



# DESIGNING FOR DENSITY IN THE TROPICS

DESIGN GUIDE

Cairns Regional Council acknowledges the First Peoples within our region who are the Traditional Custodians of this country. We pay respect to their elders both past and present and future and also extend that respect to all other Aboriginal and Torres Strait Islander Australians within our region.

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## What is the Design Guide

The Designing for Density in the Tropics Design Guide (the guide) is not another style guide (you can find that [here!](#)), rather its purpose is to give the community, Council, developers, design professionals and builders a practical understanding of how to achieve diverse, more dense and well-designed housing that is appropriate for Cairns.

The guide steps through the key principles to designing for density in the tropics to ensure future homes in Cairns:

- » Appropriately respond to the local climate,
- » Provide increased comfort and liveability,
- » Positively contribute to the Cairns tropical character,
- » Respond to the natural environment,
- » Include landscaping that contributes to local biodiversity, and
- » Reduce energy consumption through passive design.

The guide works under the premise that when development is truly responsive to its regional environment, neighbourhood context and site characteristics, it will achieve good quality design and inherently reflect the Cairns tropical character.

## How the Design Guide works

The guide does not provide statutory provisions that development must comply with. However, it provides practical design guidance that can assist with meeting the assessment benchmarks in CairnsPlan 2016, and incorporate design responses that make a home more pleasant to live in.

The CairnsPlan 2016 regulates zoning, densities, natural hazard overlays and development parameters to ensure appropriate development is delivered across the city.

Not all typologies within the guide will be suitable for every site. Reference should be made to CairnsPlan 2016 to understand the suitability of each housing typology for a given site. The guide provides design guidance that is supplementary to the regulatory provisions of CairnsPlan 2016.

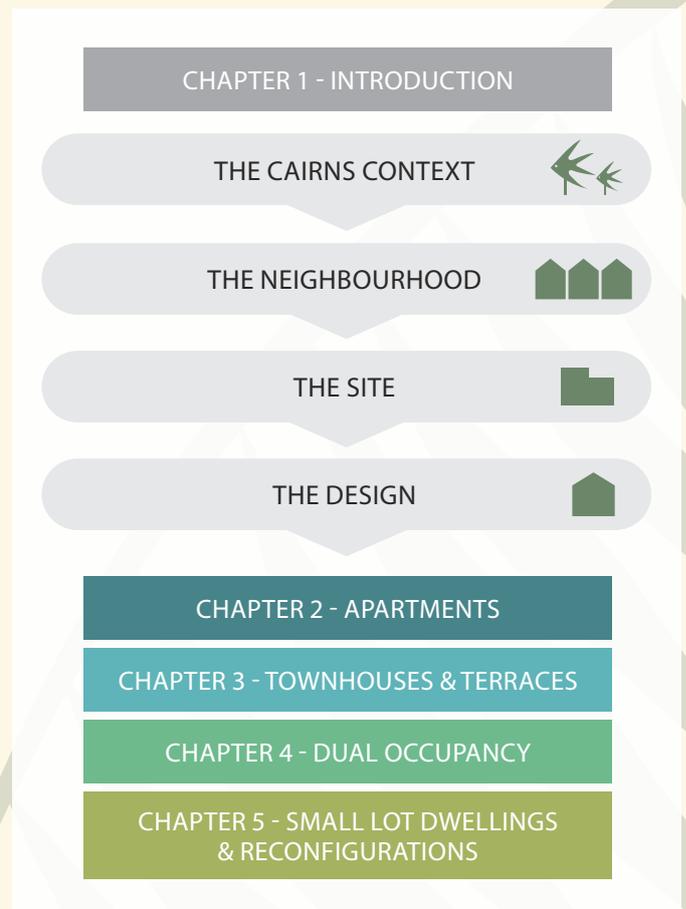
## How the Design Guide is structured

The guide is framed around achieving four overarching design principles, and operates at four scales – The Cairns Context, The Neighbourhood, The Site and The Design.

The Cairns Context describes the tropical urbanism approach to development within the city that underpins the guide.

The Neighbourhood and The Site sections help to better understand a site's internal and external context, and the most suitable housing typology for the site, whether it be apartments, townhouses and terraces, dual occupancies, or small lot dwellings and reconfigurations. These sections will ensure that your development will demonstrate context-sensitive siting and design.

The Design provides concise design guidance, easy-to-understand diagrams, and imagery for each typology. Applying this guidance will ensure new development in Cairns demonstrates exemplary tropical design and higher density living that positively contributes to its street and neighbourhood.



# INTRODUCTION





# Why prepare a Design Guide?

Cairns strives to achieve a built environment that is characterised by its tropical design and natural surrounds. The interrelationship between buildings, landscaping and open space is enshrined in the city's design narrative, most simply described as Tropical Urbanism.

As Cairns continues to grow and deliver more diverse housing options it is important to ensure that tropical urbanism is embedded into the design and development of a range of higher density housing typologies.



As the city of Cairns grows and adapts to meet changing social, economic and environmental conditions, the availability of housing options also needs to respond.

As a first principle, new housing is needed to supply the forecasted increase in population and to meet the changing needs of residents.

Cairns is seeing a clear demographic shift, with a growing number of residents desiring smaller lot and denser housing forms in well located areas of the city.

It is understood that higher densities will not only be achieved through medium to high rise apartments, but also through newer typologies that are lower rise and fit within the Cairns character. These newer typologies, which include medium density and small lot dwellings, can locate in both established residential neighbourhoods and new development areas, and provide an important alternative to detached houses on large lots.

This guide is intended to help ensure new higher density development is well-designed and responds to the tropical climate and identity of Cairns. Best practice design guidance for apartments, townhouses and terraces, dual occupancies and small lot dwellings and reconfigurations demonstrates how utilising design that is responsive to the tropics can make homes in Cairns more pleasant to live.

This guide is intended as a common reference point for tropical higher density housing in Cairns. It operates in conjunction with existing national, state and local government statutory and non-statutory policy.

It provides design guidance that is supplementary to regulatory requirements, including:

- » [CairnsPlan 2016](#), which regulates zoning, densities and suitable housing typologies across the city,
- » [Planning Scheme Policy – Tropical Urbanism](#),
- » Council's [Cool Homes Guide](#),
- » Building Act 1975 (Qld) and associated regulation and codes, and
- » National Construction Code.

# Objectives for Delivering Density in the Tropics

## 1

The delivery of new forms of density in a tropical setting strives to achieve the following objectives.

