Great Design Fast Track

Design Principles

VICTORIA State Government
Department of Transport and Planning

Acknowledgements

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Accessibility
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Version	Date	Summary of Changes

▲ Front cover image: Markham Avenue, Ashburton by Architectus and MALA Photography: Peter Clarke

Acknowledgement of Country

The Victorian Government acknowledges Victoria's First Peoples for their ongoing strength, resilience and practice of the world's oldest living cultures.

We acknowledge them as the Traditional Owners of the lands, waters and skies in Victoria and acknowledge their obligations to care for Country and maintain their deep spiritual connection to it.

We pay our respects to Elders past and present, whose knowledge and wisdom have ensured the continuation of spiritual and cultural practices.

Great Design Fast Track

The Great Design Fast Track design principles (the design principles) are intended to guide those involved in the planning and design of proposals under the Great Design Fast Track planning pathway.

The design principles describe attributes of great design that support affordable, well-designed townhouses and apartments in Victoria. The principles are interconnected and should be considered holistically. Proposals committed to great design will demonstrate these principles.

Each design principle is accompanied by suggested outcomes. The suggested outcomes are not prescriptive, but provide guidance and examples of the application of the principles in practice. There are many ways to respond to the design principles, and sometimes a single aspect of a proposal may relate to multiple design principles.

An application must specify how the proposal responds to each of the design principles.

If a proposal seeks to vary a requirement of an applicable clause of the planning scheme, the application must specify how this is acceptable using the principles.

Under the Great Design Fast Track planning pathway, the responsible authority may waive or reduce a height or setback requirement. Proposals that demonstrate a high-quality and integrated design response to the principles may apply to vary these requirements.

Waiving or varying a requirement should be determined through the zone, the proposal's response to the design principles and the surrounding amenity, urban context and strategic context.

Table 1 may be used as a guide for waiving or varying the state standard height requirement in the head clause of each zone.

Table 1 Waiving or varying the state standard height requirement

Zone	Height (Storeys)
Neighbourhood Residential Zone	Up to 3 storeys
General Residential Zone	Up to 5 storeys
Residential Growth Zone	Up to 6 storeys
Mixed Use Zone, Commercial 1 Zone or any Special Purpose Zone where Dwelling is specified as a section 1 or 2 use	Up to 8 storeys

Design Principles

01 Neighbourly homes
Enhancing local identity by embracing change and generating lasting social value.

02 Welcoming homes
Creating welcoming and safe homes that promote a sense of family and community.

03 Landscaped homes
Enhancing local biodiversity, natural systems and connections to nature.

04 Sustainable homes
Enduring and high-performing, embedding climate resilience and minimising environmental impacts.

05 Healthy homes
Enhancing health and wellbeing through integrating the natural and built environment.

06 Adaptable homes
Housing that meets the diverse and changing needs of households and families.

07 Good value homes
Supporting more affordable housing through innovative housing development and delivery models that respond to changing housing markets.

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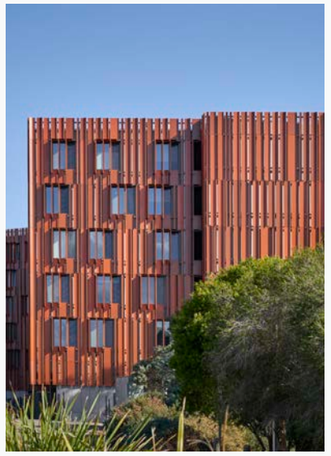


Principle 01: Neighbourly homes

Enhancing local identity by embracing change and generating lasting social value.

Suggested outcomes:

- A range of households have affordable access to homes in locations with good transport, jobs and services
- High-quality street interfaces contribute to the public realm and provide a clear sense of address
- Any increased height and decreased setbacks are sensitively designed to support housing supply while enhancing local identity
- New or improved through-site links enhance local connectivity
- Siting, layout and modulation of form manages surrounding amenity and solar access
- A beautiful addition to the neighbourhood, positively contributing to local identity.

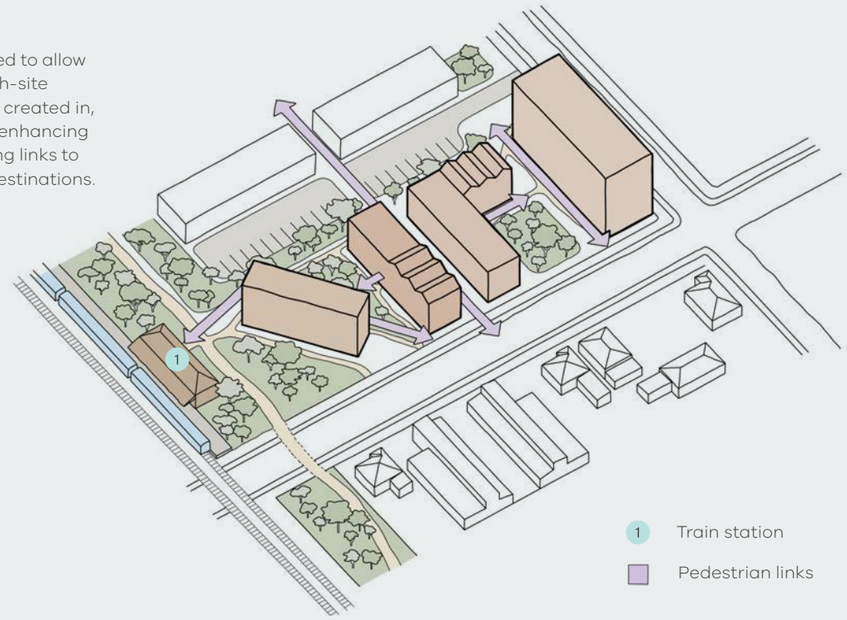
▲ 1.01 Clyde Street Mews, Thornbury VIC - Six Degrees Architects

A friendly interface between private open space and the public realm fosters a sense of community. Clyde Street Mews by Six Degrees Architects uses a variety of durable materials and landscape treatments to provide a clear boundary between public and private, while allowing visual connection and a sense of inclusion through the development.

01 Neighbourly homes

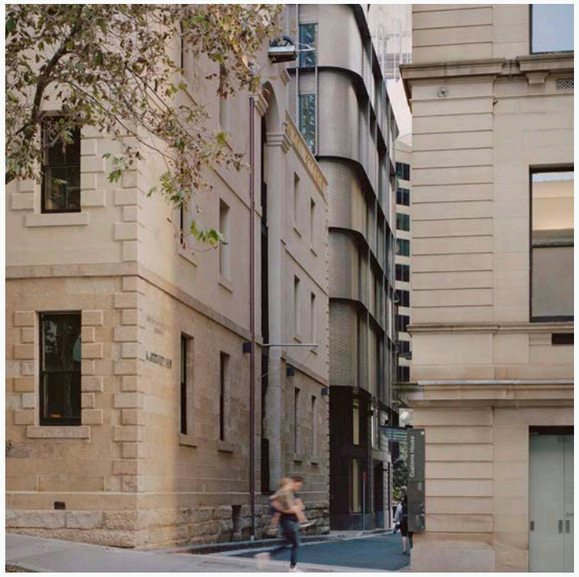
01 Neighbourly homes

Figure 1.1 Buildings are designed to allow for pedestrian links and through-site connectivity. New networks are created in, around and through buildings, enhancing existing desire lines and creating links to neighbourhood features and destinations.



1.02 Nightingale Village, Brunswick VIC - Breathe and Kennedy Nolan

High-quality, pedestrian-focused street interfaces positively contribute to the public realm and provide a clear sense of address. Skye House by Breathe and Leftfield by Kennedy Nolan are both part of Nightingale Village, Brunswick - a collection of six neighbouring buildings each designed by a different architect. Every building carefully curates the interface between ground floor uses and the footpath. Seating nooks, canopies, and operable glazing provide connectivity, encourage interactions and provide cues for wayfinding.



1.03 Quay Quarter Lanes (8 Loftus Street), Sydney NSW - Studio Bright

A sophisticated approach to materiality can reference its context and make a positive contribution to the local identity. Quay Quarter Lanes (8 Loftus Street) by Studio Bright presents a simple, modern form and façade within a sandstone heritage context. The carefully considered façade consisting of solid and hit-and-miss brick, steel detailing and perforated metal screens creates visual delight, while interpreting its context in a progressive way.

1.04 Mundingburra Housing, Townsville QLD - Counterpoint

Considered modulation of form can break down building mass to address the human scale, define entries and create an engaging street interface. Responding directly to its context, Mundingburra Housing reflects its post-war suburban location through its built form and use of materials. Splashes of colour add vibrancy to the streetscape and reinforce each home's identity. Landscaped pockets with deep soil planting further enhance the streetscape and allow for a canopy tree to each dwelling.

