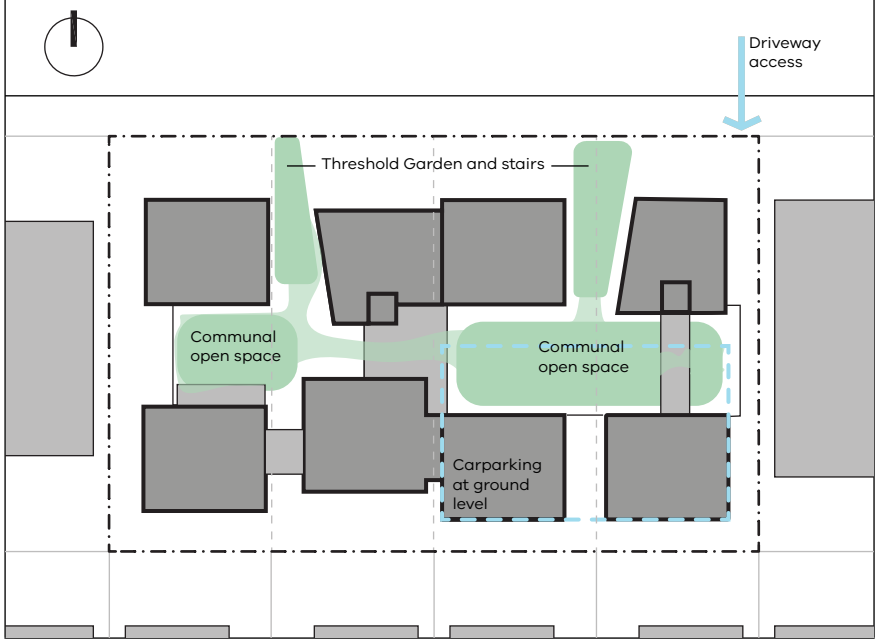
Figure 2A.28: Deep site



Three and four lot amalgamation

For a site that amalgamates three or four lots, the design can be adapted by creating a continuous linkage of central open space while ensuring there is good north-facing solar access, as Figure 2A.29 shows.

Figure 2A.29: Amalgamation of four lots



7.6 Sloping site

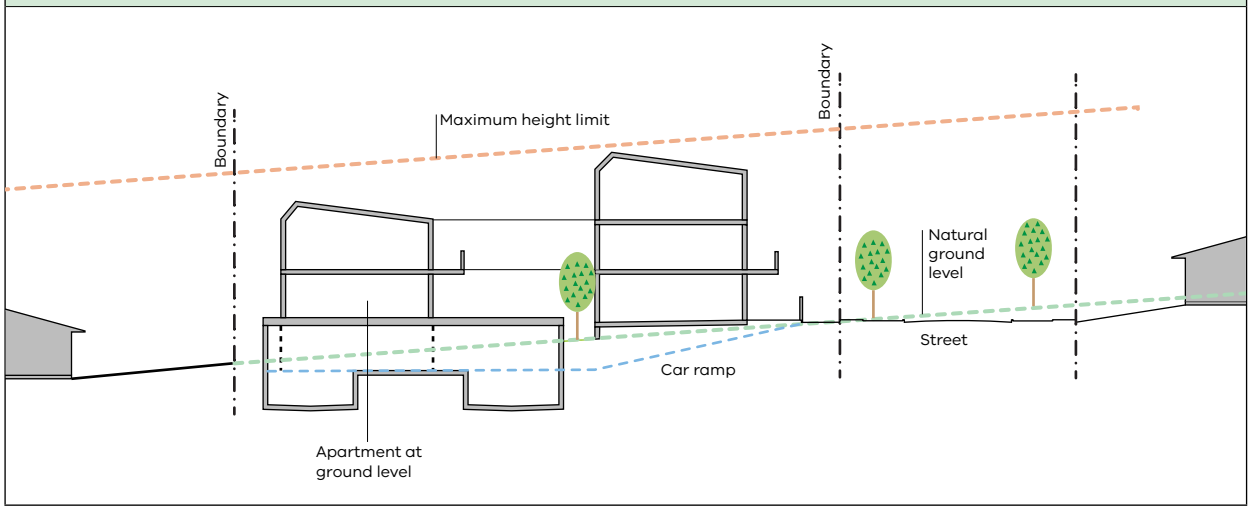
General adaptation guidance

There is no general adaptation guidance for this topic.

Exemplar Design A adaptation guidance

This design can be adapted for a sloping site, as Figure 2A.30 shows. The figure uses a ground slope of between 1:11 and 1:13 (7.6 percent to 8.7 percent). If the site is steeper than this, the daylight for the courtyard may be compromised in the north-south orientation.

Figure 2A.30: Sloping site



7.7 Floodplain

General adaptation guidance

A development on a site within a flood overlay must be designed in accordance with Melbourne Water's requirements.

Inappropriate development in flood affected areas can lead to fundamental changes in the nature and impact of flooding. It can also increase the potential for loss of life and flood damages to the community and the environment.

Melbourne Water decisions are guided by planning policies in the planning scheme. In addition, Melbourne Water assesses development applications in accordance with the *Guidelines for Development in Flood Affected Areas* (DELWP, 2019). Usually the information in the guidelines is sufficient to guide decision making. However, the guidelines cannot cover all the circumstances and aspects of flood behaviour.

Development in or adjacent to a floodplain will only be acceptable where the new development is protected from flooding (flood levels are constructed to the identified Nominal Flood Protection Level); has safe access to and around the development (in considering site specific flood depths and velocities); and does not interfere with the passage and storage of floodwaters.

Developments in areas affected by flooding must not obstruct the passage of flood flows or reduce floodplain storage as this may cause flood levels and velocities to increase and adversely impact surrounding properties. On sites subject to flooding, imported fill must also be kept to a minimum and used only for sub floor areas of dwellings, garages and driveway ramps. New fencing and decking should also be of an open style of construction (50 per cent permeable/open) to maintain conveyance of flows through floodplains.

All new development should preserve, and if possible enhance, the social and environmental values and benefits of floodplains and waterways and should be sensitively designed and sited to maintain and enhance environmental assets, significant views and landscapes along river corridors and waterways and adjacent to lakes and wetlands. For detail on development setbacks required from waterways, see the *Healthy Waterways Strategy 2018-2028*.

On sites affected by flooding, Melbourne Water requires the following information to be included on all plans:

- The boundaries and dimensions of the site
- Existing conditions survey and feature plans. Taken by or under the direction and supervision of a licensed land surveyor showing:
  - natural ground level
  - the current Flood Level
  - the dimensions and ground and finished floor levels of any existing buildings, to Australian Height Datum (AHD)
- Proposed architectural plans, elevations and section drawings (1:50 or 1:20). Showing the proposed finished surface levels and finished floor levels and the Nominated Flood Protection Level (NFPL) of all new structures on the land
- All proposed finished floor levels notated on the plans to Australian Height Datum
- A comparative description of the existing and proposed use and development of the site
- Cross-sectional details of any basement entry ramps and other basement entries to Australian Height Datum. Showing floor levels of entry and exit areas and drainage details
- A written assessment against 'Part Three – assessing development proposals' of the *Guidelines for Development in Flood Affected Areas* (DELWP, 2019), and subsequent submission of any associated Flood Risk Management Plan
- Any other application requirements specified in a relevant planning overlay schedule applicable to the site
- Appropriate boundary setbacks to allow for the conveyance of overland flows
- Detailed location of any Melbourne Water asset (including drains, sewers or water mains) within 20 metres of the subject site
- Hydraulic details and associated reporting of all/any existing and proposed earthworks, including details of any cut and fill required for works
- Details of any other known physical features that may affect flows on-site and on adjoining land, such as levees, fences and retaining walls
- A written description of proposed actions, flood risk mitigation strategies or measures required, if any, to the siting and design of the buildings or works, or in association with the use and occupation of all aspects of the proposal in order to reduce the risk to individuals, property, infrastructure and the environment.

Exemplar Design A adaptation guidance

There is no specific adaptation guidance for this topic.

7.8 Easements

General adaptation guidance

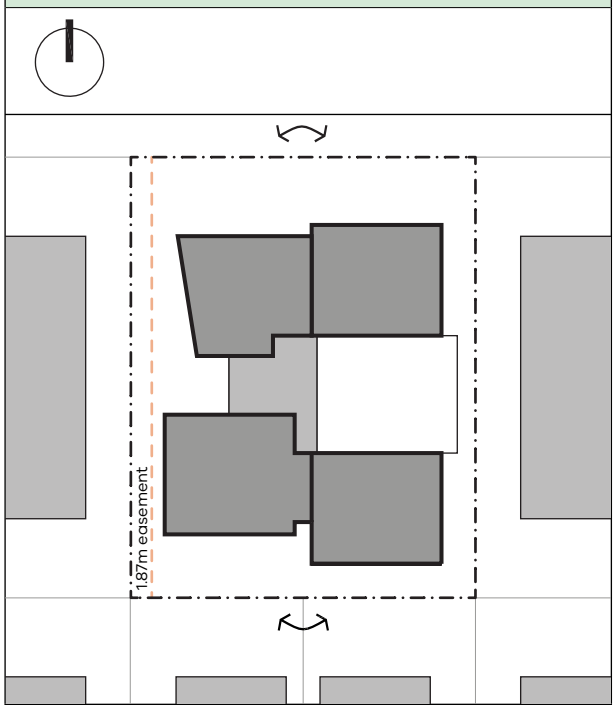
There is no general adaptation guidance for this topic.

Exemplar Design A adaptation guidance

For illustrative purposes, a nominal 3.05 metre easement along the rear boundary and 1.83 metre easements along the side boundaries have been assumed.

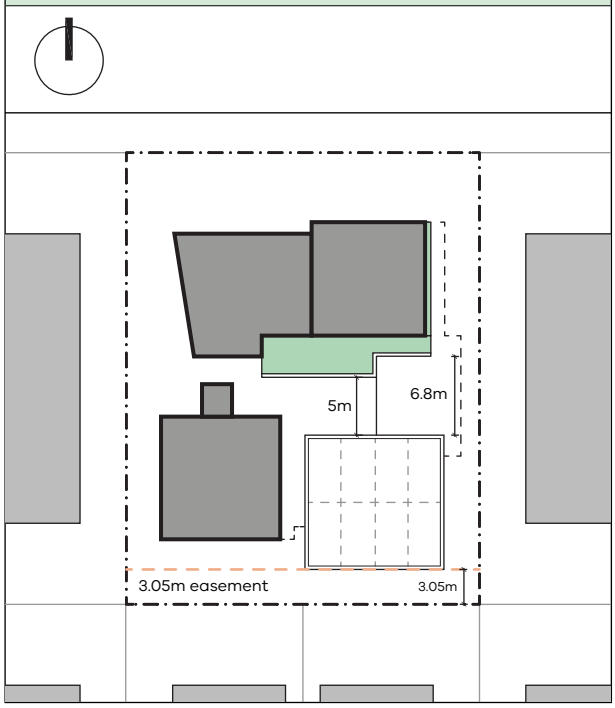
The design can be adapted by detaching buildings from the side boundary, allowing for an easement (assumed as 1.87 metres) along the boundary, as Figure 2A.31 shows.

Figure 2A.31: 1.87 metre easement along the side boundary



The design can be adapted by using consolidated car parking (stackers), which allows for an easement (assumed as 3.05 metres) along the rear boundary, as Figure 2A.32 shows.

Figure 2A.32: 3.05 metre easement along the rear boundary, with mechanical car parking option



7.9 Systems and approach

General adaptation guidance

Off-site manufacturing

Off-site construction delivers pre-finished, prefabricated building elements and modules that are assembled on site using efficient construction and manufacturing techniques.

Consider standardisation and repetition of structural framing. It can help to reduce material waste, and prefabrication of structural framing can mean fewer trades and waste on site.

Prefabricated external walls with preassembled windows generally have higher-quality sealing than on-site construction. This method reduces on-site sealing and can reduce the incidence of poor workmanship and defects. Prefabrication also can minimise the construction period; the building can be prefabricated while groundworks and footings are being constructed.

Consider early contractor advice in the design phase if offsite construction is applicable and/or a known builder will construct the development. This way, trades and their supply chains can help coordinate and standardise the design of services, and costs assist to accurately estimate costs.

Future changes in use

Plan for the potential amalgamation of smaller apartments into a larger apartment or vice versa. Such alterations would need room dimensions and optimal locations of wall openings to be considered, to reduce the need for structural adjustments.

Structure

Consider an efficient structural frame that extends in alignment from the ground floor to the top floor such as a lightweight post-and-beam timber, or cross-laminated timber (CLT). This reduces the number of on-site trades and the time needed for coordination and construction. Consider the fire-rating implications of this method of construction.

- Use regular grids and modular components for floors, walls, stairs, roofs and service risers.
- For non-wet areas, consider providing structural flooring that can span between load-bearing walls. This will enable internal walls within a sole occupancy unit to be non-load-bearing and adaptable in the future.
- Consider providing structure and footings for more floors to be added over time, and clearly documenting these for future reference.
- Consider using a structural insulated panel system or sandwich panels.

Car park

- Floor-to-floor height for above-ground car park spaces should allow for other temporary or long-term uses, including conversion to habitable space.
- Aim to provide a minimum of 2.6 metres clear in basement areas, to allow for services to be installed.
- Plan for adequate ventilation and likely service infrastructure needs for future uses.
- Provide adequate drainage at the base of ramps for surface run-off, pits for excess water, and a freeboard threshold at the top of the ramps.

Exemplar Desing A adaptation guidance

There is no specific adaptation guidance for this topic.

7.10 Materials and finishes

General adaptation guidance

Future Homes exemplar designs have a materials schedule that includes substitution guidance to suit different contexts, budgets and design preferences.

Exemplar Design A adaptation guidance

Refer to the materials schedule for substitution guidance.

7.11 Fire services

General adaptation guidance

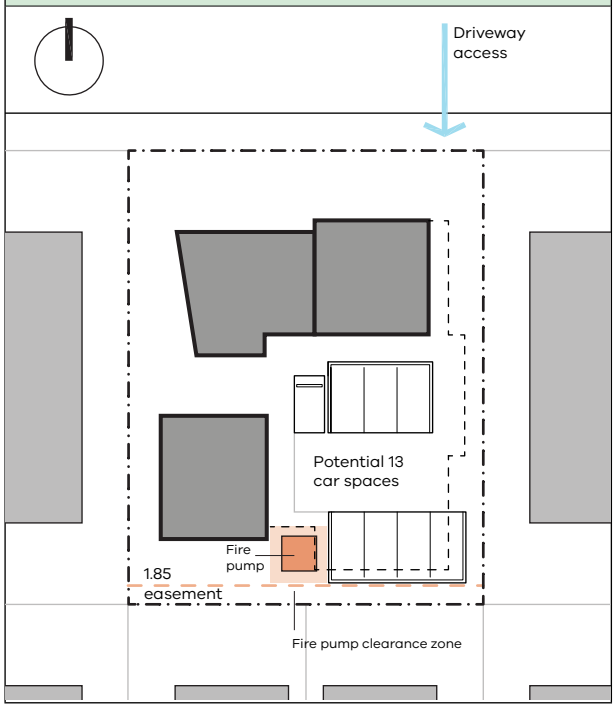
There is no general adaptation guidance for this section.

Exemplar Design A adaptation guidance

Fire pump and tank, north-south orientation, at grade

If a fire pump and tank are needed, the north-south orientation, at grade can be adapted by relocating the mechanical parking towards the eastern boundary to allow space for a fire pump and clearance space, as Figure 2A.33 shows. Consider the structural implications of the mechanical parking alignment.

Figure 2A.33: Fire pump and tank and adjusted mechanical parking location



Fire safety

Buildings up to three storeys may not require complete fire sprinkler protection. The exemplar designs address non-compliance with fire protection codes by specifying sprinkler protection throughout.

To assist with a deemed-to-satisfy solution and to potentially reduce the extent of fire sprinkler protection, Figure 2A.34 and Figure 2A.35 provide guidance.

Figure 2A.34: North-south orientation, basement, extended courtyard L01 stair to provide direct access to the ground level

Buildings up to three storeys may not require complete fire sprinkler protection. The exemplar designs address non-compliance with fire protection codes by specifying sprinkler protection throughout.

Figure 2A.35: East–west orientation, at grade, with a public stair through the courtyard void to provide direct access to the ground level

These options need to be discussed with a building surveyor, to assess compliance against the overall existing travel distances strategy.

Part 2B

Exemplar Design B
LIAN

Design Statement

Prepared by LIAN

Exemplar Design B by LIAN architects is inspired by the qualities inherent in suburban living and the single-family home. By maximising private amenity with generous space, abundant natural light and seamless connections to large private open spaces, this scheme overlays these qualities into a new denser form.

Siting strategy

The siting strategy prioritises northern aspect and solar gains to living spaces and private outdoor spaces. This is achieved through the formation of two building masses, a north and south building, separated by large, linear, central communal garden.

The northern building consists of double-storey maisonette-style units with dual access from a south-facing entry door, and north-facing private verandas and gardens. Stacked above, are single-storey units featuring north-facing terraces accessed through living spaces with views to sky and horizon.

The southern building is arranged with parking to the rear, under multi-level townhouses with north-facing living/dining spaces that open out to private terraces. In the basement scheme, this building adopts an alternative configuration to take advantage of the western and eastern outlook and access to a perimeter garden space.

Design and materiality

The anatomy of the building aspires to simplicity, rationality and economy. A standardised, linear construction grid enables a range of apartment sizes and configurations which can be readily adapted to a project's specific demographic brief.

The simple well-proportioned form, overlaid with a careful rhythm of openings, pergolas, and planters, provides a timeless quality, intended to transcend architectural trends and retain market value in the long-term.

Volumetric additions of voids and raised ceilings create a more expansive sense of space, abundant light, and room for bikes, surfboards or space to grow.

Dual-aspect apartments with glazed entry doors for light, air and multiple outlooks to greenery, provide glimpses of shifting occupation throughout the day with a seamless connection from living areas to outdoor space.

Lightweight cladding such as fibre-cement sheeting and galvanised metal are proposed as affordable, highly durable materials that need little maintenance.

Varying modular panel breaks create misalignment and sense of movement across the facades, and reduce material wastage. Juliet balconies further animate the side facades of the building.

Common spaces

A minimum proportion of 6 metres to the central space between buildings ensures adequate space for landscape, circulation and opportunities for residents to interact. A large, central communal garden or 'ferny forest walk' with native trees, low-lying landscaping links individual ground floor entries with a meandering, floating boardwalk.

The prioritisation of private amenity has been balanced with engaged shared spaces through a careful design approach and siting. Three distinct, connected shared zones aspire to a better community experience of everyday rituals of arrival, departure and dwelling.

Raised communal walkways, and a sculptural external lift and stair, connect the two buildings at upper levels, vertically extending the spatial experience of the garden. Vertical greenery is supported by lattice to the lift and planters and includes hanging plants. Tree canopies between windows at upper levels assist with passive privacy.

Bicycle parking, storage, productive gardens and composting are clustered along the entry path providing opportunity for chance encounters and supporting daily rhythms of interaction.

Landscape

At the neighbourhood scale, street-facing gardens and terraces encourage individualisation, improving the liveliness of the street and promoting passive surveillance. A social street edge with benches integrated into the front fence, provides opportunity for neighbours to interact with residents.

To the southern area of the site an arbour supporting climbers and soft landscape is provided to the vehicle circulation area to soften the interface with neighbouring sites and shade the paving below. Vegetation, shady trees and a central green strip are crucial elements that descale and soften the driveway along the boundary length.

1 Introduction

This chapter guides designers adapting Exemplar Design B for a particular development site. Authored by the architects who designed the exemplar, the chapter is organised according to the six Future Homes objectives that adapted designs need to address: Responsive to Need, Liveable, Good Neighbours, Enduring, Sustainable and Adaptable.

For each objective, the chapter sets out:

- how to adapt the design to fit different sites and contexts
- preferred and discouraged approaches to adaptation
- ideas to adapt the design to suit particular needs such as a different bedroom configuration or a main road location
- ideas to achieve better development and design outcomes by adapting the design if the opportunity arises.

The guidance in this section is not exhaustive, and there is no adaptation guidance for some planning elements. It is up to the designer to process or interpret the exemplars. The assessment process will treat all adaptations on their merits.

2 Responsive to need

2.1 Apartment mix and size

General adaptation guidance

Apartment designs need to respond to the changing patterns of living, including an increasingly diverse household mix and size.

The apartment should be sufficiently adaptable to allow:

- the ability to upsize or downsize: for example, by having the space and services configuration to combine smaller apartments to create a larger apartment and vice versa
- multi-purpose spaces for work and study from home
- internal functions to be rearranged over time: for example, bathrooms, kitchens and laundries that can be reconfigured or be combined differently.

Preferred approaches include:

✔ the layout is easy to change

✔ open-plan living spaces cater for flexible furniture arrangements

✔ floor space is used efficiently.

Discouraged approaches include:

✘ excessive corridors and passageways

✘ excessive use of built-in joinery.

Exemplar Design B adaptation guidance

This adaptation can accommodate:

- a different mix of apartments based on market demand
- merging apartments to provide different bedroom mixes and configurations.

Figure 2B.1: Examples of alternative apartment configurations

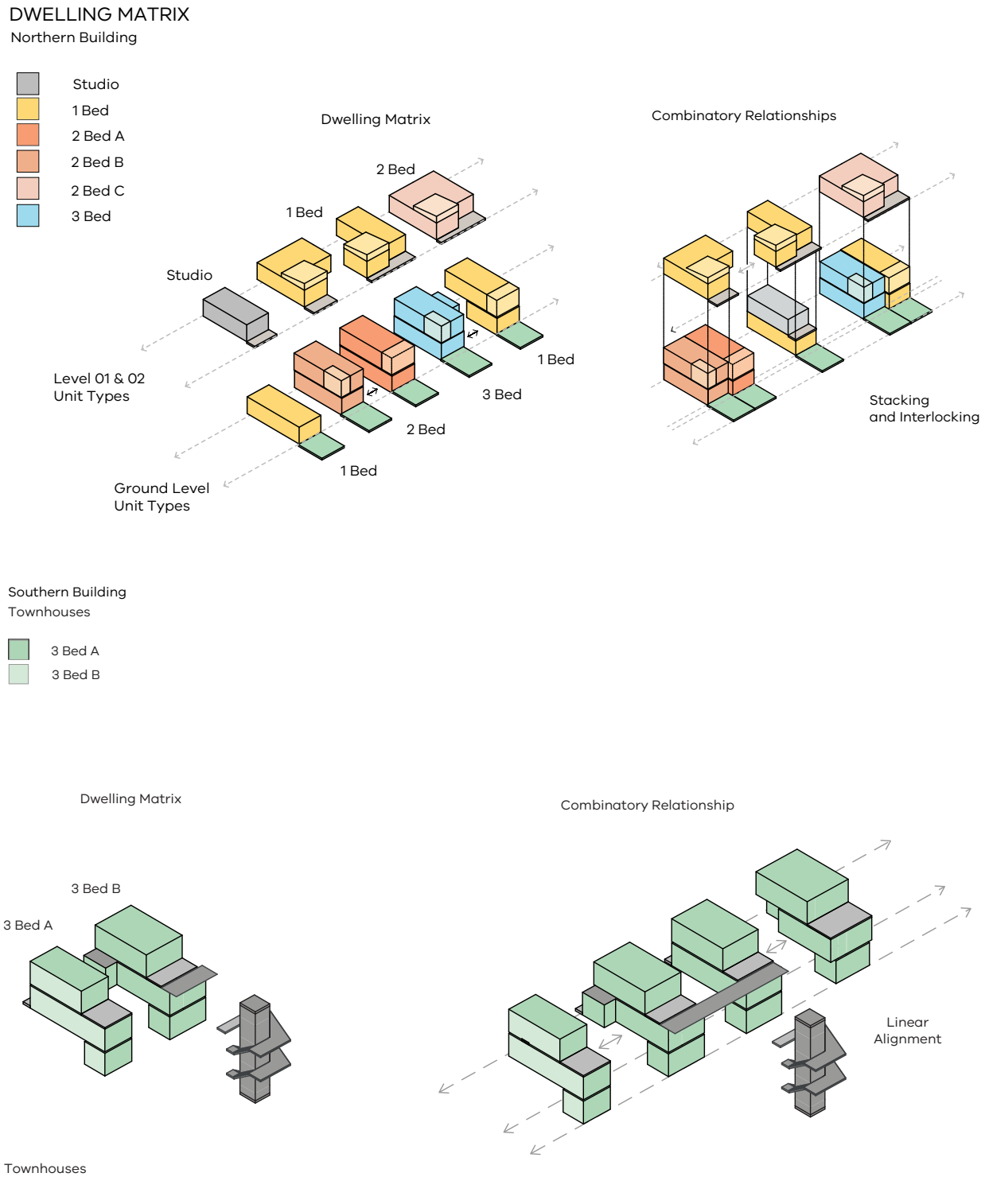
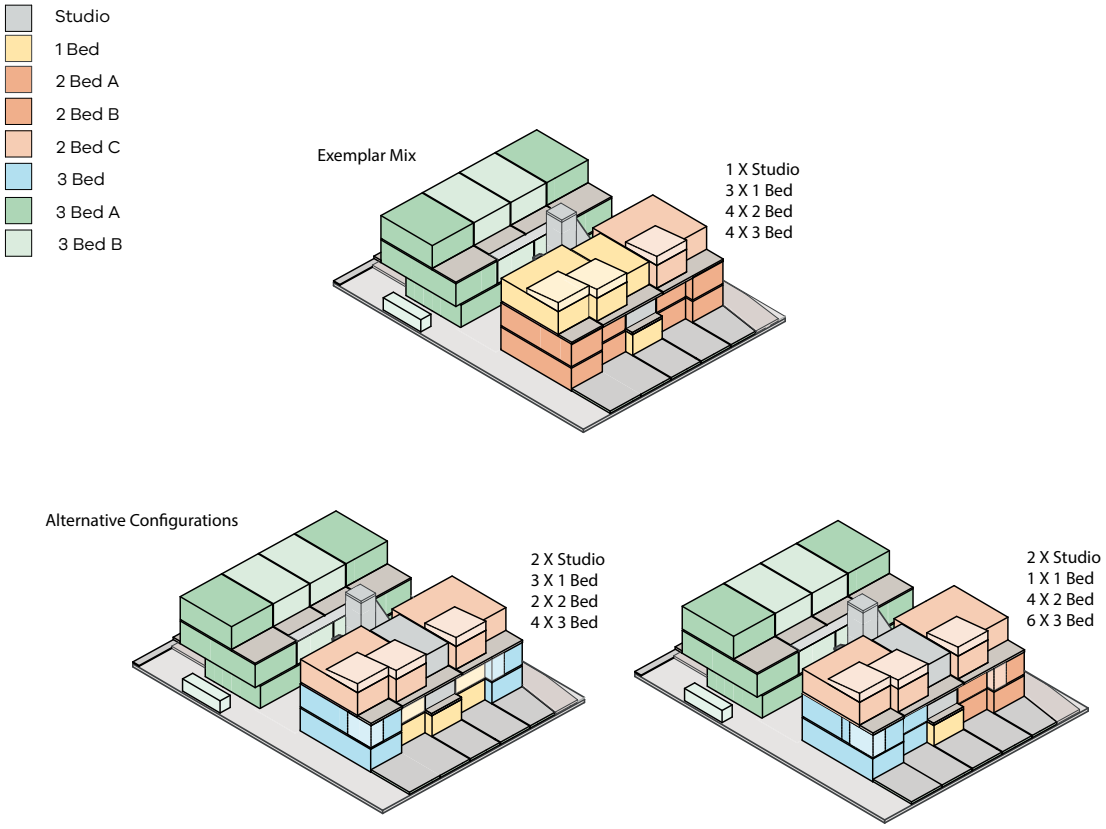


Figure 2B.1: Examples of alternative apartment configurations (continued)



2.2 Parking: cars

General adaptation guidance

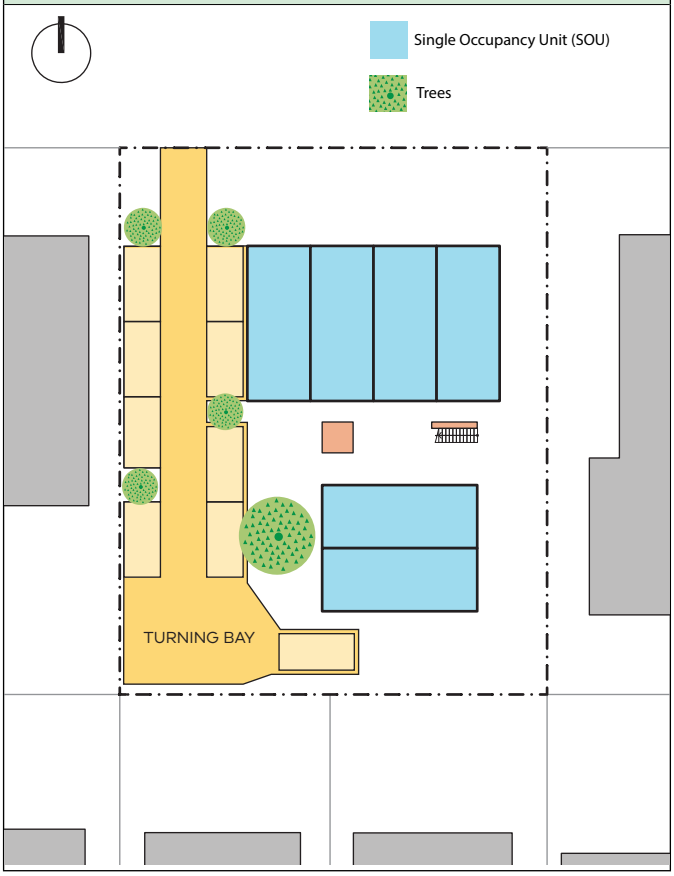
If it is acceptable to have fewer car parking spaces, the design should be adapted to avoid the need to use mechanical parking. The development should also allow for future adaptation of car parking spaces to alternative uses to support changes in use, personal preferences and technology over time.

Measures to support future adaptation include sufficient floor-to-ceiling height to allow future habitable spaces to be inserted with access to natural light.

Exemplar Design B adaptation guidance

This adaptation could be used if a lower car parking rate is allowed. It uses a laneway-like condition to pedestrianise the driveway, as Figure 2B.2 shows.

Figure 2B.2: North-south orientation, at grade, reduced car parking requirements and a pedestrianised driveway



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2.3 Parking: bicycles

General adaptation guidance

Consider locating bicycle parking within oversized balconies, while retaining the minimum preferred useable space for residents' recreation.

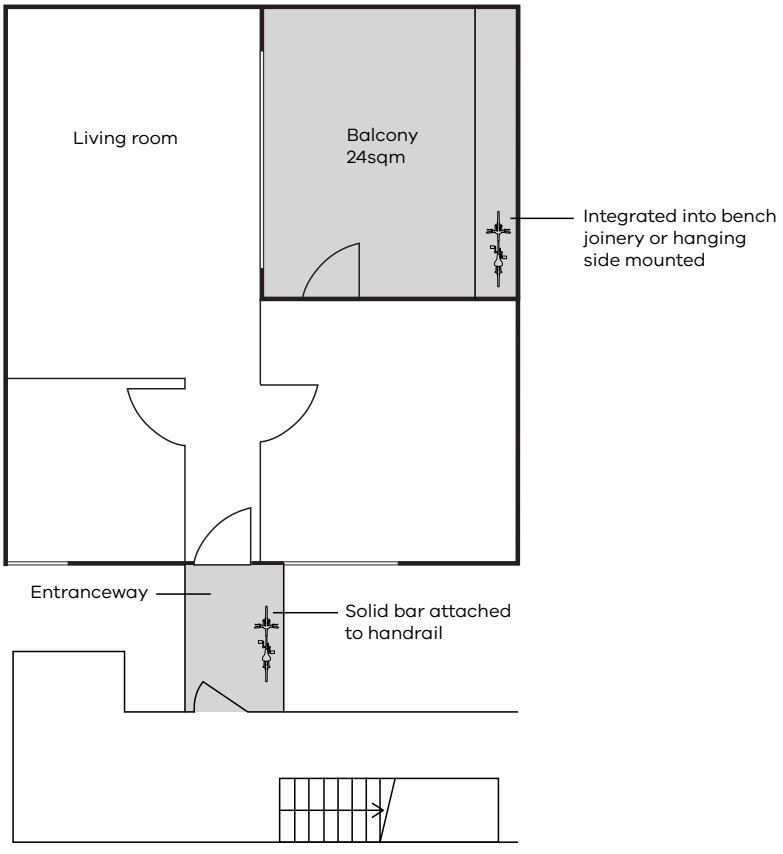
Bicycle parking provided on oversized balconies will require the provision of a bicycle-accessible path from the ground floor. Where bicycle parking is provided on upper floors, lifts and/or stairs should be designed to provide access to upper floors for bicycles.

Preferred bicycle parking spaces are those that are covered from the weather and secured.

Exemplar Design B adaptation guidance

Bicycle parking systems could be located in private open space such as on an oversized balcony or entranceway, as Figure 2B.3 shows.

Figure 2B.3: Bicycle parking in private open space



3 Liveable

General adaptation guidance

There is no general adaptation guidance for the Liveable objective, but that does not mean alternative solutions are not acceptable. Where one is proposed, the objectives, principles and mandatory requirements in Part 1 must still be met.

4 Good neighbours

4.1 Front setback

General adaptation guidance

Front setbacks need to be adapted to the street context. The starting point should be the predominant street setback along the length of the street up to 150 metres (or about ten properties) on either side. Within a site, the building setback may be staggered, forward or behind the predominant street setback having regard to the local context, design outcome and impact on the streetscape.

When determining the front setback or setbacks, the considerations should be:

- the wider streetscape and urban block pattern
- whether an adjoining building sits forward of the predominant street setback
- opportunities to use articulation to transition between neighbouring sites
- whether the approach responds to the emerging or future character of the area
- opportunities to provide suitable canopy tree planting.

Preferred approaches include:

✔ upper-level projections including balconies that provide weather protection for the spaces below

✔ where a lesser front setback is appropriate, consider increasing the rear setback and/or providing additional internal breathing space between buildings.

Discouraged approaches include:

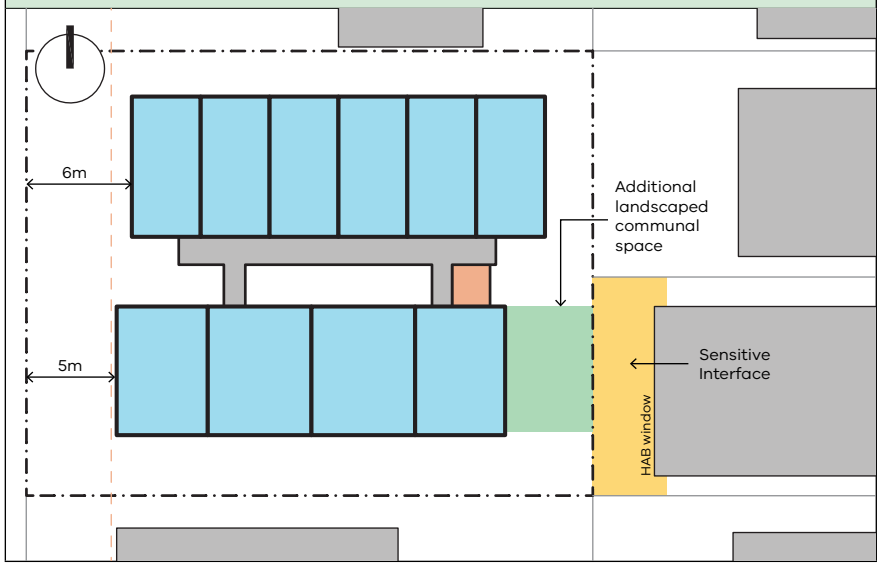
✘ monolithic setbacks without breaks or variations

✘ balcony projections that will limit the planting of canopy trees.

Exemplar Design B guidance

This adaptation introduces a landscaped common space to create a greater separation from the sensitive interface at the rear, as Figure 2B.4 shows.

Figure 2B.4: East–west orientation, at grade, reduced front setback to allow increased separation from adjoining sensitive interface



4.2 Height

General adaptation guidance

Where the responsible authority permits, the exemplar design can be adapted to add another storey. A fourth storey may reinforce the existing character of the wider urban context or respond to the agreed future character of the local area.

An adaptation to increase building height should consider:

- impacts on solar access and articulation to the scale of the specific neighbouring context
- the siting of the additional storey, to minimise overlooking and overshadowing
- transitions to lower, neighbouring built form
- additional fire egress and services requirements
- access and circulation
- additional car and bicycle parking requirements, if the number of apartments is increased
- additional communal open space and landscaping requirements.