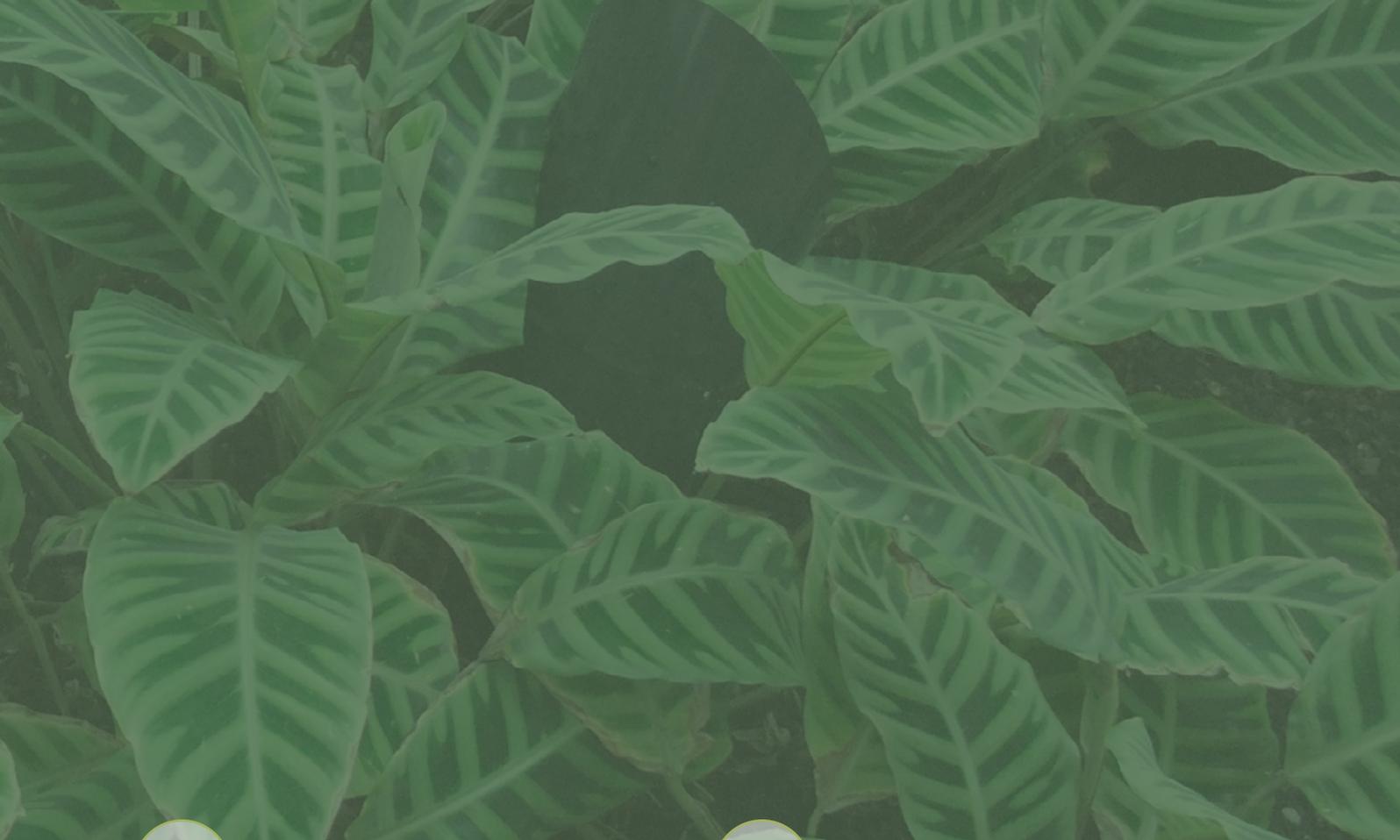
### Achieve Housing Diversity

To achieve housing diversity is to establish a diverse range of dwelling typologies in existing neighbourhoods and new development areas of Cairns. Diversity is required to respond to increased population growth and shifting household demographics that have different housing needs and desires.

The property market in Cairns has largely seen a reliance on larger lots. However, the changing demographic profile of Cairns now means that diverse housing typologies need to be provided within the market, including a range of housing choices that are smaller, flexible, affordable and more accessible, to respond to the needs and desires of a variety of household types.

A city without a variety of housing types can result in first homeowners being locked-out of the property market, fewer options for downsizers and lone person households, housing not meeting the needs of modern families, and reduced affordability.

Diversity is important in ensuring housing is available, accessible, and affordable for all residents throughout their entire life cycle.



2

## Respond to Local Context

Local context refers to the setting of development, including both the neighbourhood and the streetscape.

Whether in a new or existing community, development should integrate with and be sympathetic to neighbouring properties, the transport network, the streetscape and surrounding setting.

Dwelling design should consider the important elements that characterise the streetscape and respond to the natural and physical features of the site and setting – this includes topography, vegetation and hazards.

Design should also have regard to how the street and built form may develop and change over time to respond to changing demographics, statutory planning requirements (i.e. zoning) and housing needs.

3

## Reflect the Cairns Character

The Cairns region is part of Australia's wet tropics, characterised by two seasons - the wet summer season, and dry winter season. Defined by its green and blue – the mountain ranges to the west and the ocean to the east, the Cairns character is unique with urban development settled within a tropical natural environment.

The climatic conditions within the region necessitate unique building responses to increase the comfort and amenity of dwellings. This includes functional and practical design responses to deal with the heat, humidity and seasonal weather changes. The unique tropical building design also contributes to the distinct Cairns identity.

New development is encouraged to be sympathetic to the more traditional built forms that define the region, whilst incorporating design elements, materials, built form, roofing and landscaping that positively contribute to the green, tropical character of the region and the liveability of the dwelling.



# The Cairns Context

## Tropical Urbanism

Tropical Urbanism is most simply described as the integration of landscaping and tropical design elements into the built environment.

Council's CairnsPlan2016 Planning Scheme Policy – Tropical Urbanism provides an excellent context and guide to the qualities of Tropical Urbanism:

- » Shelter from the sun and rain.
- » A contrast of light and shade.
- » Sufficient spaces around and between buildings.
- » Minimisation of radiant heat and urban heat island effects.
- » Air circulation, breeze permeation and passive cooling.
- » Generous outdoor living spaces with large window and balcony openings.
- » Generous floor to ceiling heights.
- » High quality landscaping.
- » Quality public and private spaces that proliferate and enliven the urban form.
- » Passive design that responds to the tropical climate.



[\(CairnPlan2016 Planning scheme policy– Tropical Urbanism\)](#)

While the Planning Scheme Policy – Tropical Urbanism currently applies to development undertaken within the Cairns City Centre, it is still considered a core foundation to what the guide is expressing in a residential setting.



## Design Principles

These principles are high-level goals for new development. A deep understanding and considered response to the four principles, from the large scale of the Cairns context to the smaller scale of the site, will provide the tools to successfully achieve and positively contribute to the distinctively tropical character of Cairns.

These principles focus on the essential characteristics to consider at the start of the design process and set the foundation for a high quality, climate responsive and well-designed development. The design guidance provided in the following sections seeks to achieve the overarching principles.

The four design principles are:

- 1 Understand, respond to and enhance the site's assets.
- 2 Contribute positively to the streetscape and neighbourhood to provide a safe and active public environment and foster a sense of community and identity.
- 3 Provide a safe, resilient and comfortable dwelling for the residents.
- 4 Integrate into and improve the connections to and from the site.



# The Neighbourhood Context

Achieving density can often see newer housing forms and typologies being established within existing neighbourhoods. This means it is imperative the design understands and responds to the street it is on and the neighbourhood it is in.

Time should be taken at the start of the design process to understand how the development can respond to and reflect the planned character of the streetscape and wider neighbourhood.

## 1 Understand, respond to and enhance the site's assets.

- » The unique landscape, ecology and culture of Cairns contributes to a rich neighbourhood and streetscape character. Carefully consider preserving, responding to, enhancing and integrating these features into the siting and design of development.
- » Review CairnsPlan 2016 to understand the zoning, local plans or overlays that may apply to the site.

## 2 Contribute positively to the streetscape and neighbourhood to provide a safe and active public environment and foster a sense of community and identity.

- » Explore opportunities to incorporate what is unique to the neighbourhood into the function and design of the development, whether it be built form or landscaping.
- » Analyse the existing and historic development patterns and the vernacular of the neighbourhood to understand what could be improved upon. This could be in the form of materials, bulk, scale, setbacks, articulation, landscaping and streetscape.
- » Consider the safety of users and the surrounding community by creating as many active and vibrant spaces as possible. Ensure the landscape and built form design encompasses the principles of Crime Prevention Through Environmental Design (CPTED) including passive surveillance.



**3** Provide a safe, resilient and comfortable dwelling for the residents.

- » Consider the elements that may need to be addressed through design to improve residential amenity such as maximising views and privacy, and minimising noise.
- » Consider existing and future development in the siting and built form placement to provide a resilient, adaptable and long lasting home.
- » Consider the broader neighbourhood and proximity to existing and future amenities such as open spaces and day-to-day services. The neighbourhood needs to be able to support an increase in housing density.

**4** Integrate into and improve the connections to and from the site.

- » Understand if there are any existing services, easements, water connections, sewerage and stormwater infrastructure, or shared access arrangements across the site and adjoining properties and consider these in the siting of the development and the open space design.
- » Understand and integrate with existing transport network connections, considering crossovers, road hierarchy, footpaths, laneways and external open spaces.