01 Neighbourly homes

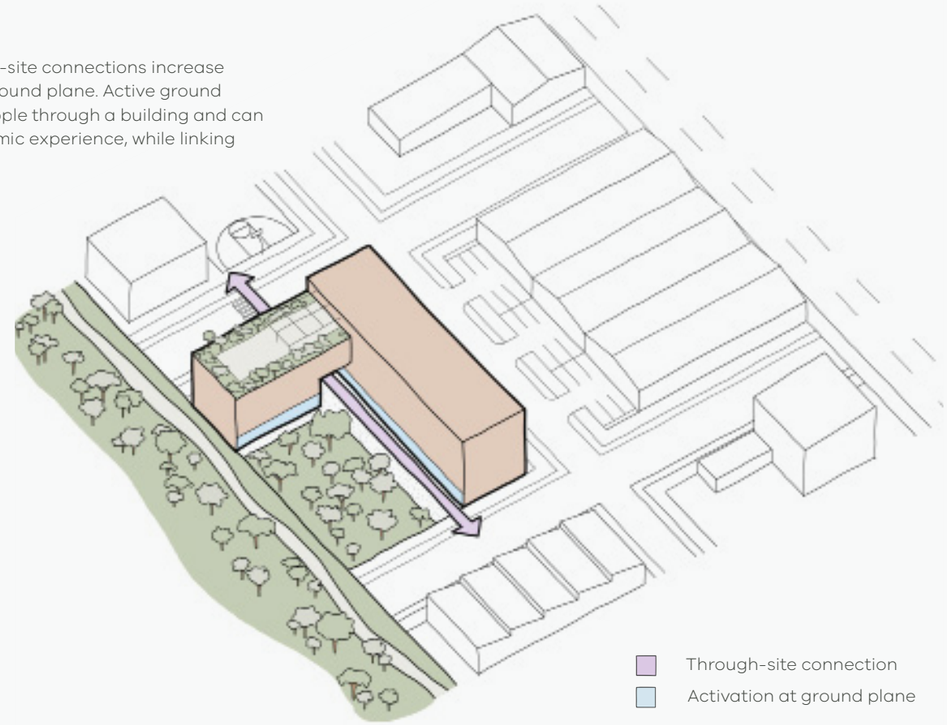
Pedestrian-oriented laneways allow connectivity of public spaces, as well as passive surveillance. One Central Bedford provides a mix of apartments and townhouses. People-focused open space is provided through careful siting of the built form, and is connected by laneways, residence entries, and landscape. A consolidated car park allows for a mix of communal courtyards and laneways that promote social encounters between residents, with all dwellings enjoying dual aspects and views, and views over the open spaces.

1.05 One Central Bedford Apartment, Christchurch, NZ - Architectus

Considered site massing and contextual, high-quality materials positively contribute to local identity. Balfe Park Lane (below) is composed of four buildings surrounding an elevated central courtyard, with a pedestrian path linking Nicholson Street to the park. A robust red brick and concrete palette honours the local context and strengthens the buildings' identity. Townhouse entries and upper-level balconies activate the park edge. Diverse dwelling types, generously sized apartments, and dual-aspect layouts elevate the internal living experience.

1.06 Balfe Park Lane, Brunswick East VIC - Kerstin Thompson Architects

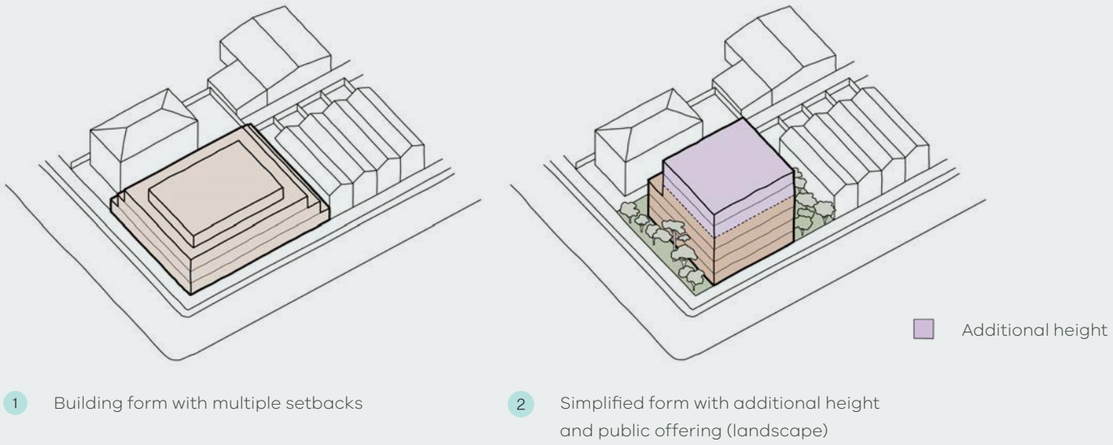
Figure 1.2 Through-site connections increase activation at the ground plane. Active ground floor uses draw people through a building and can create a rich, dynamic experience, while linking destinations.



1.07 Westhof Housing, Zürich, Switzerland - Conen Sigl

Shared circulation spaces and links through buildings connect the public to existing pathways and transport. This encourages larger developments to remain integrated and connected to their surroundings. Westhof Housing by Conen Sigl uses bold colours to guide wayfinding in its through-site links, while glazing enhances light, visual connections, and mirrors views of the courtyard beyond.

01 Neighbourly homes



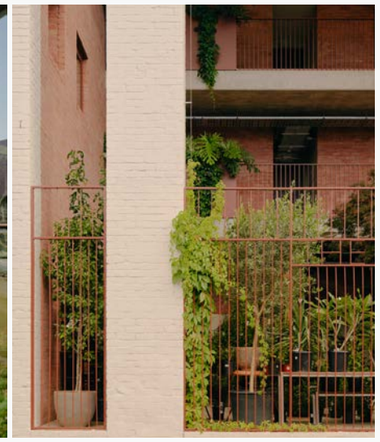
1 Building form with multiple setbacks

2 Simplified form with additional height and public offering (landscape)

Figure 1.3 A nuanced approach to context analysis informs a building's massing. A proposal that includes multiple setbacks in its form can be questioned. If appropriate, prioritise quality shared landscape for the public realm, and simplified building form. If a proposal demonstrates a high-quality realisation of all principles in this document, additional height can be contemplated in line with Table 1 on page 3.

▲ 1.08 Mari-Mari-Ba Affordable Housing, Brisbane QLD - Deicke Richards for the Queensland Department of Housing with the Office of the Queensland Government Architect

Addressing and enhancing local identity can generate lasting social value. The Mari-Mari-Ba housing development, built on a site with rich cultural and community history, offers support services and communal spaces for residents and visitors. First Nations voices were integrated and culturally appropriate designs achieved. A community hub at the front of the site includes support services, amenities and utility spaces, while the more private and culturally sensitive spaces are located deeper within the site.



▲ 1.09 The Nursery on Brunswick, Fitzroy VIC - Clare Cousins Architects

Careful consideration of scale and materiality can craft friendly and enduring buildings. Formerly home to the Fitzroy Nursery, The Nursery on Brunswick by Clare Cousins Architects is a mixed-use building that honours its past with a central garden. Unlike typical yield-focused developments, the central nursery garden prioritises amenity over density, offering light, greenery and garden views for both residents and passers-by. The proportions and datum of the openings in the facade align with those of the immediate neighbouring buildings.

▲ 1.10 Hope Street Housing, White Gum Valley WA - Officer Woods Architects and MDC Architects

Considering a building's street interface holistically as part of a project improves the experience for the broader community. Hope Street Housing by Officer Woods Architects and MDC Architects offers a layered approach to public and private landscape, creating a humble yet beautiful addition to its neighbourhood.

Principle 02: Welcoming homes

Creating welcoming and safe homes that promote a sense of family and community.

Suggested outcomes:

- Communal spaces are well-connected, comfortable and easily accessible
- Communal spaces encourage incidental social interactions and support child, family and community-friendly outcomes
- Spaces connecting the street to the home are safe, inviting and attractive
- Dwelling entries and thresholds create a welcoming sense of arrival
- Pedestrian and bicycle site access is prioritised through safe and direct paths with clear entry points
- Bicycles and micromobility devices have convenient access to secure and accessible storage
- Car parking reductions are offset by the increased provision of bicycle parking and facilities.

▲ 2.01 Kings Crescent Phases 1 & 2, London, UK - Henley Halebrown

Multi-use, shared outdoor spaces encourage activation. Kings Crescent Phases 1 & 2 is a regeneration project that combines adaptive reuse of existing structures with the construction of new dwellings. It features revitalised shared public spaces for multiple uses and a new pedestrian network, reintegrating the estate into the city.

02 Welcoming homes

Figure 2.1 Bike storage is prioritised and well-located. It can be visually connected to the building's communal spaces, for example its circulation and/or lobby area, as well as the public realm, and incorporate higher than statutory bike parking numbers.

▲ 2.02 ParkLife, Brunswick VIC - Austin Maynard Architects

Celebrating bike storage promotes its use as a mode of transport. At Parklife by Austin Maynard Architects, the provision of secure and easily accessible bike storage encourages the use of active transport. Access to natural light, ventilation and greenery elevates this space.

▲ 2.03 38 Albermarle Street, Kensington VIC - Fieldwork

Well-located communal uses foster incidental social interactions between neighbours, supporting a diverse range of households. 38 Abermarle Street (right) includes a dogwashing bay which creates a pet and family friendly environment.

▲ 2.04 A House for Artists, London, UK - Apparata Architects

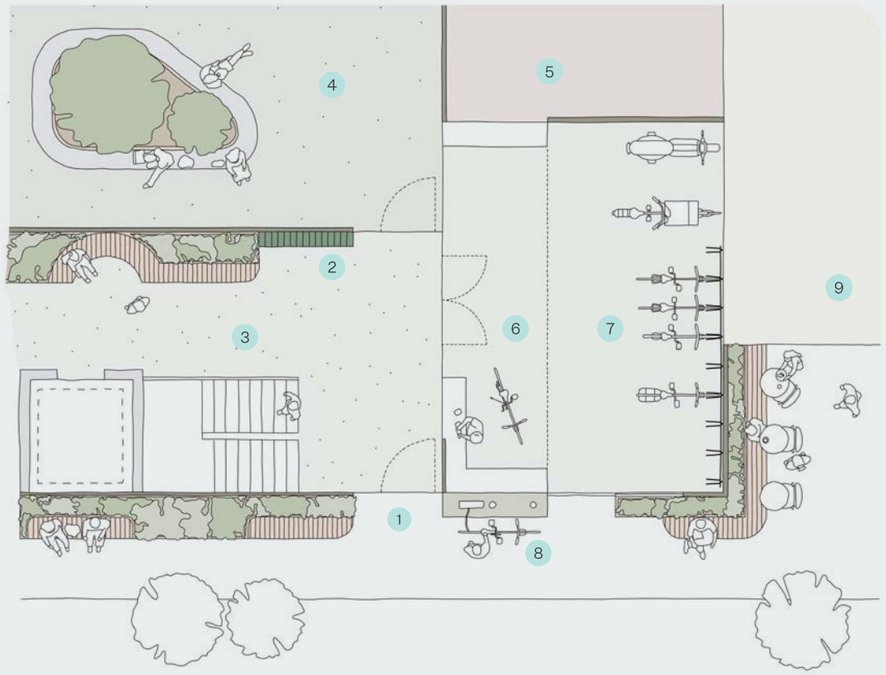
Shared spaces provide amenity to complement denser living while also fostering a sense of community. In A House for Artists by Apparata Architects, a well-located tenancy on the ground floor is used by residents and provides space for a public art program.