Preferred approaches include:

✔ The use of design techniques to reduce visual bulk and break up the mass of the building (such as articulation of built form, creating depth within the façade) and the use of materials.

Discouraged approaches include:

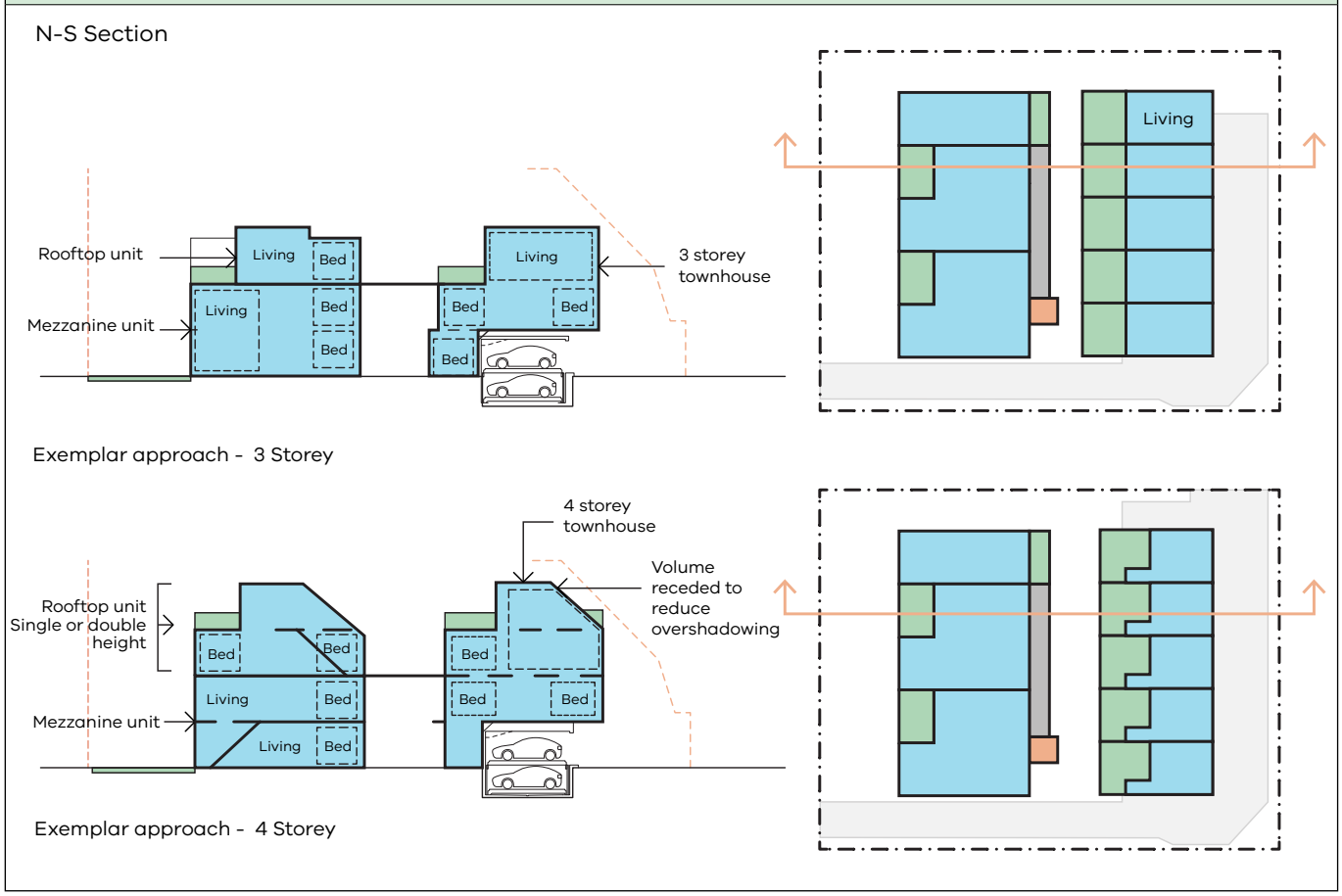
✘ Providing a fourth storey across the whole of the development

✘ Overly dominant built form that does not respect the future character of the area.

Exemplar Design B guidance

Where additional height is proposed, an adaptation can use techniques such as a mansard roof to reduce the overshadowing impacts to neighbours.

Figure 2B.5: Techniques to introduce an additional storey while protecting the amenity of neighbours



4.3 Walls on boundary

General adaptation guidance

An adaptation to increase building height should consider:

- impacts on solar access and articulation to the scale of the specific neighbouring context
- the siting of the additional storey, to minimise overlooking and overshadowing
- transitions to lower, neighbouring built form
- additional fire egress and services requirements
- access and circulation
- additional car and bicycle parking requirements, if the number of apartments is increased
- additional communal open space and landscaping requirements.

Preferred approaches include:

✔ A building height that transitions to the scale of adjoining buildings

✔ The use of design techniques to reduce visual bulk and break up the mass of the building such as articulation of built form, creating depth within the façade and the use of materials.

Discouraged approaches include:

✘ Providing a fourth storey across the whole of the development

✘ Overly dominant built form that does not respect the future character of the area.

Exemplar Design B guidance

North-south orientation, at grade

This design can be adapted by reconfiguring the site layout to take advantage of existing blank walls on the boundary and creating a larger, communal open space. The height of any new wall on the boundary will need to respond to neighbouring conditions. Figure 2B.6 shows the adaptation for a north-south orientation.

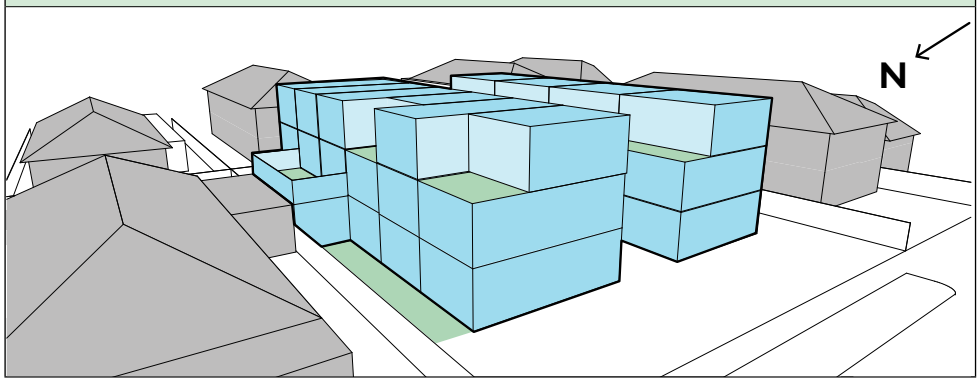
Figure 2B.6: North-south orientation, at grade, wall on the boundary

Figure 2B.7 and Figure 2B.8 show the adaptation for an east–west orientation. The reconfiguration provides an opportunity for a raised, open space at the first or second storey, depending on the height of the adjoining boundary wall. The need for screening at the upper levels could also potentially be reduced, depending on the height of the adjoining boundary wall and the location of windows and open space.

Fire services and overlooking requirements would need to be carefully considered in this adaptation.

Figure 2B.7: East–west orientation, at grade, wall on the boundary

Figure 2B.8: East–west orientation, at grade, wall on the boundary



4.4 Overlooking

General adaptation guidance

The principles in Part 1 set out general design considerations for this planning element.

The exemplar provides two design strategies to prevent overlooking that respond to the different orientations, while providing amenity to residents, allowing access to external views and daylight.

Adaptations should not hinder the amenity of residents. For example, highlight windows should be avoided as a standalone solution to overlooking.

Exemplar Design B adaptation guidance

This design can be adapted by using:

- a Juliette balcony with a 1.7 metre high semi-transparent balustrade, providing access to outdoor space while limiting overlooking
- window sills, planters and fixed joinery to deflect downward views away from private open spaces and neighbouring habitable room windows
- climbers on fixed cables or pergolas for visual screening from internal overlooking.

These adaptations are shown in Figure 2B.9, Figure 2B.10 and Figure 2B.11.

Figure 2B.9: Juliette balcony with 1.7 m, semi-transparent balustrade

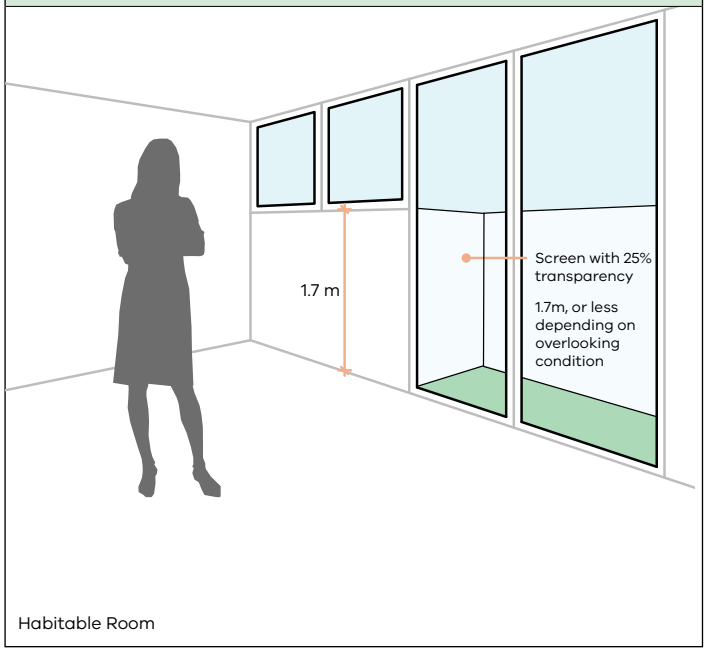


Figure 2B.10: Planters with cables spanning to the pergola to limit internal overlooking

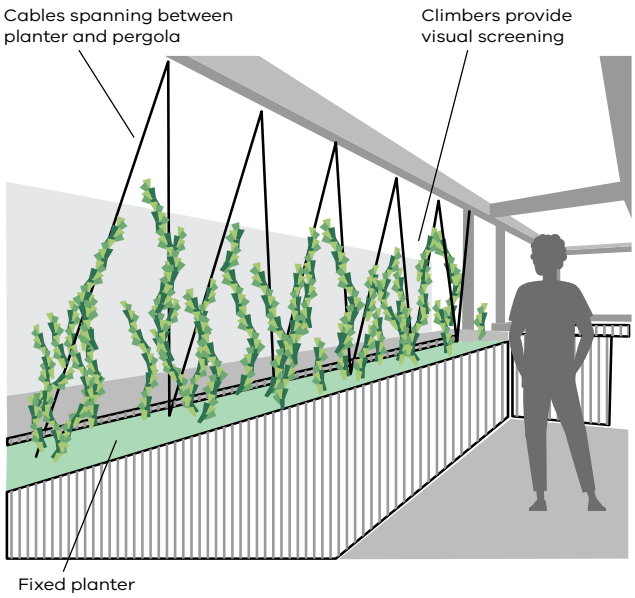
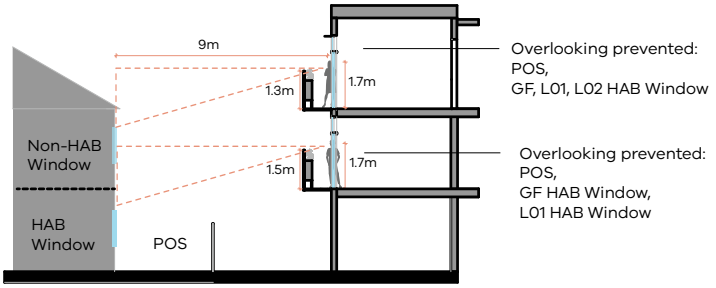
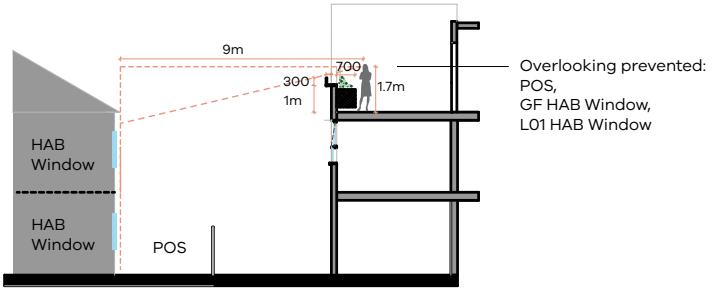


Figure 2B.11: Planting and greenery to minimise views

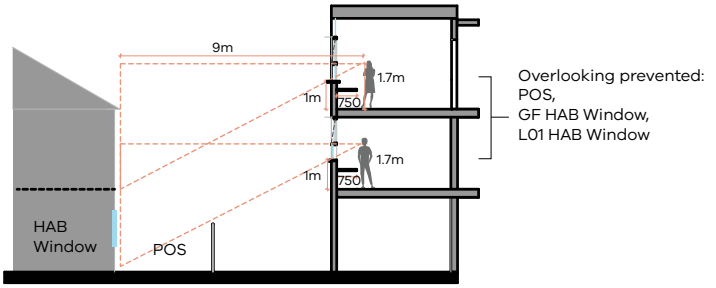
Juliette Balcony as external screen
Balustrade 25% transparent

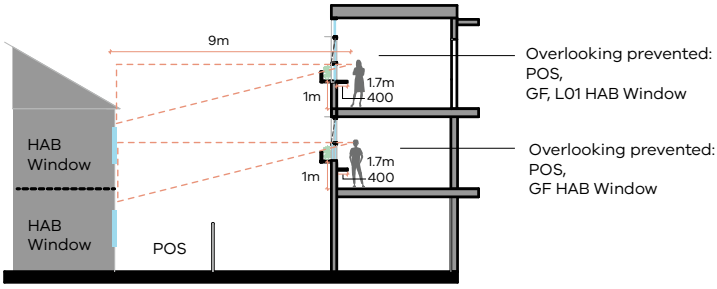


Block downwards view:
external horizontal offset planter to terrace



Block downwards view:
Extended sill and fixed joinery against window





4.5 Daylight to existing windows

General adaptation guidance

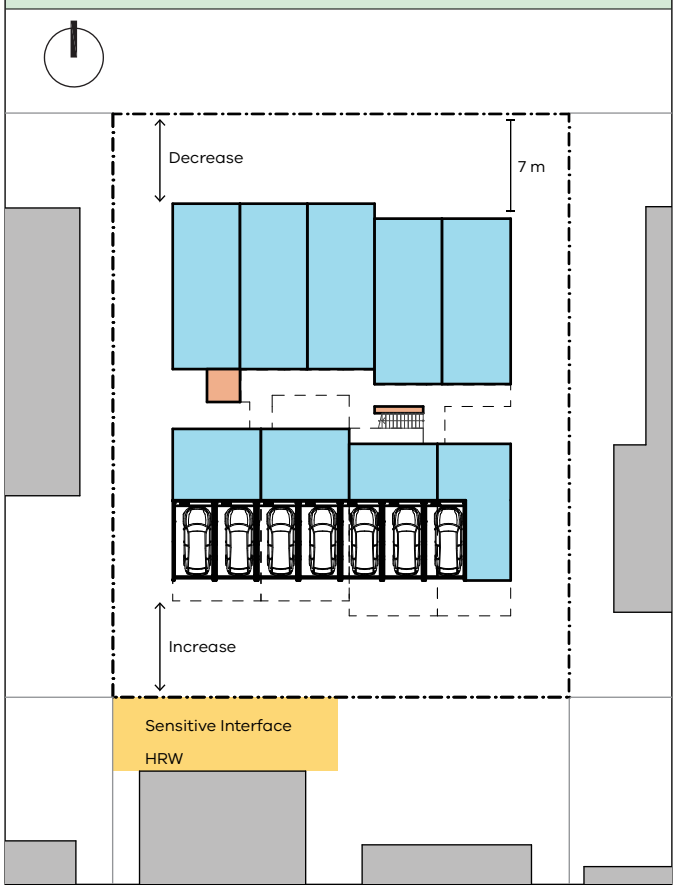
The exemplar design protects solar access to existing habitable room windows without the need for rigid numeric compliance. Designs can be reconfigured to provide adequate daylight through the habitable room windows of existing dwellings located close to the site boundary.

Exemplar Design B adaptation guidance

North-south orientation, at grade – habitable room window to the south

This design can be adapted if there is an existing habitable room window to the south by decreasing the front setback, where appropriate, to increase the distance separation from the window, as Figure 2B.12 shows.

Figure 2B.12: North-south orientation, habitable room window to the south



4.6 Site access

General adaptation guidance

Site access may need to be adapted if:

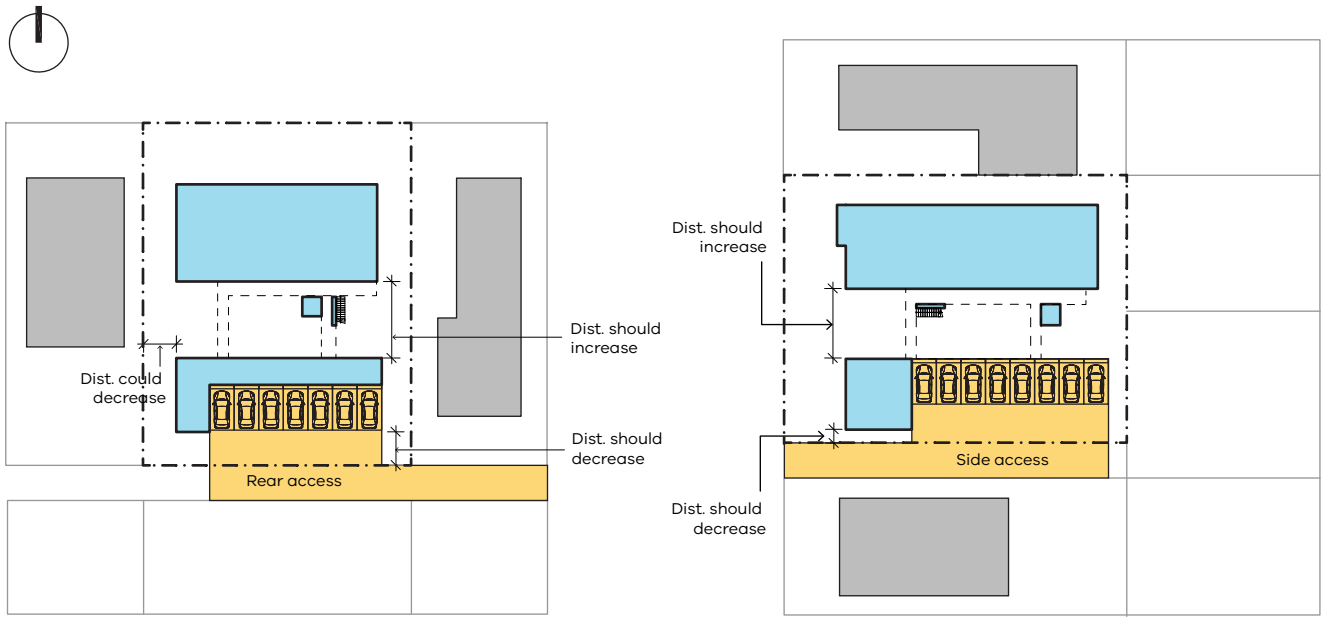
- street and public transport assets such as street trees, bus shelters, stays or electrical poles are located on nature strips
- a rear or side lane access is available and the rights to use the laneway for vehicle access are established.

Exemplar Design B adaptation guidance

Laneway and rear access

This design can be adapted for rear and side laneway access, as Figure 2B.13 shows.

Figure 2B.13: Rear and side laneway access



4.7 Existing vegetation

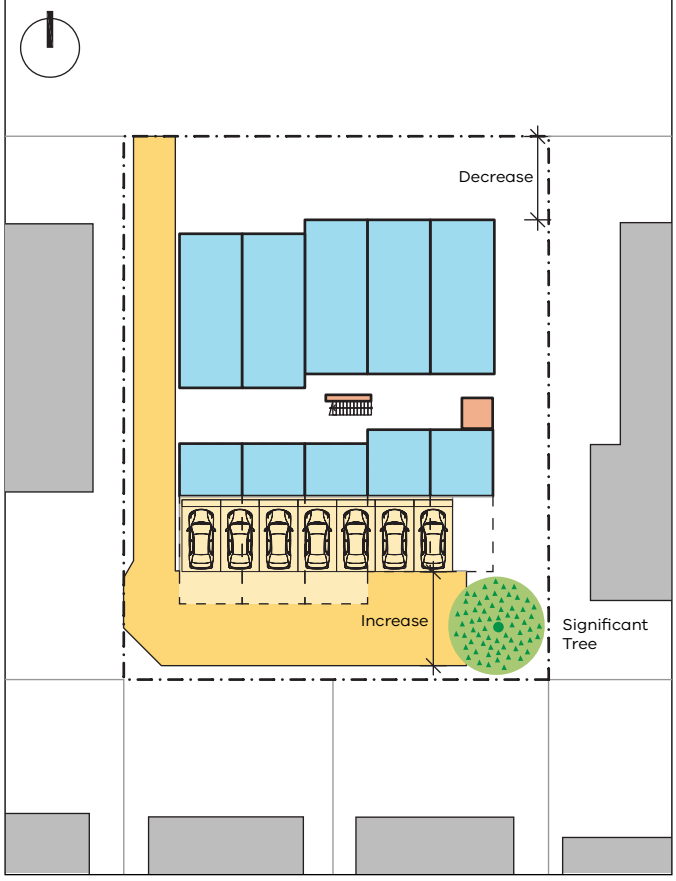
General adaptation guidance

Retain existing significant trees, particularly where they are located within the front and rear gardens. Seek guidance from an arborist, particularly where tree controls apply on site.

Exemplar Design B adaptation guidance

This design can be adapted by shifting apartments forward to retain existing significant vegetation, as Figure 2B.14 shows.

Figure 2B.14: Adjust setback to retain existing vegetation at the rear



5 Enduring

5.1 Greening and landscape

General adaptation guidance

Greening and landscaping could be increased if there is potential to:

- increase setbacks at the front, side or rear if site conditions allow such as on larger sites and sites without sensitive interfaces or easements)
- increase the separation between buildings in the development
- raise private and communal open spaces to the upper levels or create a roof terrace, while meeting the garden area performance targets
- abut an adjoining wall at the boundary
- use low-maintenance green walls to manage privacy and overlooking; such walls must comply with cladding regulations and be drought-tolerant and irrigated.

Preferred approaches include:

✔ adjusting layouts to integrate existing trees or vegetation

✔ adjusting layouts to improve access to sun in the morning and evening

✔ maximise areas of connected deep soil.

Discouraged approaches include:

✘ high-maintenance landscape elements including green roofs

✘ excessive hard ground surfaces

✘ excessive use of planter boxes at the expense of deep-soil planting.

Exemplar Design B adaptation guidance

Landscape is an essential part of the exemplar, and it needs to be carefully coordinated with architectural components and all the necessary services to ensure it is adequately implemented. This design integrates greening strategies throughout.

The street edge and front garden provides communal space for residents. Consider appropriate design elements to encourage social interaction, and provide comfortable spaces in the context of the street.

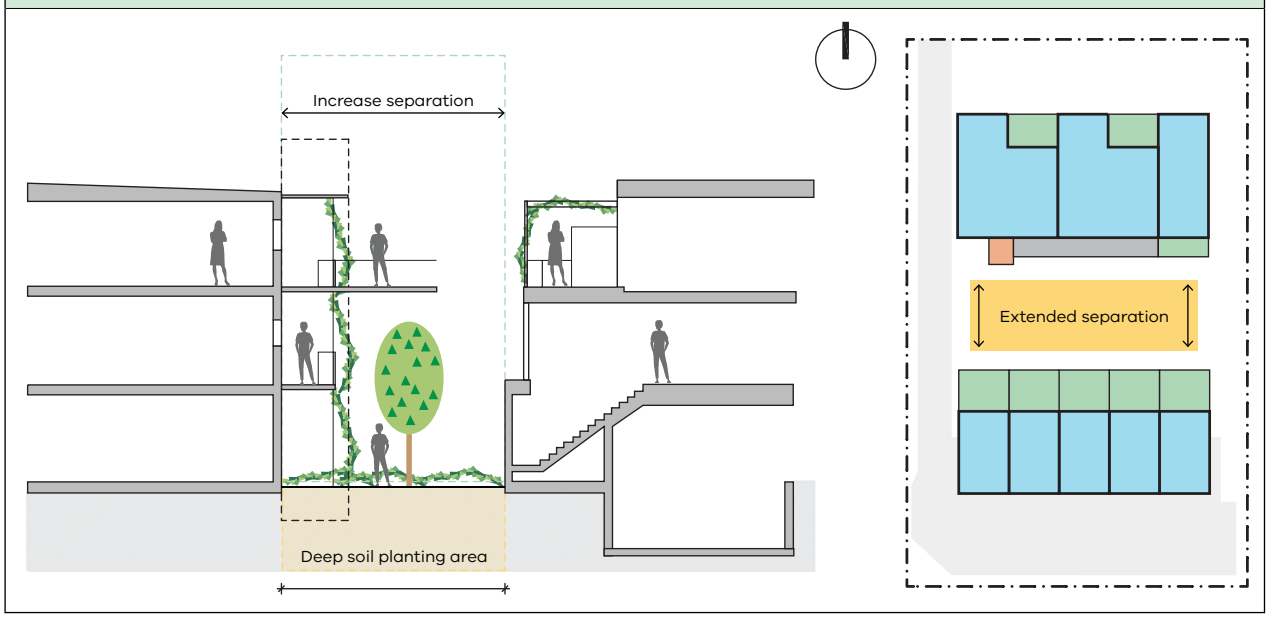
A key feature of the design is the central landscaped area. Maximise the deep-soil area to create optimum growing conditions while allowing good pedestrian access.

Utilise opportunities for enhancing the greening of the rear car park.

On larger sites, the design can be adapted by increasing the separation between the two building forms to enhance the amenity and privacy of habitable rooms and extend the opportunity for deep soil, as Figure 2B.15 shows.

Service risers should be located such that the central garden area is left as clear as possible, whilst meeting the requirements for ongoing maintenance access. The exemplar design locates hydraulic service risers adjacent to lift doors, with narrower electrical risers to the side of the lift, minimising the impact on the central void and apartment facades.

Figure 2B.15: Optimise landscape and greening



6 Sustainable

General adaptation guidance

There is no general adaptation guidance for the Sustainable objective, but that does not mean alternative solutions are not acceptable. Where one is proposed, the principles and performance targets in Part 1 must still be met.

See Appendix 6: Environmentally Sustainable Design for more information.

7 Adaptable

7.1 Roof terraces

General adaptation guidance

Roof terraces increase communal open space and can be vibrant hubs where residents can socialise and build a sense of community.

Consideration of a roof terrace should include:

- the capacity of the structural system
- access, circulation, fire and balustrading safety
- the maximum building height requirements, noting that lift and stair overruns and balustrades do not count toward the building height.

Preferred approaches include:

- ✔ integrating the terrace design with the overall building form
- ✔ providing protection from the wind, sun and rain, noting maximum building height requirements
- ✔ using opportunities for cooling and greening
- ✔ having a well-designed drainage system that minimise unsightly services, staining and damage to the building
- ✔ creating a flexible design that caters for a mix of activities including vegetable gardens and hobbies
- ✔ providing infrastructure services and facilities (such as lighting, barbecues, garden taps, outdoor furniture, sun shades and vegetable gardens)
- ✔ protecting adjoining properties from noise and overlooking.

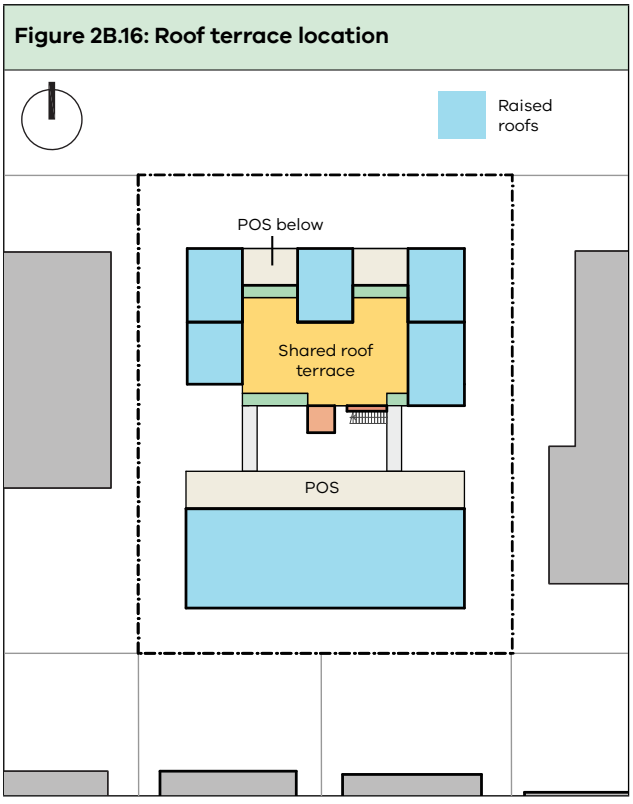
Discouraged approaches include:

- ✘ exposed, windy terraces
- ✘ designs that don't allow for more greenery
- ✘ overlooking into existing habitable room windows and private open space.

Exemplar Design B adaptation guidance

This design can be adapted by locating the roof terrace above the front apartment block to minimise potential overlooking and overshadowing of neighbouring properties, as Figure 2B.16 shows.

Figure 2B.16: Roof terrace location



7.2 Orientation

General adaptation guidance

There is no general adaptation guidance for this topic.

Adaptations should address site planning requirements including daylight, ventilation and access.

Exemplar Design B adaptation guidance

There is no specific adaptation guidance for this design.

7.3 Site on a main road

General adaptation guidance

If a site is on a main road, designs should be adapted to address traffic movements, noise, pollution and privacy issues. Main road sites may also need expert advice from acoustic and traffic consultants.

Designs can be adapted:

- with landscape treatments to mitigate noise and soften the harsh road environment
- by building a front fence up to 1.8 metres high
- by positioning the main communal areas away from the main road
- with acoustic treatment such as double-glazed windows
- by providing balconies with solid balustrades
- by providing for a vehicle passing area.

Preferred approaches include:

✔ a frontage that contributes to the streetscape character, by screening with trees.

Discouraged approaches include:

✘ long, blank walls with no visual connection to the street.

Transport for Victoria (TfV) requirements for main road sites

TfV requires plans to be prepared in accordance with the following:

- A feature survey plan must be submitted, showing all features of the road including street trees, utility poles, pits, bus stops, line-markings, slip lanes, medium strips and traffic / pedestrian lights in proximity to the site
- Where tram lines exist, access to the property should be confined to left-in and left-out only arrangements
- Crossovers must be set back:
  - at least 1.5 metres (with no part closer than 1.0 metres) from any public transport assets
  - at least 1.0 metres from infrastructure/ utility poles
  - at least 9 metres from an intersection

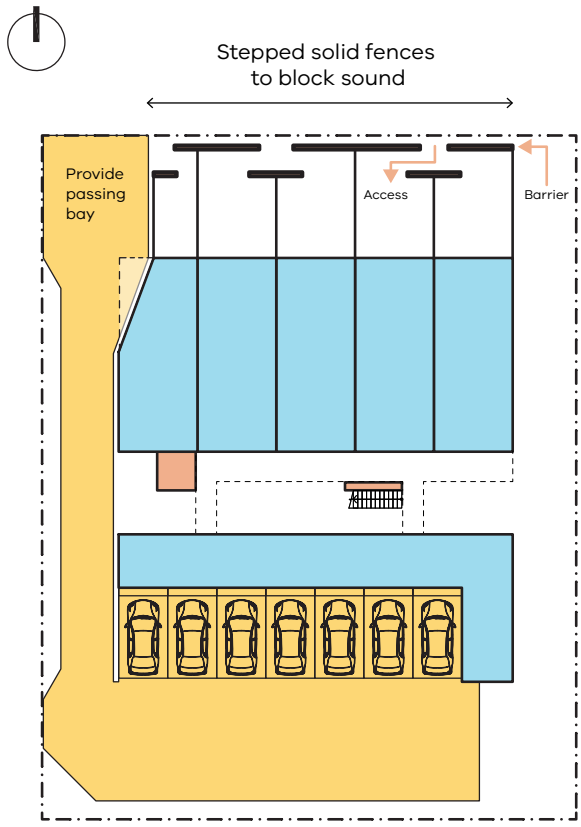
- Accessways must:
  - Provide a passing area at the entrance at least 6.1 metres wide and 7 metres long where an accessway serves:
    - 10 or more cars and is more than 50 metres long or
    - connects to a road in a Transport Zone 2 (TRZ2)
  - Be designed so that cars can exit the site in a forward direction, if the accessway serves four or more car spaces or connects to a road in a TRZ2
  - Have a corner splay or area at least 50 per cent clear of visual obstructions extending at least 2 metres along the frontage road from the edge of an exit lane and 2.5 metres along the exit lane from the frontage, to provide a clear view of pedestrians on the footpath of the frontage road. The area clear of visual obstructions may include an adjacent entry or exit lane where more than one lane is provided, or adjacent landscaped areas, provided the landscaping in those areas is less than 900mm in height
  - Be set back a minimum of 7 metres inside the property boundary for any security boom, barrier, gate, or similar device controlling vehicular access to the premises, to allow vehicles to stay clear of the road pavement and footpath
  - Provide clear directional signs on the arterial road frontage if one-way access is proposed
- If an accessway to four or more car parking spaces is from land in a TRZ2, the access to the car spaces must be at least 6 metres from the road carriageway
- If entry to the car space is from a road, the width of the accessway may include the road
- Ensure car parking spaces are in accordance with the dimensions in Table 1.6: Minimum dimensions of car parking spaces and accessways. Where mechanical parking is proposed, refer to **Chapter 2.3 Parking: Cars** for guidance on dimensions and aisle widths
- If a Future Homes adaptation does not address the requirements above, TfV may ask the permit applicant to do so.

Exemplar Design B adaptation guidance

For a site located on a main road, this design can be adapted by:

- reducing the ground-level apartment area to accommodate a car-passing area and designing the front fence to mitigate noise, as Figure 2B.17 shows
- using overlapping fencing sections to provide access without compromising acoustic protection, as Figure 2B.18 shows.

Figure 2B.17: Main road site



7.4 Corner site

General adaptation guidance

A development on a corner site must locate crossovers in accordance with council and/or TfV requirements and accommodate any existing street services and assets.

Preferred approaches include:

- ✔ clear sightlines
- ✔ crossovers appropriately set back from street corners, to avoid vehicle conflict
- ✔ developments that face the street on both frontages
- ✔ buildings that offers passive surveillance of the street
- ✔ use of landscape elements to maintain visual permeability
- ✔ vehicle access from the local road.

Discouraged approaches include:

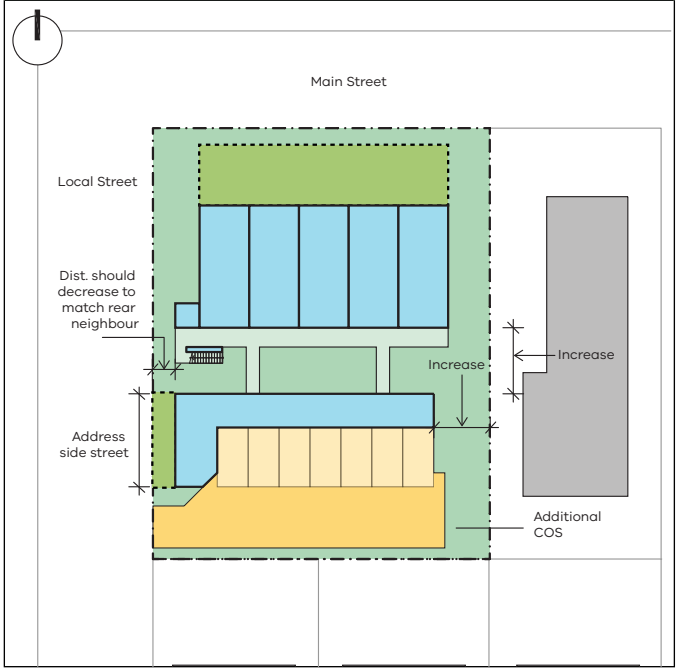
- ✘ high, long, blank walls at street frontages.

Exemplar Design B adaptation guidance

This design can be adapted by:

- reducing the side setback to match that of the neighbours on the local street
- increasing separation between the front and rear blocks.