# The Site Context

Appropriate site planning is vital to a successful development, particularly when dealing with higher density housing typologies. Higher density and small lot housing forms can face challenges when it comes to the prioritisation of open space, landscaping, built form, access and car parking.

Whilst these housing typologies can face challenges, they also present a clear opportunity to use innovative design solutions to produce high quality and context-sensitive design. This comes from having a clear understanding of the site and its natural and physical assets, and consideration of how the development will respond and integrate with its surroundings.

Each dwellings' level of amenity including access to daylight, open space, breezes and landscaping should be considered at siting design.



## 1 Understand, respond to and enhance the site's assets.

- » Understand the existing site features and natural assets such as topography, vegetation, existing services and outlooks which impact how the site will be developed.
- » When establishing the building zone and siting development, prioritise protecting and enhancing the existing vegetation and natural environment. This will enhance the tropical character and provide greater amenity for residents.
- » Respond to the existing topography by minimising the extent of earthworks and incorporating the landform into the design.
- » Consider engaging a landscape specialist to assist with understanding site constraints that could impact the long term establishment of the landscaping (i.e. soil condition, tree suitability, light, water, maintenance).
- » Ensure landscaping in setbacks, car parking areas and open spaces is of a sufficient area for tree and shrub maturity. Where appropriate, deep planting should be promoted.

## 2 Contribute positively to the streetscape and neighbourhood to provide a safe and active public environment and foster a sense of community and identity.

- » Consider the site's area, lot dimensions and shape, planning requirements and suitability for different housing typologies. Dwellings should be of an appropriate scale that is responsive to the site area and features. This is to ensure that development is not too large for the site and ultimately comes at the expense of providing amenity and landscaping.

## 3 Provide a safe, resilient and comfortable dwelling for the residents.

- » Orientate and design development to maximise views, privacy, daylight to internal living spaces, shade to external living spaces and capturing breezes for cross-ventilation.
- » Mitigate excessive light, sun, noise, odour and visual obtrusions with consideration given to siting, location of building services, built form and landscaping.
- » Consider existing and future development in siting and built form placement to provide a resilient, adaptable and long lasting home.

## 4 Integrate and improve the connections to and from the site.

- » Understand if there are any services easements, water connections, sewerage and stormwater infrastructure, or shared access arrangements already established on the development site. These should be considered in the siting of the development or the open space design.



Multiple dwellings, including apartments, comprise three or more dwellings on a single site with shared access to the dwellings, car parking facilities and open space. There are many different types of multiple dwellings with various arrangements and scales. The focus of this section is low and medium rise apartments, which typically have a building height up to four or five storeys and are located in appropriately zoned residential and mixed use areas.

# APARTMENTS

Residents of apartments enjoy being located proximate to centres, open space and public transport. Private balconies, generous communal open space and direct access to public amenities complement the reduced dwelling size.

Due to the larger building mass, an apartment has the potential for greater impacts on the streetscape and neighbourhood.

An important consideration for apartments is the siting and scale of the building, which should be sensitive to the local context, particularly the amenity and privacy of residents and neighbours. Design features such as larger setbacks and extensive landscaping ensure apartments are responsive to the tropical environment and provide a softer built form in the streetscape.



## Design Guidance

As a first step, analyse and understand the features and characteristics of the site.



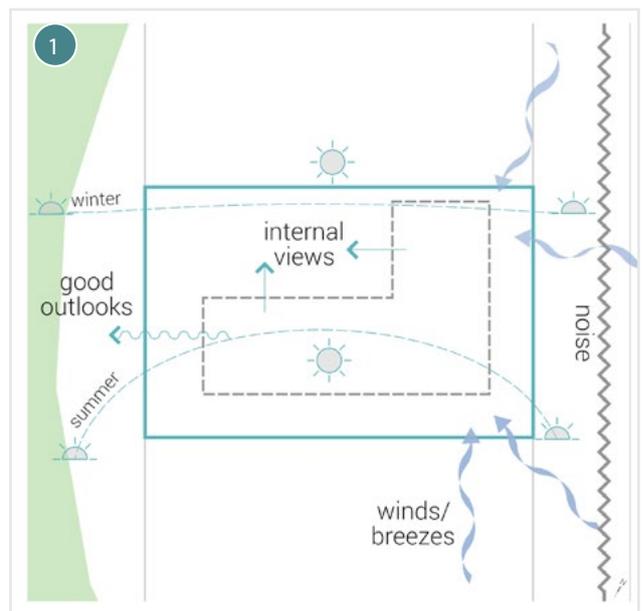
### Sensory and Climatic

One of the fundamental factors of good design is to understand and respond appropriately to the site's surrounding context and climate. This is particularly the case in Cairns, where being able to enjoy indoor and outdoor living is core to the way of life. The following guidance will assist with the design of enjoyable living spaces in a tropical climate.



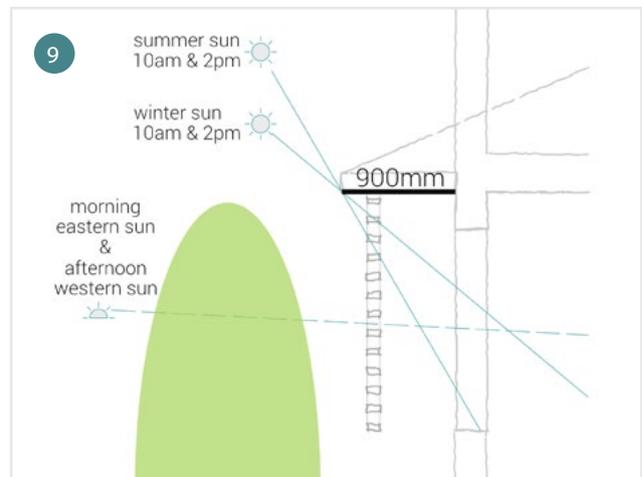
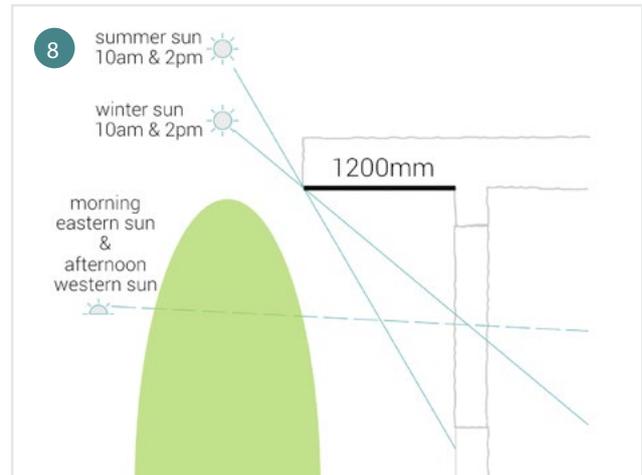
#### Sensory and Climatic

- 1 Orientate the development to optimise the number of dwellings that receive maximum daylight and capture prevailing breezes.
- 2 Dwellings should be of a depth that allows for penetration of daylight and breezes.
- 3 Consider the outlook from key habitable rooms for each dwelling.
- 4 Utilise vegetation and landscaping, as well as visual and acoustic privacy elements, to minimise impacts on adjacent development.
- 5 Use built form elements and landscaping to mitigate impacts that affect a comfortable living environment (i.e. noise, visual, urban heat island effect).
- 6 Utilise topography to increase privacy where practicable.



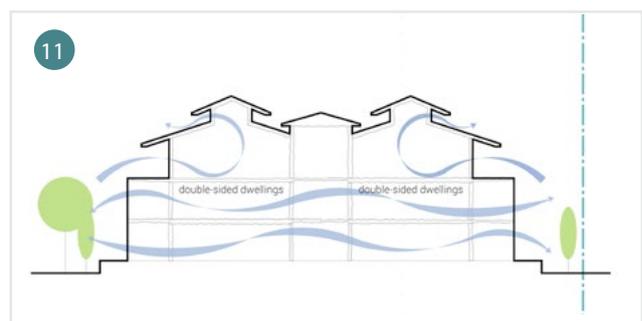
## Shade and shelter

- 7 Consider how the pitch of the roof and depth of the eaves can increase shade, capture rainwater and maximise daylight.
- 8 Provide wide awnings over external openings to provide shade from the sun and shelter from the rain.
- 9 Carefully locate landscaping and vertical screening in conjunction with wide eaves to shade walls and windows, particularly to the south-west.
- 10 Verandahs and balconies that include cooling elements (i.e. fan, operable screening), should be located on facades that are exposed to direct sun.