▲ 2.05 Ecoquartier Des Noes, Val-de-Reuil, France - Philippe Madec Atelier

Ecoquartier Des Noes by Philippe Madec Atelier provides a community program which includes space to accommodate childcare.

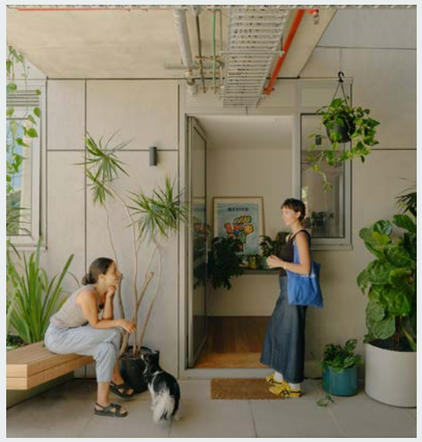
Figure 2.2 Consolidate car parking where possible, either in a basement or a separate location, accessed by a single crossover. If central accessways with multiple crossovers are unavoidable, these spaces should be designed as shared zones that prioritise pedestrians through the inclusion of landscape and permeable surface materials.

Figure 2.3 Activated communal spaces create opportunities for incidental interactions. These include circulation spaces such as lobbies, stairs and corridors, with connections to residents' amenity spaces. Building a dynamic relationship between the lobby, external residents' spaces and shared uses is encouraged.



1 Entry
2 Mailboxes
3 Lobby & circulation
4 Atrium
5 Communal room
6 Workshop
7 Bike storage
8 Bike pump
9 Cafe

▲ 2.06 Aboriginal Housing Victoria, Reservoir VIC - Breathe



▲ 2.07 38 Albermarle Street, Kensington VIC - Fieldwork

The design of dwelling entries can create a welcoming sense of arrival. The thoughtful use of artwork, colour, seating and/or glazing to identify individual dwelling entries elevates the arrival experience and encourages a sense of ownership.

▲ 2.08 Marmalade Lane, Cambridge, UK - Mole Architects

The building's connection to the street is designed to be attractive and offer a safe and inviting experience. Marmalade Lane by Mole Architects creates an accessible, family-friendly interface that includes front garden area, public seating and paving treatment.

Figure 2.4 The ground plane of a new building is an important opportunity to activate and positively contribute to the streetscape. Design ground floor program such as retail and commercial space, resident amenities (for example, a workshop) as well as ground floor dwellings, with considerations to weather protection, landscape and the human scale.

02 Welcoming homes

A thoughtfully designed journey from the street to home features safe and inviting circulation spaces. At Wohnregal Apartments & Ateliers in Berlin, an open stair on the building's façade offers an engaging and active experience. The view as a resident while circulating the stair is of the nearby tree canopy and city beyond; meanwhile the passerby can see at a glance the active lives of the residents within.

2.09 Wohnregal Apartments & Ateliers, Berlin, Germany - FAR frohn&rojas

2.10 Westhof Housing, Zürich, Switzerland - Conen Sigl

When shared indoor and outdoor spaces are designed to the highest quality, these foster a sense of belonging and encourage active use. Westhof Housing affordable apartments by Conen Sigl offers a diverse range of communal outdoor spaces. An elevated central courtyard and a pergola-covered rooftop terrace are connected by an open stair, and create opportunities for various forms of communal use.

Figure 2.5 Privacy control for residents can be user-driven. Blinds, curtains and operable screens can be considered as privacy measures that allow residents to make independent decisions about their priority between natural light, ventilation and privacy. Building separation is enabled using meaningful landscape and communal open space.

Figure 2.6 Vertical circulation is an opportunity to create moments of interaction between residents. It can be a tool to animate a façade, alluding to the lives of the building within. An open or glazed stair also provides an inherent break in building form which can assist with modulation and articulation of form.

2.11 122 Roseneath Street, Clifton Hill VIC - Fieldwork

A considered journey from street to home includes attractive and enjoyable circulation spaces. At 122 Roseneath Street by Fieldwork, the site layout and consolidation of parking at ground level enables the creation of two linear gardens elevated at the first-floor level. The primary circulation paths carve through the centre of these gardens, and make use of the two buildings' separation.

Principle 03: Landscaped homes

Enhancing local biodiversity, natural systems and connections to nature.

Suggested outcomes:

- High-quality, integrated gardens create a safe, healthy and invigorating environment
- Green spaces are located on street frontages or public interfaces to enhance the public realm
- Landscaping contributes to tree canopy cover, facilitates deep soil planting and improves public and private amenity
- Where the ground plane is unavailable, landscaping is embedded across the building.

▲ 3.01 Markham Avenue , Ashburton VIC - Architectus

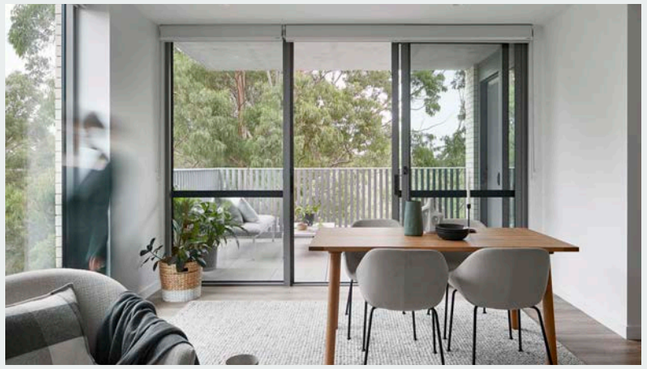
Integrated communal gardens with multiple connection points to the broader neighbourhood provide a connected and healthy place for users to pass through. Markham Avenue by Architectus is connected to its wider context with a through-link from the street to the creek, inviting people to move through the site. Multiple access points and extensive pathways allow residents to connect to their immediate landscape, and to the wider neighbourhood. Retaining significant existing trees on the site, the development was planned around a central garden. The established trees bring significant value and have become the heart of the development, with dwellings planned to have an outlook to either the central green space, or the adjacent creek and parklands.

03 Landscaped homes

03 Landscaped homes

Figure 3.1 Early integration of landscape is a key design driver, to inform a building's siting and layout. Large green spaces can be used as building separation and resident amenity. All planting should be connected to an irrigation system for maintenance.

1. Design around existing landscape that is of retention value
2. Provide central landscaped amenity so that all dwellings have a view to green
3. Landscape can be considered on the vertical plane
4. Landscaped rooftop amenity
5. Balcony planters designed with adequate soil depth to accommodate meaningful planting

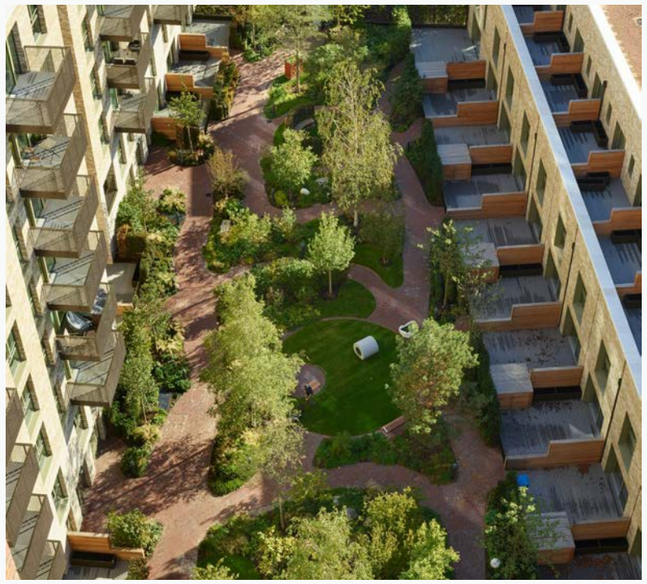


▲ 3.02 Markham Avenue, Ashburton VIC - Architect: Architectus, Landscape: MALA

A direct view to landscape from a dwelling is positive for mental health. Markham Avenue by Architectus orients dwellings to either a central garden designed into the development, or to neighbouring parklands.

▲ 3.03 Hope Street, White Gum Valley WA - Architects: Officer Woods Architects and MDC Architects, Landscape: Aspect Studios

Integrating native, deep soil planting in the public realm improves amenity and creates habitat for native wildlife. Hope Street by Officer Woods Architects and MDC Architects includes a meaningful setback for deep soil planting and gardens with high permeability. By providing low-height solid fences, partially obscured views to private gardens contribute to the streetscape.



▲ 3.04 South Gardens, London, UK - Architect: Maccreanor Lavington, Landscape: Gillespie's

Planting can be integrated with a layered horizontal and vertical approach to provide a view to landscape from each dwelling. South Gardens by Maccreanor Lavington includes vertical surfaces as green walls, landscaped terraces, green roofs and a central residents' garden. These landscapes are maintained via dripline irrigation systems which are fed by rainwater harvesting. Plant selection, to create priority habitats, has been incorporated on the rooftops to attract and encourage insects and rare birds.