Figure 2B.18: Corner site showing response to neighbouring setbacks



7.5 Varied site dimensions

General adaptation guidance

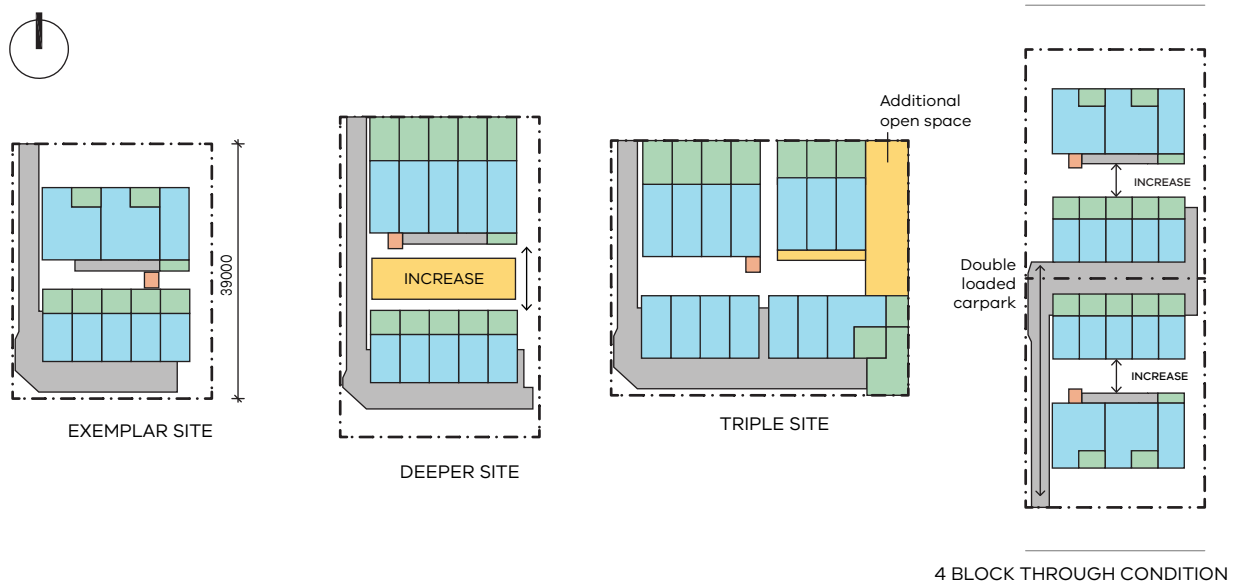
For a deep site:

- ensure equitable access to circulation including stairs and lifts
- avoid a long, continuous built form without breaks in the massing.

Exemplar Design B adaptation guidance

This design can be adapted for deep blocks and multiple blocks in the ways shown in Figure 2B.19.

Figure 2B.19: Large-block site configurations



7.6 Sloping site

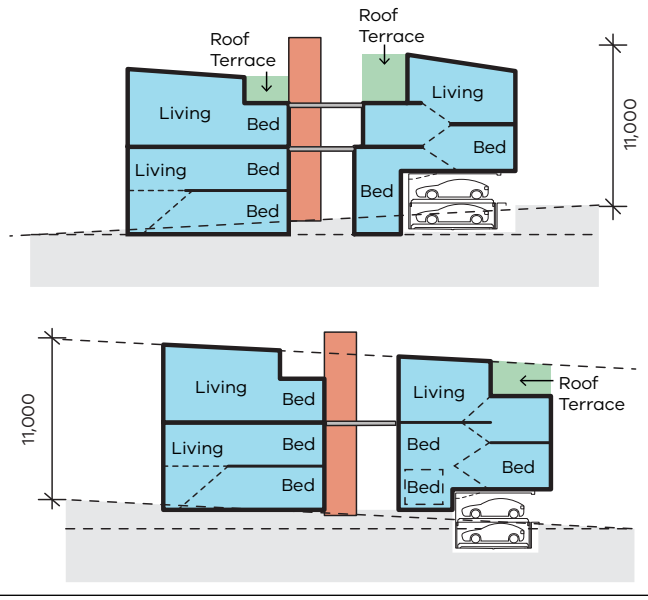
General adaptation guidance

There is no general adaptation guidance for this element.

Exemplar Design B adaptation guidance

This design can be adapted to utilise split-level arrangements and may result in additional roof terraces being provided to the northern apartments, as Figure 2B.20 shows. When designing split-level arrangements, ensure the maximum building height and storey requirements under the zone are met.

Figure 2B.20: Sloping site



7.7 Floodplain

General adaptation guidance

A development on a site within a flood overlay must be designed in accordance with Melbourne Water's requirements.

Inappropriate development in flood affected areas can lead to fundamental changes in the nature and impact of flooding. It can also increase the potential for loss of life and flood damages to the community and the environment.

Melbourne Water decisions are guided by planning policies in the planning scheme. In addition, Melbourne Water assesses development applications in accordance with the *Guidelines for Development in Flood Affected Areas* (DELWP, 2019). Usually the information in the guidelines is sufficient to guide decision making. However, the guidelines cannot cover all the circumstances and aspects of flood behaviour.

Development in or adjacent to a floodplain will only be acceptable where the new development is protected from flooding (flood levels are constructed to the identified Nominal Flood Protection Level); has safe access to and around the development (in considering site specific flood depths and velocities); and does not interfere with the passage and storage of floodwaters.

Developments in areas affected by flooding must not obstruct the passage of flood flows or reduce floodplain storage as this may cause flood levels and velocities to increase and adversely impact surrounding properties. On sites subject to flooding, imported fill must also be kept to a minimum and used only for sub floor areas of dwellings, garages and driveway ramps. New fencing and decking should also be of an open style of construction (50 per cent permeable/open) to maintain conveyance of flows through floodplains.

All new development should preserve, and if possible enhance, the social and environmental values and benefits of floodplains and waterways and should be sensitively designed and sited to maintain and enhance environmental assets, significant views and landscapes along river corridors and waterways and adjacent to lakes and wetlands. For detail on development setbacks required from waterways, see the *Healthy Waterways Strategy 2018-2028*.

On sites affected by flooding, Melbourne Water requires the following information to be included on all plans:

- The boundaries and dimensions of the site
- Existing conditions survey and feature plans. Taken by or under the direction and supervision of a licensed land surveyor showing:
  - natural ground level
  - the current Flood Level
  - the dimensions and ground and finished floor levels of any existing buildings, to Australian Height Datum (AHD)
- Proposed architectural plans, elevations and section drawings (1:50 or 1:20). Showing the proposed finished surface levels and finished floor levels and the Nominated Flood Protection Level (NFPL) of all new structures on the land
- All proposed finished floor levels notated on the plans to Australian Height Datum
- A comparative description of the existing and proposed use and development of the site
- Cross-sectional details of any basement entry ramps and other basement entries to Australian Height Datum. Showing floor levels of entry and exit areas and drainage details

- A written assessment against 'Part Three – assessing development proposals' of the *Guidelines for Development in Flood Affected Areas* (DELWP, 2019), and subsequent submission of any associated Flood Risk Management Plan
- Any other application requirements specified in a relevant planning Overlay schedule applicable to the site
- Appropriate boundary setbacks to allow for the conveyance of overland flows
- Detailed location of any Melbourne Water asset (including drains, sewers or water mains) within 20 metres of the subject site
- Hydraulic details and associated reporting of all/any existing and proposed earthworks, including details of any cut and fill required for works
- Details of any other known physical features that may affect flows on-site and on adjoining land, such as levees, fences and retaining walls
- A written description of proposed actions, flood risk mitigation strategies or measures required, if any, to the siting and design of the buildings or works, or in association with the use and occupation of all aspects of the proposal in order to reduce the risk to individuals, property, infrastructure and the environment.

Exemplar Design B adaptation guidance

There is no adaptation guidance for this design.

7.8 Easements

General adaptation guidance

There is no general adaptation guidance for this topic.

Exemplar Design B adaptation guidance

This design can be adapted by accommodating a 3.05 metre rear easement in the north-south or east–west orientations. A 1.83 metre side easement would only affect the east–west orientation if columns and beams along the boundary are required to pick up the volume overhanging the driveway.

7.9 Systems and approach

General adaptation guidance

Off-site manufacturing

Off-site construction delivers pre-finished, prefabricated building elements and modules that are assembled on site using efficient construction and manufacturing techniques.

Consider standardisation and repetition of structural framing. It can help to reduce material waste, and prefabrication of structural framing can mean fewer trades and waste on site.

Prefabricated external walls with preassembled windows generally have higher-quality sealing than on-site construction. This method reduces on-site sealing and can reduce the incidence of poor workmanship and defects. Prefabrication also can minimise the construction period; the building can be prefabricated while groundworks and footings are being constructed.

Consider early contractor advice in the design phase if offsite construction is applicable and/or a known builder will construct the development. This way, trades and their supply chains can help coordinate and standardise the design of services, and costs assist to accurately estimate costs.

Future changes in use

Plan for the potential amalgamation of smaller apartments into a larger apartment or vice versa. Such alterations would need room dimensions and optimal locations of wall openings to be considered, to reduce the need for structural adjustments.

Structure

Consider an efficient structural frame that extends in alignment from the ground floor to the top floor such as a lightweight post-and-beam timber, or cross-laminated timber (CLT). This reduces the number of on-site trades and the time needed for coordination and construction. Consider the fire-rating implications of this method of construction.

- Use regular grids and modular components for floors, walls, stairs, roofs and service risers.
- For non-wet areas, consider providing structural flooring that can span between load-bearing walls. This will enable internal walls within a sole occupancy unit to be non-load-bearing and adaptable in the future.
- Consider providing structure and footings for more floors to be added over time and clearly documenting these for future reference.
- Consider using a structural insulated panel system or sandwich panels.

Car park

- Floor-to-floor height for above-ground car park spaces should allow for other temporary or long-term uses, including conversion to habitable space.
- Aim to provide a minimum of 2.6 metres clear in basement areas, to allow for services to be installed.
- Plan for adequate ventilation and likely service infrastructure needs for future uses.
- Provide adequate drainage at the base of ramps for surface run-off, pits for excess water and a freeboard threshold at the top of the ramps.

Exemplar Design B adaptation guidance

There is no specific adaptation guidance for this topic.

7.10 Materials and finishes

General adaptation guidance

Future Homes exemplar designs have a materials schedule that includes substitution guidance to suit different contexts or design preferences.

Exemplar Design B adaptation guidance

Refer to the materials schedule for substitution guidance.

7.11 Fire services

General adaptation guidance

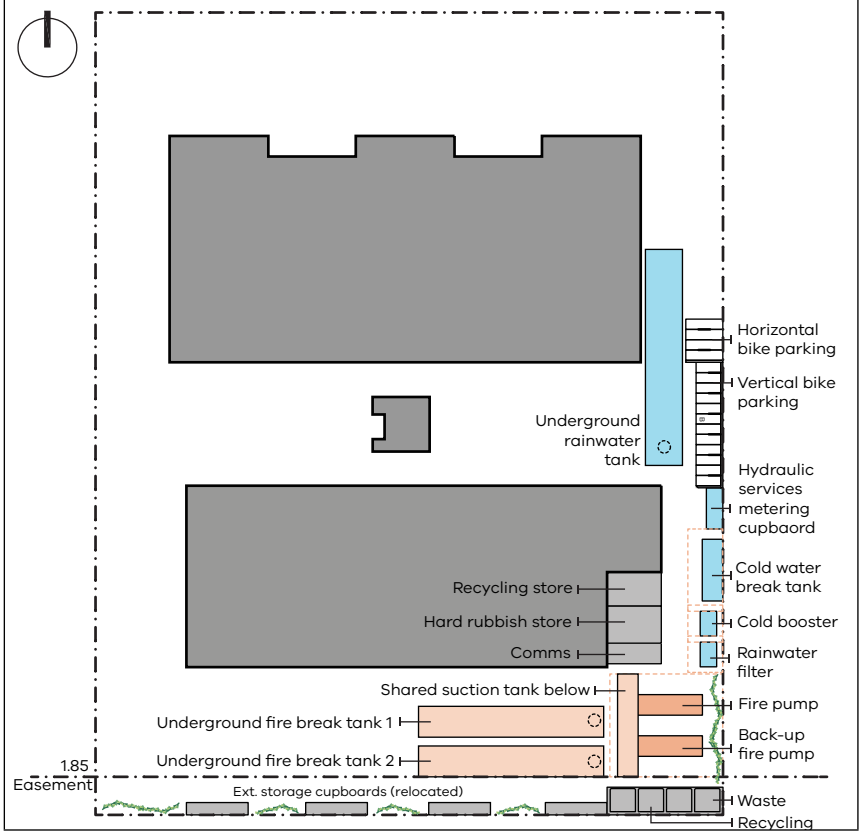
There is no general adaptation guidance for this topic.

Exemplar Design B adaptation guidance

If a fire pump and tank are needed, the design can be adapted by:

- locating the fire pump in the south-east corner of the site
- locating the break tank under the parking aisle
- relocating the waste storage within the exterior storage rooms
- relocating and reconfiguring the storage to the southern boundary
- relocating the rainwater tank to the eastern edge.

Figure 2B.21: Fire pump location guidance



Part 2C

Exemplar Design C
McGregor Westlake Architecture

Design Statement

Prepared by McGregor Westlake Architecture

Exemplar Design C by McGregor Westlake Architecture has been designed to consolidate and minimise its footprint, to maximise the surrounding deep soil, landscape and open space. The layout of apartments has focused on capturing northern light and prioritising the outlook for the maximum number of apartments, with an open-air 'gallery' circulation strategy encouraging interaction between residents. The rear yard is intended to create an indigenous forest and landscape corridor, when combined with neighbouring yards, to promote tree cover and bird life.

Siting and Layout Strategy

- The driveway and carpark are contained within and under the building footprint, and the compacted building form articulated by the common open-air 'gallery' access. The consolidated form enables increased separation from neighbours, especially to the rear. The open-air 'gallery' creates a clear punctuation in the form, with its more transparent balustrades and minimal materials.
- The built form is characterised by solid corner elements that frame more open and semi-recessed balconies. Within the frontage balconies cantilever towards the street.
- In section and elevation, the ground floor is designed as a plinth, absorbing all the services, car parking and pedestrian entry.
- Apartments typically have living areas opening northwards onto balconies. All balconies have a street outlook or look towards the street, and all north-facing openings are protected by balconies, awnings or hoods.

Materiality

- The ground floor consists of masonry cladding, with an expressed concrete column structure and recycled brick infill from demolished houses. Where recycled brick is unavailable, off-site brick can be brought in.
- The materiality of the upper-level cladding consists of factory-finished panels, which are available in a broad range of colours and profiles. This includes profiled metal or fibre-cement sheets. The key is their vertical arrangement to create a unified double-order (two-level expression) above the ground-floor plinth. The panels are available from a range of manufacturers and are framed and protected by a neatly turned down flashing, eliminating the need for scaffold finishing.
- Windows are typical off-the-shelf units and inset, creating a calm elevation. A polychrome spandrel panel creates identity and delight to the façade.

Common Space

- Large front gardens enable communal open space to be adjacent to the street, creating a more socially connected and engaged project.
- Common circulation is via outdoor stairs and 'gallery' access, promoting a more open-air and landscape quality for everyday life within the project.
- The circulation gallery is 3 metres wide and open at either end, providing views out to landscape on both sides and a safe and easily understood passage. It is generous, yet efficient in providing space for social interaction.

Landscape

- The design provides a continuous perimeter of landscape, allowing the development to feel surrounded by planting. The front garden provides a social street edge with lawn and planting.
- Entry paths are surrounded by planting. The pathway weaves to provide more space for tree planting and accentuate the feeling of being within planting.
- Varied, colourful planting provides a feeling of wilderness. Climbing plants along the facades and fences increase the sense of green.

1 Introduction

This chapter guides designers adapting Exemplar Design C for a particular development site. Authored by the architects who designed the exemplar, the chapter is organised according to the six Future Homes objectives that adapted designs need to address: Responsive to Need, Liveable, Good Neighbours, Enduring, Sustainable and Adaptable.

For each objective, the chapter sets out:

- how to adapt the design to fit different sites and contexts
- preferred and discouraged approaches to adaptation
- ideas to adapt the design to suit particular needs (such as a different bedroom configuration or a main road location)
- ideas to achieve better development and design outcomes by adapting the design if the opportunity arises.

The guidance in this section is not exhaustive, and there is no adaptation guidance for some planning elements. It is up to the designer to process or interpret the exemplars. The assessment process will treat all adaptations on their merits.

2 Responsive to need

2.1 Apartment mix and size

General adaptation guidance

Apartment designs need to respond to the changing patterns of living, including an increasingly diverse household mix and size.

The apartment should be sufficiently adaptable to allow:

- the ability to upsize or downsize: for example, by having the space and services configuration to combine smaller apartments to create a larger apartment and vice versa
- multi-purpose spaces for work and study from home
- internal functions to be rearranged over time (for example, bathrooms, kitchens and laundries that can be reconfigured or be combined differently).

Preferred approaches include:

✔ the layout is easy to change

✔ open-plan living spaces cater for flexible furniture arrangements

✔ floor space is used efficiently.

Discouraged approaches include:

✘ excessive corridors and passageways

✘ excessive use of built-in joinery.

Exemplar Design C adaptation guidance

This adaptation can accommodate:

- a different mix of apartments based on market demand
- merging apartments to provide different bedroom mixes and configurations.

Figure 2C.1: North-south orientation, internal layout adaptation to suit different apartment mix

2.2 Parking: cars

General adaptation guidance

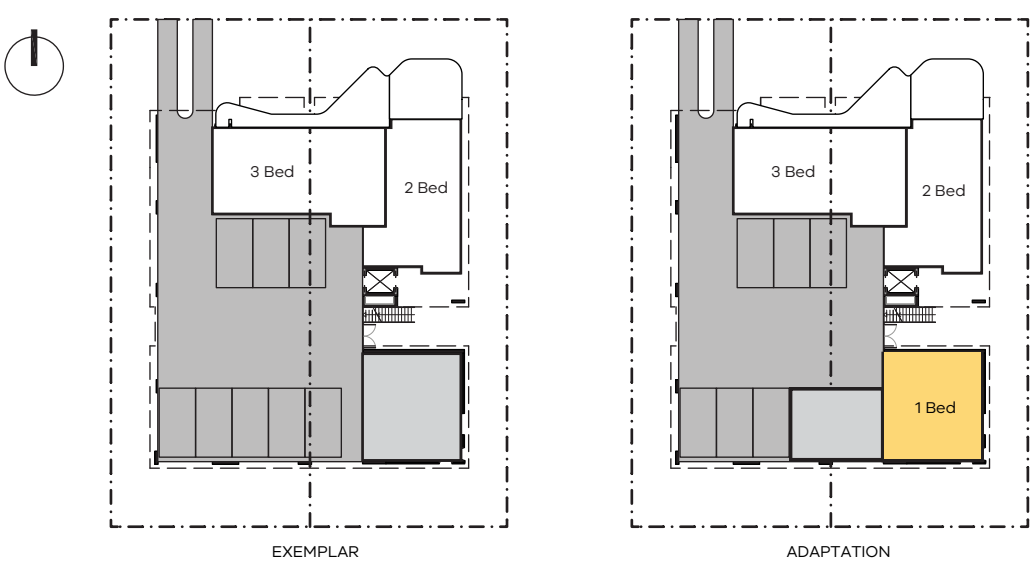
If it is acceptable to have fewer car parking spaces, the design should be adapted to avoid the need to use mechanical parking. The development should also allow for future adaptation of car parking spaces to alternative uses to support changes in use, personal preferences and technology over time.

Measures to support future adaptation include sufficient floor-to-ceiling height to allow future habitable spaces to be inserted with access to natural light.

Exemplar Design C adaptation guidance

If a lower car parking rate is allowed, all parking could be provided on-grade, without mechanical parking. If the car parking requirement is further reduced, additional ground-floor apartments are possible.

Figure 2C.2: North-south orientation, at grade, non-mechanical parking option



2.3 Parking: bicycles

General adaptation guidance

Consider locating bicycle parking within oversized balconies, while retaining the minimum preferred useable space for residents' recreation.

Bicycle parking provided on oversized balconies will require the provision of a bicycle-accessible path from the ground floor. Where bicycle parking is provided on upper floors, lifts and/or stairs should be designed to provide access to upper floors for bicycles.

Preferred bicycle parking spaces are those that are covered from the weather and secured.

Exemplar Design C adaptation guidance

Bicycle parking is provided on all levels, so residents and visitors can conveniently access their bicycles.

3 Liveable

General adaptation guidance

There is no general adaptation guidance for the Liveable objective, but that does not mean alternative solutions are not acceptable. Where one is proposed, the objectives, principles and mandatory requirements in Part 1 must still be met.

4 Good neighbours

4.1 Front setback

General adaptation guidance

Front setbacks need to be adapted to the street context. The starting point should be the predominant street setback along the length of the street up to 150 metres (or about ten properties) on either side. Within a site, the building setback may be staggered, forward or behind the predominant street setback having regard to the local context, design outcome and impact on the streetscape.

When determining the front setback or setbacks, the considerations should be:

- the wider streetscape and urban block pattern
- whether an adjoining building sits forward of the predominant street setback
- opportunities to use articulation to transition between neighbouring sites
- whether the approach responds to the emerging or future character of the area
- opportunities to provide suitable canopy tree planting.

Preferred approaches include:

✔ upper-level projections including balconies that provide weather protection for the spaces below

✔ where a lesser front setback is appropriate, consider increasing the rear setback and/or providing additional internal breathing space between buildings.

Discouraged approaches include:

✘ monolithic setbacks without breaks or variations

✘ balcony projections that will limit the planting of canopy trees.

Exemplar Design C adaptation guidance

This design has side and rear setbacks that provide transitional spaces between existing neighbouring dwellings. Balconies, circulation and fences that have different setbacks can be adjusted to further respond to neighbouring conditions and create an articulated street front.

Streets gain character by having existing buildings with different setbacks. However, if lesser setbacks dominate, the development can be moved forward to create a larger backyard.

4.2 Height

General adaptation guidance

Where the responsible authority permits, the exemplar design can be adapted to add another storey. A fourth storey may reinforce the existing character of the wider urban context or respond to the agreed future character of the local area.

An adaptation to increase building height should consider:

- impacts on solar access and articulation to the scale of the specific neighbouring context
- the siting of the additional storey, to minimise overlooking and overshadowing
- transitions to lower, neighbouring built form
- additional fire egress and services requirements
- access and circulation
- additional car and bicycle parking requirements, if the number of apartments is increased
- additional communal open space and landscaping requirements.

Preferred approaches include:

✔ the use of design techniques to reduce visual bulk and break up the mass of the building such as articulation of built form, creating depth within the façade and the use of materials.

Discouraged approaches include:

✘ providing a fourth storey across the whole of the development

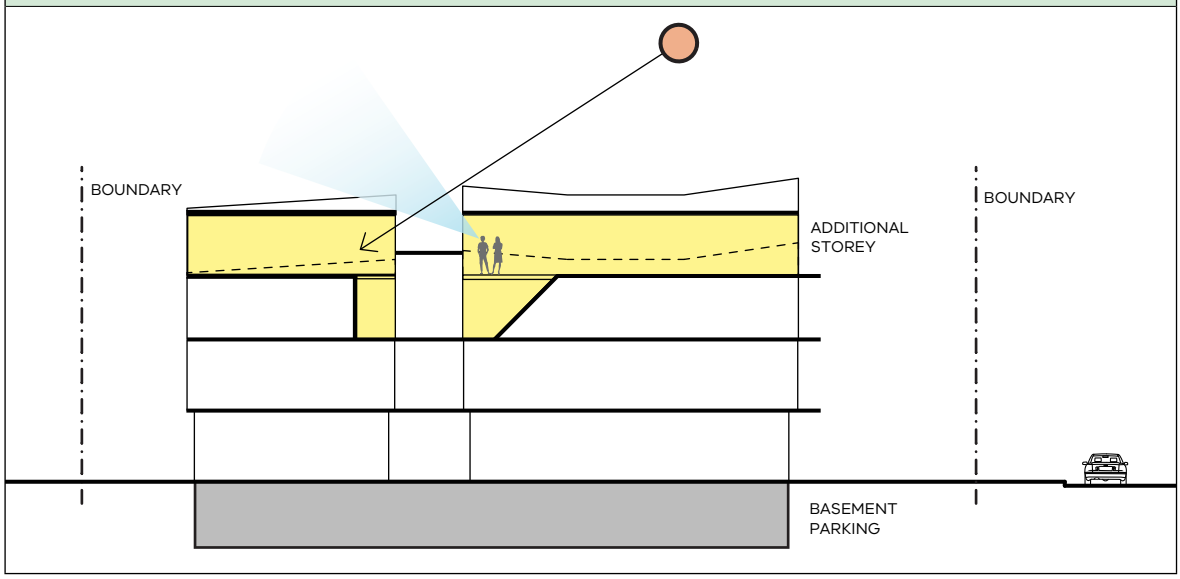
✘ overly dominant built form that does not respect the future character of the area.

Exemplar Design C adaptation guidance

Where a fourth storey is possible:

- access to top-floor apartments can be located on the second floor, potentially avoiding the need for additional fire stairs; access to all other parts of the building can remain as per the exemplar design, as Figure 2C.3 shows
- the roof over the circulation area can be lowered to the sill of the upper apartment windows, to enable additional outlook and sunlight.

Figure 2C.3: Additional (fourth) storey with access via Level 2



4.3 Walls on a boundary

General adaptation guidance

Building to boundaries should be treated flexibly, depending on the site context and impacts on neighbouring properties.

Walls on a boundary may be appropriate where:

- there is an existing wall on the boundary of similar length and height
- the site abuts a laneway
- they improve the development's character such as by contributing to more landscape and open space opportunities on the site
- there are no sensitive interfaces on the neighbouring property.

Discouraged approaches include a wall on a boundary:

- ✘ that significantly exceeds the height or length of neighbouring walls
- ✘ if overshadowing, access to sunlight and daylight, noise or loss of vegetation or the visual amenity on the adjoining property cannot be adequately managed
- ✘ if there is a clear preference for a landscaped perimeter
- ✘ if a site abuts a public park.

Exemplar Design C adaptation guidance

This design does not recommend walls on boundaries as strong perimeter landscaping is a core feature.

If there is an adjoining wall on the boundary:

- a landscaped courtyard could be created
- a ground-floor apartment could have its solar amenity compromised.

4.4 Overlooking

General adaptation guidance

The principles in Part 1 set out general design considerations for this topic.

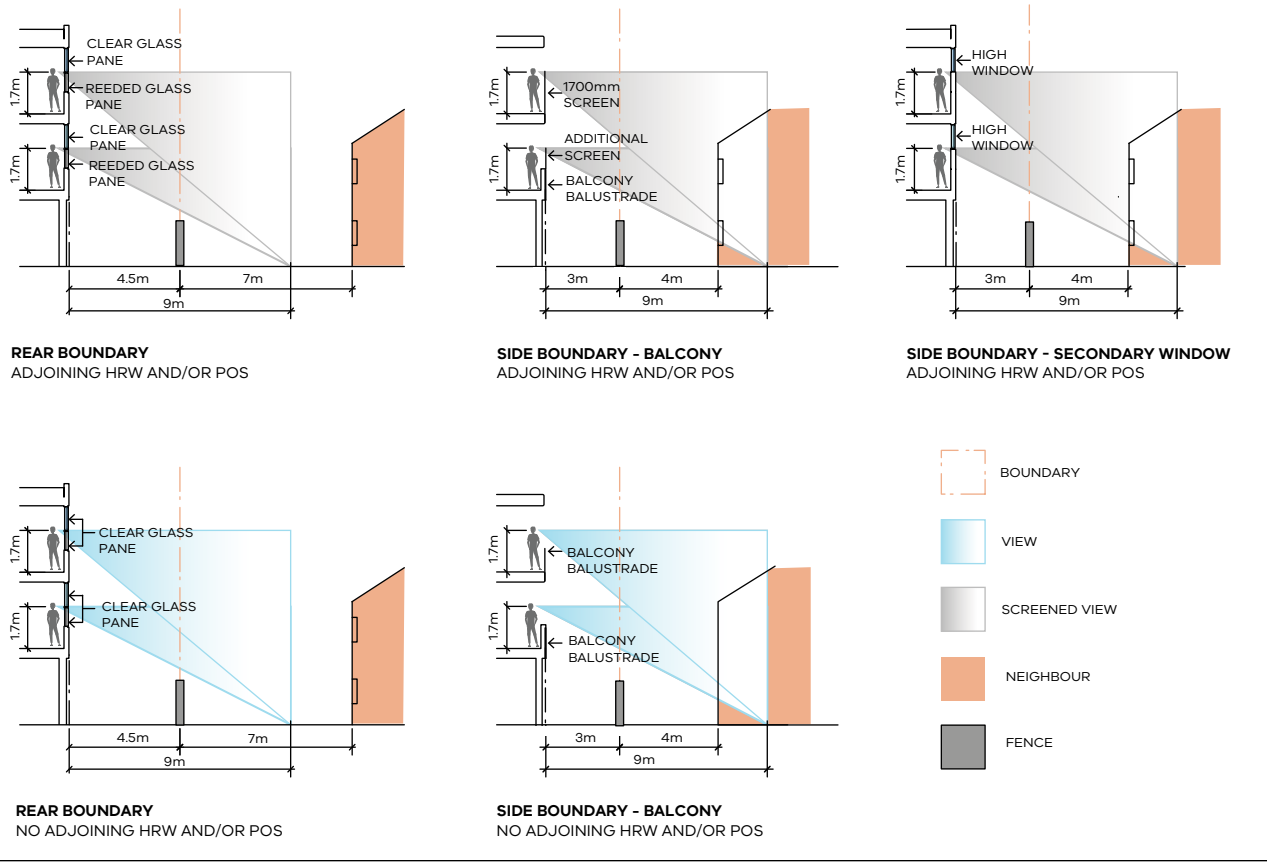
The exemplar provides two design strategies to prevent overlooking that respond to the different orientations, while providing amenity to residents, allowing access to external views and daylight.

Adaptations should not hinder the amenity of residents. For example, highlight windows should be avoided as a standalone solution to overlooking.

Exemplar Design C adaptation guidance

Design for strategic placement of windows and appropriate sill heights within habitable rooms, to limit overlooking.

Figure 2C.4: Managing views



4.5 Daylight to existing windows

General adaptation guidance

The exemplar design protects solar access to existing habitable room windows without the need for rigid numeric compliance. Designs can be reconfigured to provide adequate daylight through the habitable room windows of existing dwellings located close to the site boundary.

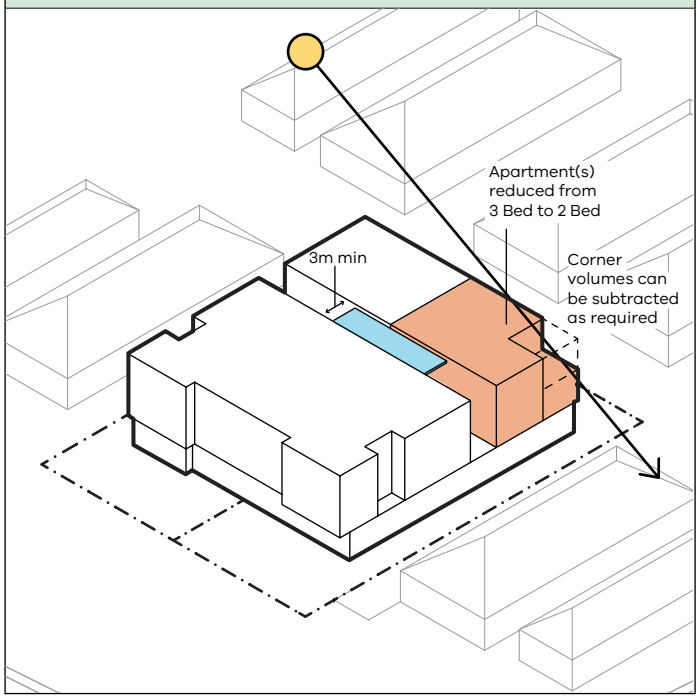
Exemplar Design C adaptation guidance

This design can be adapted by:

- reducing massing to comply with the performance targets for daylight to existing windows and by relocating windows as appropriate
- the circulation area is to be no less than 3 metres wide. If necessary, the rear apartments can be adjusted, as Figure 2C.5 shows.

The apartment mix may be adapted to suit development requirements.

Figure 2C.5: North-south orientation, reduced apartment massing for solar access



4.6 Site access

General adaptation guidance

Site access may need to be adapted if:

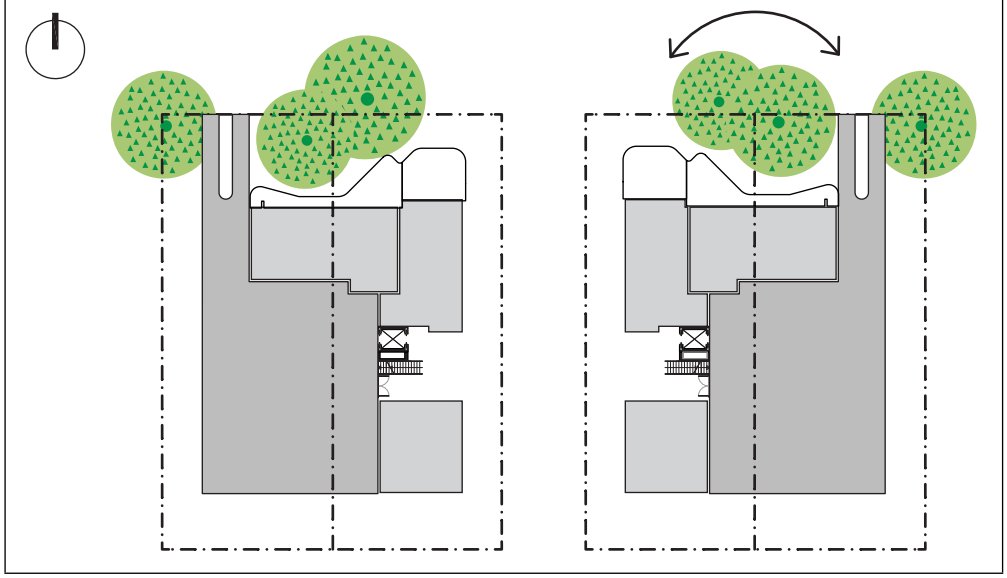
- street and public transport assets such as street trees, bus shelters, stays or electrical poles are located on nature strips
- a rear or side lane access is available and the rights to use the laneway for vehicle access are established.

Exemplar Design C adaptation guidance

Mirrored access

This design can be adapted by mirroring the plan in the event of a conflict with the driveway and street assets, as Figure 2C.6 shows. The mirror-image adaptation enables the carpark and aisle to be relocated.

Figure 2C.6: North-south orientation, mirrored access

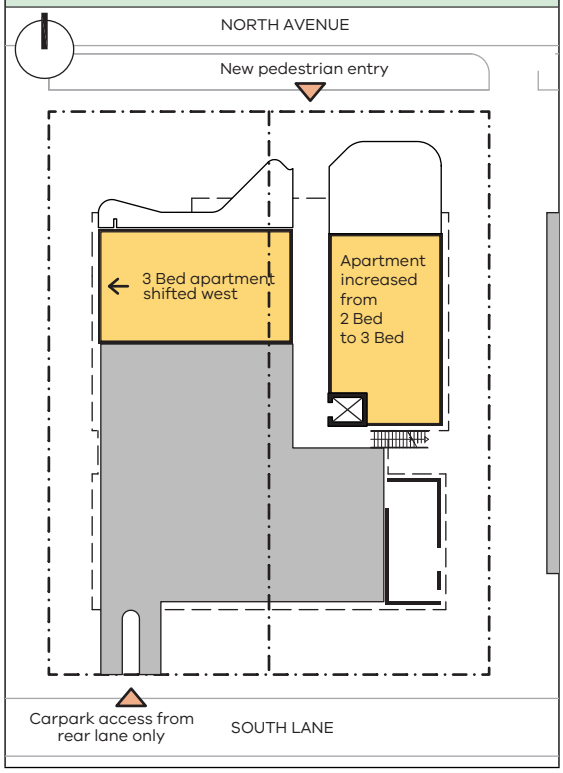


Laneway and rear access

The design can be adapted for rear laneway access by:

- adjusting the ground-floor plan to increase the street frontage of apartments on the ground level
- having a single entry from the laneway with car parking remaining under the building.

Figure 2C.7: Laneway and rear access



4.7 Existing vegetation

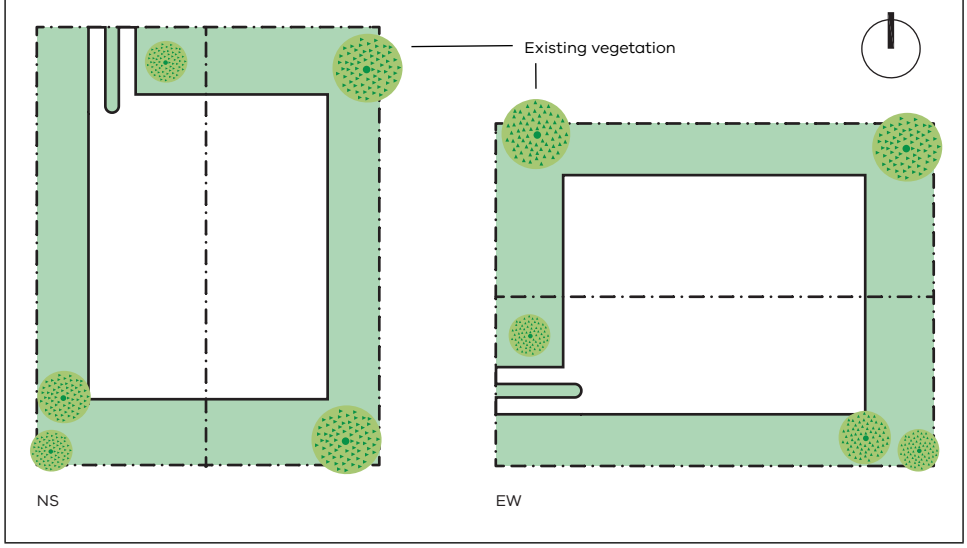
General adaptation guidance

Retain existing significant trees, particularly where they are located within the front and rear gardens. Seek guidance from an arborist, particularly where tree controls apply on site.