## Ventilation

- 11 Provide external openings (i.e. windows, balconies, doors) on as many facades as possible to allow for cross-ventilation.
- 12 Promote open plan living to optimise cross-ventilation (i.e. single internal living space, internal louvres).
- 13 Use mezzanines to enhance cross-ventilation and increase daylight to internal living spaces. This will also help provide variety in roof form and articulation of the skyline, which is particularly important for apartments, which have higher building heights.
- 14 Consider external breezeways and accessways to minimise blockages to cross-ventilation.
- 15 Provide facade articulation to allow for more opportunities for external openings.

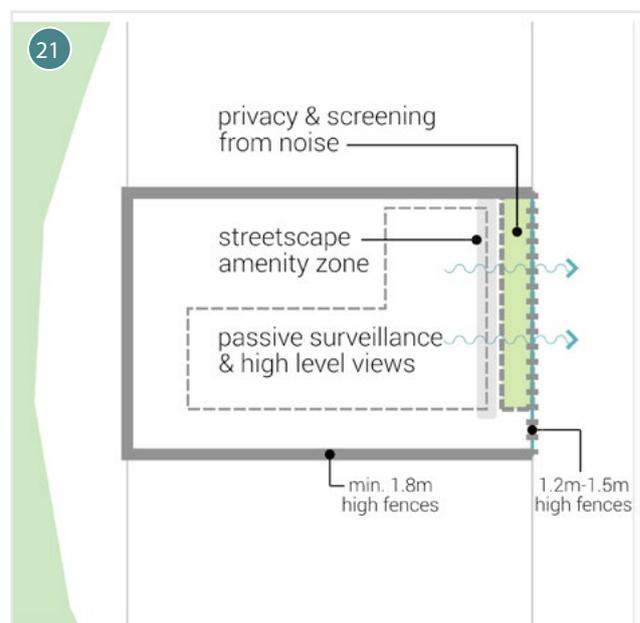
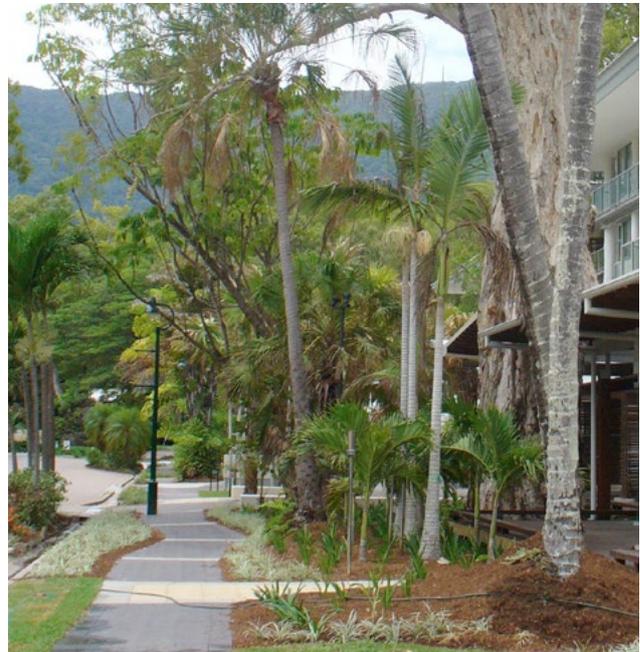


## Streetscape Amenity

How development sits within the neighbourhood contributes to its overall character, appearance and visual identity. Well designed streetscapes can foster a sense of community and safety among the residents through actively encouraging interactions and connections.

### Streetscape Amenity

- 16 In an infill context, address the development to the street to effectively integrate the built form with neighbouring development and respect the local context.
- 17 In new areas of development, ensure the built form addresses the street to contribute to the overall sense of place and identity of the new neighbourhood.
- 18 To ensure the development does not feel overbearing to a pedestrian, consider site cover and the overall impact of the building scale and bulk on the streetscape.
- 19 Carefully consider the streetscape character of all street-facing facades. If the site is located on a corner, respond to both frontages with equal care.
- 20 Ensure habitable rooms are positioned to provide passive surveillance of the street. Facades that face the street should incorporate elements such as windows, verandahs and balconies that overlook the public realm.
- 21 Pay attention to all street frontages with consideration to:
  - » Windows, verandahs, awnings and balconies,
  - » Building and dwelling entrances,
  - » Facade articulation,
  - » Variety of materials and finishes to break up larger expanses of walls,
  - » Building scale and bulk,
  - » Vehicle entrances and car parking,
  - » Landscaping and fencing, and
  - » Passive surveillance of the street.



## Landscaping

Landscaping is one of the main elements that contributes to the quality of a neighbourhood and streetscape amenity. It also plays an imperative role in ensuring development positively contributes to the Cairns tropical character.



### Landscaping

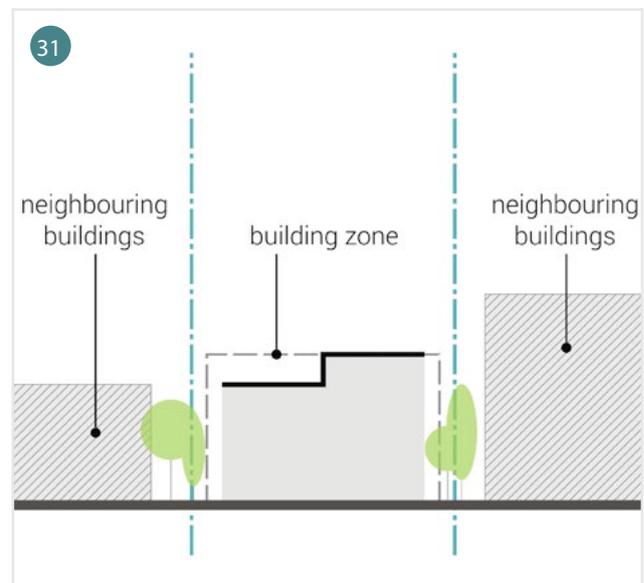
- 22 Landscaped areas need to be sufficient in size to be functional and support the establishment and growth of healthy vegetation.
- 23 Preserve existing vegetation (i.e. mature trees, planting) as part of the design to reinforce the Cairns tropical character and amenity.
- 24 Enhance development with landscaping. Encourage a diversity of species, deep planting and vertical landscaping. Avoid an over-reliance on narrow planting strips, groundcovers and grasses.
- 25 Due to having a larger building mass, apartments have the opportunity to provide larger setbacks to establish deep planting. Deep planting softens the built form and increases residential amenity.
- 26 Use landscaping to enhance privacy between dwellings instead of structural screening. Plan sufficient areas for landscaping to deliver the establishment of screening shrubs.
- 27 Site specific landscape design should be considered in conjunction with fencing.
- 28 Careful attention is needed for all frontages to provide landscaping for privacy and amenity, and to soften the visual impact of the facade.
- 29 Engage a landscape specialist to assist with understanding the site constraints that will impact on the long-term establishment of landscaping (i.e. soil condition, tree suitability, light, water, maintenance).
- 30 Any proposed planting on podium levels, the roof top or the built form should be certified by a Registered Professional Engineer of Queensland and designed by a landscape specialist.

## Setbacks

Setbacks and building separation are intended to maintain privacy for residents and neighbours, increase amenity of the streetscape, minimise noise, maximise daylight, increase access to breezes and reduce overshadowing.