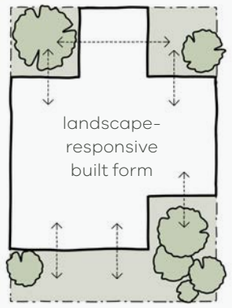
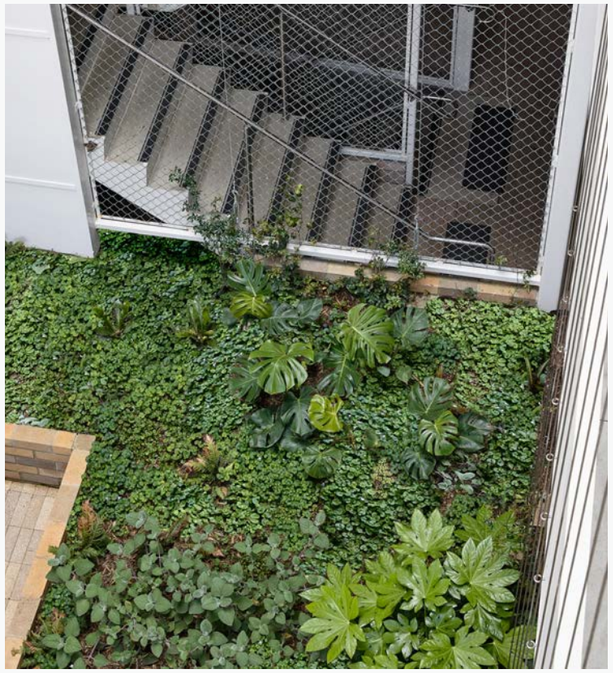


Figure 3.2 Consider landscape as an integral part of the building design, prioritising direct and usable connection with internal spaces. It should not be the product of narrow building offsets that create low-amenity and unviable garden areas.

Planting in common areas provides equitable access to landscape. Nightingale Ballarat by Breathe includes raised planters and seating that populate the ground plane, and link to external circulation.



▲ 3.05 Nightingale Ballarat, Ballarat VIC - Architect: Breathe, Landscape: Openwork

03 Landscaped homes

Figure 3.3 Consider habitat and refuge for local species in the design and layout of developments. Canopy cover can be provided to encourage habitat pathways and connection to ecology within and beyond a site's boundaries.

New canopy trees

Existing trees on site

Established surrounding greenery

Habitat pathway

3.06 Easy Street Living, Byron Bay NSW - Architect and Landscape: DJF Architects

Locating landscaping as a buffer to the public realm not only softens a building's edges, but can also contribute to a neighbourhood's canopy cover, if significant trees are accommodated. Easy Street by DJF Architects thoughtfully incorporates green spaces into the public realm, including creepers to external circulation and between building forms. Affordable, durable building materials become recessive to landscape, creating a healthy and invigorating environment.

3.07 Arkadia, Sydney NSW - Architects: Breathe and DKO, Landscape: Oculus

Rooftop gardens with interactive spaces allow for open outdoor space traditionally lost in higher density living. Arkadia by Breathe and DKO contains productive garden allotments available to each resident and a communal edible garden, barbecue facilities, a chook pen and sheltered pavilion areas.

3.08 GROW Housing, Calgary, Canada - Architect and Landscape: Modern Office of Design and Architecture

Productive rooftop planting reduces the heat island effect. GROW Housing by Modern Office of Design and Architecture uses a ramping roofline to create a sprawling urban farm. Residents come together to care for the garden, helping to build resilient communities, while also reducing the heat island effect.

Principle 04: Sustainable homes

Enduring and high-performing, embedding climate resilience and minimising environmental impacts.

Suggested outcomes:

- Upfront embodied carbon is minimised
- Attractive and durable materials reduce future maintenance and building defects
- Energy efficient design reduces future operating costs
- Resilient and responsive to current and future climate and weather events
- Fully powered by renewables, maximising on-site generation and grid-responsiveness
- Highly water efficient with embedded sustainable water management infrastructure
- Embedded low waste strategies and infrastructure supports sustainable living
- Construction impacts minimised through modern methods and innovative solutions, ensuring high-quality homes with a long-term legacy.

▲ 4.01 Monash University Gillies Hall, Frankston VIC - Jackson Clements Burrows

Implementing a cross-laminated timber (CLT) approach decarbonises a building's structure by reducing greenhouse gas emissions and storing carbon dioxide. Gillies Hall by Jackson Clements Burrows employs a CLT structure and achieves Passive House Certification. It is an industry-leading project in sustainable multi-residential accommodation.

04 Sustainable homes

04 Sustainable homes

GUIDING PRINCIPLES IN SUSTAINABLE DESIGN

- LIFECYCLE DE-CARBONISATION
- MATERIAL CIRCULARITY
- NET-POSITIVE ENERGY
- HIGH-PERFORMING THERMAL ENVELOPE
- WATER RESILIENCE
- NO WASTE TO LANDFILL (DEMO. & CONSTRUCT.)

▲4.02 Ferrars & York, South Melbourne VIC - Six Degrees Architects and Hip v. Hype

Ferrars & York by Six Degrees Architects and Hip v Hype is powered by 100% renewable energy and achieves an average 8.6 star NatHERS rating for dwellings. This NatHERS rating results in consistent air temperatures, better acoustic performance, lower energy bills and a lower carbon footprint. It was constructed with low impact, responsibly sourced products and materials and includes open walkways and a communal rooftop terrace.

▲4.03 Wilam Ngarrang Retrofit, Fitzroy VIC - Kennedy Nolan

Wilam Ngarrang Retrofit by Kennedy Nolan is a refurbishment that has extended the life of the 70's apartment building, improving building performance and amenity for residents. It includes net-positive energy output and minimised carbon output.

CARBON EMISSIONS

Reducing carbon emissions is critical and should be demonstrated and incentivised at every level. Immediate, ambitious action is required within the built environment considering that construction and operation of buildings accounts for 37% of global carbon emissions.*

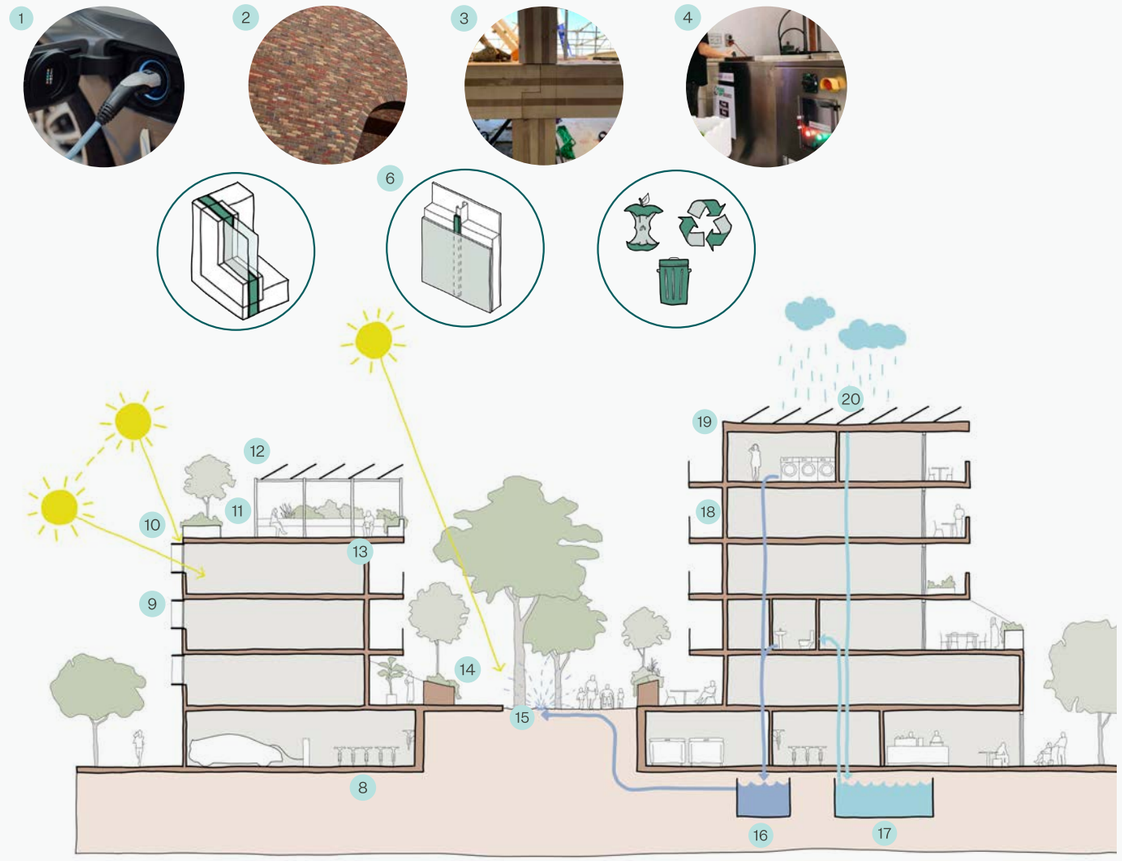
The Victorian Government's Climate Change Strategy sets an objective to hit net-zero by 2045. This aligns with the Australian Institute of Architects 'Climate Action Now' report** which outlines the need for a 40% reduction in carbon by 2030, and provides a pathway to achieve this. These reductions are compared to emission levels in 2005.

* 'Building Materials and the Climate Constructing a New Future' UN Environment Programme, Report September 2023
** 'Architecture Industry Decarbonisation Plan 2025-2030' For a pathway to net-zero emissions for a sustainable future - Interim Report November 2024

VENTILATION

Each proposed dwelling must be provided with an effective ventilation strategy that is low-energy, energy efficient and supports a healthy indoor environment.

Aim to naturally ventilate dwellings in the first instance. Where this is not possible, single-sided ventilation with mechanical assistance must be adopted, preferably by incorporation of a heat-recovery-ventilation (HRV) system as a low-energy, high-efficiency measure to maintain a healthy indoor environment. External conditions mean that it is not always possible to rely solely on natural cross-flow ventilation.