Exemplar Design C adaptation guidance

Side and rear setbacks should be maximised, to retain existing vegetation. Figure 2C.8 shows the adaptation.

Figure 2C.8: Setbacks to retain existing vegetation



5 Enduring

5.1 Greening and landscape

General adaptation guidance

Greening and landscaping could be increased if there is potential to:

- increase setbacks at the front, side or rear if site conditions allow such as on larger sites and sites without sensitive interfaces or easements
- increase the separation between buildings in the development
- raise private and communal open spaces to the upper levels or create a roof terrace, while meeting the garden area performance targets
- abut an adjoining wall at the boundary
- use low-maintenance green walls to manage privacy and overlooking; such walls must comply with cladding regulations and be drought-tolerant and irrigated.

Preferred approaches include:

✔ adjusting layouts to integrate existing trees or vegetation

✔ adjusting layouts to improve access to sunshine in the morning and evening

✔ maximising areas of connected deep soil.

Discouraged approaches include:

✘ high-maintenance landscape elements including green roofs

✘ excessive hard-ground surfaces

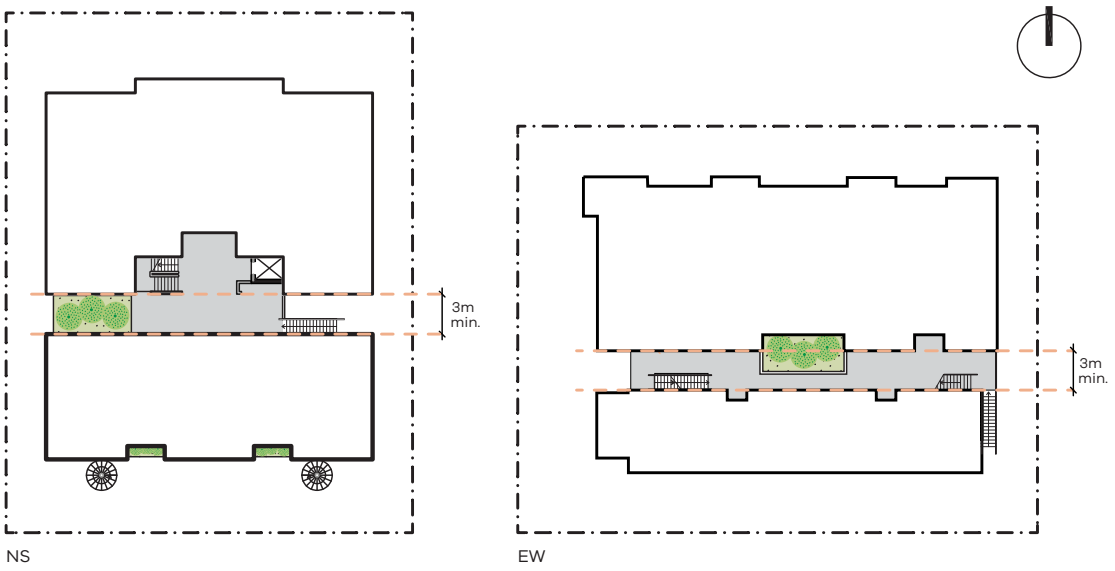
✘ excessive use of planter boxes at the expense of deep-soil planting.

Exemplar Design C adaptation guidance

This design is centred on a landscape response, and the landscape area is maximised by a consolidated built form, including by having the car park completely within the building footprint. The layout enables a ring of connected deep soil around the entire perimeter of the site. Planting is incorporated into the circulation areas, creating a consolidated and prominent landscape.

The central circulation area should be no less than 3 metres wide to maintain access to daylight and sunlight for residents and vegetation.

Figure 2C.9: Greening the building separation



6 Sustainable

General adaptation guidance

There is no general adaptation guidance for the Sustainable objective, but that does not mean alternative solutions are not acceptable. Where one is proposed, the principles and performance targets in Part 1 must still be met.

See Appendix 6: Environmentally Sustainable Design for further information.

7 Adaptable

7.1 Roof terraces

General adaptation guidance

Roof terraces increase communal open space and can be vibrant hubs where residents can socialise and build a sense of community.

Consideration of a roof terrace should include:

- the capacity of the structural system
- access, circulation, fire and balustrading safety
- the maximum building height requirements, noting that lift and stair overruns and balustrades do not count towards building height.

Preferred approaches include:

- ✔ integrating the terrace design with the overall building form
- ✔ providing protection from the wind, sun and rain, noting maximum building height requirements
- ✔ using opportunities for cooling and greening
- ✔ having a well-designed drainage system that minimises unsightly services, staining and damage to the building
- ✔ creating a flexible design that caters for a mix of activities including vegetable gardens and hobbies
- ✔ providing infrastructure services and facilities such as lighting, barbecues, garden taps, outdoor furniture, sun shades and vegetable gardens
- ✔ protecting adjoining properties from noise and overlooking.

Discouraged approaches include:

- ✘ exposed, windy terraces
- ✘ designs that don't allow for more greenery
- ✘ overlooking into existing habitable room windows and private open space.

Exemplar C adaptation guidance

There is no specific adaptation guidance for this topic.

7.2 Orientation

General adaptation guidance

There is no general adaptation guidance for this topic.

Adaptations should address site planning requirements including daylight, ventilation and access.

Exemplar Design C adaptation guidance

There is no specific adaptation guidance for this topic.

7.3 Site on a main road

General adaptation guidance

If a site is on a main road, designs should be adapted to address traffic movements, noise, pollution and privacy issues. Main road sites may also need expert advice from acoustic and traffic consultants.

Designs can be adapted:

- with landscape treatments to mitigate noise and soften the harsh road environment
- by building a front fence up to 1.8 metres high
- by positioning the main communal areas away from the main road
- with acoustic treatment such as double-glazed windows
- by providing balconies with solid balustrades
- by providing for a vehicle passing area.

Preferred approaches include:

✔ a frontage that contributes to the streetscape character, by screening with trees.

Discouraged approaches include:

✘ long, blank walls with no visual connection to the street.

Transport for Victoria (TfV) requirements for main road sites

TfV requires plans to be prepared in accordance with the following:

- A feature survey plan must be submitted, showing all features of the road including street trees, utility poles, pits, bus stops, line-markings, slip lanes, medium strips and traffic / pedestrian lights in proximity to the site
- Where tram lines exist, access to the property should be confined to left-in and left-out only arrangements
- Crossovers must be set back:
  - at least 1.5 metres (with no part closer than 1.0 metres) from any public transport assets
  - at least 1.0 metres from infrastructure/ utility poles
  - at least 9 metres from an intersection
- Accessways must:
  - Provide a passing area at the entrance at least 6.1 metres wide and 7 metres long where an accessway serves:
    - 10 or more cars and is more than 50 metres long or
    - connects to a road in a Transport Zone 2 (TRZ2)
  - Be designed so that cars can exit the site in a forward direction, if the accessway serves four or more car spaces or connects to a road in a TRZ2
  - Have a corner splay or area at least 50 per cent clear of visual obstructions extending at least 2 metres along the frontage road from the edge of an exit lane and 2.5 metres along the exit lane from the frontage, to provide a clear view of pedestrians on the footpath of the frontage road. The area clear of visual obstructions may include an adjacent entry or exit lane where more than one lane is provided, or adjacent landscaped areas, provided the landscaping in those areas is less than 900mm in height
  - Be set back a minimum of 7 metres inside the property boundary for any security boom, barrier, gate, or similar device controlling vehicular access to the premises, to allow vehicles to stay clear of the road pavement and footpath
  - Provide clear directional signs on the arterial road frontage if one-way access is proposed
- If an accessway to four or more car parking spaces is from land in a TRZ2, the access to the car spaces must be at least 6 metres from the road carriageway
- If entry to the car space is from a road, the width of the accessway may include the road
- Ensure car parking spaces are in accordance with the dimensions in Table 1.6: Minimum dimensions of car parking spaces and accessways. Where mechanical parking is proposed, refer to **Chapter 2.3 Parking: Cars** for guidance on dimensions and aisle widths.

If a Future Homes adaptation does not address the requirements above, TfV may ask the permit applicant to do so.

Exemplar Design C adaptation guidance

There is no specific adaptation guidance for this topic.

7.4 Corner site

General adaptation guidance

A development on a corner site must locate crossovers in accordance with council and/or TfV requirements and accommodate any existing street services and assets.

Preferred approaches include:

- ✔ clear sightlines
- ✔ crossovers appropriately set back from street corners, to avoid vehicle conflict
- ✔ developments that face the street on both frontages
- ✔ buildings that offer passive surveillance of the street
- ✔ use of landscape elements to maintain visual permeability
- ✔ vehicle access from the local road.

Discouraged approaches include:

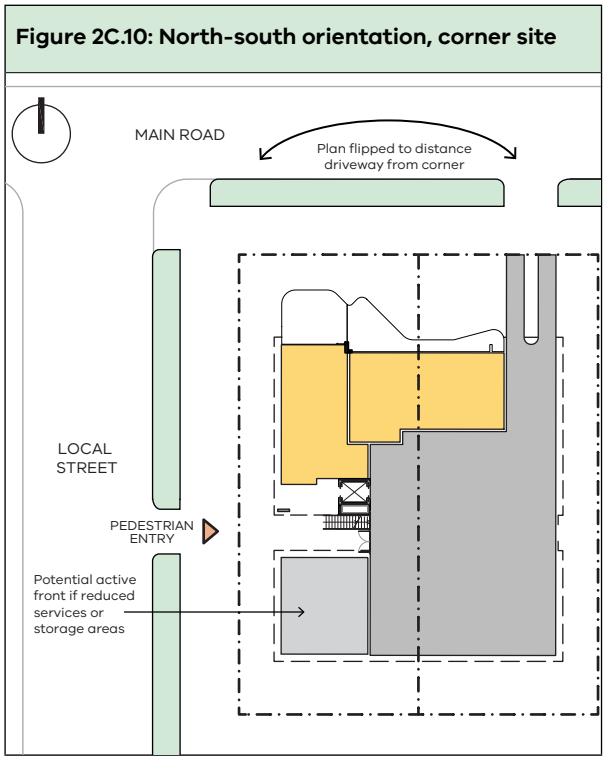
- ✘ high, long, blank walls at street frontages.

Exemplar Design C adaptation guidance

This design can be adapted by:

- locating the driveway entry away from the corner and positioning it to comply with TfV's 9 metre intersection offset requirement
- orientating apartments to address both streets
- encouraging active uses along both street frontages.

Figure 2C.10: North-south orientation, corner site



7.5 Varied site dimensions

General adaptation guidance

For a deep site:

- ensure equitable access to circulation including stairs and lifts
- avoid a long, continuous built form without breaks in the massing.

Exemplar Design C adaptation guidance

There is no specific adaptation guidance for this topic.

7.6 Sloping site

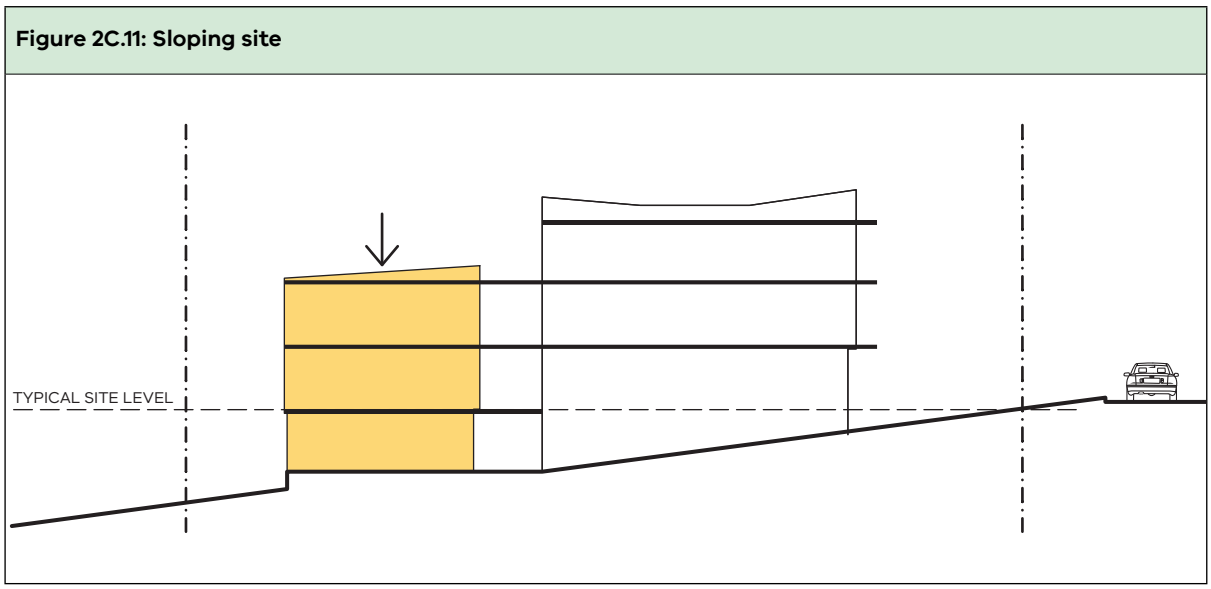
General adaptation guidance

There is no general adaptation guidance for this topic.

Exemplar Design C adaptation guidance

This design can be adapted by dropping the front or rear block of the building by one level to accommodate a sloping site. The corridor and stairs would need to be reconfigured: the apartment floorplates would be unchanged. Figure 2C.11 shows the adaptation.

Figure 2C.11: Sloping site



7.7 Floodplain

General adaptation guidance

A development on a site within a flood overlay must be designed in accordance with Melbourne Water's requirements.

Inappropriate development in flood affected areas can lead to fundamental changes in the nature and impact of flooding. It can also increase the potential for loss of life and flood damages to the community and the environment.

Melbourne Water decisions are guided by planning policies in the planning scheme. In addition, Melbourne Water assesses development applications in accordance with the *Guidelines for Development in Flood Affected Areas* (DELWP, 2019). Usually the information in the guidelines is sufficient to guide decision making. However, the guidelines cannot cover all the circumstances and aspects of flood behaviour.

Development in or adjacent to a floodplain will only be acceptable where the new development is protected from flooding (flood levels are constructed to the identified Nominal Flood Protection Level); has safe access to and around the development (in considering site specific flood depths and velocities); and does not interfere with the passage and storage of floodwaters.

Developments in areas affected by flooding must not obstruct the passage of flood flows or reduce floodplain storage as this may cause flood levels and velocities to increase and adversely impact surrounding properties. On sites subject to flooding, imported fill must also be kept to a minimum and used only for sub floor areas of dwellings, garages and driveway ramps. New fencing and decking should also be of an open style of construction (50 per cent permeable/open) to maintain conveyance of flows through floodplains.

All new development should preserve, and if possible enhance, the social and environmental values and benefits of floodplains and waterways and should be sensitively designed and sited to maintain and enhance environmental assets, significant views and landscapes along river corridors and waterways and adjacent to lakes and wetlands. For detail on development setbacks required from waterways, see the *Healthy Waterways Strategy 2018-2028*.

On sites affected by flooding, Melbourne Water requires the following information to be included on all plans:

- The boundaries and dimensions of the site
- Existing conditions survey and feature plans. Taken by or under the direction and supervision of a licensed land surveyor showing:
  - natural ground level
  - the current Flood Level
  - the dimensions and ground and finished floor levels of any existing buildings, to Australian Height Datum (AHD)
- Proposed architectural plans, elevations and section drawings (1:50 or 1:20). Showing the proposed finished surface levels and finished floor levels and the Nominated Flood Protection Level (NFPL) of all new structures on the land
- All proposed finished floor levels notated on the plans to Australian Height Datum
- A comparative description of the existing and proposed use and development of the site

- Cross-sectional details of any basement entry ramps and other basement entries to Australian Height Datum. Showing floor levels of entry and exit areas and drainage details
- A written assessment against 'Part Three – assessing development proposals' of the Guidelines for Development in Flood Affected Areas (DELWP, 2019), and subsequent submission of any associated Flood Risk Management Plan
- Any other application requirements specified in a relevant planning Overlay schedule applicable to the site
- Appropriate boundary setbacks to allow for the conveyance of overland flows
- Detailed location of any Melbourne Water asset (including drains, sewers or water mains) within 20 metres of the subject site
- Hydraulic details and associated reporting of all/any existing and proposed earthworks, including details of any cut and fill required for works
- Details of any other known physical features that may affect flows on-site and on adjoining land, such as levees, fences and retaining walls
- A written description of proposed actions, flood risk mitigation strategies or measures required, if any, to the siting and design of the buildings or works, or in association with the use and occupation of all aspects of the proposal in order to reduce the risk to individuals, property, infrastructure and the environment.

Exemplar Design C adaptation guidance

There is no specific adaptation guidance for this topic.

7.8 Easements

General adaptation guidance

There is no general adaptation guidance for this topic.

Exemplar Design C adaptation guidance

This design has sufficient setbacks to accommodate different sizes and locations of easements.

7.9 Systems and approach

General adaptation guidance

Off-site manufacturing

Off-site construction delivers pre-finished, prefabricated building elements and modules that are assembled on site using efficient construction and manufacturing techniques.

Consider standardisation and repetition of structural framing. It can help to reduce material waste, and prefabrication of structural framing can mean fewer trades and waste on site.

Prefabricated external walls with preassembled windows generally have higher-quality sealing than on-site construction. This method reduces on-site sealing and can reduce the incidence of poor workmanship and defects. Prefabrication also can minimise the construction period; the building can be prefabricated while groundworks and footings are being constructed.

Consider early contractor advice in the design phase if offsite construction is applicable and/or a known builder will construct the development. This way, trades and their supply chains can help coordinate and standardise the design of services, and assist to accurately estimate costs.

Future changes in use

Plan for the potential amalgamation of smaller apartments into a larger apartment or vice versa. Such alterations would need room dimensions and optimal locations of wall openings to be considered, to reduce the need for structural adjustments.

Structure

Consider an efficient structural frame that extends in alignment from the ground floor to the top floor such as a lightweight post-and-beam timber, or cross-laminated timber (CLT). This reduces the number of on-site trades and the time needed for coordination and construction. Consider the fire-rating implications of this method of construction.

- Use regular grids and modular components for floors, walls, stairs, roofs and service risers.
- For non-wet areas, consider providing structural flooring that can span between load-bearing walls. This will enable internal walls within a sole occupancy unit to be non-load-bearing and adaptable in the future.
- Consider providing structure and footings for more floors to be added over time and clearly documenting these for future reference.
- Consider using a structural insulated panel system or sandwich panels.

Car park

- Floor-to-floor height for above-ground car park spaces should allow for other temporary or long-term uses, including conversion to habitable space.
- Aim to provide a minimum of 2.6 metres clear in basement areas, to allow for services to be installed.
- Plan for adequate ventilation and likely service infrastructure needs for future uses.
- Provide adequate drainage at the base of ramps for surface run-off, pits for excess water and a freeboard threshold at the top of the ramps.

Exemplar Design C adaptation guidance

There is no specific adaptation guidance for this topic.

7.10 Materials and finishes

General adaptation guidance

Future Homes exemplar designs have a materials schedule that includes substitution guidance to suit different contexts or design preferences.

Exemplar Design C adaptation guidance

Refer to the materials schedule for substitution guidance.

7.11 Fire services

General adaptation guidance

There is no general adaptation guidance for this section.

Exemplar Design C adaptation guidance

Should a fire pump room not be required, the area in the exemplar design set aside for a fire pump could be converted to additional indoor or outdoor communal space.

Part 2D

Exemplar Design D
Spiral Architects Lab

Design Statement

Prepared by Spiral Architects Lab

Exemplar Design D by Spiral Architects Lab is a design inspired by 'atomic structures'. Modular buildings, arranged in clusters, create a system that adapts to reflect the place and unique conditions of each site. This is supported by an internal and compositional logic that can scale up and down, from local site amalgamation to neighbourhood urban planning; the larger the site, the greener and denser a scheme can become.

Module strategy

- There are two scales of modules: a larger module that measures 9 metres by 9 metres, and a smaller module that measures 7.5 metres by 7.5 metres. They are further broken down into quarters named 'atoms', which are roughly the size of a habitable room.
- Apartments can be stacked in different configurations using the typical apartment floor plans provided, either with interlocking or repeated spaces. They should be oriented towards desirable elements such as private open space, the street, northerly aspect, or communal open space. The stacking enables adaptation of a single-bedroom home up to a five-bedroom home.
- 'Atoms' can be double-height, providing either clerestory windows, private open space or double-height living areas.
- The perimeter of the module blocks contains most of the load-bearing elements, to maximise the flexibility of the interior space and to create connections through façades and flow through ceilings.
- The arrangement of modules on site should be informed by preferencing access to northern light, cross-ventilation for apartments, and views across the site. The displacement or staggering should be informed by typical material dimensions, to reduce material wastage and on site handling.

Expression and materiality

- The strategy for external finishes is driven by the module of the blocks/volumes. The exterior walls of each module block can be wrapped in a single cladding material reinforcing its shape, which gives the designer the freedom for each block to be read as an individual entity or part of a whole: either a unified or village-like feeling.
- The selection of finishes is guided by the material schedule and should be informed by the local context.

Common Space

- Each project should be composed of modular blocks arranged in clusters, connected by external common corridors and vertical circulation.
- The strategy of displacing modules allows for interconnected permeable green spaces, wide corridors, and open covered communal spaces at all levels.

Landscape

- Three or more displaced modules can be grouped to create a shared landscaped zone.
- The landscape experience of the entry sequence is key for the scheme. Planting of feature trees at the end of the main entry path creates long views through the building to greenery at each end. Climbing plants on the fence provide additional green backdrop.
- The entry courtyard with seats and feature trees provides a social street edge.
- Productive gardens provide a communal social space on the ground level.
- Shade-tolerant climbers and groundcover provide a forest feel to the courtyard.

1 Introduction

This chapter guides designers adapting Exemplar Design D for a particular development site. Authored by the architects who designed the exemplar, the chapter is organised according to the six Future Homes objectives that adapted designs need to address: Responsive to Need, Liveable, Good Neighbours, Enduring, Sustainable and Adaptable.

For each objective, the chapter sets out:

- how to adapt the design to fit different sites and contexts
- preferred and discouraged approaches to adaptation
- ideas to adapt the design to suit particular needs such as a different bedroom configuration or a main road location
- ideas to achieve better development and design outcomes by adapting the design if the opportunity arises.

The guidance in this section is not exhaustive, and there is no adaptation guidance for some planning elements. It is up to the designer to process or interpret the exemplars. The assessment process will treat all adaptations on their merits.

2 Responsive to need

2.1 Apartment mix and size

General adaptation guidance

Apartment designs need to respond to the changing patterns of living, including an increasingly diverse household mix and size.

The apartment should be sufficiently adaptable to allow:

- the ability to upsize or downsize: for example, by having the space and services configuration to combine smaller apartments to create a larger apartment and vice versa
- multi-purpose spaces for work and study from home
- internal functions to be rearranged over time (for example, bathrooms, kitchens and laundries that can be reconfigured or be combined differently).

Preferred approaches include:

✔ the layout is easy to change

✔ open-plan living spaces cater for flexible furniture arrangements

✔ floor space is used efficiently.

Discouraged approaches include:

✘ excessive corridors and passageways

✘ excessive use of built-in joinery.

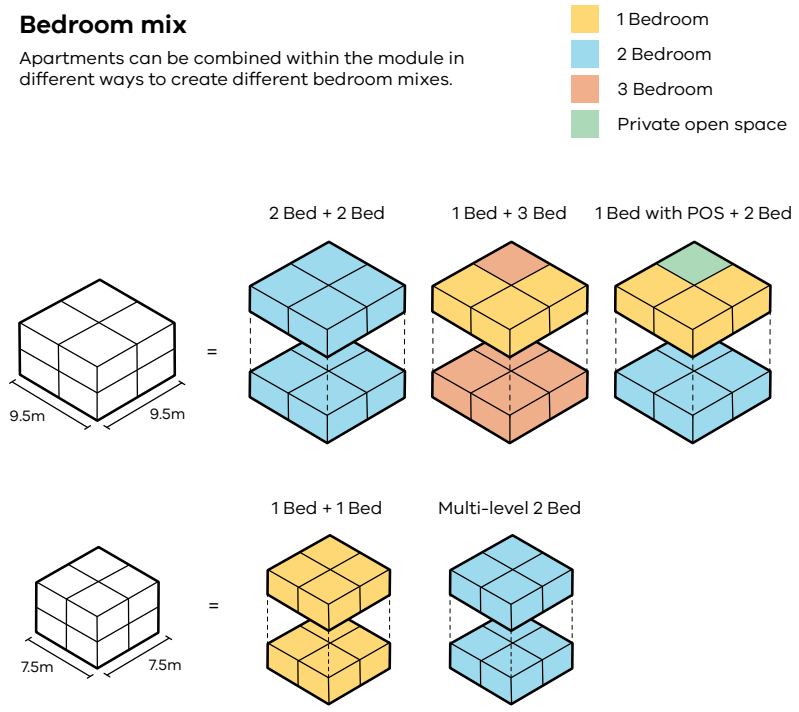
Exemplar Design D adaptation guidance

This adaptation can accommodate:

- a different mix of apartments based on market demand
- merging apartments to provide different bedroom mixes and configurations
- smaller modules if the site is constrained.

Figure 2D.1 shows this adaptation.

Figure 2D.1: Alternative apartment mix options



2.2 Parking: cars

General adaptation guidance

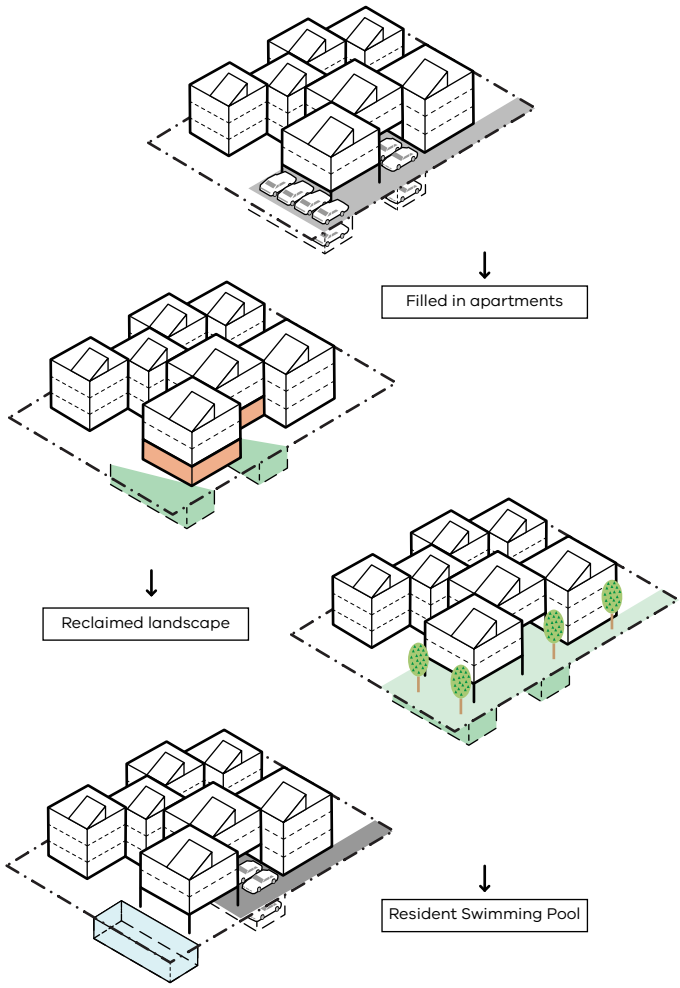
If it is acceptable to have fewer car parking spaces, the design should be adapted to avoid the need to use mechanical parking. The development should also allow for future adaptation of car parking spaces to alternative uses to support changes in use, personal preferences and technology over time.

Measures to support future adaptation include sufficient floor-to-ceiling height to allow future habitable spaces to be inserted with access to natural light.

Exemplar Design D adaptation guidance

If a lower car parking rate is allowed, car parking spaces could be converted to accommodate other uses — for example, uncovered car spaces could become landscape, communal areas and covered car spaces removed to increase the number of units or covered communal areas — as Figure 2D.2 shows.

Figure 2D.2: Adaptive re-use of car parking spaces, 3D view



2.3 Parking: bicycles

General adaptation guidance

Consider locating bicycle parking within oversized balconies, while retaining the minimum preferred useable space for residents' recreation.

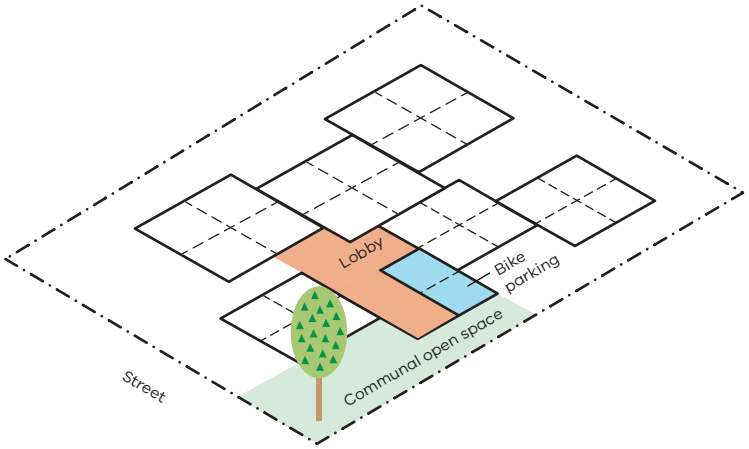
Bicycle parking provided on oversized balconies will require the provision of a bicycle-accessible path from the ground floor. Where bicycle parking is provided on upper floors, lifts and/or stairs should be designed to provide access to upper floors for bicycles.

Preferred bicycle parking spaces are those that are covered from the weather and secured.

Exemplar Design D adaptation guidance

Bicycle parking should be located between the lobby and communal open space, to activate both locations and encourage neighbour interaction, as Figure 2D.3 shows.

Figure 2D.3: Bicycle parking



3 Liveable

General adaptation guidance

There is no general adaptation guidance for the Liveable objective, but that does not mean alternative solutions are not acceptable. Where one is proposed, the objectives, principles and mandatory requirements in Part 1 must still be met.

4 Good neighbours

4.1 Front setback

General adaptation guidance

Front setbacks need to be adapted to the street context. The starting point should be the predominant street setback along the length of the street up to 150 metres (or about ten properties) on either side. Within a site, the building setback may be staggered, forward or behind the predominant street setback having regard to the local context, design outcome and impact on the streetscape.

When determining the front setback or setbacks, the considerations should be:

- the wider streetscape and urban block pattern
- whether an adjoining building sits forward of the predominant street setback
- opportunities to use articulation to transition between neighbouring sites
- whether the approach responds to the emerging or future character of the area
- opportunities to provide suitable canopy tree planting.

Preferred approaches include:

✔ upper-level projections including balconies that provide weather protection for the spaces below

✔ where a lesser front setback is appropriate, consider increasing the rear setback and/or providing additional internal breathing space between buildings.

Discouraged approaches include:

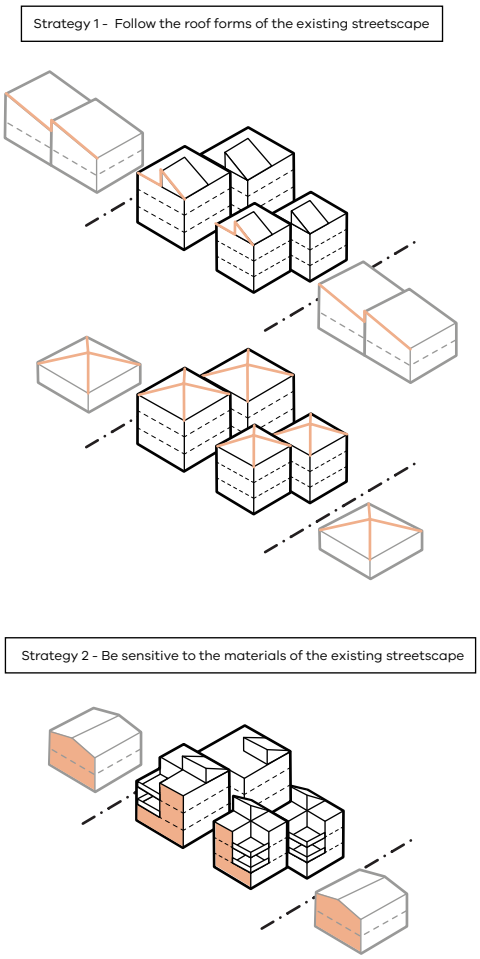
✘ monolithic setbacks without breaks or variations

✘ balcony projections that will limit the planting of canopy trees.

Exemplar Design D adaptation guidance

There are multiple techniques to approach streetscape character, as Figure 2D.4 shows.

Figure 2D.4: Following the neighbourhood's street character



4.2 Height

General adaptation guidance

Where the responsible authority permits, the exemplar design can be adapted to add another storey. A fourth storey may reinforce the existing character of the wider urban context or respond to the agreed future character of the local area.

An adaptation to increase building height should consider:

- impacts on solar access and articulation to the scale of the specific neighbouring context
- the siting of the additional storey, to minimise overlooking and overshadowing
- transitions to lower, neighbouring built form
- additional fire egress and services requirements
- access and circulation
- additional car and bicycle parking requirements, if the number of apartments is increased
- additional communal open space and landscaping requirements.

Preferred approaches include:

✔ the use of design techniques to reduce visual bulk and break up the mass of the building such as articulation of built form, creating depth within the façade and the use of materials.

Discouraged approaches include:

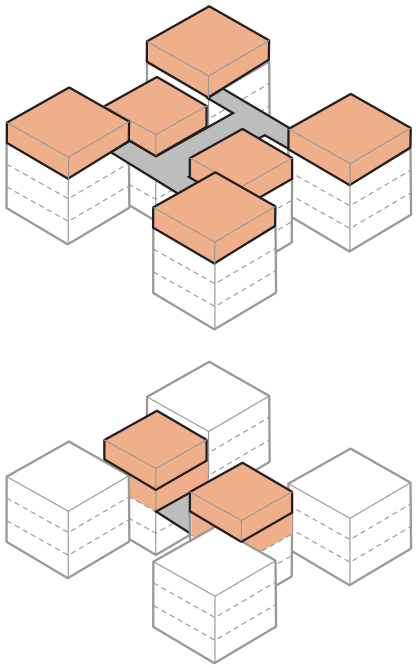
✘ providing a fourth storey across the whole of the development

✘ overly dominant built form that does not respect the future character of the area.

Exemplar Design D adaptation guidance

If an additional storey is permitted, the storey can utilise a centralised circulation access. If circulation space is not possible from the fourth level, two-storey modules can be used, as Figure 2D.5 shows.

Figure 2D.5: Provision of an additional storey showing access options



4.3 Walls on a boundary

General adaptation guidance

Building to boundaries should be treated flexibly, depending on the site context and impacts on neighbouring properties.

Walls on a boundary may be appropriate where:

- there is an existing wall on the boundary of similar length and height
- the site abuts a laneway
- they improve the development's character such as by contributing to more landscape and open space opportunities on the site
- there are no sensitive interfaces on the neighbouring property.