### Setbacks

- 31 Consider how setbacks can be best utilised to transition between different types of housing and development scales, particularly in relation to varied building heights along the streetscape.
- 32 Optimise building separation distances between the built form and neighbouring development. Due to the larger scale and bulk, apartments require larger setbacks and separation from neighbouring development.
- 33 To ensure the mass of the development does not feel overbearing to a pedestrian, the front setback should provide an appropriate amount of space between the street and building, and stepping building height should be used where practicable.
- 34 Setbacks are an opportunity to establish high quality landscaping, and setback widths should be considered in conjunction with landscape planning.
- 35 Where possible, provide landscaping in the side setbacks rather than building features (i.e. pathway, clothes drying area, building services).



## Residential Amenity

All the principles within the guide are designed to maximise residential amenity. When living in a higher density setting, this becomes even more important as space decreases and the quality of the amenity needs to increase.



### Residential Amenity

- 36 Provide space for functional facilities for residential amenity (i.e. bicycle parking, storage, security, outdoor space for pets).
- 37 Ensure there is clarity between what is communal open space and private open space for legibility and privacy.
- 38 Use landscaping to provide delineation and additional privacy between adjoining dwellings and neighbouring development.
- 39 Consider the proximity of adjacent dwellings and the street. Consider visual and acoustic privacy, access to daylight and outlook.

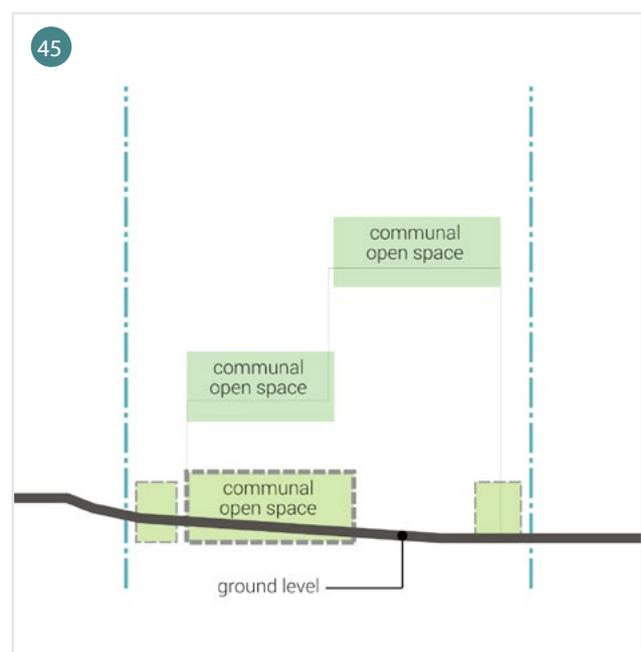
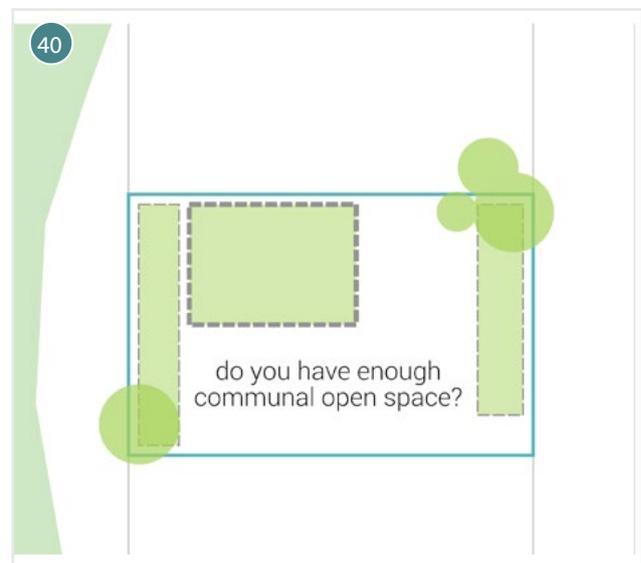


## Open Space

Incorporating open space into the design of development at the beginning helps achieve quality indoor and outdoor living. Well-considered open space will achieve a harmonious balance between the site's natural assets and development.

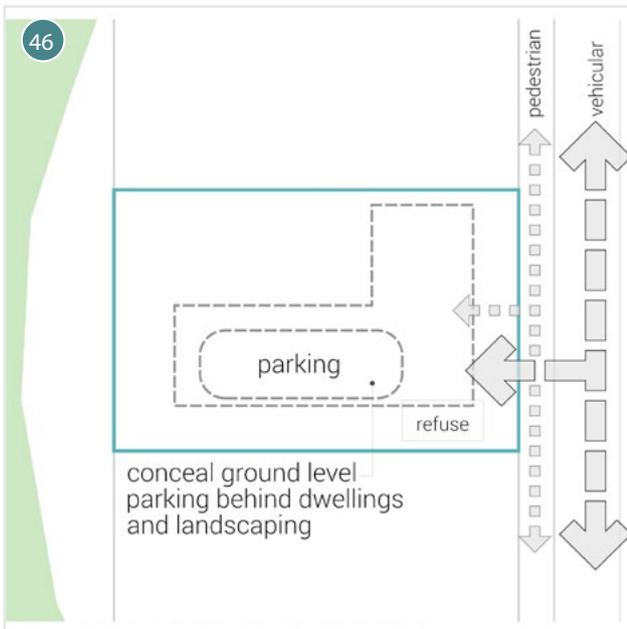
### Open Space

- 40 Site cover and siting of development should ensure that each dwelling has private open space and there is enough communal open space.
- 41 Establish a hierarchy of open spaces to ensure quality communal open space for recreation, landscaping and deep planting, and comfortable private open space for residents.
- 42 Communal open space needs to be both aesthetic and functional. It should be considered at the start of siting design, not just the 'leftovers' of the site.
- 43 Concentrate the built form to the southern side of the site to leave the northern side for open space with access to daylight.
- 44 Shade private and communal open space to create a comfortable living environment (i.e. trees, operable screening).
- 45 Utilise rooftop open space where practicable to supplement other communal and private open space.



## Access and Circulation

Access to and from the development and each individual dwelling, whether it be by vehicle or foot, is integral to the functional design of apartments. Access has a great impact on legibility, safety, inclusionary design and streetscape amenity. This design guidance aims to minimise the dominance of garages and car parking areas, address the presence of cars on the street, and maximise accessibility.



### Access and Circulation

- 46 Apartments have a high demand for car parking, therefore a balanced car parking strategy that maintains streetscape amenity needs to be established from the outset.
- 47 Locate access points to effectively integrate with the street network and avoid existing streetscape features (i.e. street trees, power poles).
- 48 Ensure car parking access points are designed to minimise conflicts between pedestrians and vehicles.
- 49 Arrange dwelling entrances and access points to consider the privacy of both the residents and neighbours.
- 50 From the street view, ensure the pedestrian entries and car parking access are legible, and car parking is not dominant. This will ensure there is a visual connection between the dwellings and the street.
- 51 To enhance the streetscape, screen any car parking areas that are visible with landscaping and/or built form elements.
- 52 Understand and respond to the implications of basement, semi-basement or at-grade parking on landscaping, open space and built form.
- 53 Integrate building servicing, operations and maintenance into the design in a holistic and efficient manner (i.e. screened refuse enclosures that are easily accessible, landscaping clear zones around maintenance areas).
- 54 Ensure obstruction-free and efficient access and circulation for bulk bin waste collection vehicles.

## Establish the Building Zone

Once the site characteristics and dwelling requirements are understood, establish the building zone. The building zone sets the foundation for how the development will respond to its context and design elements (i.e. sensory and climatic, streetscape amenity, landscaping, setbacks, residential amenity, open space, access and circulation). Once the building zone is established, consider the architectural style and floor plan of the development.

### Establish the Building Zone

- 55 When the design elements are not considered together, or one is left out, then the development cannot perform to its full potential, nor can it make a positive contribution to the streetscape and neighbourhood.

A good way to visualise this is to think of the proportions of all the development requirements on the ground plane of the site, considering:

- » Required amount of communal and private open space,
- » Maximum site cover requirements,
- » Setbacks and landscaping,
- » Minimising the appearance of car parking and vehicular access,
- » Screening of and access to refuse or services,
- » Existing water connections, sewerage infrastructure and connections to adjoining lots, and
- » On site stormwater management.