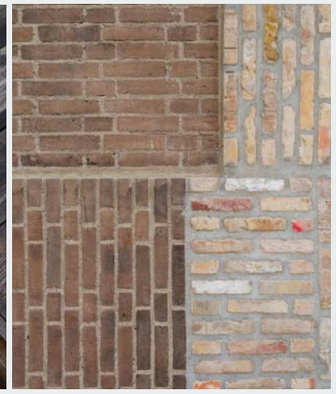


1 Electric vehicle-to-grid
2 Durable, recycled materials
3 De-carbonised structure
4 Composter
5 Thermally broken windows
6 Eliminate thermal bridging
7 Considered waste recovery room
8 Secure and activate bicycle parking (not in basement)
9 Shading - north, east and west
10 Parapet edge planting
11 Weather-protected rooftop amenity
12 Maximised rooftop solar photovoltaics (PV)
13 External residents' circulation - cross flow ventilation
14 Significant planters facilitating privacy
15 Deep soil planting and habitat recovery
16 Grey water collection for irrigation
17 Rainwater collection
18 Increase air tightness and heat-recovery ventilation system
19 Considered building orientation, prioritising northern aspect
20 Rain collection

Figure 4.1 Building orientation and passive design first-principles planning have the greatest impact on the quality of habitable spaces. Simple building form allows for a rational structural grid, and improves buildability, which gives a greater chance for designed performance to be achieved. A simple, stacked building form also eliminates external spaces, like balconies, being built over habitable space. In turn, this reduces a building's heat loss, and the opportunity for waterproofing issues. Sustainability infrastructure should be prioritised, with consideration to the above design inclusions.

Durable materials minimise ongoing maintenance requirements. Gen Y Housing by Cast Studio combines durable metal cladding and brickwork. It achieves 'Gold Medal' lifecycle analysis by eTool, and meets the principles of Bioregional's 'One Planet Living' sustainability framework. It demonstrates that smaller footprint living can provide private and communal outdoor space at an affordable pricepoint.

▲ 4.04 Gen Y Housing, Perth WA - Cast Studio



▲ 4.05 Resource Rows, Copenhagen, Denmark - Lendager

Recycled materials should be considered in the early design phases of a project. Resource Rows by Lendager uses up-cycled bricks, waste wood and windows from abandoned structures, saving 29% of carbon dioxide emissions.

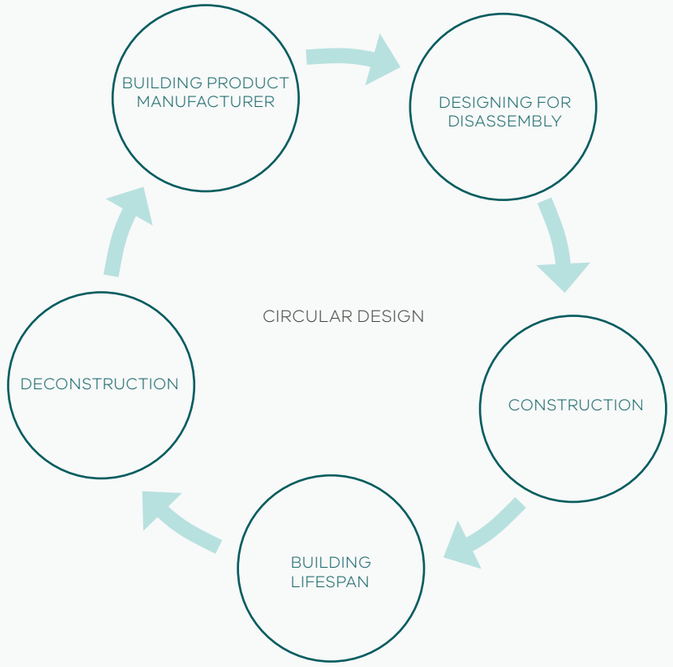


Figure 4.2 Building design should consider the circular economy of construction from the initial design phase through to deconstruction.

What considerations are within the circular economy steps?

BUILDING PRODUCT MANUFACTURE
- Material passport
- Sustainable natural resources
- Recycled materials

DESIGNING FOR DISASSEMBLY
- Consider time, tools and effort required for disassembly
- Simplify systems and building elements, avoiding irreversible build-ups

CONSTRUCTION
- Reduce construction waste
- Consider modern methods of construction

BUILDING LIFESPAN
- Durable, recyclable materials
- Regular maintenance
- Extension of construction services life
- Provide community shared infrastructure and tools

DECONSTRUCTION
- Decrease emissions, disruptions and waste by:
  - Selective demolition
  - Adaptive re-use

▲ 4.06 High Street Apartments, Thornbury VIC - Gardiner Architects

Cross-laminated timber (CLT) can sequester carbon, has a high thermal performance and can increase the speed of construction. Replacing one cubic metre of concrete with timber saves 1 tonne of carbon. High Street Apartments by Gardiner Architects employs CLT and achieves an 8.4 star NatHERS rating on average. CLT is prefabricated in a factory and represents a reduction in construction waste.

Principle 05: Healthy homes

Enhancing health and wellbeing through integrating the natural and built environment.

Suggested outcomes:

- Indoor spaces support occupant health and provide natural light, good air quality, thermal and acoustic comfort, and outlook
- Accessible and inviting outdoor spaces enable daily activities and interactions for all residents
- Solar access is maximised and southern orientations minimised across living areas and bedrooms of all dwellings
- Well-ventilated homes maximising cross-ventilation and dual-aspect dwellings.

5.01 wij_land, Amsterdam, Netherlands - Space & Matter

External circulation allows for dual aspect dwellings and natural cross flow ventilation. Wij_land by Space & Matter is a self-build collective made up of a community of diverse residents wanting to live more sustainably - both materially and socially. Single-loaded apartment types are accessed via external circulation, adjacent to each dwellings' balcony. This balcony circulation arrangement encourages informal encounters while also allowing more daylight to apartments through dual-aspect orientation.

05 Healthy homes

5.02 Nightingale Evergreen, Brunswick VIC - Clare Cousins Architects

Flush balcony transitions, direct sunlight, and views to green contribute to a healthy dwelling. Nightingale Evergreen orients dwellings north, towards a community park. Its dwellings average 8.1 stars NatHERS rating, and include flush balcony transitions.

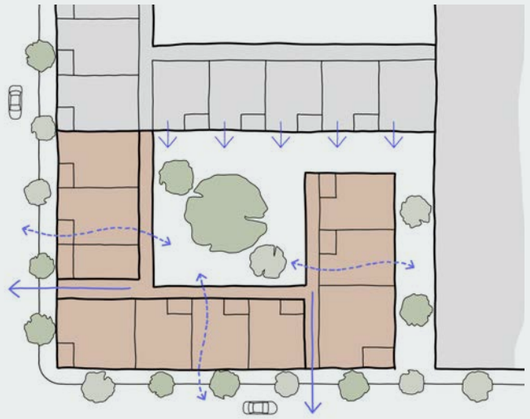
5.03 38 Albermarle Street, Kensington VIC - Fieldwork

38 Abermarle Street by Fieldwork employs open breezeway circulation with circular voids between levels to facilitate dual-aspect apartments. It also creates the opportunity for planting in communal corridors. Visual connection between levels encourages neighbourly interaction and creates a sense of openness.

1 Building mass results in unusable narrow areas around site boundary, with a harsh interface toward existing neighbours

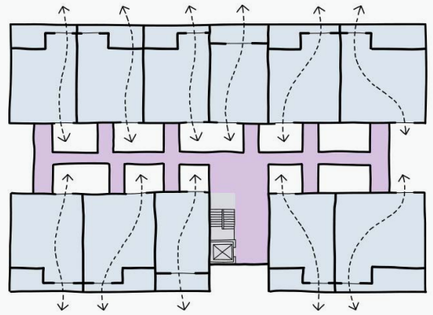
Neighbouring building
Development opportunity

Figure 5.1 Consider building massing to avoid leaving small and unusable areas around the site boundary. By shifting a building's massing to the perimeter of its block and creating a central courtyard, there may be the opportunity to increase views to green space for residents and their neighbours, as well as cross-flow ventilation.

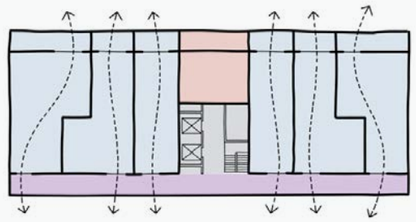


2 U-shaped massing creates usable central greenspace, with more desirable views for existing neighbours and new residents. Cross-flow ventilation is available to all new dwellings.

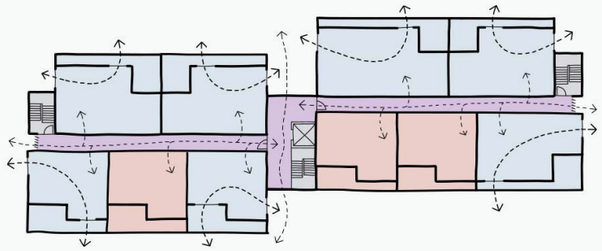
APARTMENT TYPOLOGIES SUPPORTING NATURAL VENTILATION



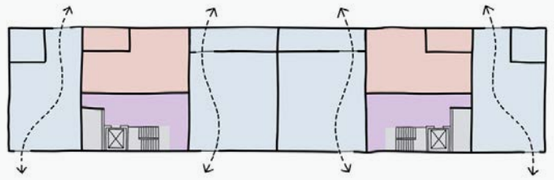
1 Open corridor
'breezeway' typology



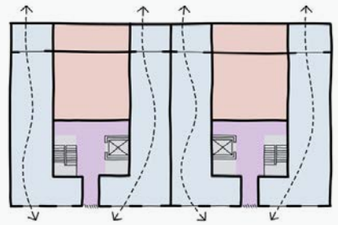
2 Dual aspect apartments
'single-loaded' typology



3 Ventilated corridor
'semi-open' typology



4 Short corridor, small community
'mansion' typology (shallow)



5 Short corridor, small community
'mansion' typology (deep)

Figure 5.2 Planning of building orientation and circulation has a significant impact on a dwelling's ability for cross-flow ventilation. Air-flow through a dwelling is dictated by its orientation, internal planning, and the number of external building walls it accesses. Where single-orientation south-facing glazing cannot be avoided, a dwelling's proportions should be shallower and wider, so as to have greater access to natural light. North-facing dwellings can be designed to gain adequate natural light by applying a deeper typology.