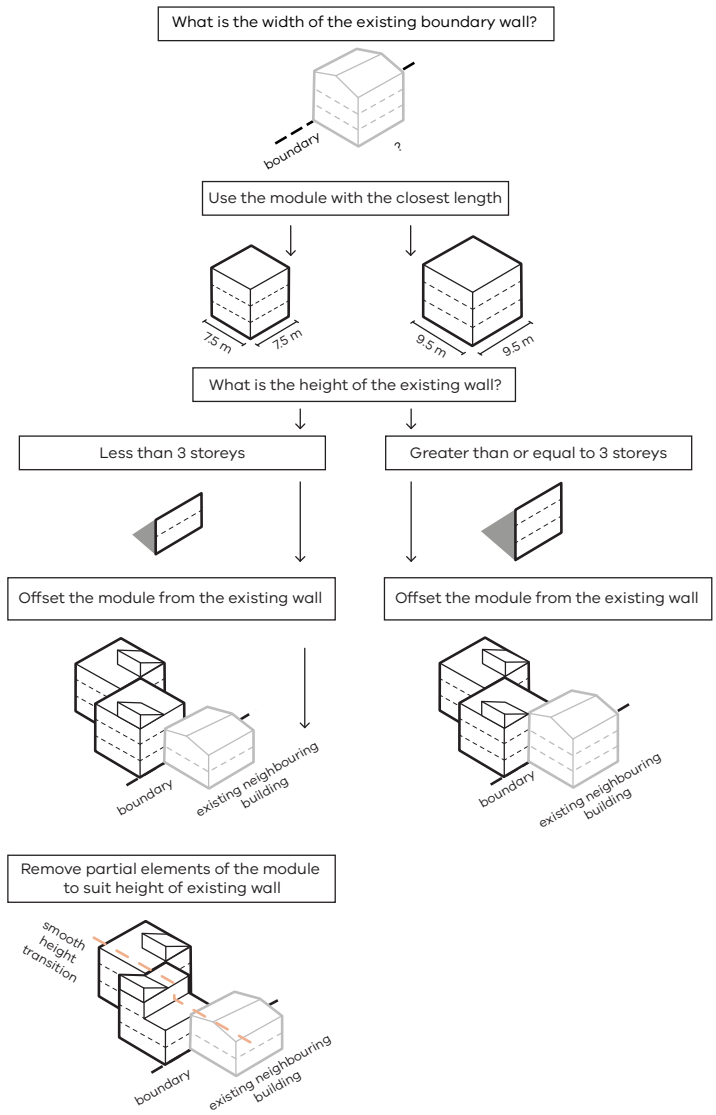
Discouraged approaches include a wall on a boundary:

- ✘ that significantly exceeds the height or length of neighbouring walls
- ✘ if overshadowing, access to sunlight and daylight, noise or loss of vegetation or the visual amenity on the adjoining property cannot be adequately managed
- ✘ if there is a clear preference for a landscaped perimeter
- ✘ if a site abuts a public park.

Exemplar Design D adaptation guidance

There are multiple techniques to adapt a design if there is a wall on the boundary, as Figure 2D.6 shows.

Figure 2D.6: Adaptations to suit length and height of an existing adjoining wall



4.4 Overlooking

General adaptation guidance

The principles in Part 1 set out general design considerations for this topic.

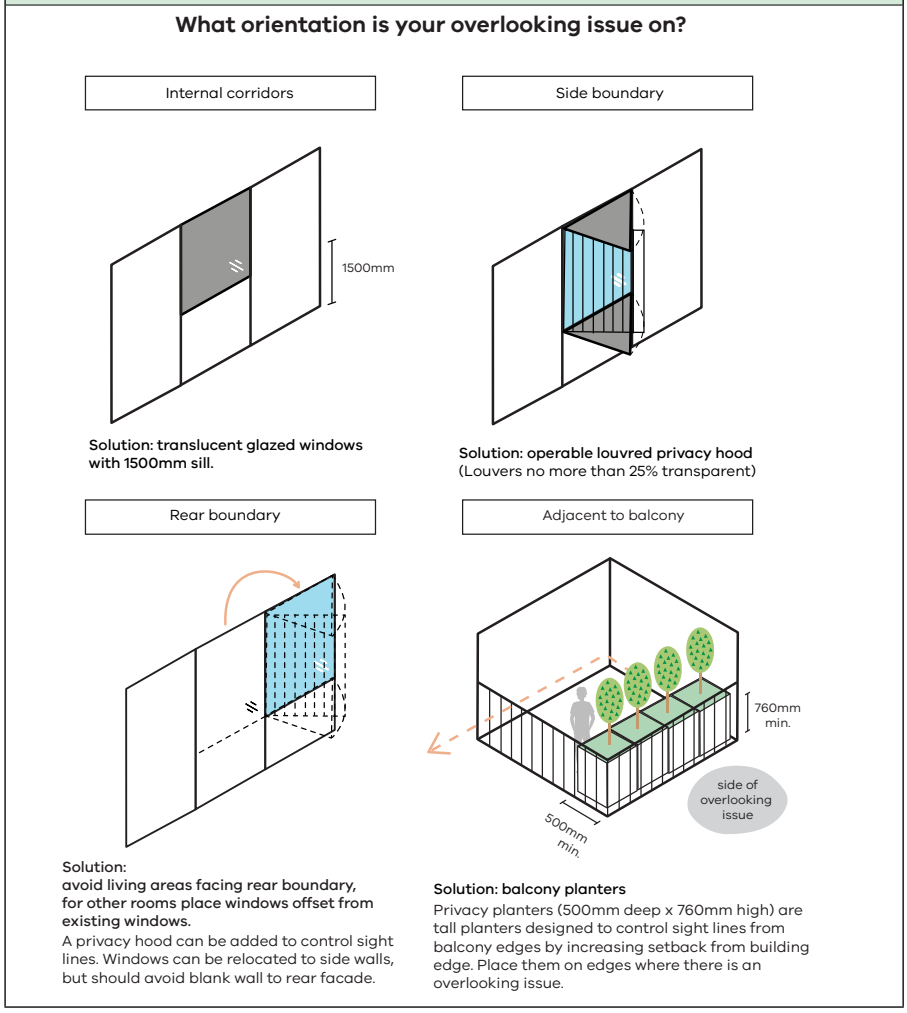
The exemplar provides two design strategies to prevent overlooking that respond to the different orientations, while providing amenity to residents, allowing access to external views and daylight.

Adaptations should not hinder the amenity of residents. For example, highlight windows should be avoided as a standalone solution to overlooking.

Exemplar Design D adaptation guidance

There are multiple techniques to limit overlooking, as Figure 2D.7 shows.

Figure 2D.7: Techniques to limit views



4.5 Daylight to existing windows

General adaptation guidance

The exemplar design protects solar access to existing habitable room windows without the need for rigid numeric compliance. Designs can be reconfigured to provide adequate daylight through the habitable room windows of existing dwellings located close to the site boundary.

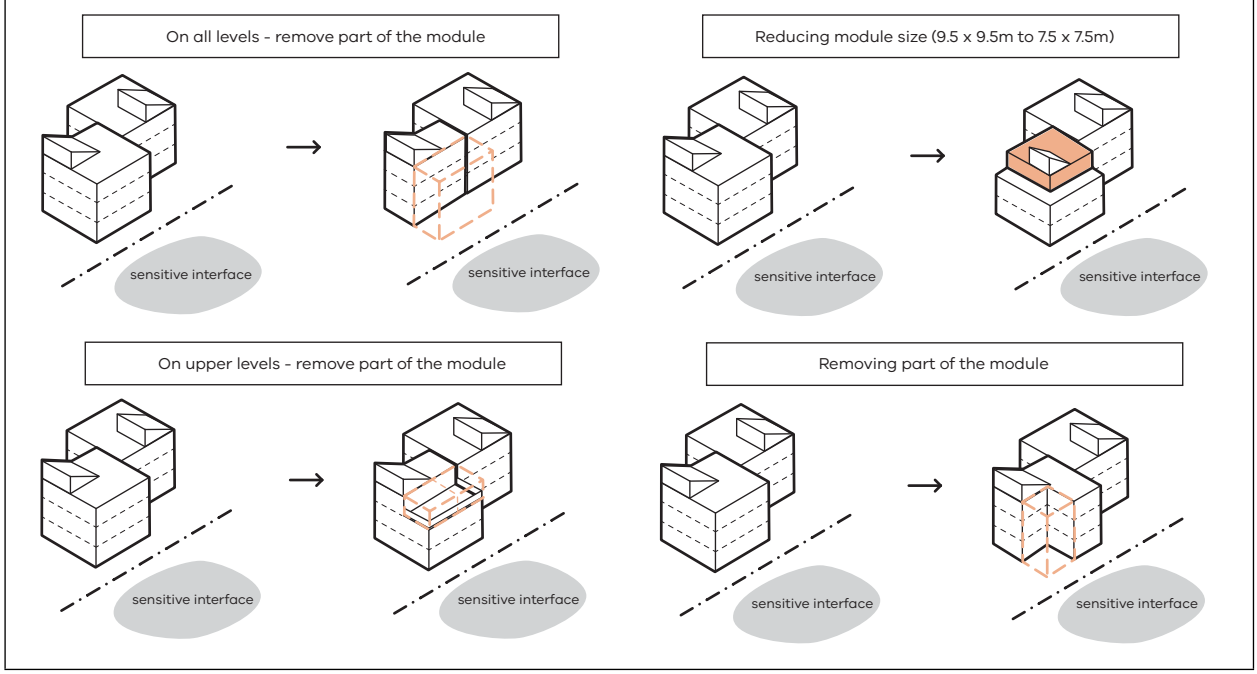
Exemplar Design D adaptation guidance

This design can be adapted by:

- reducing modules from 9.5 metres by 9.5 metres to 7.5 metres by 7.5 metres, to allow light to remain for existing habitable room windows
- removing modules, which would reduce the overall footprint.

Figure 2D.8 shows these and other adaptations to address a sensitive interface.

Figure 2D.8: Addressing sensitive interfaces



4.6 Site access

General adaptation guidance

Site access may need to be adapted if:

- street and public transport assets such as street trees, bus shelters, stays or electrical poles are located on nature strips
- a rear or side lane access is available and the rights to use the laneway for vehicle access are established.

Exemplar Design D adaptation guidance

There are multiple techniques to adapt vehicular access, as shown in Figure 2D.9 to Figure 2D.12.

Figure 2D.9: At grade, vehicular access location

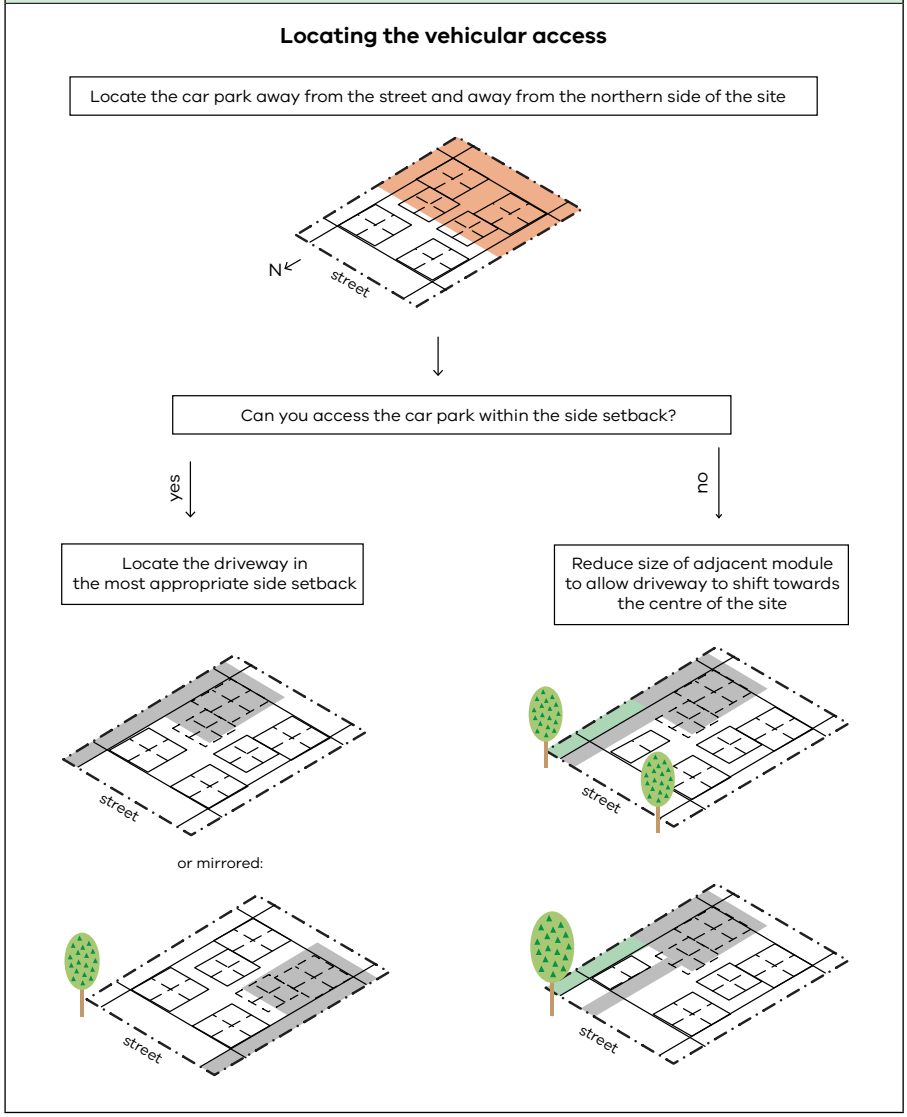


Figure 2D.10: Locating pedestrian access

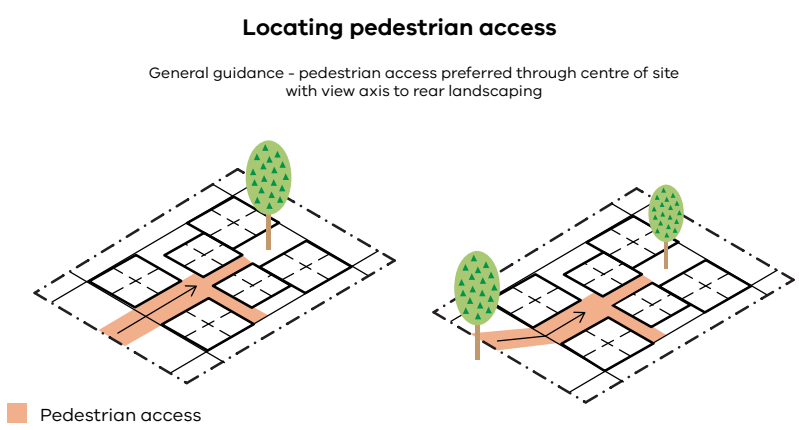


Figure 2D.11: Access from a rear lane

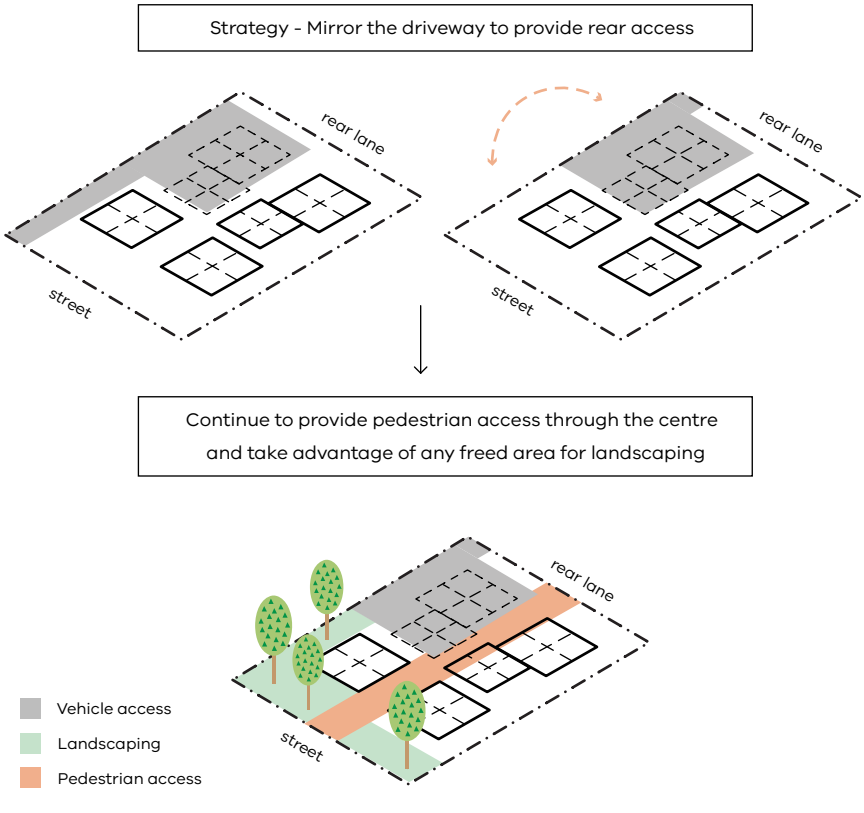
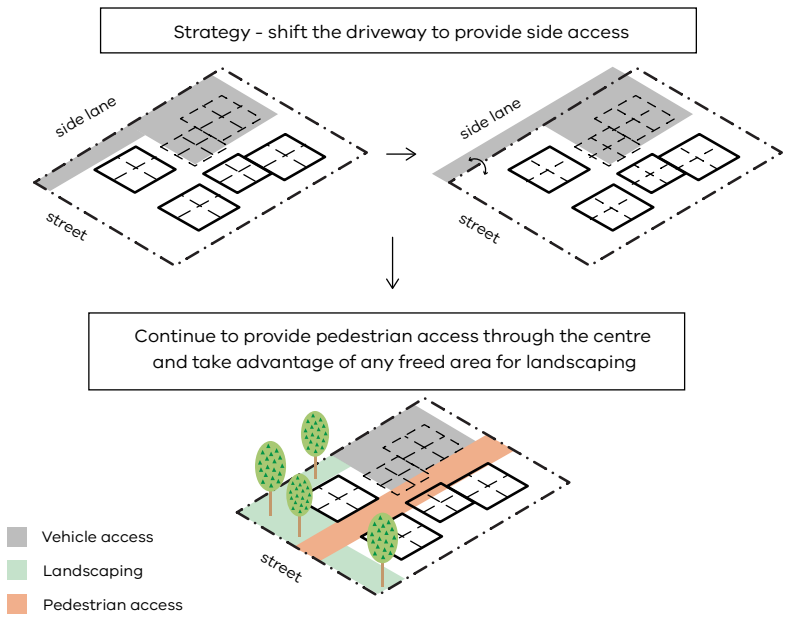


Figure 2D.12: Access from a side lane



4.7 Existing vegetation

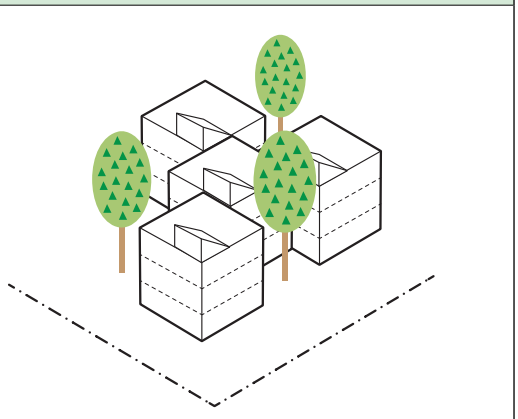
General adaptation guidance

Retain existing significant trees, particularly where they are located within the front and rear gardens. Seek guidance from an arborist, particularly where tree controls apply on site.

Exemplar Design D adaptation guidance

This design can be adapted by arranging modules to embrace and retain existing significant vegetation, as Figure 2D.13 shows.

Figure 2D.13: Cluster arrangement to retain existing significant vegetation



5 Enduring

5.1 Greening and landscape

General adaptation guidance

Greening and landscaping could be increased if there is potential to:

- increase setbacks at the front, side or rear if site conditions allow such as on larger sites and sites without sensitive interfaces or easements
- increase the separation between buildings in the development
- raise private and communal open spaces to the upper levels or create a roof terrace, while meeting the garden area performance targets
- abut an adjoining wall at the boundary
- use low-maintenance green walls to manage privacy and overlooking; such walls must comply with cladding regulations and be drought-tolerant and irrigated.

Preferred approaches include:

✔ adjusting layouts to integrate existing trees or vegetation

✔ adjusting layouts to improve access to sunshine in the morning and evening

✔ maximising areas of connected deep soil.

Discouraged approaches include:

✘ high-maintenance landscape elements including green roofs

✘ excessive hard-ground surfaces

✘ excessive use of planter boxes at the expense of deep-soil planting.

Exemplar Design D adaptation guidance

Landscape is an essential part of the design and needs to be carefully coordinated with architectural components and all services to ensure it is well integrated. When adapting this design, consider:

- arranging the module layout to retain any existing site trees
- prioritising light access and deep soil to communal spaces
- providing access from the street into the centre of the block. The layout should provide access to light for the garden beds, and use trees, climbers and planters to create a green walkway. Consider the view through to the rear of the site and position vertical planting such as trees and climbers to provide a prominent outlook of greenery
- consider the front garden's interface with the street. Consider the design of the garden's edge and provide seats and planting to facilitate social connection
- the communal open space provides a connection to the street. Consider the scale and function of the space in the context of the street to enhance the social life of residents and the community

- utilising the ground-floor private open space as an opportunity for gardens and deep-soil planting
- the inclusion of roof gardens where possible as additional private or communal open space
- using in-built planters to limit overlooking from balconies and terraces
- locating productive gardens in easily accessible, shared spaces between apartments, ideally in north-facing spaces, as Figure 2D.14 shows
- planting climbers where appropriate to green interfaces
- locating raingardens in the natural drainage points of the site.

Figure 2D.14: Areas for potential productive gardens

6 Sustainable

General adaptation guidance

There is no general adaptation guidance for the Sustainable objective, but that does not mean alternative solutions are not acceptable. Where one is proposed, the principles and performance targets in Part 1 must still be met.

See Appendix 6: Environmentally Sustainable Design for more information.

7 Adaptable

7.1 Roof terraces

General adaptation guidance

Roof terraces increase communal open space and can be vibrant hubs where residents can socialise and build a sense of community.

Consideration of a roof terrace should include:

- the capacity of the structural system
- access, circulation, fire and balustrading safety
- the maximum building height requirements, noting that lift and stair overruns and balustrades do not count towards building height.

Preferred approaches include:

- ✔ integrating the terrace design with the overall building form
- ✔ providing protection from the wind, sun and rain, noting maximum building height requirements
- ✔ using opportunities for cooling and greening
- ✔ having a well-designed drainage system that minimises unsightly services, staining and damage to the building
- ✔ creating a flexible design that caters for a mix of activities including vegetable gardens and hobbies
- ✔ providing infrastructure services and facilities such as lighting, barbecues, garden taps, outdoor furniture, sun shades and vegetable gardens
- ✔ protecting adjoining properties from noise and overlooking.

Discouraged approaches include:

- ✘ exposed, windy terraces
- ✘ designs that don't allow for more greenery
- ✘ overlooking into existing habitable room windows and private open space.

Exemplar Design D adaptation guidance

This design can be adapted by:

- providing lift access to roof terraces
- locating roof terraces to the north of the site, where possible for solar access
- visually connecting roof terrace to other communal open space areas on the site.

Where a roof terrace is proposed, ensure any overlooking concerns are mitigated.

Figure 2D.15: Rooftop communal open space

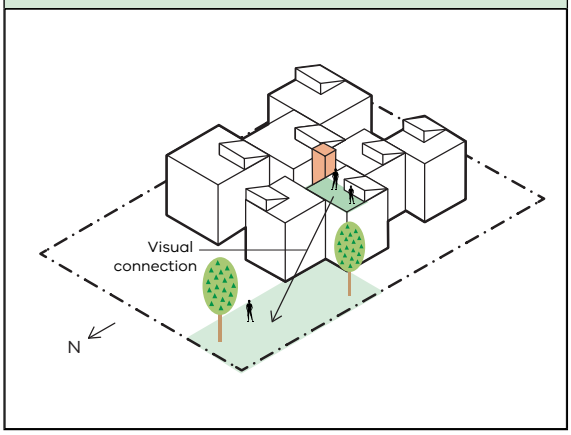
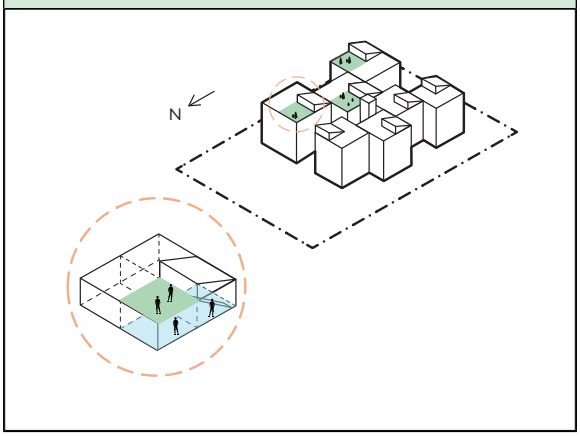


Figure 2D.16: Rooftop private open space



7.2 Orientation

General adaptation guidance

There is no general adaptation guidance for this topic.

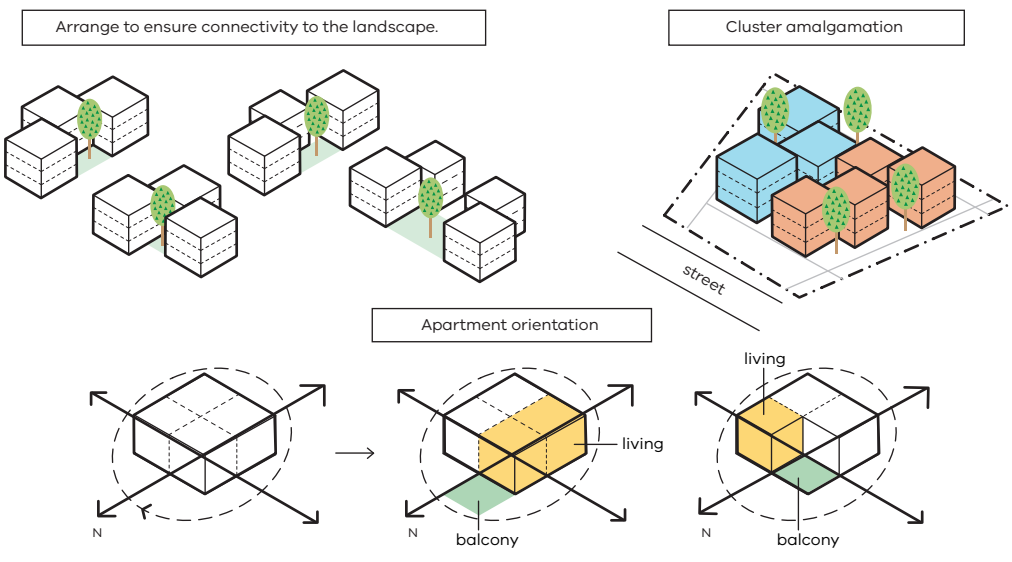
Adaptations should address site planning requirements including daylight, ventilation and access.

Exemplar Design D adaptation guidance

This design can be adapted by:

- 'growing' the design by clusters, for example by grouping three modules to ensure connectivity to the landscape
- rotating or mirroring the modules to locate private open space and living areas towards the north.

Figure 2D.17: Adapting to different site orientations and conditions



7.3 Site on a main road

General adaptation guidance

If a site is on a main road, designs should be adapted to address traffic movements, noise, pollution and privacy issues. Main road sites may also need expert advice from acoustic and traffic consultants.

Designs can be adapted:

- with landscape treatments to mitigate noise and soften the harsh road environment
- by building a front fence up to 1.8 metres high
- by positioning the main communal areas away from the main road
- with acoustic treatment such as double-glazed windows
- by providing balconies with solid balustrades
- by providing for a vehicle passing area.

Preferred approaches include:

✔ a frontage that contributes to the streetscape character, by screening with trees.

Discouraged approaches include:

✘ long, blank walls with no visual connection to the street.

Transport for Victoria (TfV) requirements for main road sites

TfV requires plans to be prepared in accordance with the following:

- A feature survey plan must be submitted, showing all features of the road including street trees, utility poles, pits, bus stops, line-markings, slip lanes, medium strips and traffic / pedestrian lights in proximity to the site
- Where tram lines exist, access to the property should be confined to left-in and left-out only arrangements
- Crossovers must be set back:
  - at least 1.5 metres (with no part closer than 1.0 metres) from any public transport assets
  - at least 1.0 metres from infrastructure/ utility poles
  - at least 9 metres from an intersection
- Accessways must:
  - Provide a passing area at the entrance at least 6.1 metres wide and 7 metres long where an accessway serves:
    - 10 or more cars and is more than 50 metres long or
    - connects to a road in a Transport Zone 2 (TRZ2)
  - Be designed so that cars can exit the site in a forward direction, if the accessway serves four or more car spaces or connects to a road in a TRZ2

- Have a corner splay or area at least 50 per cent clear of visual obstructions extending at least 2 metres along the frontage road from the edge of an exit lane and 2.5 metres along the exit lane from the frontage, to provide a clear view of pedestrians on the footpath of the frontage road. The area clear of visual obstructions may include an adjacent entry or exit lane where more than one lane is provided, or adjacent landscaped areas, provided the landscaping in those areas is less than 900mm in height
- Be set back a minimum of 7 metres inside the property boundary for any security boom, barrier, gate, or similar device controlling vehicular access to the premises, to allow vehicles to stay clear of the road pavement and footpath
- Provide clear directional signs on the arterial road frontage if one-way access is proposed

- If an accessway to four or more car parking spaces is from land in a TRZ2, the access to the car spaces must be at least 6 metres from the road carriageway
- If entry to the car space is from a road, the width of the accessway may include the road
- Ensure car parking spaces are in accordance with the dimensions in Table 1.6: Minimum dimensions of car parking spaces and accessways. Where mechanical parking is proposed, refer to **Chapter 2.3 Parking: Cars** for guidance on dimensions and aisle widths.

If a Future Homes adaptation does not address the requirements above, TfV may ask the permit applicant to do so.

Exemplar Design D adaptation guidance

This design can be adapted by:

- increasing the driveway entry area to meet TfV requirements, as Figure 2D.18 shows
- increasing the front setback, and providing more landscape treatments with consideration to impacts to the rear, as Figure 2D.19 shows.

Figure 2D.18: Increase driveway width to meet Transport for Victoria's requirements

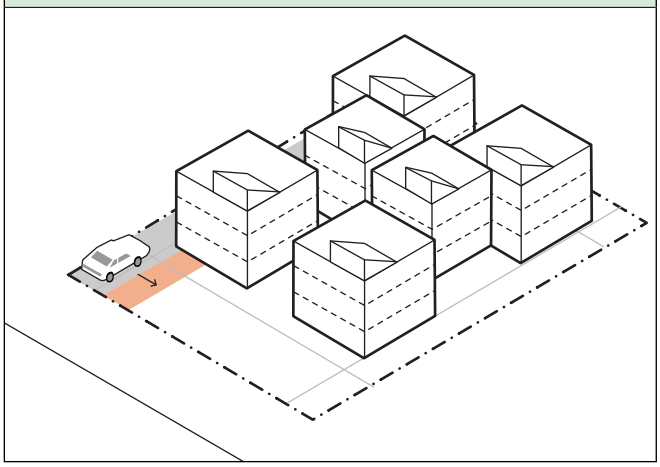
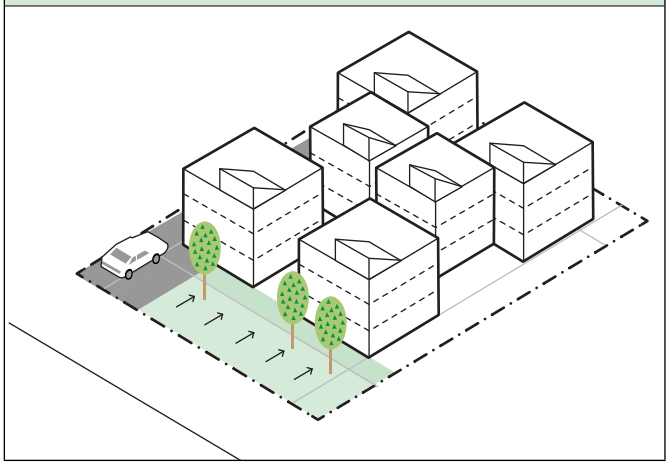


Figure 2D.19: Main road, increase landscaped setback but consider neighbours' amenity



7.4 Corner site

General adaptation guidance

A development on a corner site must locate crossovers in accordance with council and/or TfV requirements and accommodate any existing street services and assets.

Preferred approaches include:

- ✔ clear sightlines
- ✔ crossovers appropriately set back from street corners, to avoid vehicle conflict
- ✔ developments that face the street on both frontages
- ✔ buildings that offer passive surveillance of the street
- ✔ use of landscape elements to maintain visual permeability
- ✔ vehicle access from the local road.

Discouraged approaches include:

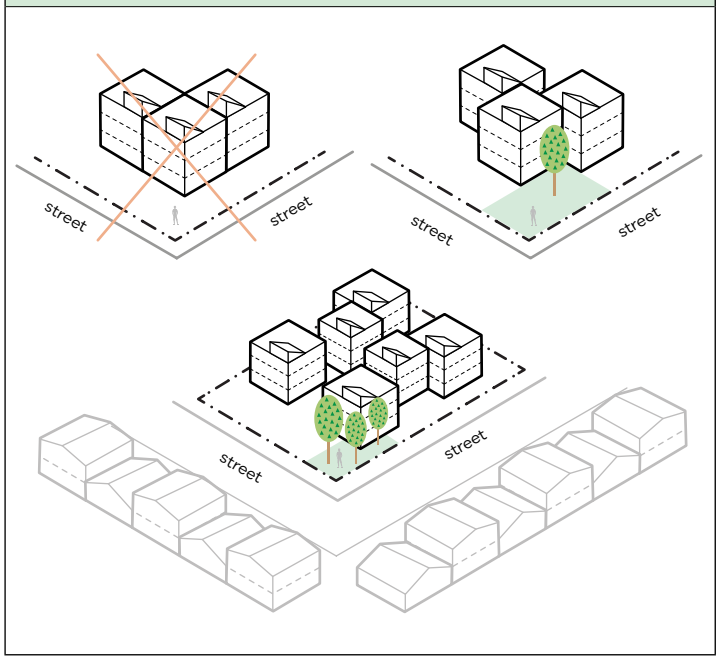
- ✘ high, long, blank walls at street frontages.

Exemplar Design D adaptation guidance

This design can be adapted by:

- providing a landscaped area at the corner, to add visual interest and act as a buffer to soften the scale and appearance of the development and function as communal open space
- articulating the façade and orientating modules to address both streets.

Figure 2D.20: Corner site



7.5 Varied site dimensions

General adaptation guidance

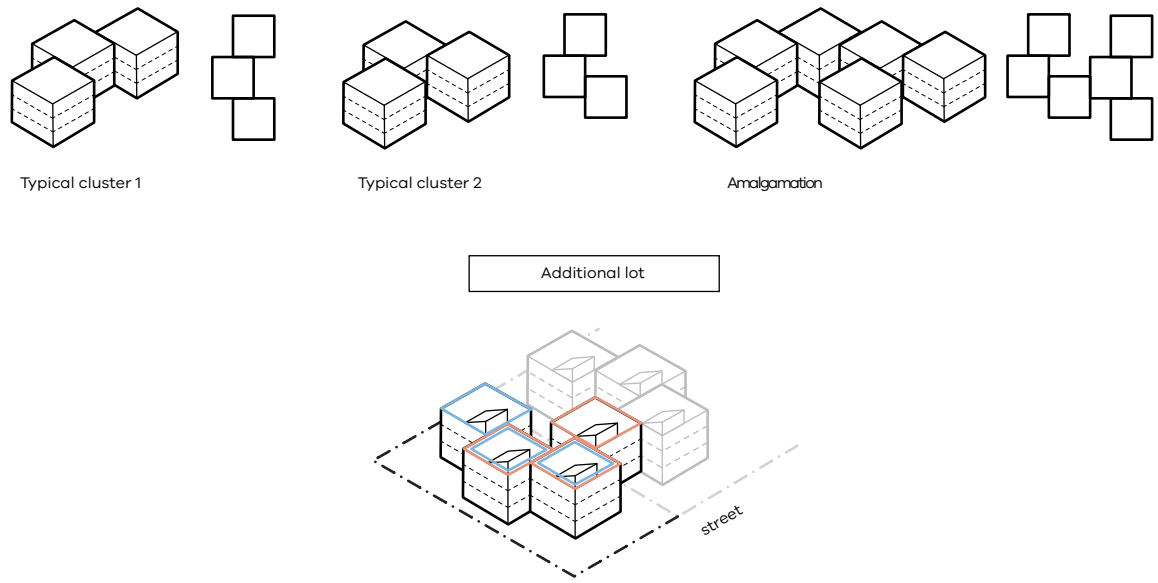
For a deep site:

- ensure equitable access to circulation including stairs and lifts
- avoid a long, continuous built form without breaks in the massing.

Exemplar Design D adaptation guidance

There are multiple techniques to address varied site dimensions, as Figure 2D.21 shows. The design grows by clusters, so modules should be arranged to ensure solar access, cross-ventilation and neighbours' connectivity.