# TOWNHOUSES & TERRACES

Townhouses and terraces are a type of multiple dwelling that accommodate three or more dwellings on a single site. The dwellings can have shared common walls, open space and vehicle access. Individual entrances to each dwelling are a key feature that set townhouses and terraces apart from apartments. This type of housing is usually two to three storeys and located on larger sites within residential zones identified for high density.

Residents of townhouses and terraces enjoy a similar lifestyle to residents of both apartments and low density housing. Individual dwelling entries provide the privacy of a detached dwelling whilst shared facilities and open spaces provide for an affordable and low maintenance lifestyle.

Main streets, centre uses, public transport and functional public open space are accessible from townhouses and terraces to support higher density living.

An important consideration for townhouses or terraces along street frontages is individual dwelling design and features for visual interest to enhance the streetscape amenity.

Landscaping blends townhouses and terraces seamlessly with a variety of other housing types and reflects the tropical character of Cairns. Ensuring there is adequate space for landscaping is of particular importance for townhouses and terraces arranged in more than one row on a site.



## Design Guidance

As a first step, analyse and understand the features and characteristics of the site.

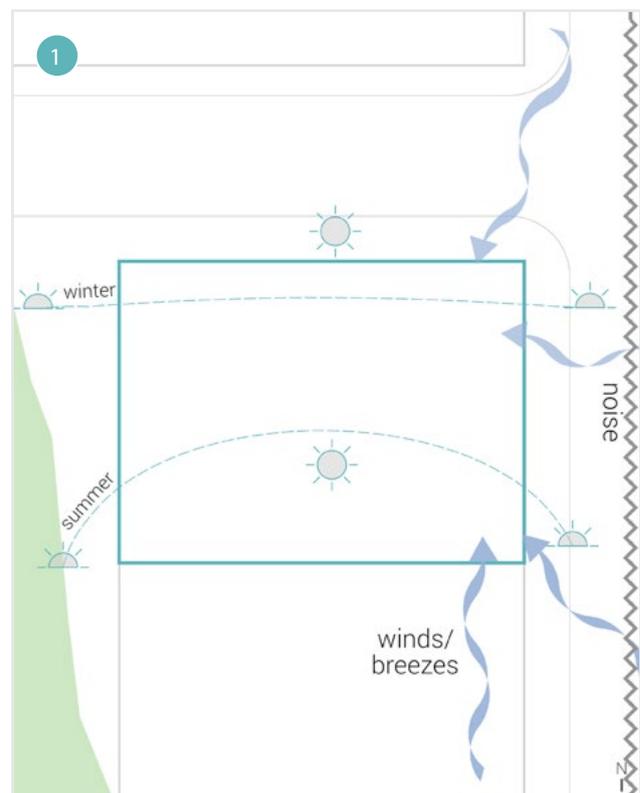


### Sensory and Climatic

One of the fundamental factors of good design is to understand and respond appropriately to the site's surrounding context and climate. This is particularly the case in Cairns, where being able to enjoy indoor and outdoor living is core to the way of life. The following guidance will assist with the design of enjoyable living spaces in a tropical climate.

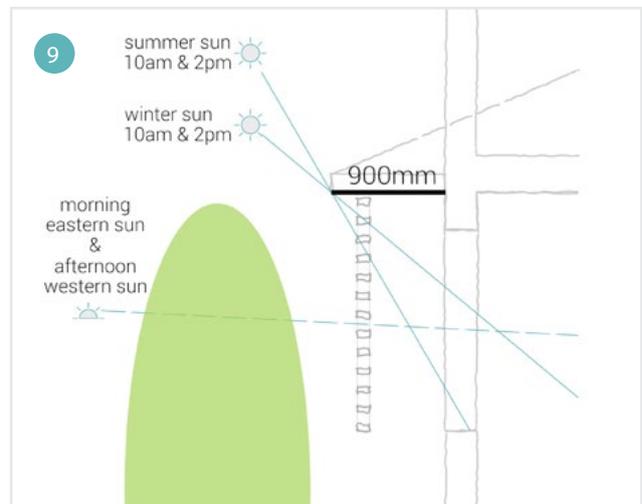
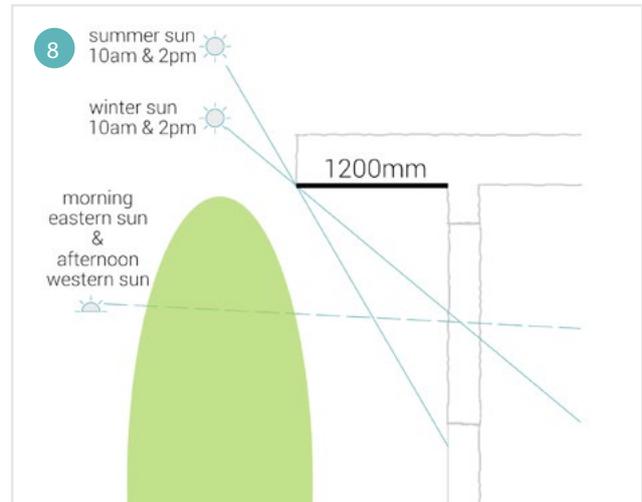
#### Sensory and Climatic

- 1 Orientate the development to optimise the number of dwellings that receive maximum daylight and capture prevailing breezes.
- 2 Dwellings should be of a depth that allows for penetration of daylight and breezes.
- 3 Consider the outlook from key habitable rooms for each dwelling.
- 4 Utilise vegetation and landscaping, as well as visual and acoustic privacy elements, to minimise impacts on adjacent development.
- 5 Use built form elements and landscaping to mitigate impacts that affect a comfortable living environment (i.e. noise, visual, urban heat island effect).
- 6 Townhouses and terraces are typically two storeys and need to consider how balconies, roof tops and topography can respond to and increase privacy between dwellings.



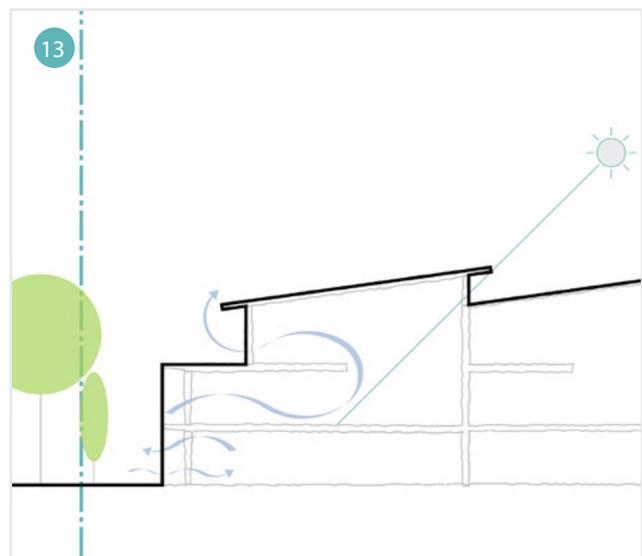
## Shade and shelter

- 7 Consider how the pitch of the roof and depth of the eaves can increase shade, capture rainwater and maximise daylight.
- 8 Provide wide awnings over external openings to provide shade from the sun and shelter from the rain.
- 9 Carefully locate landscaping and vertical screening in conjunction with wide eaves to shade walls and windows, particularly to the south-west.
- 10 Verandahs and balconies that include cooling elements (i.e. fan, operable screening), should be located on facades that are exposed to direct sun.



## Ventilation

- 11 Provide external openings (i.e. windows, balconies, doors) on as many facades as possible to allow for cross-ventilation.
- 12 Promote open plan living to optimise cross-ventilation (i.e. single internal living space, internal louvres).
- 13 Use mezzanines to enhance cross-ventilation and increase daylight to internal living spaces. This will also help provide variety in roof form and articulation of the skyline.
- 14 Provide facade articulation to allow for more opportunities for external openings.