Circulation
Dwelling that could achieve cross-flow ventilation
Dwelling that would not achieve cross-flow ventilation

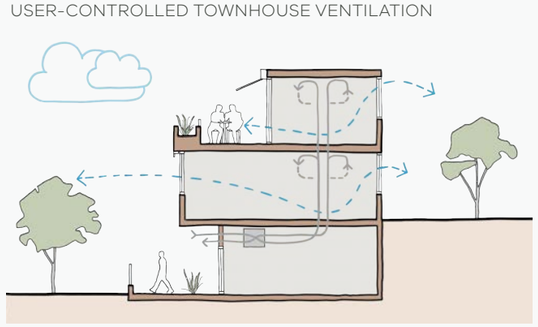
▲ 5.04 Toiora Co-housing, Dunedin, South Island, NZ - Architype

Activated communal outdoor spaces encourage neighbour interaction and play. Toiora Co-Housing by Architype includes modular designed townhouses and a children's play area, vegetable gardens, bike sheds and a large communal garden. The dwellings include passive indoor air control through natural ventilation, as well as mechanical ventilation with heat recovery.

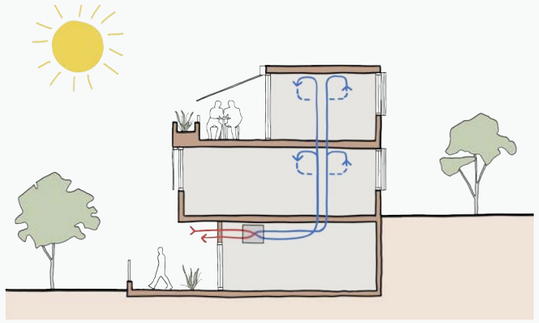
Shaded and sheltered exterior spaces allow for spending time outdoors, regardless of the weather. Anne Street Garden Villas by Anna Gorman incorporates accessible and inviting outdoor spaces through a considered series of public and private thresholds. The dwellings are passively designed to respond to the climate with multiple orientations to each townhouse, and varied operable glazing.

▲ 5.05 Anne Street Garden Villas. Gold Coast QLD - Anna Gorman

USER-CONTROLLED TOWNHOUSE VENTILATION



1 Mild external conditions - A townhouse where natural cross flow ventilation is able to act as the predominant method for ventilation. The need for heat-recovery ventilation is significantly reduced



2 Harsh external conditions - A townhouse that closes its windows and draws its external shading. Heat-recovery ventilation is used as the sole method for ventilation.

Figure 5.3 Design dwellings for low-energy, user-controlled operation. As air-tightness construction requirements increase, adequate ventilation to dwellings is critical to avoid moisture build-up and control air quality. It is not always viable to naturally ventilate, and in this event, a heat-recovery ventilation system provides a low-energy solution. When paired with external shading, a home can be passively heated or cooled without relying on the energy needed for traditional mechanical ventilation.

▲ 5.06 wij_land, Amsterdam, Netherlands - Space & Matter

Thoughtful balconies designed to maximise solar access encourage time spent outdoors. At wij_land by Space & Matter, balconies are flipped to the side of external circulation. In addition, generous communal green zones allows space for the residential community to meet and tend to productive planting.

Principle 06: Adaptable homes

Housing that meets the diverse and changing needs of households and families.

Suggested Outcomes:

- Diverse dwelling sizes and types cater to different household needs at all life stages, including families with children and ageing in place
- Adaptable and comfortable layouts make good use of space and accommodate various patterns of occupation and use
- Flexible layouts can be adapted to changing households needs over time, and support future dwelling consolidation opportunities
- Effective zoning, and sequencing of internal spaces to enhance functionality, circulation and manage noise.

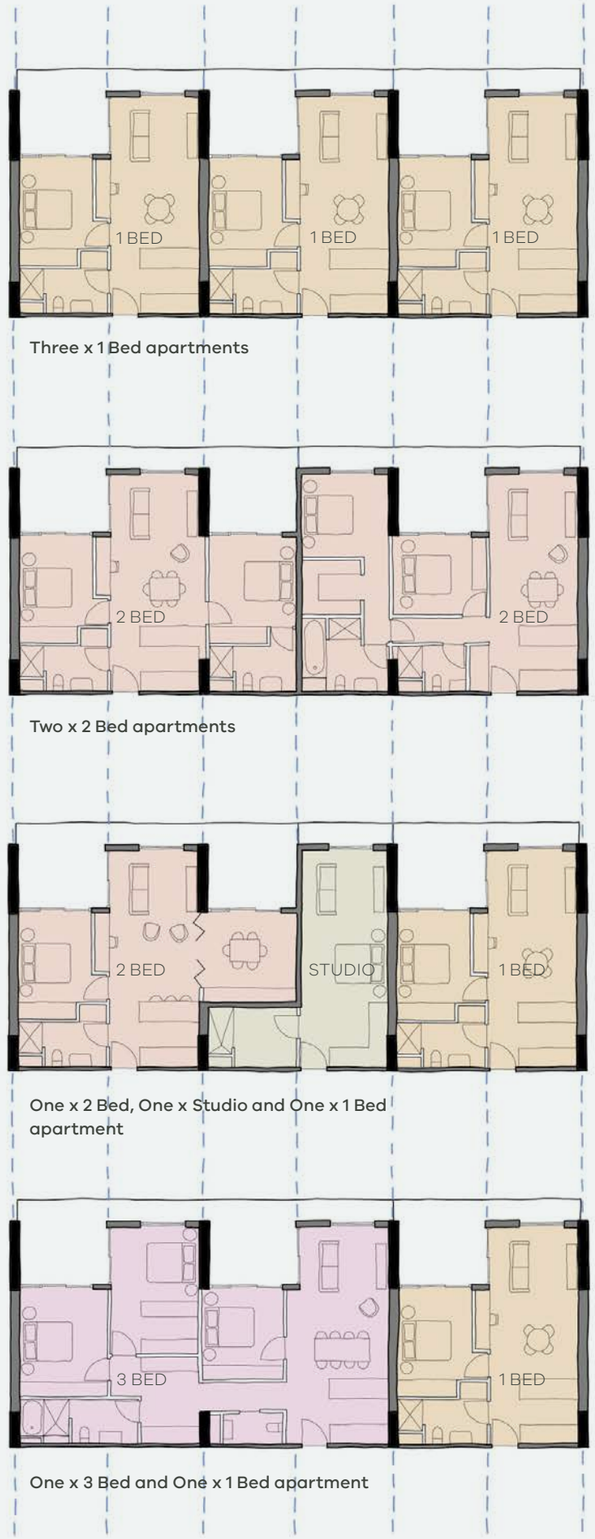
▲ 6.01 WPI Older Women's Housing Project, Beaconsfield VIC - Studio Bright

Operable walls allow rooms and spaces to be used flexibly. Older Women's Housing Project by Studio Bright includes bi-fold walls that allow residents to re-configure space as their needs change. A second living room/study is provided, and able to be closed off as needed. The units are designed to achieve LHA Gold Standard through Livable Housing Australia.

06 Adaptable homes

06 Adaptable homes

Figure 6.1 A regular grid arrangement can allow for a modular approach to apartment planning. This supports greater flexibility in apartment sizes, with the addition or subtraction of modules, and allows the market and user needs to drive dwelling sizes. Using a regular grid arrangement, apartment configurations can become flexible, with internal walls able to move and adapt with different stages of life. It supports the merging of future spaces to create larger dwellings from multiple smaller ones, and vice-versa to allow for right-sizing over a resident's lifetime.



6.02 wij_land, Amsterdam, Netherlands - Space & Matter

Built-in bench seat joinery maximises space by allowing for an efficient dining room arrangement. Built-in overhead storage saves on space and offers personalisation opportunities for different stages of life.

Flush transitions between indoor and outdoor spaces encourage private balconies to be used as an extension of the living room, like in Short Lane by Woods Bagot (left).

In small dwellings, curtains can be used as room dividers to create spatial flexibility, like in The Picador by Architecture Architecture (right).

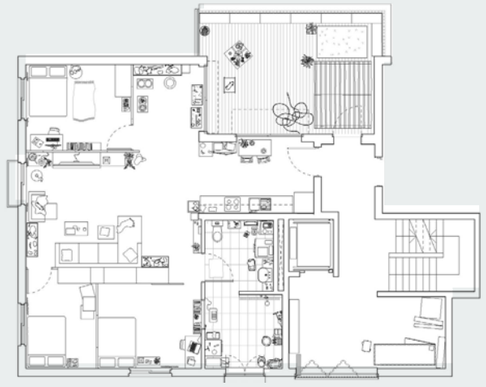
6.03 Short Lane, Sydney NSW - Woods Bagot

6.04 The Picador, Kew VIC - Architecture Architecture

6.05 Marmalade Lane Co-Housing Development, Cambridge, UK - Mole Architects

Flexible communal rooms encourage community use. Marmalade Lane Co-Housing by Mole Architects provides community use through multi-purpose spaces. The development's townhouses employ a selection of standard floorplans, interior schemes and exterior schemes to allow residents to tailor and personalise their own homes without the cost or risk of a self-build.