Figure 2D.21: Varied site sizes



7.6 Sloping site

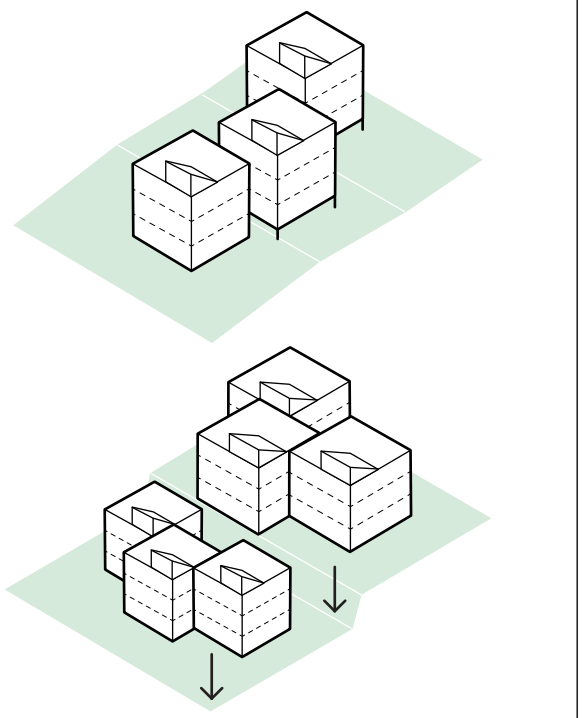
General adaptation guidance

There is no general adaptation guidance for this topic.

Exemplar Design D adaptation guidance

Step modules up by one level in line with site slope or break the development into clusters if there are two primary levels for ease of circulation.

Figure 2D.22: Sloping site section



7.7 Floodplain

General adaptation guidance

A development on a site within a flood overlay must be designed in accordance with Melbourne Water's requirements.

Inappropriate development in flood affected areas can lead to fundamental changes in the nature and impact of flooding. It can also increase the potential for loss of life and flood damages to the community and the environment.

Melbourne Water decisions are guided by planning policies in the planning scheme. In addition, Melbourne Water assesses development applications in accordance with the *Guidelines for Development in Flood Affected Areas* (DELWP, 2019). Usually the information in the guidelines is sufficient to guide decision making. However, the guidelines cannot cover all the circumstances and aspects of flood behaviour.

Development in or adjacent to a floodplain will only be acceptable where the new development is protected from flooding (flood levels are constructed to the identified Nominal Flood Protection Level); has safe access to and around the development (in considering site specific flood depths and velocities); and does not interfere with the passage and storage of floodwaters.

Developments in areas affected by flooding must not obstruct the passage of flood flows or reduce floodplain storage as this may cause flood levels and velocities to increase and adversely impact surrounding properties. On sites subject to flooding, imported fill must also be kept to a minimum and used only for sub floor areas of dwellings, garages and driveway ramps. New fencing and decking should also be of an open style of construction (50 per cent permeable/open) to maintain conveyance of flows through floodplains.

All new development should preserve, and if possible enhance, the social and environmental values and benefits of floodplains and waterways and should be sensitively designed and sited to maintain and enhance environmental assets, significant views and landscapes along river corridors and waterways and adjacent to lakes and wetlands. For detail on development setbacks required from waterways, see the *Healthy Waterways Strategy 2018-2028*.

On sites affected by flooding, Melbourne Water requires the following information to be included on all plans:

- The boundaries and dimensions of the site
- Existing conditions survey and feature plans. Taken by or under the direction and supervision of a licensed land surveyor showing:
  - natural ground level
  - the current Flood Level
  - the dimensions and ground and finished floor levels of any existing buildings, to Australian Height Datum (AHD)
- Proposed architectural plans, elevations and section drawings (1:50 or 1:20). Showing the proposed finished surface levels and finished floor levels and the Nominated Flood Protection Level (NFPL) of all new structures on the land
- All proposed finished floor levels notated on the plans to Australian Height Datum
- A comparative description of the existing and proposed use and development of the site
- Cross-sectional details of any basement entry ramps and other basement entries to Australian Height Datum. Showing floor levels of entry and exit areas and drainage details
- A written assessment against 'Part Three – assessing development proposals' of the *Guidelines for Development in Flood Affected Areas (DELWP, 2019)*, and subsequent submission of any associated Flood Risk Management Plan
- Any other application requirements specified in a relevant planning Overlay schedule applicable to the site
- Appropriate boundary setbacks to allow for the conveyance of overland flows
- Detailed location of any Melbourne Water asset (including drains, sewers or water mains) within 20 metres of the subject site
- Hydraulic details and associated reporting of all/any existing and proposed earthworks, including details of any cut and fill required for works
- Details of any other known physical features that may affect flows on-site and on adjoining land, such as levees, fences and retaining walls
- A written description of proposed actions, flood risk mitigation strategies or measures required, if any, to the siting and design of the buildings or works, or in association with the use and occupation of all aspects of the proposal in order to reduce the risk to individuals, property, infrastructure and the environment.

Exemplar Design D adaptation guidance

The design can be adapted by raising the ground floor above the floodplain and designing in access ramps.

7.8 Easements

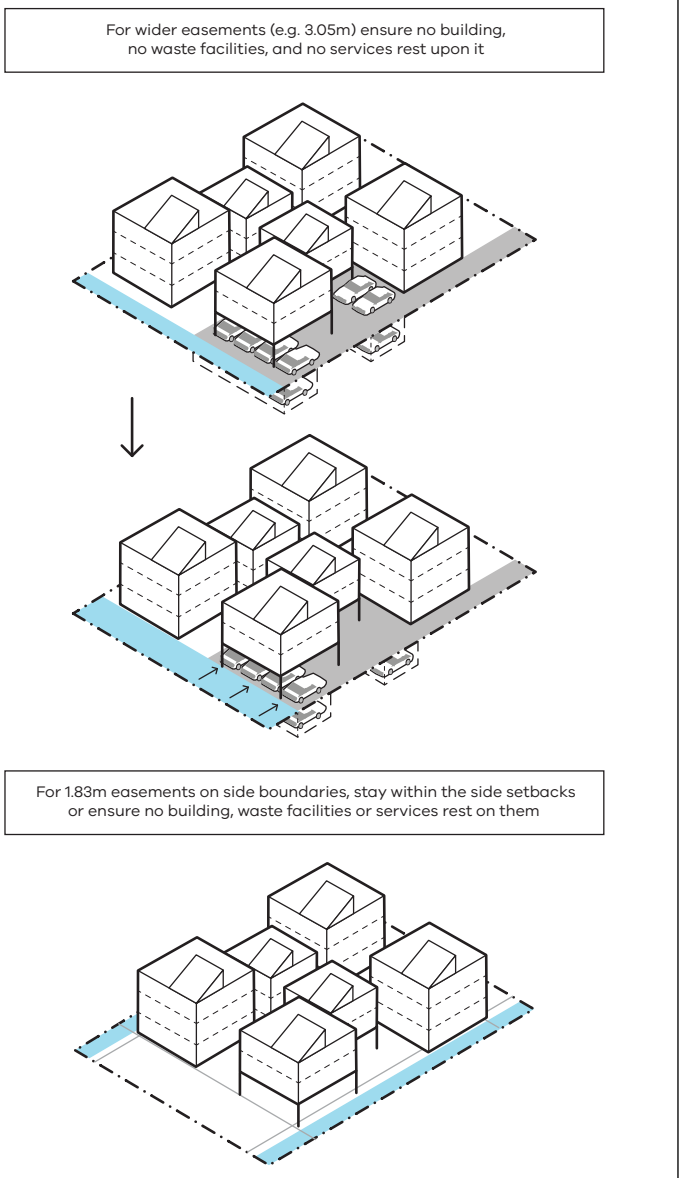
General adaptation guidance

There is no general adaptation guidance for this topic.

Exemplar Design D adaptation guidance

This design includes sufficient setbacks to accommodate different sizes and locations of easements. Where mechanical parking is proposed, consideration should be given to clearance and height requirements, as Figure 2D.23 shows.

Figure 2D.23: Adapting to different easements



7.9 Systems and approach

Off-site manufacturing

Off-site construction delivers pre-finished, prefabricated building elements and modules that are assembled on site using efficient construction and manufacturing techniques.

Consider standardisation and repetition of structural framing. It can help to reduce material waste, and prefabrication of structural framing can mean fewer trades and waste on site.

Prefabricated external walls with preassembled windows generally have higher-quality sealing than on-site construction. This method reduces on-site sealing and can reduce the incidence of poor workmanship and defects. Prefabrication also can minimise the construction period; the building can be prefabricated while groundworks and footings are being constructed.

Consider early contractor advice in the design phase if offsite construction is applicable and/or a known builder will construct the development. This way, trades and their supply chains can help coordinate and standardise the design of services, and costs assist to accurately estimate costs.

Future changes in use

Plan for the potential amalgamation of smaller apartments into a larger apartment or vice versa. Such alterations would need room dimensions and optimal locations of wall openings to be considered, to reduce the need for structural adjustments.

Structure

Consider an efficient structural frame that extends in alignment from the ground floor to the top floor such as a lightweight post-and-beam timber, or cross-laminated timber (CLT). This reduces the number of on-site trades and the time needed for coordination and construction. Consider the fire-rating implications of this method of construction.

- Use regular grids and modular components for floors, walls, stairs, roofs and service risers.
- For non-wet areas, consider providing structural flooring that can span between load-bearing walls. This will enable internal walls within a sole occupancy unit to be non-load-bearing and adaptable in the future.
- Consider providing structure and footings for more floors to be added over time aetnd clearly documenting these for future reference.
- Consider using a structural insulated panel system or sandwich panels.

Car park

- Floor-to-floor height for above-ground car park spaces should allow for other temporary or long-term uses, including conversion to habitable space.
- Aim to provide a minimum of 2.6 metres clear in basement areas, to allow for services to be installed.
- Plan for adequate ventilation and likely service infrastructure needs for future uses.
- Provide adequate drainage at the base of ramps for surface run-off, pits for excess water and a freeboard threshold at the top of the ramps.

Exemplar Design D adaptation guidance

There is no specific adaptation guidance for this topic.

7.10 Materials and finishes

General adaptation guidance

Future Homes exemplar designs have a materials schedule that includes substitution guidance to suit different contexts or design preferences.

Exemplar Design D adaptation guidance

Refer to the materials schedule for substitution guidance.

7.11 Fire services

General adaptation guidance

There is no general adaptation guidance for this section.

Exemplar Design D adaptation guidance

There is no specific adaptation guidance for this topic.

Part 3

Appendices

Introduction

The appendices provide additional technical information and guidance to assist adaptation of the Future Homes exemplar designs. They:

- identify considerations for key equipment, systems and elements incorporated in the exemplar designs
- identify building compliance assumptions and considerations
- identify opportunities to enhance and exceed the Future Homes requirements.

The appendices include:

- benchmarks, technical standards and detailed design guidance
- sustainability guidance to meet the performance targets
- alternative paths for compliance and identify targets and systems that can be varied.

Disclaimer

The pro forma Future Homes exemplar plans and accompanying guidance documents set out a plan and performance schedule for the design of a residential apartment building. The plans and schedules are designed to be used in Victoria and will require adaptation to suit your site and requirements. You must obtain independent professional advice in relation to any proposal to use and adapt the plans.

The plans and accompanying guidance documents are provided subject to the Terms of Use, which are available for download at https://www.planning.vic.gov.au/policy-and-strategy/future-homes.

Appendix 1: Structure

The following guidance is not exhaustive, and it does not supersede the National Construction Code, Australian Standards or any other regulatory requirements. Other pathways to compliance, not included in this guidance, may represent a successful design approach.

General guidance

- Loads that span between party walls can allow for internal partitions to be non-load-bearing.
- Consider prefabricated stairs to a core for a high-quality, consistent finish and to provide safe access for workers during construction.
- Consider post-tensioned suspended slabs for maximum efficiency if concrete is used.
- Coordinate set-downs in structure, so they are carefully integrated with services and other performance requirements.
- The exemplar designs and associated guidance do not consider construction in flood-prone, bushfire-prone or cyclone-prone areas.

Footings

- Footings will be designed to avoid differential settlement between buildings on the same site.
- Footings will be designed strictly in accordance with the instructions of a geotechnical consultant and structural engineer.

Retention system

- Adjacent buildings will be checked to identify any basements that might be impacted.
- Where required, cantilevered bored piles will be designed with adequate surcharge loads.
- The building surveyor will confirm whether protection works are required.

Geotechnical investigation required for each site

- Boreholes will be deep enough to analyse the use of cantilevered bored piles.
- A wet basement requires a spoon drain around its perimeter. Water collected in a basement may need to be treated before reuse.
- A dry basement design requires the treatment of groundwater or a deep, concrete slab with appropriate reinforcement for uplift loads.

Appendix 2: Fire safety

This information reflects the exemplar designs before adaptation.

The exemplar designs and accompanying guidance were generally designed with regard to the technical and construction requirements of the National Construction Code (NCC) Volume One. Further testing is to be undertaken by the purchaser and those undertaking the adaptation to ensure compliance with all relevant codes at the time of adaptation.

Independent professional advice and verification must be sought with any proposal to use and adapt the exemplar designs to suit a particular site.

The information and guidance provided is not exhaustive and does not supersede the National Construction Code, Australian Standards or any other regulatory requirements. Other pathways to compliance, not included in this guidance, may represent a successful design approach.

General guidance

- As currently designed, the exemplar designs are assumed to be sprinkler-protected.
- Travel paths and distances and the location and number of stairs and exits shown in the exemplar designs may be subject to change and performance solutions.
- If a building is not sprinkler-protected, vertical spandrel separation between external openings will be required. This does not apply to openings contained within the same sole-occupancy unit.
- Mechanical parking will be sprinkler-protected in line with Fire Rescue Victoria's Guideline 32 Buildings Incorporating Automated Vehicle Parking Systems (AVPS).
- Provide sprinkler protection to laundry cupboards where required by the National Construction Code (NCC).
- Buildings will be served by a fire hydrant system.
- The part of a building containing car parking spaces will be served by a fire hose reel system.
- The basement level will have a smoke detection system in accordance with National Construction Code Specification E2.2a Smoke Detection and Alarm Systems.
- A basement level requires a mechanical ventilation system in line with AS 1668.2-2012 Mechanical ventilation in buildings.
- A sole-occupancy unit will have a smoke alarm system in accordance with National Construction Code Specification E2.2a Smoke Detection and Alarm Systems.
- A floor contained within the same sole-occupancy unit need not be fire-rated unless it provides lateral or vertical support to another fire-resistance element.
- A separating wall will extend to the underside of the roof covering or above the floor, and it will not be crossed by structure.
- The roof covering will be non-combustible.
- External walls and internal fire-rated walls will be non-combustible; timber framing is permitted.
- Windows and other openings within 3 metres of a side or rear boundary will be protected by either external wall-wetting sprinklers or fire-rated glazing.

- Consider the increased level of protection required for openings facing paths of travel to exits.
- Consider the protection requirements for a booster assembly when located within 10 metres of the building line.
- A basement level should have at least two exits.
- Climbers and cascading plants should have an ongoing maintenance regime as part of the assessment for a deemed-to-satisfy fire safety solution under the National Construction Code. The maintenance regime could include:
  - an automatic irrigation system
  - a means to collect rainwater and a dedicated on-site tank, to serve the irrigation system
  - a monitoring device fitted to a shut-off valve serving the irrigation system, with fault signalling to the building's main fire-indicator panel
  - use of a sprinkler system.

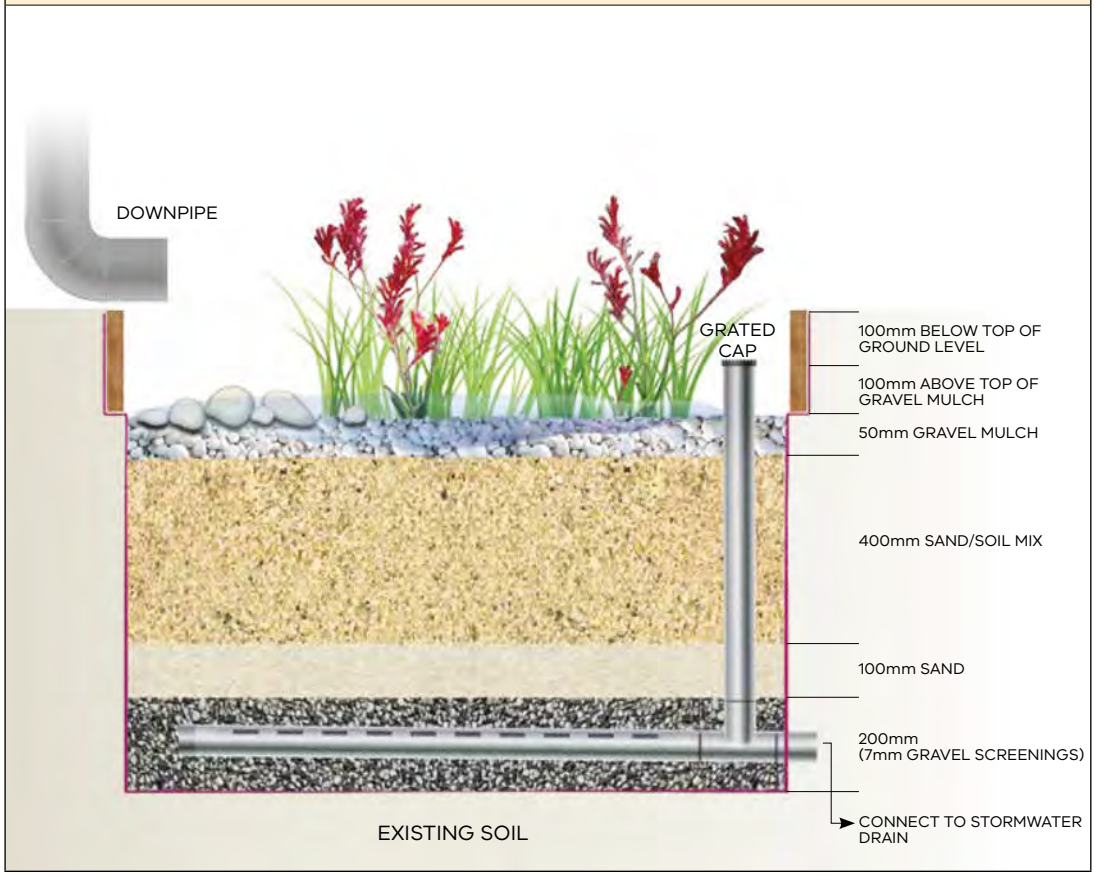
Appendix 3: Landscape

General guidance

- Any tree that is part of the calculation of canopy cover should be a minimum of 100 litres and 2.5 metres tall at the time of planting.
- If in-ground services are located in areas of deep soil, they should be subtracted from the deep soil calculation.
- Raingardens or swales are to be sized in accordance with the Future Homes ESD requirements. As a guide, these typically comprise a minimum of 1 percent to 2 percent of the impermeable site area. They are best located at the lowest point of the site and can be at multiple locations.
- Avoid locating large trees adjacent to external building walls where they are prone to impact building footings. Seek advice about the use of root barriers to reduce the risk of damage to the footings caused by changes of moisture in the soil.

Refer to Appendix 2: Fire Safety for advice on climbers and cascading plants

Figure 3.1: Section showing typical raingarden guidance



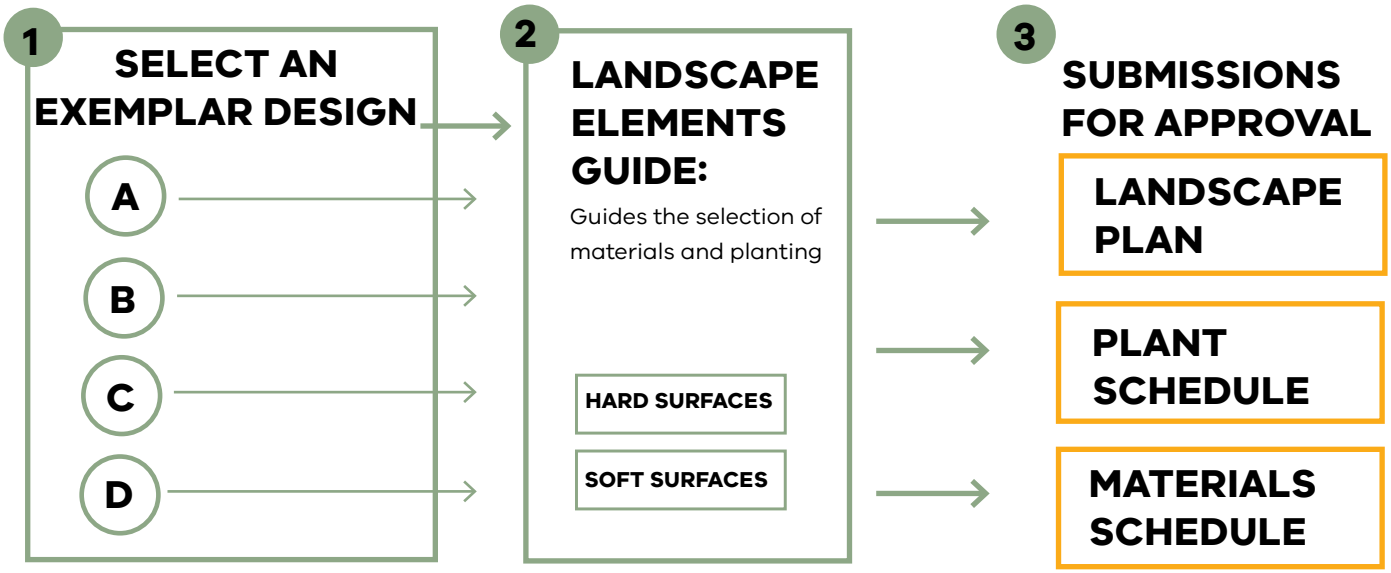
Source: Building an inground raingarden, Melbourne Water Corporation, December 2013

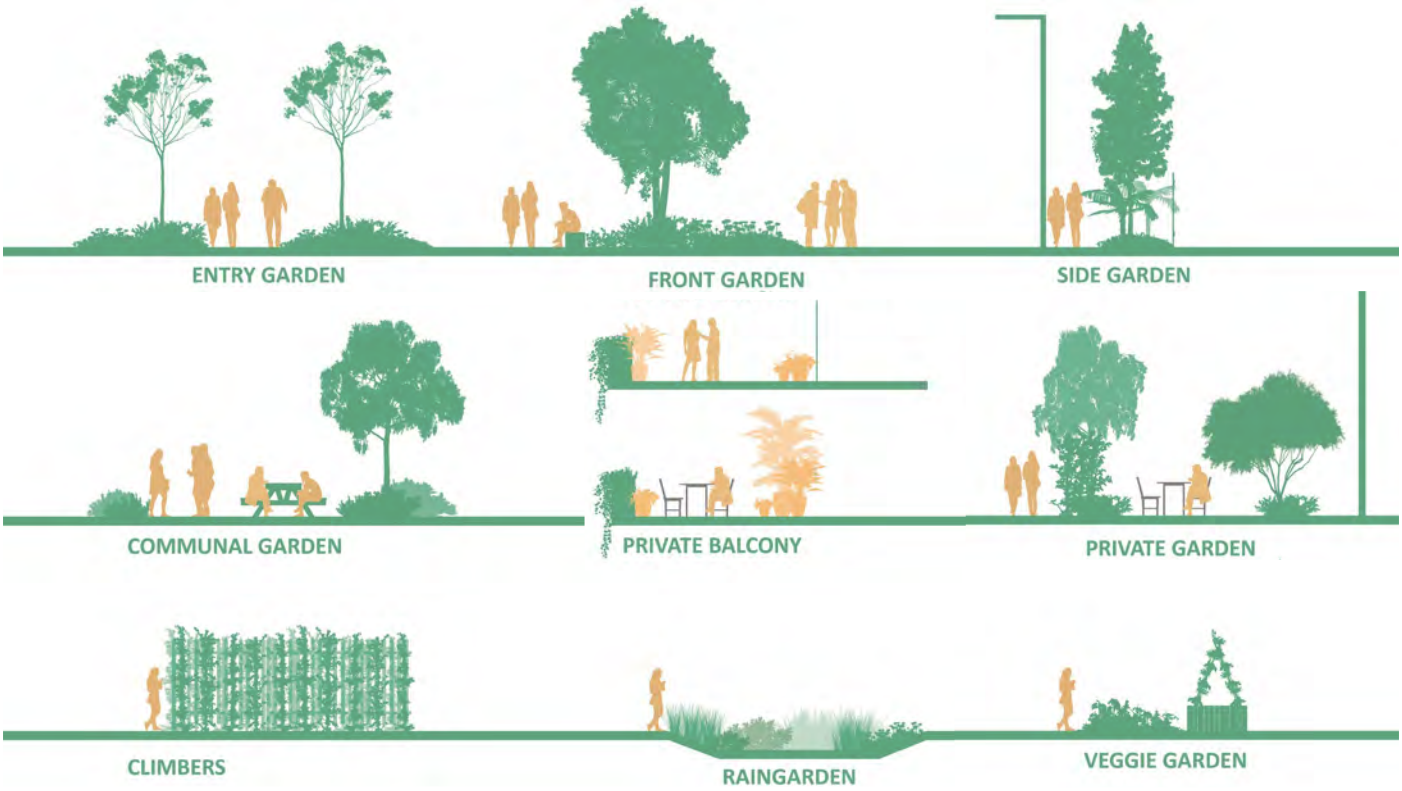
The following has been prepared by GLAS Urban.

Introduction - Using the templates to create a template plan

The landscape template plans define the extent and location of landscape typologies for each exemplar plan. The landscape elements guide provides guidance on the character of each of the landscape typologies. Designers adapting the exemplars can use the elements guide to develop a design plan for the planting and hard landscape materiality that is responsive to site. The landscape design plan plus plant and material schedules are submitted as part of the package for planning approval.

How to use this guide:





LANDSCAPE TARGETS

The landscape performance targets aim to establish minimum or ideal criteria to enable a more environmental friendly outcome for Victoria's future developments. In this section, Clause 55 of the Victoria Planning Provision is used as a reference for the establishment of the metrics used in the evaluation of the template schemes.

20% SURFACE PERMEABILITY
REFER TO 5.2 GREENING IN PART 1

35% GARDEN AREA (MANDATORY)
REFER TO 2.2 GARDEN AREA IN PART 1

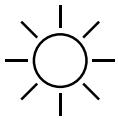
5-15% CANOPY COVER (MANDATORY)
REFER TO 5.2 GREENING IN PART 1

30-100 SQM DEEP SOIL AREA (MANDATORY)
REFER TO 5.2 GREENING IN PART 1

8-25 SQM PRIVATE OPEN SPACE
REFER TO 3.2 PRIVATE OPEN SPACE IN PART 1

30-220 SQM CIRCULATION AND COMMUNAL OPEN SPACE (MANDATORY)
REFER TO 3.3 CIRCULATION AND COMMUNAL OPEN SPACE IN PART 1

INTEGRATED LANSCAPE
REFER TO 5.3 INTEGRATED LANDSCAPE IN PART 1



HEAT ISLAND EFFECT
REFER TO 6.5 HEAT ISLAND EFFECT IN PART 1

WASTE MANAGEMENT
REFER TO 5.5 SITE SERVICES IN PART 1

The landscape elements guide provides guidance on the character of each of the landscape typologies identified within the landscape templates.

H1. PRIMARY ENTRY PAVER

Application

The primary paving will be used to define the main communal pedestrian entry to the residential block.

Character

This pathway should be the primary entry, designed to enhance the entry experience and to define the entry as a welcoming, pedestrian orientated access way.

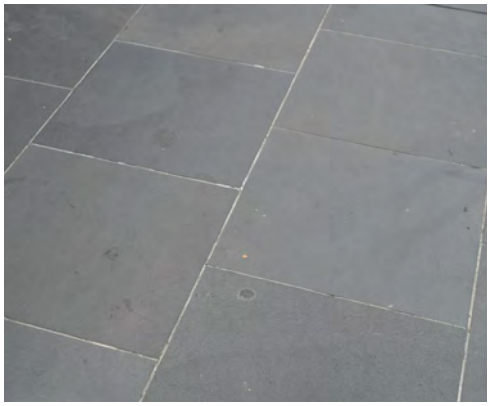
Materials

The surface should be composed of high-quality materials with a texture, scale or pattern that signifies a pedestrian access. Where relevant, surface materials should be selected to reflect the local streetscape character and to complement the architectural finishes.

Appropriate materials

- Bluestone paving
- Clay brick paving
- Granite setts
- Castlemaine slate paving

Materials to be avoided:
- Asphalt
- Copper Chrome Arsenate (CCA) treated pine



Bluestone paving

Granite setts

Clay brick paving

Castlemaine slate paving

H2. SECONDARY PATH PAVER

Application

The secondary path will be used to define secondary pedestrian circulation within the residential block.

Character

This paving should be a simple, durable material that signifies a pedestrian surface and compliments the primary paving in colour and texture.

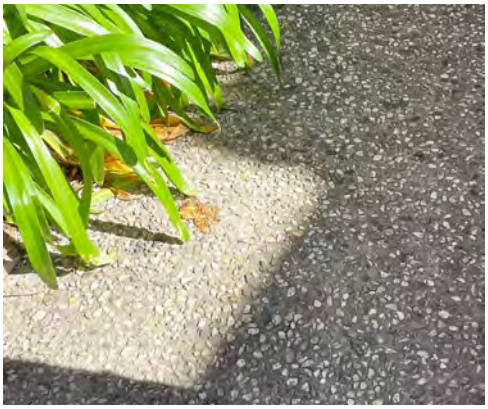
Materials

The surface should be composed of good quality materials with a texture, scale or pattern that signifies a pedestrian access. Where relevant, surface materials should be selected to reflect the local streetscape character and to complement the architectural finishes.

Appropriate materials

- Insitu exposed aggregate paving with close-set saw-cut joints
- Insitu place concrete
- Clay brick paving
- Concrete pavers

Materials to be avoided:
- Asphalt
- CCA treated pine



Insitu exposed aggregate concrete

Concrete pavers

Concrete pavers

Clay brick paving

H3. SHARED PATH PAVER (VEHICLE/PEDESTRIAN)

Application

The shared path paver will be used to define shared circulation zones between pedestrians and vehicles. They can be used on paths that guide pedestrians to car parking areas at ground or basement level.

Character

As a hard surface is required for the vehicle grade, other qualities of colour, texture, scale or pattern can be used to signify the shared access. Where relevant, surface materials should be selected to reflect the local streetscape character and to complement the architectural finishes.

Materials

This paving should be a simple, durable material that is vehicle graded. Ideally, it should minimise the hard paving area to the wheel projection path while allowing for more pervious surface around. Asphalt roads should be avoided and a more friendly surface that compliments the primary and secondary paving in colour and texture should be preferred. Grasscrete pavers have shown little performance in driveways and are not suggested as a continuous surface.

Appropriate materials

- Insitu concrete
- Clay brick paving (vehicle grade)
- Resin-bound gravel
- Exposed aggregate concrete

Materials to be avoided:

- Large areas of concrete

Insitu concrete path with integrated garden bed

Resin-bound gravel

Exposed aggregate concrete

Clay brick paving (vehicle grade)

H4. COMMUNAL TERRACE PAVER

Application

The communal terrace paver will be used to define communal areas within the residential block.

Character

This paving should be a simple, durable material that signifies a communal gathering area and compliments the surrounding architecture in colour and texture.

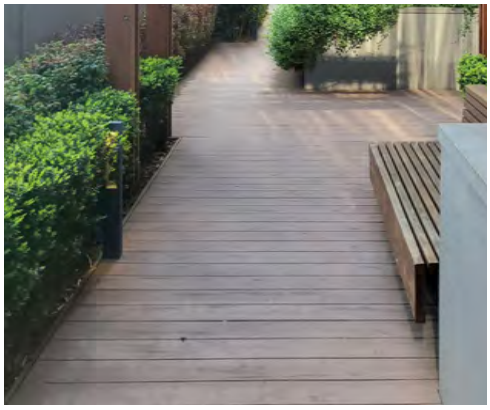
Materials

The surface should be composed of good quality materials with a texture, scale or pattern that signifies an outdoor communal space. Where relevant, surface materials should be selected to reflect the local streetscape character and to complement the architectural finishes.

Appropriate materials

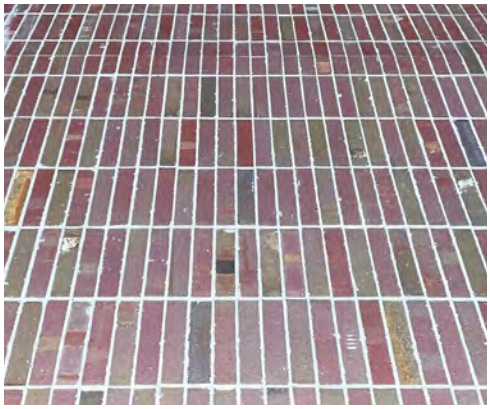
- Exposed aggregate concrete pavers
- Bluestone pavers
- Timber Deck
- Clay brick paving

Materials to be avoided:
- Asphalt
- CCA treated pine



Timber decks

Exposed aggregate concrete pavers



Clay brick paving

Bluestone paver

H5. RAISED WALKWAYS

Application

The communal terrace paver will be used to define communal areas within the residential block.

Character

This paving should be a simple, durable material that signifies a communal gathering area and compliments the surrounding architecture in colour and texture.

Materials

The surface should be composed of good quality materials with a texture, scale or pattern that signifies an outdoor communal space. Where relevant, surface materials should be selected to reflect the local streetscape character and to complement the architectural finishes.

Appropriate materials

- Steel grates
- Precast concrete sleepers
- Deck
- Concrete

Materials to be avoided:

- Asphalt
- CCA treated pine

Steel grate

Concrete

Deck structure

Precast concrete sleepers

S1. ENTRY GARDEN

Application

The entry garden will be located at the main pedestrian entry and lining the main entry pathway.

Planting character

This garden will create a welcoming entry with a variety of colourful and textured plants with seasonal change.

Planting type

Planting should be arranged in a combination of single-species groups and individual plants to provide a variety of heights and forms. Pathways should be lined with a combination of groundcover and low-level shrubs. Small to medium trees should be integrated. Maintain clear view lines to ensure visibility and safety.

Plant species should be selected that:

- Are appropriate to the site location, microclimate and soil type;
- Will be suited to the level of shade or sun of the specific garden bed;
- Will achieve the heights appropriate to the planting typology.

THIS NOTE APPLIES TO ALL TYPOLOGIES

Clear view framed by trees

Robust planting scheme with diverse colour and texture

S2. FRONT YARD GARDEN

Application

The front garden will be located at the interface of the lot with the street, being the main visible garden from the street.

Planting character

This garden will create an inviting entry with a variety of colourful and textured plants with seasonal change, while providing visual screening for residents' privacy.

Planting type

Planting should be arranged in a combination of single-species groups and individual plants to provide a variety of heights and forms. Depth and height of planting should be considered according to garden size, with a combination of groundcover and low-level shrubs. Small to medium trees should be integrated. Screening plants should be considered when privacy is desired.

Street interfaces can become a welcoming edge for neighbourhood interactions

Edges that allow for seating can encourage informal spaces for gathering

S3. SIDE GARDEN

Application

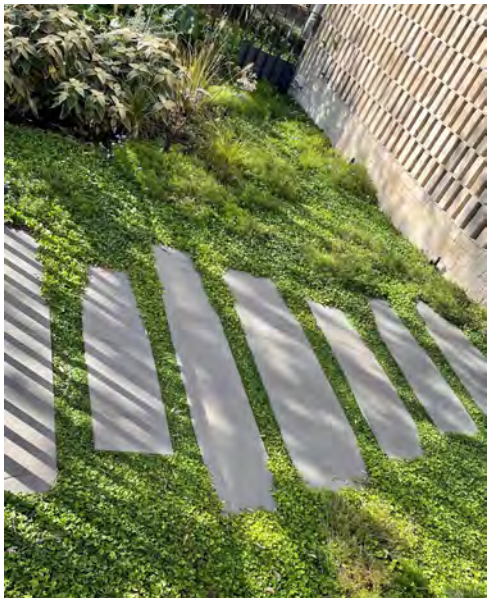
The side garden will be located at secondary entries, usually next to the lot boundary wall.

Planting character

This garden will create a robust entry with screening plants or climbers against the wall.

Planting type

Planting should be arranged in a linear combination to ease maintenance. Species selection should respond to character and council requirements. Narrow trees should be integrated whenever possible. Proximity to residences should determine tree canopy size.



Low maintenance, shade tolerant plants should be used.

Small trees at boundaries provide screening and soften the edges.

S4. PRIVATE GARDEN

Application

Private gardens are located on the ground level and accessed by a single residence.

Planting type

This garden should enable a flexible layout for residents to incorporate their own planting. Screening should be provided whenever privacy is required. A paved or lawn area should be included to allow space to sit outside.

Planting character

Planting should be arranged in a combination of single-species groups and individual plants to provide a variety of heights and forms. Garden beds should be located around a central paved/deck area to support high use. Small to medium trees should be integrated.