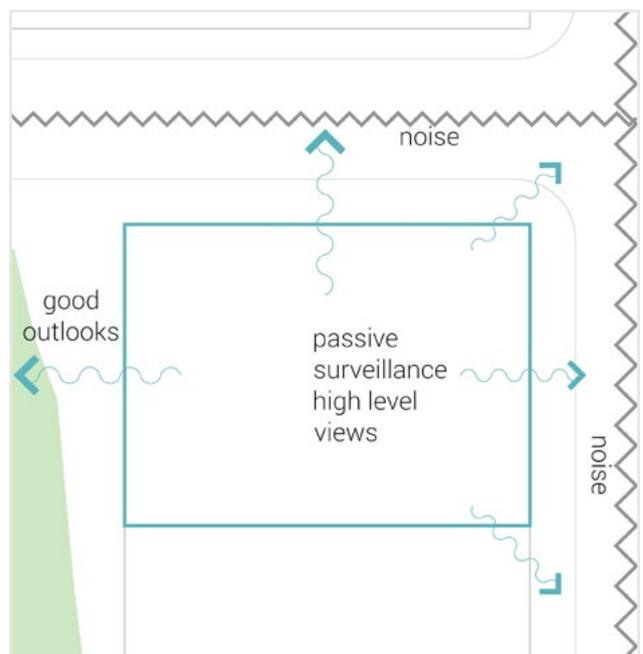


## Streetscape Amenity

How development sits within the neighbourhood contributes to its overall character, appearance and visual identity. Well designed streetscapes can foster a sense of community and safety among the residents through actively encouraging interactions and connections.

### Streetscape Amenity

- 15 In an infill context, address the development to the street to effectively integrate the built form with neighbouring development and respect the local context.
- 16 In new areas of development, ensure the built form addresses the street to contribute to the overall sense of place and identity of the new neighbourhood.
- 17 Townhouses and terraces need to integrate with surrounding development, which can include detached dwelling houses. Consider the most appropriate built form for the townhouses and terraces, considering building bulk and scale from the street.
- 18 Carefully consider the streetscape character of all street-facing facades. If the site is located on a corner, respond to both frontages with equal care.
- 19 Ensure habitable rooms are positioned to provide passive surveillance of the street. Facades that face the street should incorporate elements such as windows, verandahs and balconies that overlook the public realm.
- 20 Pay attention to all street frontages with consideration to:
  - » Windows, verandahs, awnings and balconies,
  - » Building and dwelling entrances,
  - » Facade articulation,
  - » Variety of materials and finishes to break up larger expanses of walls,
  - » Building scale and bulk,
  - » Vehicle entrances and car parking,
  - » Landscaping and fencing, and
  - » Passive surveillance of the street.



## Landscaping

Landscaping is one of the main elements that contributes to the quality of a neighbourhood and streetscape amenity. It also plays an imperative role in ensuring development positively contributes to the Cairns tropical character.



### Landscaping

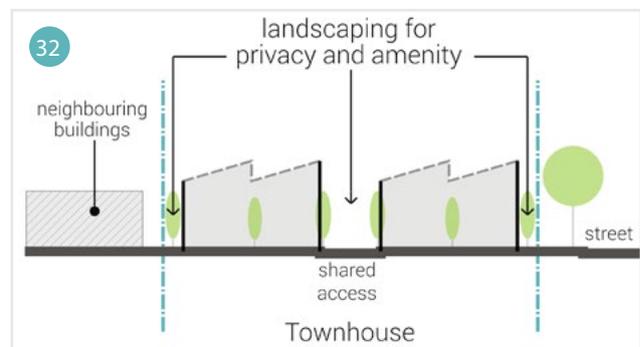
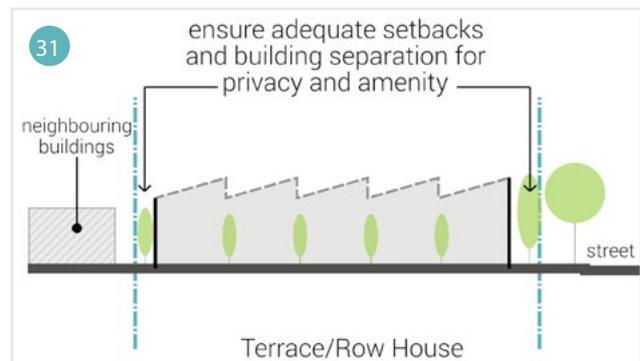
- 21 Landscaped areas need to be sufficient in size to be functional and support the establishment and growth of healthy vegetation.
- 22 Preserve existing vegetation (i.e. mature trees, planting) as part of the design to reinforce the Cairns tropical character and amenity.
- 23 Enhance development with landscaping. Encourage a diversity of species, deep planting and vertical landscaping. Avoid an over-reliance on narrow planting strips, groundcovers and grasses.
- 24 Use landscaping to enhance privacy between dwellings instead of structural screening. Plan sufficient areas for landscaping to deliver the establishment of screening shrubs.
- 25 Site specific landscape design should be considered in conjunction with fencing.
- 26 Careful attention is needed for all frontages to provide landscaping for privacy and amenity, and to soften the visual impact of the facade.
- 27 Engage a landscape specialist to assist with understanding the site constraints that will impact on the long-term establishment of landscaping (i.e. soil condition, tree suitability, light, water, maintenance).
- 28 Any proposed planting on the built form should be certified by a Registered Professional Engineer of Queensland and designed by a landscape specialist.

## Setbacks

Setbacks and building separation are intended to maintain privacy for residents and neighbours, increase amenity of the streetscape, minimise noise, maximise natural daylight, increase access to breezes and reduce overshadowing.

### Setbacks

- 29 Aim to align the front setback with the prevailing setbacks within the street to provide a consistent rhythm of development.
- 30 Consider how setbacks can be best utilised to improve privacy, minimise overlooking, and enhance the amenity of adjoining dwellings and neighbouring development.
- 31 Optimise building separation distances between the built form and neighbouring development. Where adjoining dwellings are not attached by a common wall, ensure adequate separation is provided.
- 32 Dwellings without adequate separation to provide visual privacy must utilise added design solutions (i.e. landscaping, screening) to achieve both privacy and outlook.
- 33 Setbacks are an opportunity to establish high quality landscaping, and setback widths should be considered in conjunction with landscape planning.
- 34 Attached dwellings incorporating common walls are an opportunity for larger side setbacks with high quality landscaping and increased separation from neighbouring development.



## Residential Amenity

All the principles within the guide are designed to maximise residential amenity. When living in a higher density setting, this becomes even more important as space decreases and the quality of the amenity needs to increase.



### Residential Amenity

- 35 Provide space for functional facilities for residential amenity (i.e. bicycle parking, storage, security, outdoor space for pets).
- 36 Ensure there is clarity between what is communal open space and private open space for legibility and privacy.
- 37 Use landscaping to provide delineation and additional privacy between adjoining dwellings and neighbouring development.
- 38 Site cover and siting of the development should ensure that townhouse and terrace sites provide private open space as well as communal open space amenity for residents.
- 39 Consider the proximity of adjacent dwellings and the street. Consider visual and acoustic privacy, access to daylight and outlook.