06 Adaptable homes



6.06 St Albans Housing, St Albans VIC - NMBW, MADA and Housing Choices

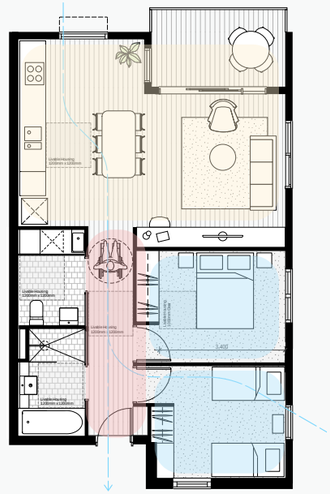
NMBW, Monash Art, Design and Architecture and Housing Choices designed St Albans housing through a co-design process with residents, which resulted in room sizes and arrangements being customised to each user. It is a 'build-to-rent development', providing accessible and affordable accommodation, with dwellings arranged around a central wet-area core and non-load bearing internal walls. These walls can be reconfigured with their changing needs, or as a new resident takes the lease.

6.08 Hope Street, White Gum Valley WA - Officer Woods Architects and MDC Architects

6.07 Fitzroy III, Fitzroy VIC - Agius Scorpo Architects

Operable joinery can be used to increase the flexibility of dwellings. Agius Scorpo Architects' Fitzroy III uses inventive joinery pieces that serve multiple functions. Operable kitchen joinery closes down to resemble a wall for when the kitchen space becomes an entertaining space.

Variation in the volume of dwellings allows for a sense of openness and generosity. Hope Street by Officer Woods Architects and MDC Architects provide variation in dwelling typology by designing in double height spaces.



6.09 Future Homes, Melbourne VIC - MWA

Clear zoning separating the shared and private areas of the plan alongside careful sequencing of internal spaces, create welcoming and comfortable homes. The Future Homes exemplar designs provide efficient layouts that maximise flexible use of the rooms and opportunity for outlook, while incorporating distinct entry thresholds and considered circulation paths.

1. Nursery or study
2. Twin room
3. Large bathroom with bath
4. 2 x standard sized bathrooms
5. Bedroom with ensuite
6. Flexible living / dining space
7. Living room with curtain divider
8. Kitchen with moveable island

Figure 6.2 Considered internal apartment configuration and non-load bearing internal walls allow flexibility for residents to alter their apartment as their needs change. The use of operable walls allows for rooms to combine, or be divided into smaller spaces. Bi-fold, sliding, cavity, or large pivot doors are tools that allow for occupant control and flexible planning.

Principle 07: Good value homes

Supporting more affordable housing through innovative housing development delivery models that respond to changing housing markets.

Suggested outcomes:

- A diverse range of housing meets the needs of different income levels, household types, and life stages, including families with children and ageing in place
- Housing incorporates efficient design and construction methods to reduce costs while maintaining quality and durability
- Housing minimises operational costs for residents and addresses long-term affordability
- Innovative development and delivery models support affordability
- Alternative ownership, tenure and finance models support access to more affordable housing .

▲ 7.01 Low Impact Living Affordable Community, Leeds, UK - LILAC MHOS ltd

Affordable housing can be achieved through innovative development and delivery models. LILAC by White Design was delivered through the Mutual Home Ownership Scheme which is a co-operative, whereby residents pay a monthly fee to the co-operative to build up equity in the community. The urban infill development was carbon neutral through construction and is carbon negative in its running costs. It includes car-sharing, pooling of resources, tools and equipment, and productive planting.

07 Good value homes

07 Good value homes

▲ 7.02 BIGyard, Berlin, Germany - Architect: Zanderroth Architekten, Specialist Coordinator: SmartHoming

BAUGRUPPEN MODEL

'Baugruppen' is an innovative model of residential development that is initiated and funded by its residents. It procures housing that is tailored to their needs at a wholesale price, which excludes the developer's profit margin.
The residents at BIGyard by Zanderroth Architekten were able to control the density of their built form to reflect the desired combination of community, privacy and landscape.
The residents at Collective #9 by Zen Architects and Property Collectives focused their efforts on achieving an intentional multi-generational community with an average 8.7 star NatHERS rating.

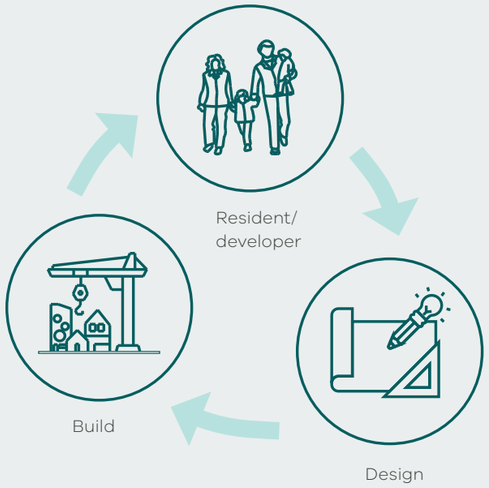


Figure 7.1 Baugruppen model diagram

▲ 7.03 Collective #9 Victoria Street, West Brunswick VIC - Architect: Zen Architects, Developer: Property Collectives

GROUND LEASE MODEL

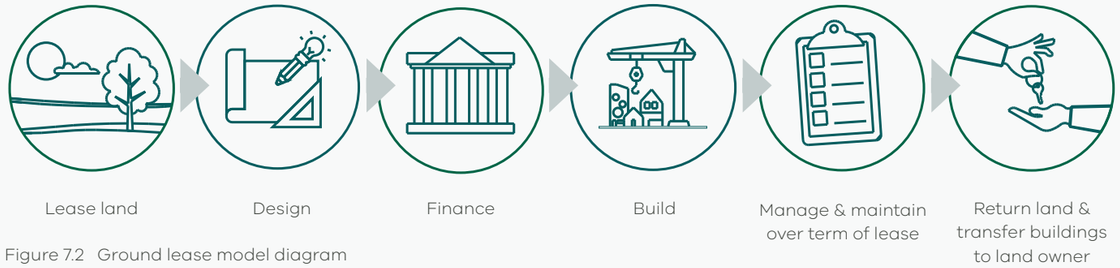


Figure 7.2 Ground lease model diagram

▲ 7.04 Victoria St, Flemington VIC - Architect: Six Degrees Architects, Project Owner: Homes Victoria

Under a Ground Lease Model, public or private land is leased to a consortium to finance, build, manage and maintain residential buildings. At the end of the lease term (for example 40 years), the ownership of the buildings is transferred to the owner of the land. Ground Lease Models can be suitable for government, council and not-for-profit land owners that own surplus land and require the skills and/or the capital of the private sector to deliver the project. Projects delivered under a Ground Lease Model often include social and/or affordable housing components. They also involve higher transaction and structuring costs than a typical sale of land. Victoria Street, Flemington was delivered through a Ground Lease Model, where Homes Victoria leased land to project partner Building Communities to finance, build, manage and maintain 119 affordable homes and 240 social homes for a 40 year lease period. The project delivered a 21% uplift in social housing.

RENTAL LEASE TERMS

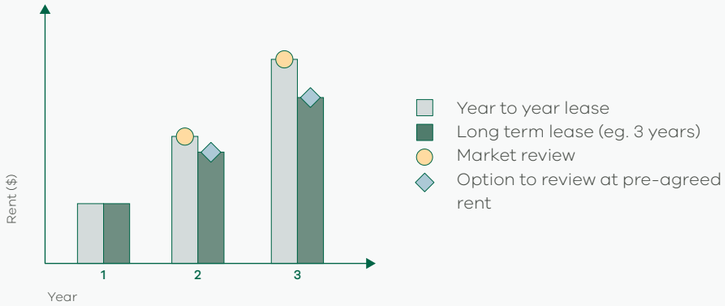
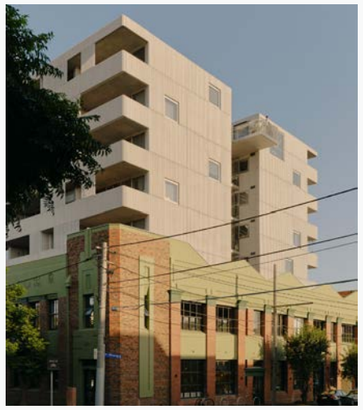


Figure 7.3 Rental lease comparison graph

All else being equal, development models which offer longer term leases provide residents with greater housing stability, which supports wellbeing and other aspects of their lives (for example job, school, community associations). 38 Abermarle Street by Fieldwork offers residents a 1 year lease with four one-year options to renew at the resident's discretion and at a pre-agreed rent. At the end of the lease term, the resident has the option, but not the obligation, to buy the apartment at a price that is agreed at the commencement of the lease.



▲ 7.05 38 Abermarle Street, Kensington VIC - Architect: Fieldwork, Developer: Assemble

07 Good value homes

7.06 Habitat on Juers, Logan QLD - Architect: REFRESH

Habitat on Juers, a collaboration with the Queensland Government, offers adaptable social housing in Logan City. Designed with a focus on accessibility and energy efficiency, Habitat on Juers provides affordable, sustainable living with a focus on fostering community connection. All 16 units perform exceptionally well both in terms of energy consumption and occupant comfort. The use of a cross laminated timber structure allowed for exposed double-brickwork and lightweight cladding. Prioritising orientation, passive heating, cooling and connection to landscape all contribute to an average 8.5 NatHERS rating across the units.

7.07 Snabba Hus Västberga, Stockholm, Sweden - Architect: Andreas Martin-Löf Arkitekter, Developer: New Living

Modern methods of construction (MMC) can lower building costs as manufacture and assembly happen off-site, installation is fast-tracked, and material wastage minimised. Snabba Hus Västberga provides affordable rental apartments for young people in Sweden. It is a high-quality architectural outcome that prioritises shared facilities like communal laundries, and uses prefabricated concrete panels to support 280 apartments which have been assembled off-site.