Provided adequate deep soil area for integration of trees

Robust screening plants

S5. COMMUNAL COURTYARD/GARDEN

Application

The communal garden, or communal open space, will be located in the main outdoor shared space of the residential block.

Planting type

This garden will create an inviting entry by including a variety of colourful and textured plants thatthat showcase seasonal variety and provide visual screening.

Planting character

Planting should be arranged in a combination of single-species groups and individual plants to provide a variety of heights and forms. Pathways should be lined with a combination of groundcover and low-level shrubs. Small to medium trees should be integrated. Maintain clear view lines to ensure visibility and safety.

Furniture should be provide in communal areas where possible

A combination of paving and soft surfaces can creating engaging microclimates

S6. PRIVATE BALCONY/TERRACE

Application

Built-in planters and/or individual planter pots are recommended to enhance the amenity of private balconies and terraces.

Planting type

In all balconies, planting must be robust and tolerant to wind exposure. With in-built planters, soil availability can be maximized and different species can be composed, although single-species groups allow for a stronger effect. Planting in pots will thrive better if planted alone, and the composition can be made through different pots.

Planting character

Planting for in-built planters should be either coordinated with all residents for a consistent facade effect or can have the flexibility of a diverse effect. Where relevant, planting should be selected to reflect the local streetscape character and to complement the architectural finishes.

In-built planters should be incorporated into balconies whenever possible. Pots should be added by residents according to necessity. **Caution: Do not provide footholds or climbing hazards.**

Refer to Appendix 2: Fire Safety for advice on climbers and cascading plants.

Mix of in-built planters and pot planting

Balcony planting can help with vertical greening

G1. PRODUCTIVE GARDEN

Application

The productive garden should be located in an easily accessible and shared space between the residents. Ideally, the productive garden should be located in north-facing spaces.

Planting type

This garden can either be in-ground or in raised planters, depending on the characteristics of the site and soil conditions. It should encourage residents to maintain plant growth through a simple design with allocated storage for tools.

Planting character

Plants will be planted by residents according to season and sunlight availability.

Note: Tap(s) and rain water tanks should be provided nearby to support and encourage use.

A productive garden can be in-ground or raised according to site requirements

The productive garden can also provide screening and colourful planting

G2. RAINGARDEN

Application

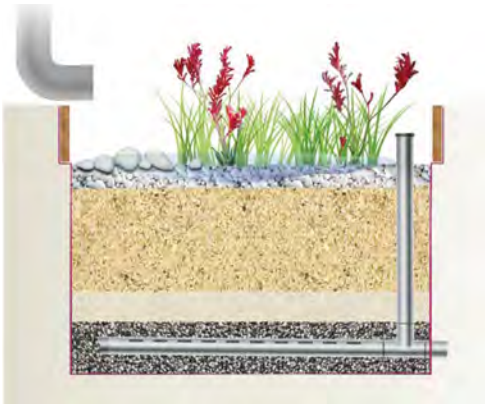
Raingardens should be located in the lower points of the garden, at the end of spoon drains or kerb lines. They will capture rainwater and treat it before directing it to stormwater drains.

Planting type

The raingarden will be lower than surrounding surfaces with an overflow connected to the stormwater network. The soil type will have a high permeability rate.

Planting character

Planting should include native species that are tolerant of drought and inundation but provide an all round visual amenity with seasonal highlights.



Coordinating downpipe location to guide roof top water into rain gardens

Rain gardens should be adjacent to large impervious areas like driveways and car parking areas.

G3. CLIMBERS

Application

Climbers can be planted in fence lines, screening trellis or can be added to facades through wire cables.

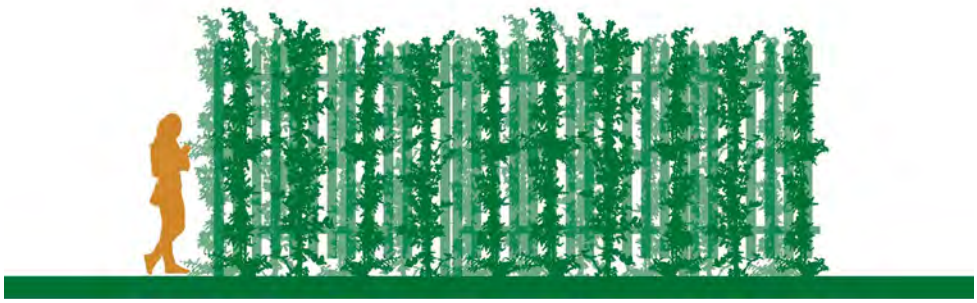
Planting type

Climbers will enable a greener look of the residential development. Climbers will also provide cooling and shading benefits.

Planting character

Planting should be arranged in a combination of single-species groups to provide a continuous effect. Maintain clear view lines to ensure visibility and safety.

Refer to Appendix 2: Fire Safety for advice on climbers and cascading plants.



Robust native climbers should be used in less shaded areas.

Self-clinging plants softens the buildings with minimum additional structural support.

Deep soil requirements

T1. SMALL TREE

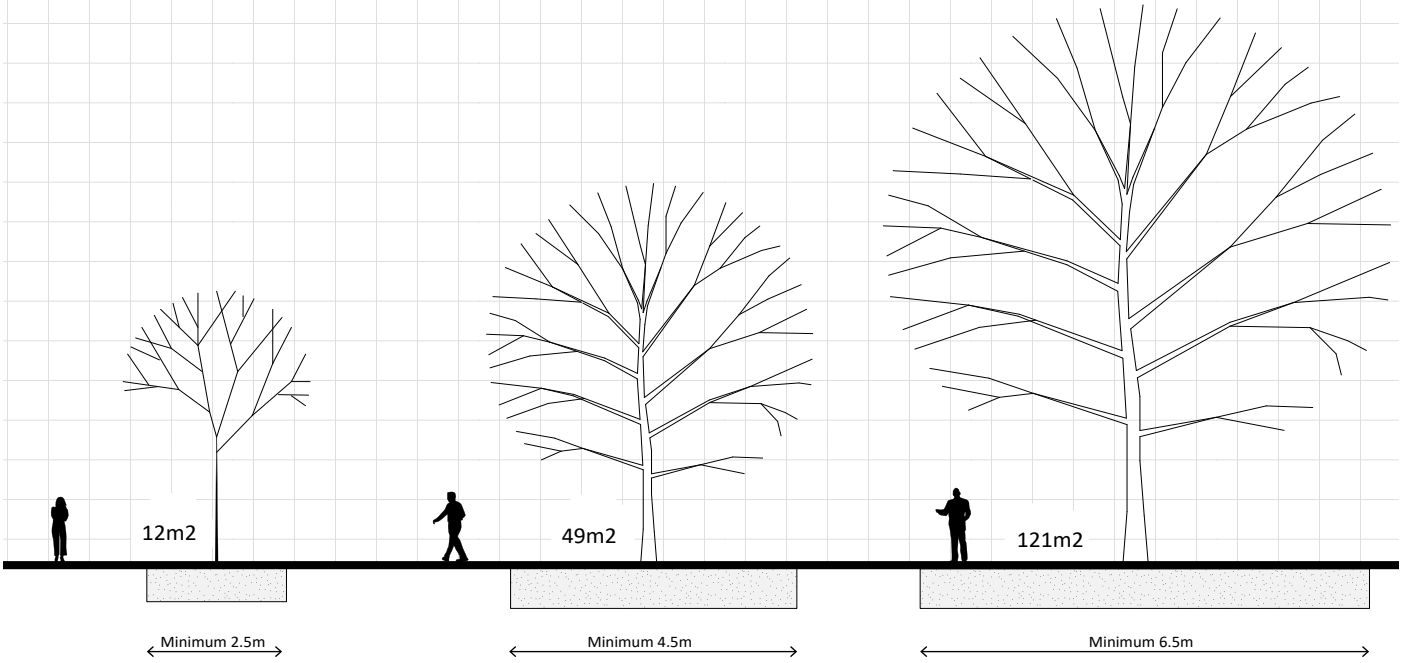
SMALL
(4m minimum height at maturity, 6m minimum canopy diameter at maturity)

T2. MEDIUM TREE

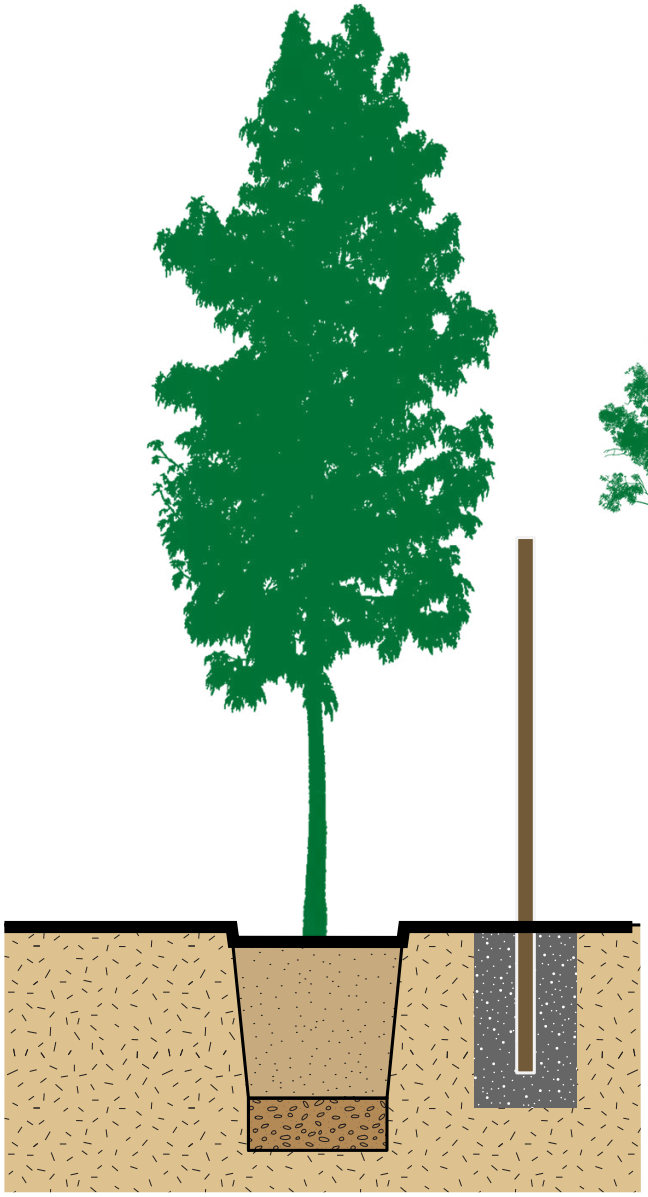
MEDIUM
(8m minimum height at maturity, 8m minimum canopy diameter at maturity)

T3. LARGE TREE

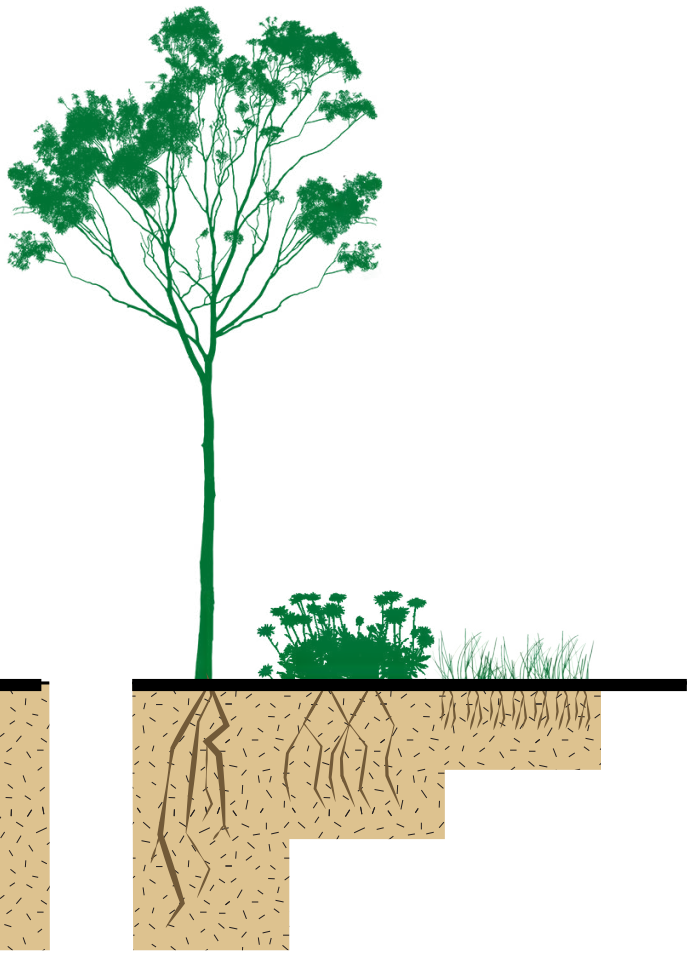
LARGE
(12m minimum height at maturity, 12m minimum canopy diameter at maturity)



LANDSCAPE DETAILS



The landscape details illustrate specific requirements for each landscape typology to thrive. The following details are key to constructing healthy landscapes and should be considered in all adaptations.



Tree planting requirements

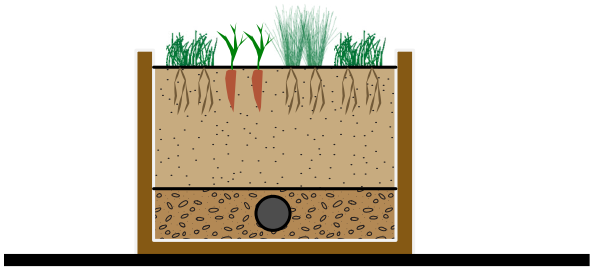
Trees planted as part of the canopy cover calculation, must be a minimum pot size of 100L, a minimum height of 2.5m at the time of planting and will be planted in deep soil. Key requirements for tree planting:

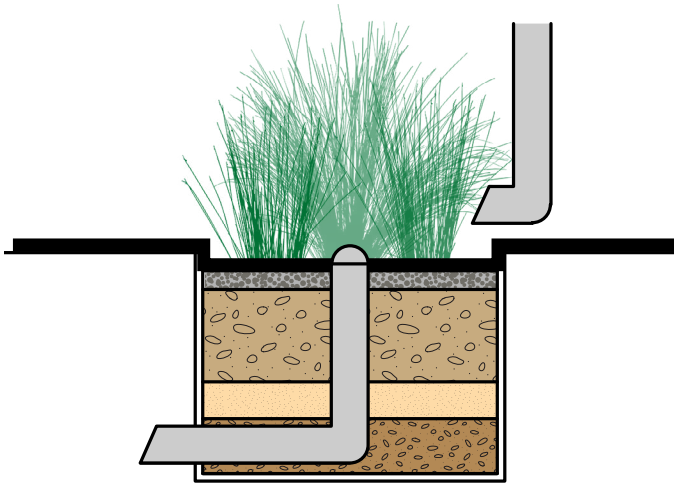
1. Minimum topsoil depth = 900mm
2. Minimum tree pits width = 1000x1000mm
3. Automatic irrigation must be provided for all trees during establishment
4. Trees pits must be a minimum of 500mm from fences or buildings
5. Trees will be staked or guyed.

Garden bed requirements

Garden beds should be designed to promote optimum conditions for growth. A mimimum of 4 plants per m2 should be provided. A minimium depth of topsoil is required for different types of planting:

1. Tree planting = 900mm min
2. Shrub and climber planting = 600mm min
3. Turf planting 250mm min
4. Gardens should have automatic irrigation.





Productive garden requirements

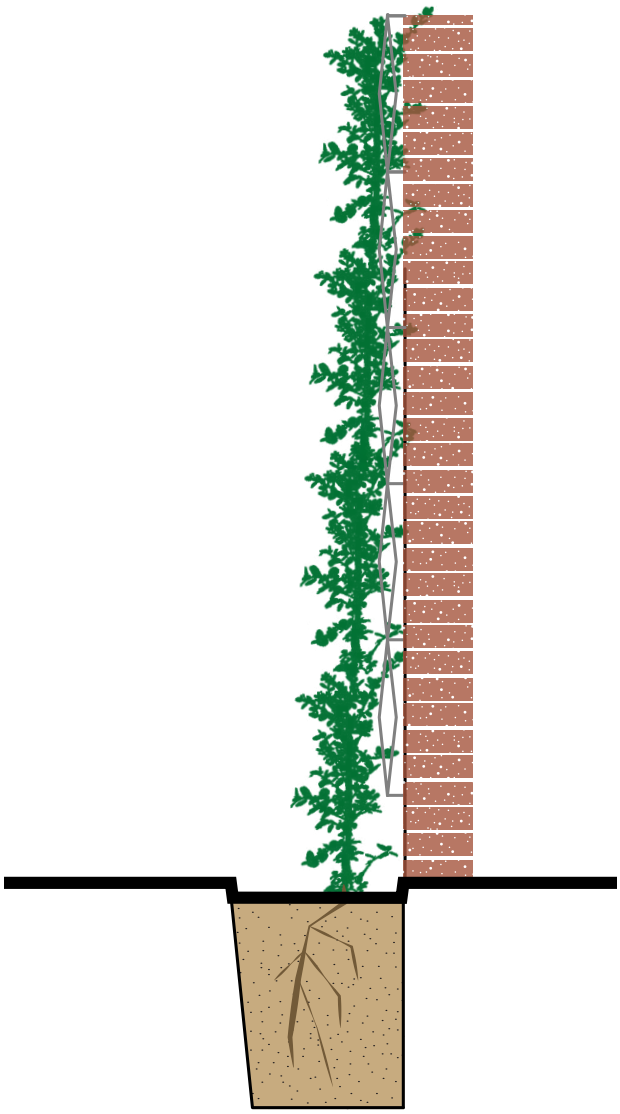
Productive gardens should be placed in raised planters to be easily accessible for maintenance. Ideal dimensions are between 600-900mm wide and 400-700mm high. The planter should include:

1. Good quality, clean topsoil
2. A drainage layer at the bottom to prevent waterlogging.
3. A tap for watering within 5 metres.

Rain garden requirements

Rain gardens capture rain water and treat it before discharging it to the stormwater drainage system. Rain gardens can be in-ground or in planters. Rain gardens should be designed in accordance with Melbourne Water guidance (www.melbournewater.com.au). Key components include:

1. Plants at 8 plants/m2
2. Gravel mulch
3. Rain garden soil (free draining sand/soil mixture)
4. Sand layer
5. Drainage layer
6. Waterproof membrane
7. Perforated pipe connected to the stormwater network
8. Stormwater overflow
9. Stormwater directed to the rain garden from downpipes or adjacent surfaces.

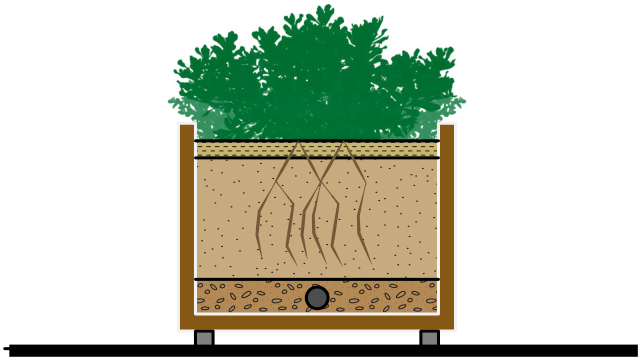


Climber requirements

Key components include:

1. Provide sufficient soil for the climbing plants to thrive. Either plant in deep soil or plant in pots with a minimum soil depth of 700mm and a minimum soil width of 500mm excluding drainage materials.
2. Wires or mesh should be provided on the fence or facade for the climbing plant to cling to.
3. Design details for proposed facade plantings should include an ongoing maintenance regime as part of the assessment for a deemed-to-satisfy fire safety solution under the National Construction Code. The maintenance regime could include:
   - evergreen climbing plant species
   - an automatic irrigation system
   - a means to collect rainwater and a dedicated on-site tank, to serve the irrigation system
   -a monitoring device fitted to a shut-off valve serving the irrigation system, with fault signalling to the building's main fire-indicator panel
   - use of a sprinkler system.

Note: sites is in a bush-fire prone area may prohibit facade plantings.

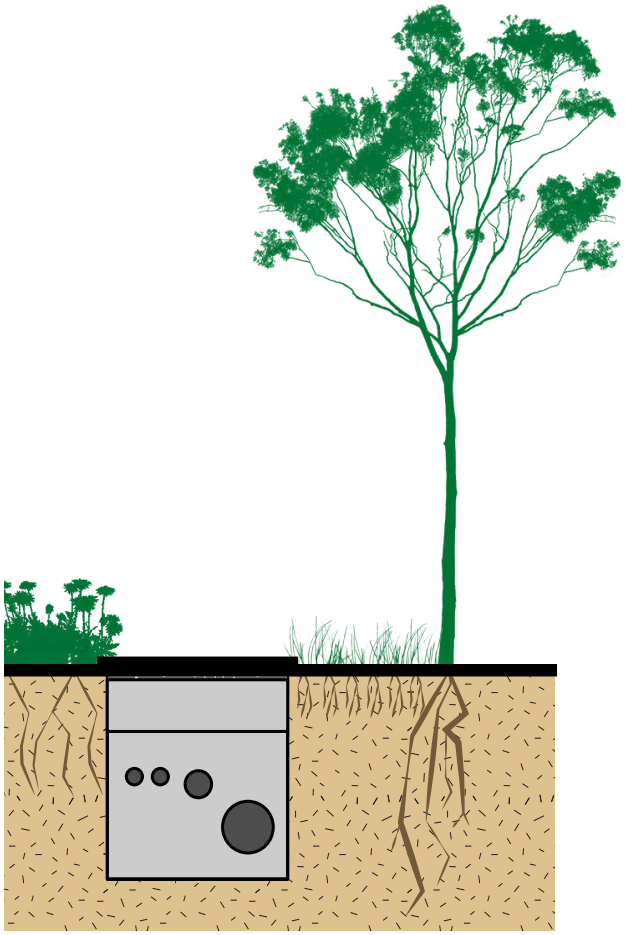


Planter box requirements

Plants should be provided to balconies and external landings. Planter boxes should provide optimum conditions for plant growth including:

1. Soil. A good quality light-weight soil should be provided, minimum sizes will vary depending on species. Minimum planter sizes should be 700mm depth (excluding drainage) and 500mm wide.
2. Weight should be co-ordinated with the structural engineer
3. Irrigation - provide automatic irrigation
4. Drainage - provide drainage
5. Exposure - positon the planters in locations that are protected from the wind where neccesary to ensure optimum plant growth
6. Shade - select appropriate plant species that will thrive with the amount of light available.

Caution: Do not provide footholds or climbing hazards.



Services co-ordination

Services should be aligned to minimise disturbance of deep soil areas.

1. Where possible align major services into common trenches
2. Locate service trenches under main pathways
3. Re-route services around 'deep-soil' areas for canopy trees
4. Consider shallow rooted planting such as groundcover and turf over services within garden beds.
5. Where no other solutions can be found, consider root-barriers.

Appendix 4: Waste

General guidance

- A waste receptacle should be large enough to store at least two days of waste and recycling. This amounts to about 35 litres for general waste and mixed recycling and about 12 litres for kitchen organics, glass recycling and soft plastics.
- Consider providing an additional receptacle for soft plastics in apartments.

Table 3.1: Waste generation rates, bin sizes and collection frequencies

Waste stream	Waste generation rate*	Shared bin size	Collection frequency
Rubbish	120 litres/apartment/week	660 litres or 1,100 litres	Weekly
Mixed recycling	120 litres /apartment/week	660 litres or 1,100 litres	Weekly
Food and garden organics	42 litres/apartment/week	240 litres	Weekly
Glass recycling	36 litres/apartment/week	240 litres	Weekly
E-waste		240 litres	At call
Hard waste		3.0 square metres	At call

*Waste generation rates are provided as a guide only and will differ between municipalities. These rates should be consulted with the relevant council to determine the exact collection and spatial requirements.

Appendix 5: Services and equipment

General guidance

Photovoltaic systems (PV)

The appropriate strategy to distribute energy to an apartment will depend on the needs of the applicant and the exemplar design chosen.

Feasible approaches for PV may include:

- an embedded network, which is more suited to large developments (e.g. 25+ apartments)
- A smart distribution system such as Allume's Solshares that distributes PV energy throughout the building while still giving residents the flexibility of choice of electricity provider
- direct cabling, which is direct wiring of a part of the PV system to each apartment, with each apartment likely to need an inverter. This may be the more viable solution for smaller developments.

Hot water system

Features of a centralised hot water system can include:

- a higher coefficient of performance, generally 2.5 to 3.5 times that of a direct instantaneous hot water system
- lower peak electrical demand
- a greater upfront cost but lower ongoing operational costs
- greater embodied energy in the production of the system
- greater spatial area
- potential for longer dead legs and wait times for hot water
- a requirement for downstream billing.

Features of a direct instantaneous hot water system can include:

- a lower coefficient of performance
- a lower initial cost
- higher instant electrical demand and greater apartment electrical capacity
- small embodied energy in the production of the system
- a small spatial area
- no downstream billing: a true ‘user pays’ system
- flexibility of installation location
- no ability to diversify.

Fire pump and tank

It is preferable to locate the fire pump and associated tank at the same level. Where spatial constraints do not allow for this, consider locating the tank underground with the fire tank located directly above it.

Adaptations could consider devices such as weather event driven rainwater tanks that uses TankTalk2 (or similar technology) to provide retention and also detention, emptying in advance of rainstorm event to reduce peak stormwater flows into the community.

Roof level services

Upper roof services should be screened with an enclosure when visible from the street level. The enclosure should be set back from the edge of the roof at any point, so it is not expressed as a high parapet.

Plant equipment, screens, and lift overruns are not included in the maximum building height calculation.

Appendix 6: Environmentally sustainable design

Table 3.2 lists two documents that together demonstrate how the exemplar designs comply with the Future Homes environmentally sustainable design (ESD) requirements.

Table 3.2: ESD planning documentation guidance

Document	Its purpose is to set out ...	Applies to ...
ESD technical report *(provided with the Future Homes exemplar design package)*	document the technical assessment and approach to compliance for each exemplar, as currently designed, against the mandatory and contributory ESD elements	all schemes: there is a report for each exemplar design
Sustainability Management Plan Template *(provided with the Future Homes exemplar design package)*	assist applicants on the reporting requirements for the SMP that will be submitted with each planning application	all schemes equally

General guidance

- External components of fixed appliances such as heat pumps, tanks and condenser units should be well integrated into the design, appropriately sized and outlined on drawings.
- Safe access to PV systems should be addressed, to minimise the risk of falling at the building's edge. Barriers around PV panels should be discreet and not overshadow the panels.
- Provide a nominated space in an accessible communal area for future installation of battery storage. Batteries maximise on-site usage of energy generated by the PV system.

Sustainability Management Plan submission requirements

ESD submission instructions

As part of any Future Homes planning application referral to DTP, an applicant must submit a Sustainability Management Plan which includes a response against the mandatory and contributory elements contained in the ESD checklist. Further guidance is provided below::

- **Sustainability Management Plan (SMP)** outlining how the adapted design addresses each of the ESD requirements for the project. A template SMP has been developed which can be used as a basis. The SMP must include project responses and technical analysis outcomes demonstrating that the adapted design will meet the ESD requirements as documented in the ESD checklist (Table 3.4). To assist applicants in preparing the required technical analysis, the State has commissioned ESD Technical Reports demonstrating how the exemplar designs meet key metrics, including:
  - NatHERS modelling
  - Daylight access

- Winter sunlight
- Effective natural ventilation
- Stormwater
- Heat island effect

Where the adapted design meets the requirements to reuse technical analysis from the ESD Technical Report (refer ESD analysis reuse guidance section below) applicants can extract relevant analysis from the ESD Technical Report and include in the submitted project SMP to demonstrate compliance.

ESD checklist

An ESD checklist has been developed which summarises the key ESD commitments and inclusions underpinning the Future Homes exemplar designs (Table 3.4). Within the checklist, each ESD initiative is classified as follows:

- **Mandatory:** A mandatory minimum requirement that must be met within the adapted design. The applicant is required to demonstrate compliance against each of these requirements.
- **Contributory:** A recommended inclusion. The applicant must respond to each 'contributory' item in the checklist regardless of whether it is included in the adapted design or not. If the item is not pursued, justification must be given, or an alternative aligned initiative proposed.

A sample Built Environment Sustainability Scorecard (BESS) assessment has been provided based on full compliance with all 'mandatory' and 'contributory' items. If an adapted design does not meet any of the 'contributory' items, the applicant may need to incorporate alternative additional ESD initiatives to maintain the target BESS score.

ESD analysis reuse guidance

The applicant may reuse items of analysis within the exemplar ESD Technical Report (minimising the need to redo analysis for the adapted design) where the adapted design meets the conditions outlined in the table below and the parameters described in the technical report.

It is noted that NatHERS and STORM will still require project-specific analysis to meet regulatory requirements, however the ESD Technical Report can be used as a resource to streamline this analysis.

An overview of what needs to be maintained in the adapted design to enable reuse of the analysis, as documented in the ESD Technical Report, is outlined below. Please note that the below table is provided for guidance only, and DTP and/or the responsible authority can, at their discretion, require that applicants provide updated analysis based on their assessment.

Table 3.3: Guidance for reuse of Technical Report analysis

NatHERS	Project-specific NatHERS modelling will be required for planning and building code compliance and therefore it is expected that project-specific NatHERS modelling will be provided by the applicant. The NatHERS modelling parameters as documented in the ESD Technical Report may contribute to a streamlined NatHERS compliance approach, however we note that NatHERS ratings can be sensitive to a range of factors including site orientation, glazing extent, apartment layouts, shading and overshadowing, project location, and NatHERS software updates. Applicants should ensure that proposed glazing solar heat gain values are conducive to maintaining visible light transmission properties as required to meet daylight targets.
Daylight access	ESD Technical Report daylight analysis can be reused by applicants where the adapted design does the following for the relevant space types (relevant space types being the spaces contributing to compliance within the ESD Technical Report daylight analysis): • Glazing extent and distribution is maintained • There is no increase in shading or overshadowing to the relevant spaces • Room depths have not increased • Minimum glazing visible light transmission (VLT) and room finishes are specified as per the Technical Report daylight modelling parameters.
Winter sunlight	ESD Technical Report winter sunlight analysis can be reused where the site orientation, living room window positions, and shading/overshadowing is not increased.
Effective natural ventilation	ESD Technical Report effective natural ventilation analysis can be reused where adapted design maintains the breeze paths between openings and the maximum distances as per the mark ups provided within the reports.
Stormwater	A compliant STORM calculator will be required to be completed for the project in accordance with planning scheme requirements, therefore a project-specific STORM calculator should be provided. It is anticipated that the calculator and mark ups provided in the ESD Technical Report will streamline achievement of a 100% STORM rating for the project. It is noted that additional stormwater measures, such as stormwater detention to mitigate flood risk, may be required within planning schemes for some jurisdictions.
Heat island effect	The heat island effect calculations can be reused where the landscaped area has been maintained or increased and the roof and hardscape minimum surface reflectance values are specified as outlined in the ESD Technical Report.

ESD checklist

Table 3.4: ESD checklist – key commitments and inclusions underpinning the Future Homes exemplar designs

Topic	Initiative	Category	Guidance
OVERALL TARGET			
Built Environment Sustainability Scorecard (BESS)	The project will achieve an "Excellence" score (>70%) under the BESS assessment tool **or** an equivalent score using an equivalent ESD assessment tool such as Green Star (minimum certified, 4 Star).	**Mandatory**	A sample BESS assessment has been provided for a project incorporating all ESD initiatives both 'mandatory' and 'contributory' within this checklist. The sample BESS assessment is a generic assessment, applicable equally to all exemplar schemes. Applicant teams are required to create a project-specific BESS assessment (or equivalent) for their project
CLIMATE AND CARBON			
Electrification	No fossil fuel use on site (in operation)	**Mandatory**	Domestic hot water is recommended to be high efficiency heat pump system (noting this typically requires a method of downstream billing). Cooktops and ovens are all electric. Induction cooktops are recommended for both efficiency and performance. Where installed. conditioning systems are generally high efficiency reverse cycle split systems.
Climate change resilience	Climate change resilience: the scheme is designed to achieve a high degree of resilience to a changing climate, particularly heatwave events	Contributory	Passive design choices should ensure that reliance on active cooling systems is minimised, such as utilisation of shading systems to reduce summer solar loads. Landscape planting is drought tolerant and plentiful natural shade has been provided.

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Table 3.4: ESD checklist – key commitments and inclusions underpinning the Future Homes exemplar designs (continued)

Topic	Initiative	Category	Guidance
ENERGY EFFICIENCY – PASSIVE SYSTEMS			
NatHERS performance (continued)	7.5 Star average across all apartments	**Mandatory**	Refer to ESD Technical Report(s) for details. Best efforts have been made in the exemplar design's NatHERS modelling to reduce required glazing performance to minimise costs, while still meeting the target. However, some designs require higher performance glazing than others: - Exemplar Design A North-South: U3.0 / SHGC 0.4 - Exemplar Design A East-West: U2.91 / SHGC 0.44 - Exemplar Design B: U2.91 / SHGC 0.44 - Exemplar Design C: U2.4 / SHGC 0.4 - Exemplar Design D: U2.1 / SHGC 0.33. In adapting the design, it may be feasible to meet the NatHERS targets with reduced performance glazing systems than currently described in the Technical Report(s). This might be achieved through further refinement of the building design, including: - Optimisation of glazed area and configuration - Further optimising shading solutions - Increasing wall/roof/floor insulation performance. Care should be taken so that any further refinement does not compromise compliance with the daylight requirements.
	6.5 Star individual apartment	**Mandatory**	
	Maximum cooling loads for relevant NatHERS climate zone as per Table 1.18 in Part 1 of the *Building Future Homes – Adaptation guide*	Contributory	
Airtightness	Meet an airtightness target of <5m3/hr/m2 at 50Pa	Contributory	Materials, fixtures and fittings, window selections and detailing will be chosen to maximise airtightness performance. Generally, this will mean ensuring that systems are well sealed (including doors) and the avoidance of leaky window types (such as louvre windows). Specification of a vapour permeable membrane may be required.
	At practical completion, undertake airtightness testing compliant with AS/NZS ISO 9972:2015. Testing must be carried out on 2,000m2 or 10% of the building envelope, whichever is greater	Contributory	

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Table 3.4: ESD checklist – key commitments and inclusions underpinning the Future Homes exemplar designs (continued)

Topic	Initiative	Category	Guidance
Airtightness (continued)	(NB: building envelope is the area of the walls, roof and exposed floors. It is distinct from floor area/number of apartments)		
Thermal bridging	Reduce the impact of thermal bridging through careful design detailing and material selection	Contributory	Reasonable steps should be taken to address thermal bridging to improve overall performance and reduce the risk of condensation within the building. This is to include: - Consideration of material selection (including structural and non-structural elements). Timber, especially timber studs, are recommended - Careful detailing of structure and insulation line - Reduction of unnecessary articulation of thermal envelope - Inclusion of thermally broken or timber window frames as standard - Consideration of prefabricated external walls that have windows and insulation pre-installed, and have a higher quality of sealing than on-site construction - Condensation should be mitigated by a combination of initiatives, not any one single item. Over-specifying in one area (e.g. wall insulation performance) will not significantly mitigate the risk if other areas (e.g. thermal bridging in the window frames) are not also addressed.
	Thermally broken, timber or uPVC window frames should be used to reduce thermal bridging, even if it is not required to meet the NatHERS target	Contributory	
ENERGY EFFICIENCY – ACTIVE SYSTEMS			
System efficiency	Provide heating and cooling systems within 1 star of the most efficient appropriately sized unit available	Contributory	Where it is not feasible (due to availability of appropriately sized units or otherwise) to meet the star rating in both heating and cooling, the target can be applied to the mode with the highest annual load (typically heating).