7.08 Glen Iris Residential, Glen Iris VIC - Designer: Modscape, Developer: Mecaware

Automation within the manufacture of building elements increases efficiency and precision. Robotics are used at Modscape for the construction of off-site building elements. Pre-fabrication was employed at Glen Iris Residential by Modscape to bring costs down by 30%, shorten delivery times by 50%, and reduce waste by up to 70%.

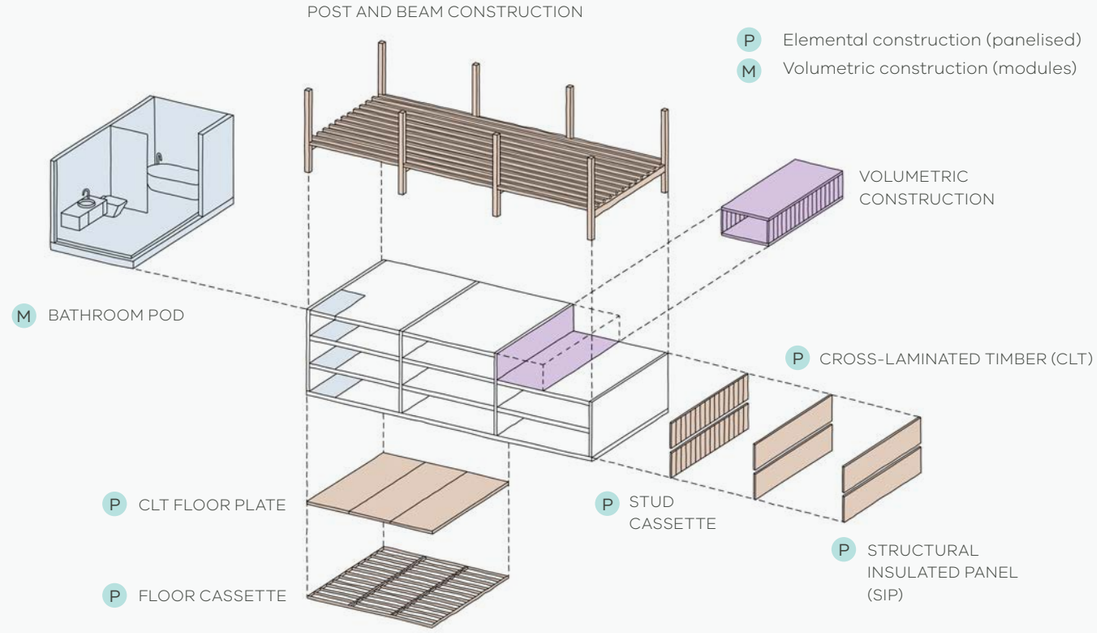


Figure 7.4 Modern methods of construction (MMC) are increasingly important systems that should be considered for their positive impacts on sustainability, quality, construction time and cost outcomes. MMC includes elemental construction (panelised), volumetric construction (modules), and hybrid strategies (kits of parts). The above demonstrates examples of MMC that fit within these three catagories.

1.01	Clyde Street Mews, Thornbury VIC - Six Degrees Architects	Photography: Alice Hutchison
1.02	Nightingale Village, Brunswick VIC - Breathe and Kennedy Nolan	Photography: Tom Ross
1.03	Quay Quarter Lanes (8 Loftus Street), Sydney NSW - Studio Bright	Photography: Rory Gardiner
1.04	Mundingburra Housing, Townsville QLD - Counterpoint	Photography: Andrew Rankin
1.05	One Central Bedford Apartment, Christchurch, NZ - Architectus	Photography: Sarah Rowlands
1.06	Balfe Park Lane, Brunswick East VIC - Kerstin Thompson Architects	Photography: Leo Showell
1.07	Westhof Housing, Zürich, Switzerland - Conen Sigl	Photography: Roman Keller
1.08	Mari-Mari-Ba Affordable Housing, Brisbane QLD - Deicke Richards	Photography: Christopher Fredrick Jones
1.09	The Nursery on Brunswick, Fitzroy VIC - Clare Cousins Architects	Photography: Tom Ross
1.10	Hope Street Housing, White Gum Valley WA - Officer Woods Architects and MDC Architects	Photography: Robert Frith
2.01	Kings Crescent Phases 1 & 2, London, UK - Henley Halebrown	Photography: John Sturrock
2.02	ParkLife, Brunswick VIC - Austin Maynard Architects	Photography: Tom Ross
2.03	38 Albermarle Street, Kensington VIC - Fieldwork	Photography: Tom Ross
2.04	A House for Artists, London, UK - Apparata Architects	Photography: Julia Forsman
2.05	Ecoquartier Des Noes, Val-de-Reuil, France - Philippe Madec Atelier	Photography: Pierre-Yves Brunaud
2.06	Aboriginal Housing Victoria, Reservoir VIC - Breathe	Photography: Andrew Wuttke
2.07	38 Albermarle Street, Kensington VIC - Fieldwork	Photography: Tom Ross
2.08	Marmalade Lane, Cambridge, UK - Mole Architects	Photography: David Butler
2.09	Wohnregal Apartments & Ateliers, Berlin, Germany - FAR frohn&rojas	Photography: David von Becker
2.10	Westhof Housing, Zürich, Switzerland - Conen Sigl	Photography: Roman Keller
2.11	122 Roseneath Street, Clifton Hill VIC- Fieldwork	Photography: Tom Ross
3.01	Markham Avenue, Ashburton VIC - Architectus and MALA	Photography: Peter Clarke
3.02	Markham Avenue, Ashburton VIC - Architectus and MALA	Photography: Peter Clarke
3.03	Hope Street Housing, White Gum Valley WA - Officer Woods Architects and MDC Architects and Aspect Studios	Photography: Robert Frith
3.04	South Gardens, London, UK - Maccreanor Lavington and Gillespie's	Photography: Tim Crocker and Will Wiesner
3.05	Nightingale Ballarat, Ballarat VIC - Breathe and Openwork	Photography: Rory Gardiner
3.06	Easy Street Living, Byron Bay NSW - DJF Architects	Photography: Christopher Frederick Jones
3.07	Arkadia, Sydney NSW - Breathe, DKO and Oculus	Photography: Tom Ross
3.08	GROW Housing, Calgary, Canada - Modern Office of Design and Architecture	Photography: Ema Peter
4.01	Monash University Gillies Hall, Frankston VIC - Jackson Clements Burrows	Photography: Peter Clarke
4.02	Ferrars & York, South Melbourne VIC - Six Degrees Architects and Hip v. Hype	Photography: Dan Preston
4.03	Wilam Ngarrang Retrofit, Fitzroy VIC - Kennedy Nolan	Photography: Eve Wilson
4.04	Gen Y Housing, Perth WA - Cast Studio	Photography: Robert Frith
4.05	Resource Rows, Copenhagen, Denmark - Lendager	Photography: Rasmus Hjortshøj
4.06	High Street Apartments, Thornbury VIC - Gardiner Architects	Photography: Rory Gardiner
5.01	wij_land, Amsterdam, Netherlands - Space & Matter	Photography: Marcel van der Burg
5.02	Nightingale Evergreen, Brunswick VIC - Clare Cousins Architects	Photography: Tom Ross
5.03	38 Albermarle Street, Kensington VIC - Fieldwork	Photography: Tom Ross
5.04	Toiora Co-housing Development, Dunedin, NZ - Architype	Photography: Andy Spain
5.05	Anne Street Garden Villas, Gold Coast QLD - Anna Gorman	Photography: Christopher Frederick Jones
5.06	wij_land, Amsterdam, Netherlands - Space & Matter	Photography: Marcel van der Burg
6.01	WPI Older Women's Housing Project, Beaconsfield VIC - Studio Bright	Photography: Rory Gardiner
6.02	wij_land, Amsterdam, Netherlands - Space & Matter	Photography: Marcel van der Burg
6.03	Short Lane, Sydney NSW - Woods Bagot	Photography: Luke Zeme
6.04	The Picador, Kew VIC - Architecture Architecture	Photography: Tom Ross
6.05	Marmalade Lane, Cambridge, UK - Mole Architects	Photography: David Butler
6.06	St Albans Housing, St Albans VIC - NMBW, MADA and Housing Choices	Photography: Peter Bennetts
6.07	Fitzroy III, Fitzroy VIC - Agius Scorpo Architects	Photography: Tom Ross
6.08	Hope Street Housing, White Gum Valley WA - Officer Woods Architects and MDC Architects	Photography: Tom Ross
6.09	Twelve Houses, Malmö, Sweden - Förstberg Ling	Photography: Markus Linderoth
7.01	Low Impact Living Affordable Community, Leeds, UK - LILAC	Photography: Andrew Lord
7.02	BIGyard, Berlin, Germany - Zanderroth Architekten and SmartHoming	Photography: Michael Feser
7.03	Collective #9 Victoria St, West Brunswick VIC - Zen Architects and Property Collectives	Photography: Tom Ross
7.04	Victoria St, Flemington VIC - Six Degrees Architects and Homes Victoria	Photography: Rory Gardiner
7.05	38 Albermarle Street, Kensington VIC - Architect: Fieldwork, Developer: Assemble	Photography: Tom Ross
7.06	Habitat on Juers, Logan QLD - Architect: REFRESH	Photography: Scott Burrows
7.07	Snabba Hus Västberga, Stockholm, Sweden Architect: Andreas Martin-Löf Arkitekter, Developer: New Living	Photography: AML Studios / Åke E:son Lindman and AML Studios / Johan Fowelin
7.08	Glen Iris Residential, Glen Iris VIC - Mecwacare and Modscape	Photography: N/A

Within the preceding book, the lead architect is credited for each project. In the Landscaped homes and Adaptable homes chapters, additional parties have been credited.

Credits

vic.gov.au/department-of-transport-and-planning