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Table 3.4: ESD checklist – key commitments and inclusions underpinning the Future Homes exemplar designs (continued)

Topic	Initiative	Category	Guidance
System efficiency (continued)	Provide heat pump domestic hot water with a minimum Coefficient of Performance of 3.5	Contributory	If provision of a central heat pump hot water system is not viable, or proposed, BESS Energy points may need to be re-assessed. We note that typically heat pump systems are 2 to 3.5 times as efficient as direct electric systems.
	Maximum lighting power density at least 20% lower than required by Table J6.2a of the NCC 2019 Vol 1 (Class 2-9)	Contributory	Will require high efficiency LED lighting systems.
	Car parking should be either naturally ventilated, or provided with CO controlled mechanical ventilation	Contributory	
PV system	Provide a PV system with 30kW total system capacity and a method to equitably distribute that solar energy to apartments (e.g. embedded network, direct cabling to apartments, or a distribution system such as SolShare or equivalent). The PV system should be well located, appropriately orientated and unobstructed throughout the year	Contributory	Provide a 30kW total capacity. This target anticipates that there will be some methodology to distribute PV energy equitably to the apartments in the building. It exceeds that required for base building / common area demand. The appropriate strategy to distribute energy to the apartment will depend on the particular exemplar design and the needs of the applicant. Feasible approaches may include: - Implementing an embedded network. This may be infeasible for smaller developments but could become more viable for larger developments (e.g. 25+ apartments) - A smart distribution system for example, from suppliers such as Allume's Solshare that distributes PV energy throughout the building while still giving residents the flexibility of choice of electricity provider

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Table 3.4: ESD checklist – key commitments and inclusions underpinning the Future Homes exemplar designs (continued)

Topic	Initiative	Category	Guidance
PV system (continued)			- Direct cabling which involves directly wiring a portion of the PV system to each apartment, with each apartment likely to need an inverter. This may be the more viable solution for smaller developments. Where this is adopted, it is recommended to distribute the system with reference to the size of each apartment (e.g. a 1-bed apartment has 1.5kw, a 2-bed apartment has 2kW, and a 3-bed apartment has 2.5kW). While a 'well orientated' system is generally considered one facing north, a combination of east and west facing panels may be appropriate in a residential context to address morning and afternoon usage peaks. Details of safe access to PV systems should be addressed to minimise the risk of falling around the building edge. Use of balustrades or similar approaches around PV panels are generally discouraged to avoid overshadowing.
Refrigerant	Where feasible, refrigerant loads are to be reduced through reduced length of refrigerant pipe runs, and reduced Global Warming Potential (GWP) refrigerants are to be used	Contributory	Where an appropriate unit is available, specifications of systems using new, low GWP refrigerants (such as R32) is encouraged. Most suppliers can provide low GWP options in split systems.
Metering	Provide metering as follows: - PV - Common area lighting (by level) - Common area power (by level) - Common area mechanical systems (where provided) - Carpark ventilation	Contributory	These sub-meters should be connected to a system capable of collating and presenting data. This could be a building BMS or another smart building system (such as 'Buddy').

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Table 3.4: ESD checklist – key commitments and inclusions underpinning the Future Homes exemplar designs (continued)

Topic	Initiative	Category	Guidance
DAYLIGHT, SOLAR ACCESS AND MITIGATION			
Daylight access	Living/dining rooms: 80% of living areas achieve a high level of daylight and/or Bedrooms: 80% of bedrooms achieve a high level of daylight	Contributory	Current BESS pathway assumes minimum one daylight target is met, i.e. living/dining rooms or bedrooms. Refer to ESD Technical Report for details. To achieve compliance with the requirement, the following is to be assumed: - Window: Visible light transmission (VLT) (total system) 45% - Ceiling: White/light coloured (0.8 reflectance) - Wall: White/cream coloured (0.7 reflectance) - Floor: Medium coloured (0.3 reflectance).
Winter sunlight	At least 70% of apartments achieve 3hrs of direct sunlight in living areas between 9am and 3pm in mid-winter	Contributory	Refer to ESD Technical Report for details. Direct sunlight is defined as sunlight that penetrates the living room space by at least 1m at any time of the day.
Other daylight criteria	Ensure 100% of single-aspect habitable rooms comply with the room depth requirements outlined in the section 3.4 in Part 1 of the Building Future Homes – Adaptation guide	**Mandatory**	Typically, it is preferred to locate living areas towards the corner of a building to provide an opportunity to increase northern exposure. When doing so, larger apartments can be located on the southern side of the building to maximise the number of apartments with at least one northern exposed living space.
	All bedrooms must have an external window	**Mandatory**	
	Minimise south-facing apartments	Contributory	
	Maximise north facing living spaces, and north-facing glazing generally	Contributory	

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Table 3.4: ESD checklist – key commitments and inclusions underpinning the Future Homes exemplar designs (continued)

Topic	Initiative	Category	Guidance
Shading	Provide well considered shading across the development to mitigate overheating	Contributory	A strong preference is placed on operable shading to the east and west façade. Exemplar designs, as far as feasible, have been designed to maximise the effectiveness of the shading solution. Operable shading to be considered for all balconies to enable occupant control of unwanted summer gains, such as external balcony blinds/screens on west-facing balconies. When designing fixed horizontal shading for north-facing glazing, a reasonable guide is to size the shading system to achieve a 52° vertical shading angle (measured from sill to edge of shading). Shading should account for a wide-range of sun positions at different times throughout the day and across summer months. Avoid over-designing to specific times of the year (such as the summer solstice). Use of heavily tinted glazing to provide solar control is discouraged as it will compromise the useful daylight performance of spaces.
VENTILATION			
Natural ventilation	100% of apartments will achieve effective natural ventilation (cross ventilation, single sided or mechanically assisted), as defined below	**Mandatory**	Refer to ESD Technical Report for the selected exemplar design. Note: even where natural ventilation is achieved, provision of a mechanical ventilation system with heat recovery is encouraged to provide ventilation even when external conditions are adverse. Guidance should be provided to building occupants that outlines effective operation of ventilation. When designing for natural ventilation: - Where a single window provides single-sided ventilation, that window should be of a type with both high-level and low-level openings (e.g. double-hung)

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Table 3.4: ESD checklist – key commitments and inclusions underpinning the Future Homes exemplar designs (continued)

Topic	Initiative	Category	Guidance
Natural ventilation (continued)		**Mandatory**	- Where front doors are used for cross ventilation, these should be provided with either a security door that provides airflow, or an adjacent openable window (either above or beside the door) - Consider any sources of contaminants or bad smells when nominating ventilation airpaths (e.g. windows / doors near open air waste areas may not be appropriate ventilation openings). For cross-ventilation (preferred solution): - A breeze path between 2 ventilation openings, either within the room or from one room to another - Breeze path length less than 18m measured between ventilation openings and around internal walls, obstructions & partitions - Ventilation openings located either in opposite or adjacent (perpendicular) external walls, or on an external wall and an operable skylight - Size of ventilation openings greater than 2% of total floor area or 1m2, whichever is greater. The opening is the maximum allowable clear open area for the window. i.e., if floor area of room is 55m^2 then clear open area of window / door must be at least 1.1m^2 - No more than 1 doorway or opening <2m^2 between the ventilation openings - Where the breeze path travels through an internal door, that door must be provided with door catches to hold open - If on adjacent walls, ventilation openings must be at least 5m apart at their closest point. This is to ensure the space has reasonable ventilation throughout and not just in one corner

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Table 3.4: ESD checklist – key commitments and inclusions underpinning the Future Homes exemplar designs (continued)

Topic	Initiative	Category	Guidance
Natural ventilation (continued)			- If relying on a courtyard adjacent to a ventilation opening the courtyard must have a minimum depth of 3m from the window or be a minimum size of 9m2.
			For single sided ventilation: - Maximum permissible depth of room is 5m - It is preferred for openings to either be split at high and low levels, or split across the width of the room, with each opening sized at 5% of the floor area served.
			Mechanically assisted natural ventilation with heat recovery: - Delivering fresh air rates of between 2.5 - 5 L/s/m2 (results should be supported by calculations).
HEAT ISLAND			
Heat island impact	A minimum of 75% of the site area consists of materials that minimise the impact of the heat island effect	Contributory	Building and shading roof colours are generally to be light. If they cannot meet the SRI target, compliance with the heat island target is likely not achievable. Innovative low heat absorption materials of equivalent performance can be considered. Compliance is generally achieved with the exemplar designs when roofs meet the SRI requirement (as roofs plus nominated landscape areas form more than 75% of site area). In cases where this combination does not constitute 75% of the site area, a combination of either ground level finishes (e.g. driveway and courtyards) or above ground finishes (e.g. balconies) must meet the relevant target. Elements that mitigate heat island effect include: - Vegetation, in the form of either ground level planting or green roofs

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Table 3.4: ESD checklist – key commitments and inclusions underpinning the Future Homes exemplar designs (continued)

Topic	Initiative	Category	Guidance
Heat island impact (continued)	Provide the following bicycle parking:		- Hardscape elements (or roofs) shaded by overhanging vegetation, roof structures compliant with the SRI requirement (outlined below) and solar hot water panels or photovoltaic panels - Areas directly to the south of the vertical building elements, that are shaded by these elements at the summer solstice - Water bodies or water courses - Unshaded hardscape elements achieving min. SRI (3-year SRI of min. 34 or an initial SRI of min. 39) - Roofing materials, including shading structures achieving min. SRI (Roof pitched <15°– a 3-year SRI of min. 64; Roof pitched >15°– a 3-year SRI of min. 34).
SUSTAINABLE TRANSPORT			
Bicycle Parking	Provide the following bicycle parking: — Minimum 1 bicycle parking space per apartment	**Mandatory**	
	— Minimum 1 visitor bicycle parking space per 5 apartments	**Mandatory**	
Electric vehicles	A general-purpose outlet should be conveniently located near at least 5% of bike parking for charging of electrical bicycles.	Contributory	Many car stacker models have nominated allowances for car charging locations.
	Provide adequate space for future installation of electrical car charging system	Contributory	

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Table 3.4: ESD checklist – key commitments and inclusions underpinning the Future Homes exemplar designs (continued)

Topic	Initiative	Category	Guidance
STORMWATER			
Stormwater	Site will achieve a 100% STORM score	**Mandatory**	Refer to ESD Technical Report for details. To achieve the extent of permeable surface, ground level landscape (plus raingardens treating impermeable surfaces) is preferred over permeable paving or the like. Increased extent of permeability over 20% is encouraged.
	A minimum of 20% of the site area will be permeable	Contributory	
POTABLE WATER			
Fixtures and fittings	Provide high water efficiency fittings, fixtures and appliances throughout, including: — Showers: ≤ 7.5 L/min — Taps: ≥ 5 star WELS — Dishwashers: ≥ 5 star WELS — Toilet: ≥ 4 star WELS — Washing machines (where provided): ≥ 5 star WELS	Contributory	Note, the requirement applies only as far as the nominated items are being provided. For example, where an applicant provides the dishwashers, those dishwashers should be 5 star. However, the applicant is not required to provide dishwashers to achieve this item.
Rainwater tank	Provide an adequately sized rainwater tank supplying water to toilets and irrigation. 2kL per apartment is recommended, however reduction from that amount may be permitted based on a performance-based approach	Contributory	Typically, minimum rainwater tank sizes have been set in the exemplar designs through STORM analysis (refer to ESD Technical Report). Rainwater tanks should be connected to clothes washers, toilets and irrigation. Tanks should be well integrated into the design, appropriately sized and outlined on drawings where applicable.

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Table 3.4: ESD checklist – key commitments and inclusions underpinning the Future Homes exemplar designs (continued)

Topic	Initiative	Category	Guidance
LANDSCAPE AND BIODIVERSITY			
Landscape and biodiversity	At least 35% of the site is garden area, with canopy cover and deep soil maximised	**Mandatory**	Refer to Garden Area, Landscape and Greening guidance in Part 1 of the Building Future Homes – Adaptation guide.
	Private open space (including balconies and courtyards) are provided with a tap and drainage point(s)	Contributory	
	Canopy trees should be located in outdoor communal open space or common areas	Contributory	
	Canopy cover and deep soil requirements must be provided as per section 5.2 in Part 1 of the Building Future Homes – Adaptation guide	**Mandatory**	
	Landscaping is climate responsive, drought-tolerant and reduces urban heat	Contributory	
	Landscaping supports biodiversity, wellbeing and amenity	Contributory	
MATERIALS			
Embodied carbon	The development addresses embodied energy, carbon and water costs of the materials used in the building through the following:	Contributory	Care should be taken to both minimise overall volume of material used, as well specify low impact materials as a priority.

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Table 3.4: ESD checklist – key commitments and inclusions underpinning the Future Homes exemplar designs (continued)

Topic	Initiative	Category	Guidance
Embodied carbon (continued)	— Nomination of low impact materials (such as sustainably sourced timber) and/or — Careful and efficient design (particularly structure) to minimise overall material usage compared to standard practice		Designers should consider: - Necessity of a particular material / response (e.g. sustainability by subtraction). - Nominating low impact materials, including recycled materials and responsibly sourced timber.
	The environmental impact of building materials used in the development will be addressed through: — "Common uses of PVC" (as defined in Green Star) will either not contain PVC, or comply with the Green Building Council of Australia's best Practice Guidelines for PVC	Contributory	
	— All timber used on site (including hoarding and the like) will be from either PEFC or FSC certified sources; or re-used	Contributory	
	— All steel used on site will be sourced from a Responsible Steel Maker, as defined under Green Star	Contributory	
Toxicity	All materials and finishes should be of very low toxicity, such that:	Contributory	Australian suppliers can typically readily meet these requirements.

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Table 3.4: ESD checklist – key commitments and inclusions underpinning the Future Homes exemplar designs (continued)

Topic	Initiative	Category	Guidance
Toxicity (continued)	— All internally applied adhesives, sealants and carpets will meet Green Star limits on Volatile Organic Compound (VOC) content		
WASTE			
Waste	Waste areas and access pathways sized to account for likely future authority waste streams including glass, organic and e-waste streams	Contributory	Seek guidance from a specialised waste consultant.
	Waste areas located with convenient access to the collection point	Contributory	
	Provide sufficient space in kitchen cabinetry to allow for waste separation, including kitchen organics, landfill, commingled recycling and glass	Contributory	
	Waste areas located conveniently in order to maximise their utility by people with limited / reduced mobility	Contributory	
	Non-landfill waste streams areas conveniently located as landfill waste streams	Contributory	
	Provide facilities for on-site processing of organic waste	Contributory	

Appendix 7: Construction cost guidance

General guidance

The Future Homes exemplar designs have been designed to construction rates commensurate with similar products on the market. They are intended for use in Victoria, and they must be adapted to suit your site and requirements. You must obtain independent professional advice in relation to any proposal to use and adapt the plans.

A Future Homes adapted design will strike a balance between conventional approaches to construction and new ways of building, including prefabricated elements and other more holistic forms of offsite construction.

DELWP engaged a quantity surveyor to prepare preliminary cost plans for each exemplar design. The cost plans were based on partial architectural design development resolution and adopted costs current in April 2021, at the time of design.

It is assumed that a structured cost planning and value engineering process will be followed throughout design adaptation and that the project will be appropriately documented before tender.

Key cost plans assumptions

- The structural system is a concrete slab on the ground, a concrete basement, a concrete slab above mechanical stackers and conventional lightweight materials for all levels over.
- Façades are of a nature typical for apartment buildings of this type and sit within standard benchmark rates. They include glazed, window-wall systems and framed, solid-façade systems with standard-range claddings including profiled metal, cement sheet and masonry.
- Internal finishes are assumed to be of a nature typical for aparment buildings of this type: for example, engineered timber flooring, carpet and tiles.
- Building services are typical for apartment buildings of this scale and type including LED lighting, split-system air-conditioning and smoke detection.
- No allowance has been made for fire sprinkler protection other than to mechanical car parking systems.
- No allowance has been made for fire sprinkler protection to apartments, balconies, common spaces, facades and paths of egress.
- Mechanical parking is based on available supply in Victoria as of April 2021, at the time of design.

Construction cost guidance

This information reflects the exemplar designs before adaptation. Independent professional advice must be sought with any proposal to use and adapt the exemplar designs to suit your site.

Any representation as to quantities, rates or estimated constructions costs are provided for guidance and do not constitute representations as to future matters. Quantities and costs may vary considerably depending on many factors including the site, final design, specification and other factors.

- All costs are reported exclusive of GST.
- Cost escalation: in the order of 15% from April 2021 to September 2022 and allow a further 5-6% up to July 2023, and 3.5-4% p.a. thereafter.

Furthermore, the Melbourne construction market is currently experiencing high levels of cost escalation and volatility, with tenderers pricing in varying levels of risk, resulting in large spreads in tender returns. Costs are based on projects being tendered to a minimum of four interested and appropriate builders under a competitive lump sum tender.

Potential risk factors which may impact pricing include:

- Ongoing shortages of structural steel and timber and associated lead times
- Abnormal site conditions including presence of fill, contaminated soil, non-rippable rock or groundwater
- Capacity of selected tenderers to deliver an architecturally designed multi-residentail project to the required level of quality to support the required sales rates
- Capacity of selected tenderers to take on the project based on the amount of projects currently on their order book.

These risks can be managed by:

- Confirming current tenderer order book and level of interest in tendering prior to releasing to market
- Thorough vetting of previously completed projects of each tenderer
- Ensuring the contract provides a balanced approach to risk in terms of items such as extensions of time, entitlement to variations, latent conditions, etc
- Making the project as easy to tender as possible (i.e. limit tender options, provide prompt, clear and concise responses to requests for information during the tender phase, provide procurement schedules to assist with pricing)
- Running an efficient tender process and subsequent contract negotiation and finalisation
- Working pro-actively with the successful builder and taking a collaborative approach to confirming material supply and any early commitments that may need to be made
- Finalising project detailing and construction documentation in a timely fashion with the builder's input.

Table 3.5: Exemplar A construction cost guidance (all costs are reported exclusive of GST)

	North-south, at grade	North-south, with basement	East-west, at grade
Possible construction cost	**Approx. $5.8 m**	**Approx. $6.8 m**	**Approx. $5.7 m**
Construction rates (all costs are reported exclusive of GST)			
Sellable apartment area (m2)	$3,200	$2,600	$3,200
Common circulation (m2)	$1,900	$1,750	$1,850
Covered on-grade parking (not including mechanical parking units) (m2)	$850	$1,500 (basement)	$850
Balconies and terraces (m2)	$1,400	$1,350	$1,250
External works and landscaping (m2)	$450 - $600	$450 - $600	$450 - $600

Table 3.6: Exemplar B construction cost guidance (all costs are reported exclusive of GST)

	North-south, at grade	North-south, with basement	East-west, at grade
Possible construction cost	**Approx. $5.4 m**	**Approx. $6.4 m**	**Approx. $5.7 m**
Construction rates (all costs are reported exclusive of GST)			
Sellable apartment area (m2)	$2,950	$2,550	$3,100
Common circulation (m2)	$2,650	$3,000	$3,200
Covered on-grade parking (not including mechanical parking units) (m2)	$650	$1,500 (basement)	$1,100
Balconies and terraces (m2)	$1,200	$1,000	$1,250
External works and landscaping (m2)	$450 - $600	$450 - $600	$450 - $600

Table 3.7: Exemplar C construction cost guidance (all costs are reported exclusive of GST)

	North-south, at grade	North-south, with basement	East-west, at grade
Possible construction cost	**Approx. $5.6 m**	**Approx. $6.8 m**	**Approx. $6.8 m**
Construction rates (all costs are reported exclusive of GST)			
Sellable apartment area (m2)	$2,950	$2,950	$3,150
Common circulation (m2)	$2,000	$2,550	1,850
Covered on-grade parking (not including mechanical parking units) (m2)	$950	$1,500 (basement)	$800
Balconies and terraces (m2)	$1,900	$2,050	$1,250
External works and landscaping (m2)	$450 - $600	$450 - $600	$450 - $600

Table 3.8: Exemplar D construction cost guidance (all costs are reported exclusive of GST)

	North-south, at grade	North-south, with basement	East-west, at grade
Possible construction cost	**Approx. $5.8 m**	**Approx. $6.4 m**	**Approx. $5.4 m**
Construction rates (all costs are reported exclusive of GST)			
Sellable apartment area (m2)	$3,050	$2,800	$2,800
Common circulation (m2)	$2,350	$3,500	$2,700
Covered on-grade parking (not including mechanical parking units) (m2)	$1,000	$1,500 (basement)	$1,050
Balconies and terraces (m2)	$1,400	$1,100	$1,200
External works and landscaping (m2)	$450 - $600	$450 - $600	$450 - $600

The above guidance covers direct construction costs only. In addition to these amounts, the feasibility study should include a construction contingency, and other project costs including:

- land acquisition and land holding
- marketing and sales costs
- authority contributions
- demolition of existing structures, if applicable.

Additional items which could affect costs include:

- the articulation of the building form and layout
- the external wall-to-floor ratio
- the floor-to-floor height
- the structural system adopted
- internal and external finishes adopted
- the ratio of solid to glazed façades
- future changes to the legislative requirements
- the level of internal and external finishes adopted
- site-specific conditions including:
  - in-ground conditions
  - the age and condition of existing structures
  - access constraints such as overhead power lines, and loading zone availability loading zone availability
  - the location, capacity and ability to connect to existing services infrastructure
- the form of construction contract adopted.

The overall project density (size and layout of apartments) should be carefully considered in any feasibility study that is undertaken. For example, one-off costs including kitchens, switchboards, and bathrooms can have a significant impact on square metre rates. Large, open spaces will dilute these costs downwards, while smaller apartments with many rooms will make these items represent a larger share of the overall cost.

Appendix 8: Accessibility

General Notes

The following notes should be included on the adapted plans to confirm compliance with the mandatory accessibility requirements:

All identified Future Homes Accessible apartments:

- *have extended floor finishes (slip resistant flooring) under appliances and cabinets to allow for future modifications in the laundry and kitchen*
- *have secure fixing surface provided to bathroom and toilet walls for installation of future grab rails*
- *have noggings provided to meet NCC requirements where walls are not constructed of solid masonry or concrete*
- *have the centreline of the toilet pan in a combined bathroom 450-460mm from the adjacent wall and other fixtures.*

All Future Homes accessible dwelling are to be clearly identified on submitted plans.

Accessibility Diagrams

These diagrams have been reproduced with the consent of Livable Housing Australia. They are provided to assist with understanding compliance with the mandatory Accessibility design outcomes at Table 1.13 in Part 1 and represent approaches in meeting the gold performance level of the Livable Housing Design Guidelines.

Applicants may consider obtaining certification of an adaptation design and/or the final as-built product with a registered Livable Housing Australia Design Guideline Assessor. Certification from a registered assessor will enable developments to be marketed as being LHA compliant.

Figure 3.2: Apartment entrance door clear opening plan

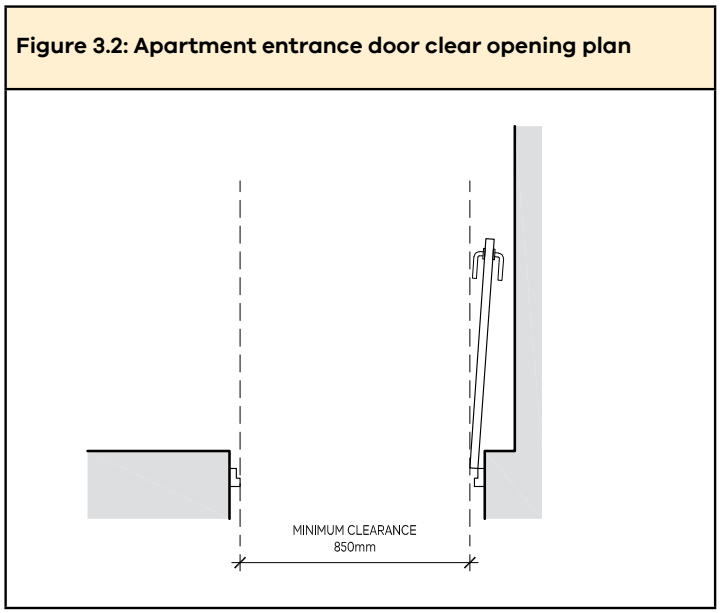
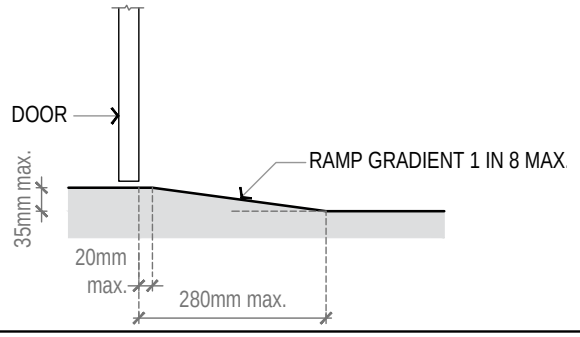


Figure 3.3: Threshold ramp section at the apartment entrance



Other design considerations at step-free apartment entries include:

- termite protection - structural depth required for termite barriers and adequate inspection zones
- weather protection - weather seals, linear drains and canopies over entries should be considered to prevent water ingress at step-free thresholds.

Figure 3.4: Toilet clearances plan when in a separate room

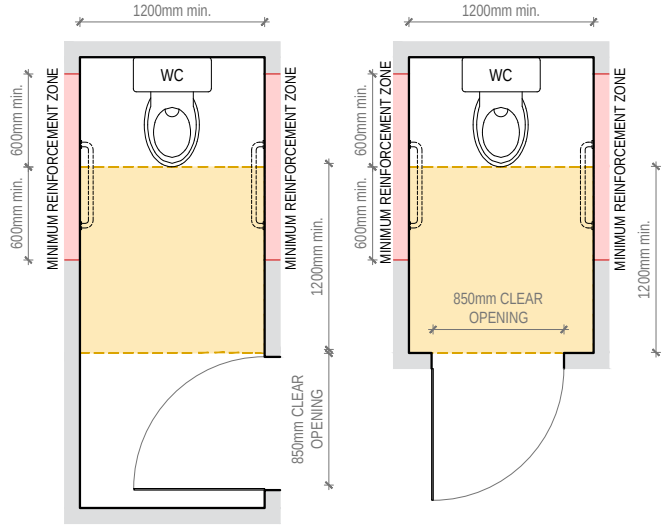


Figure 3.5: Alternative toilet clearances plan when in a bathroom

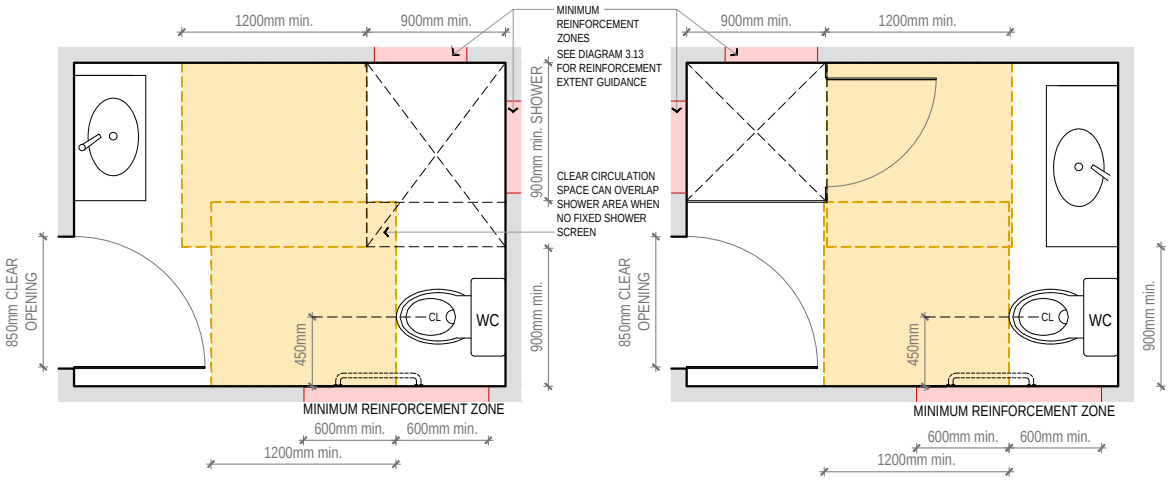


Figure 3.6: Toilet wall reinforcement elevation for future grab rails

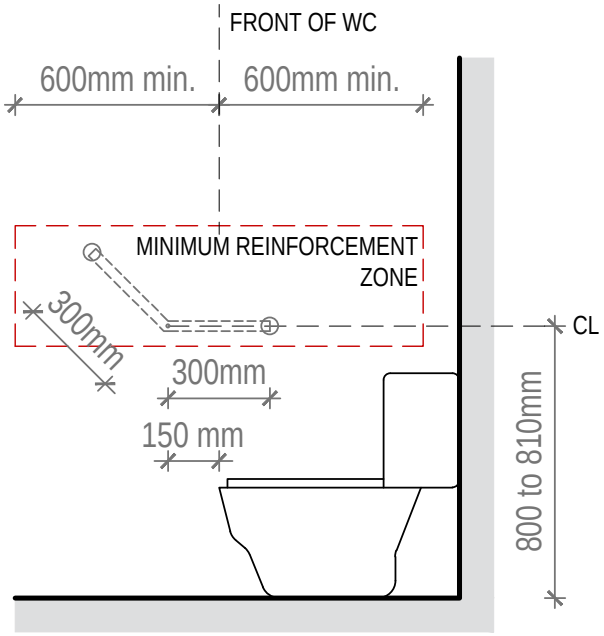


Figure 3.7: Shower clearances plan

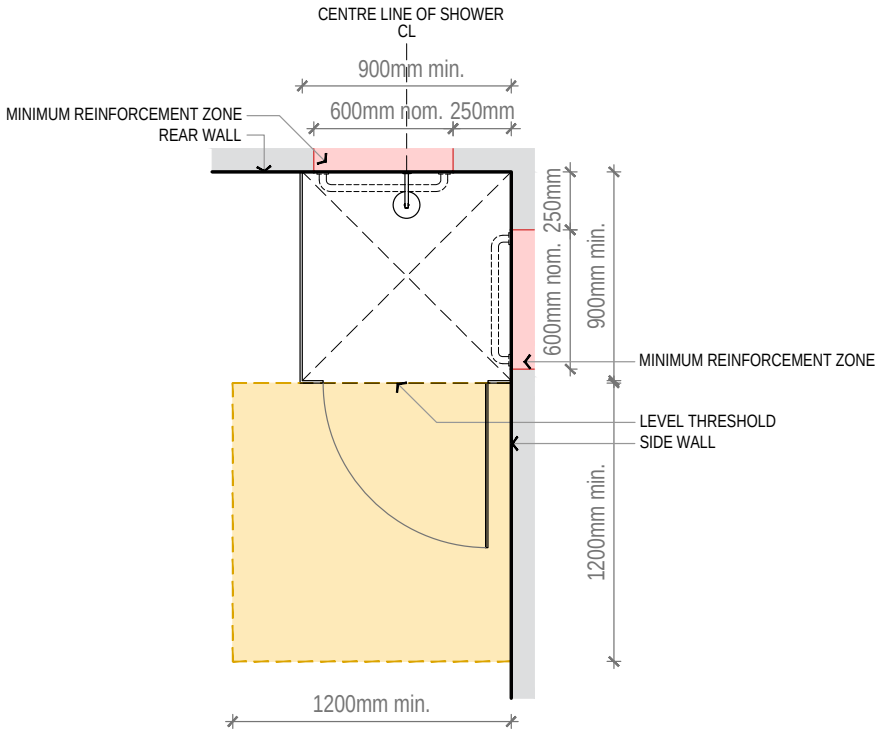


Figure 3.8: Shower wall reinforcement elevation for future grab rails

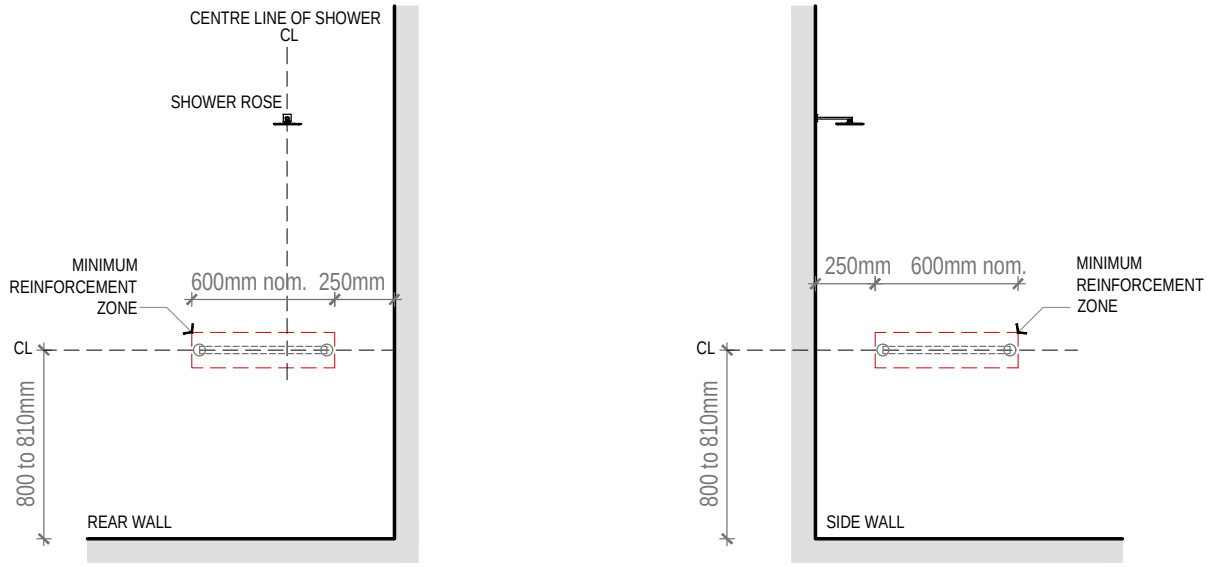
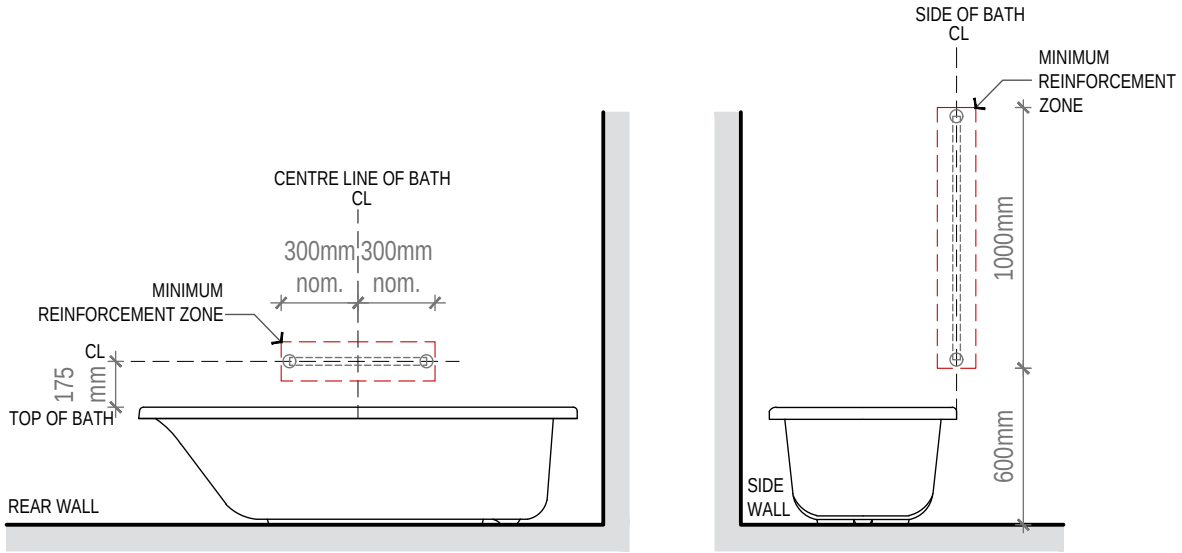


Figure 3.9: Bath wall reinforcement elevation for future grab rails



Glossary

Built Environment Sustainability Scorecard (BESS) — An assessment tool to help developers and designers show how a proposed development demonstrates sustainable design.

Exemplar design — One of the four scalable, replicable designs for three-storey apartment developments that can be adapted to various sites and which were refined from winning entries in the Future Homes architectural design competition. 'Exemplar design', 'Exemplar plan', 'Future Homes design' may be used interchangeably.

Future Homes — The Victorian Government project to increase housing diversity and density by facilitating apartment developments that are world-leading in their design quality, liveability and sustainability.

National Construction Code (NCC) —Australia's primary set of technical design and construction provisions for buildings.

Nationwide House Energy Rating Scheme (NatHERS) — A 10-star rating system to assess the thermal performance of dwellings across Australia.

Photovoltaic (PV) system — A system that uses solar panels, an inverter and other electrical and mechanical hardware to use solar energy to generate electricity.

Determining Referral authority — This term has the same definition as the Planning and Environment Act 1987. However, for the purposes of the Future Homes streamlined planning process is limited to Department of Environment, Land, Water and Planning, Melbourne Water and Transport for Victoria who have agreed to receive referral applications upfront, prior to lodgement with the responsible local authority.

Stormwater Treatment Objective - Relative Measure (STORM) — A tool to assess stormwater treatment methods.

Transport for Victoria (TfV) — Head, Transport for Victoria, a body corporate established under the Transport Integration Act 2010.

Victoria Planning Provisions (VPP) — The Victoria Planning Provisions, which are the planning policies and controls on which all land use planning decisions are made.

Water Sensitive Urban Design (WSUD) — The design of buildings, subdivisions and works to minimise the hydrological impact of urban development on the surrounding environment.

For further information please visit www.planning.vic.gov.au/policy-and-strategy/future-homes