## Open Space

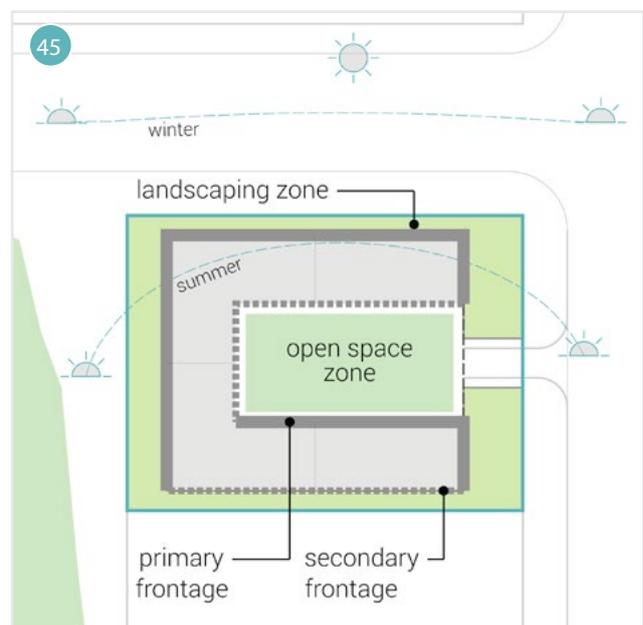
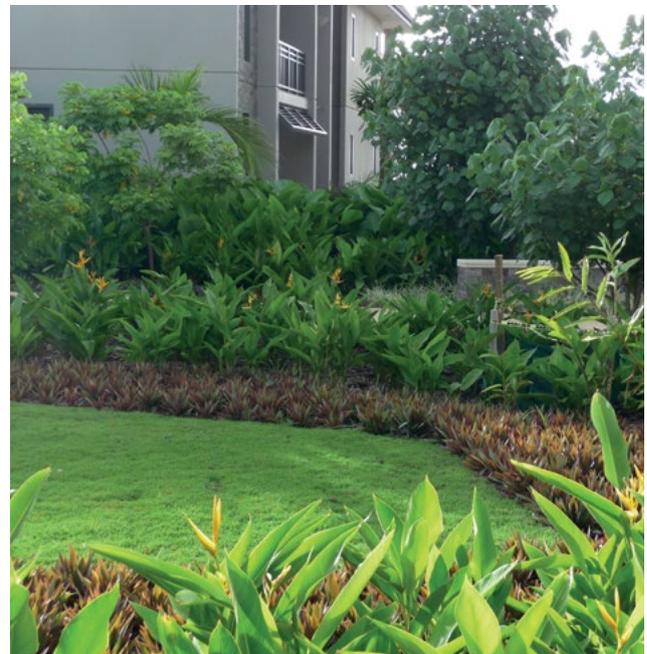
Incorporating open space into the design of development at the beginning helps achieve quality indoor and outdoor living. Well-considered open space will achieve a harmonious balance between the site's natural assets and development.

### Open Space

- 40 Site cover and siting of development should ensure that each dwelling has private open space and there is enough communal open space.
- 41 Establish a hierarchy of open spaces to ensure quality communal open space for recreation, landscaping and deep planting, and comfortable private open space for residents.
- 42 Communal open space needs to be both aesthetic and functional. It should be considered at the start of siting design, not just the 'leftovers' of the site.
- 43 Concentrate the built form to the southern side of the site to leave the northern side for open space with access to daylight.
- 44 Shade private and communal open space to create a comfortable living environment (i.e. trees, operable screening).
- 45 Optimise the amount of daylight and breezes reaching private and communal open space. Provide shaded elements (i.e. trees, operable screening)

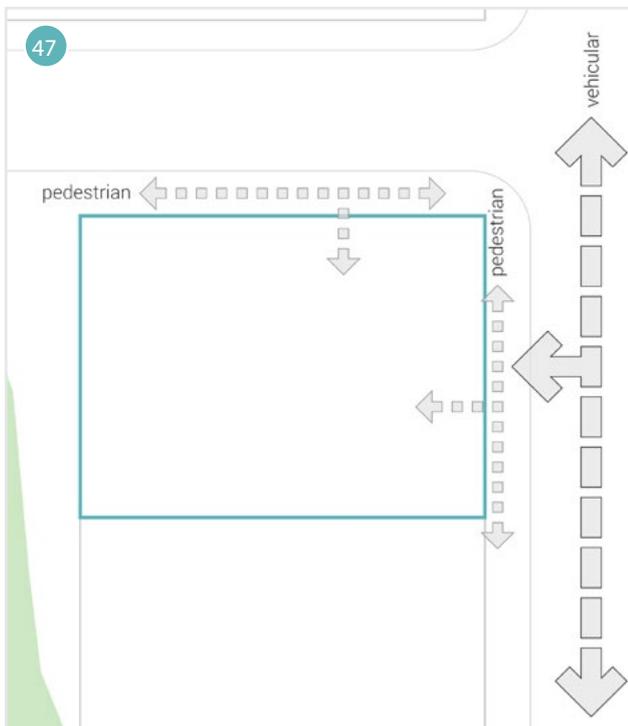
The diagram shows how to orientate built form to optimise daylight to external and internal spaces.

- » Orientate the development to take advantage of daylight, with open spaces and primary habitable rooms on the north side.
- » Understand how each dwelling has access to the outdoors and ensure outdoor areas are functional.
- » Long facades should be on an east-west axis to maximise daylight to internal living spaces.
- » Provide adequate separation between buildings to allow access to daylight.
- » Avoid narrow north-south orientation.



## Access and Circulation

Access to and from the development and each individual dwelling, whether it be by vehicle or foot, is integral to the functional design of townhouses and terraces. Access has a great impact on legibility, safety, inclusionary design and streetscape amenity. This design guidance aims to minimise the dominance of garages and car parking areas, address the presence of cars on the street, and maximise accessibility.



### Access and Circulation

- 46 Townhouses and terraces have a high demand for car parking, therefore a balanced car parking strategy that maintains streetscape amenity needs to be established from the outset.
- 47 Locate access points to effectively integrate with the street network and avoid existing streetscape features (i.e. street trees, power poles).
- 48 Ensure that car parking access points are designed to minimise conflicts between pedestrians and vehicles.
- 49 From the street view, ensure the pedestrian entries and car parking access are legible, and car parking is not dominant. This will ensure there is a visual connection between the dwellings and the street.
- 50 To enhance the streetscape, screen any car parking areas that are visible with landscaping and/or built form elements.
- 51 Integrate or provide a single car parking access point where practicable to minimise the number of car parking access points along the street and increase the provision for on-street car parking.
- 52 Design each dwelling pedestrian entrance to enable a sense of individuality and separate ownership.
- 53 Ensure obstruction-free and efficient access and circulation for bulk bin waste collection vehicles.

## Establish the Building Zone

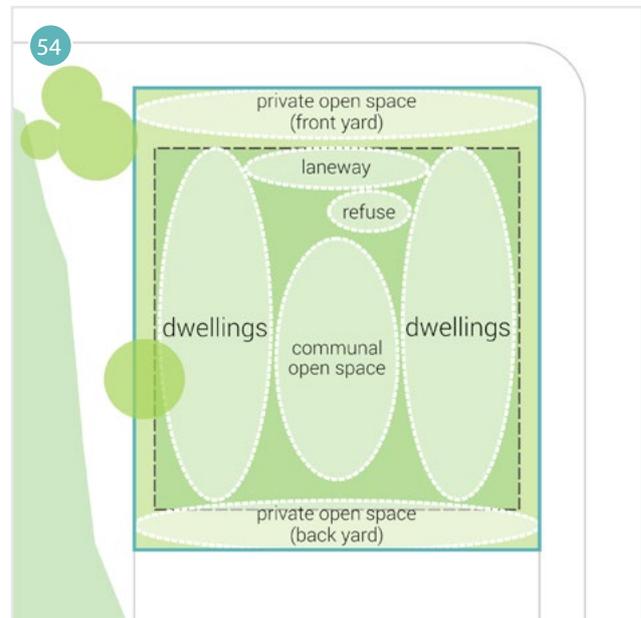
Once the site characteristics and dwelling requirements are understood, establish the building zone. The building zone sets the foundation for how the development will respond to its context and design elements (i.e. sensory and climatic, streetscape amenity, landscaping, setbacks, residential amenity, open space, access and circulation). Once the building zone is established, consider the architectural style and floor plan of the development.

### Establish the Building Zone

- 54 When the design elements are not considered together, or one is left out, then the development cannot perform to its full potential, nor can it make a positive contribution to the streetscape and neighbourhood.

A good way to visualise this is to think of the proportions of all the development requirements on the ground plane of the site, considering:

- » Required amount of communal and private open space,
- » Maximum site cover requirements,
- » Setbacks and landscaping,
- » Minimising the appearance of car parking and vehicular access,
- » Screening of and access to refuse or services,
- » Existing water connections, sewerage infrastructure and connections to adjoining lots, and
- » On site stormwater management.







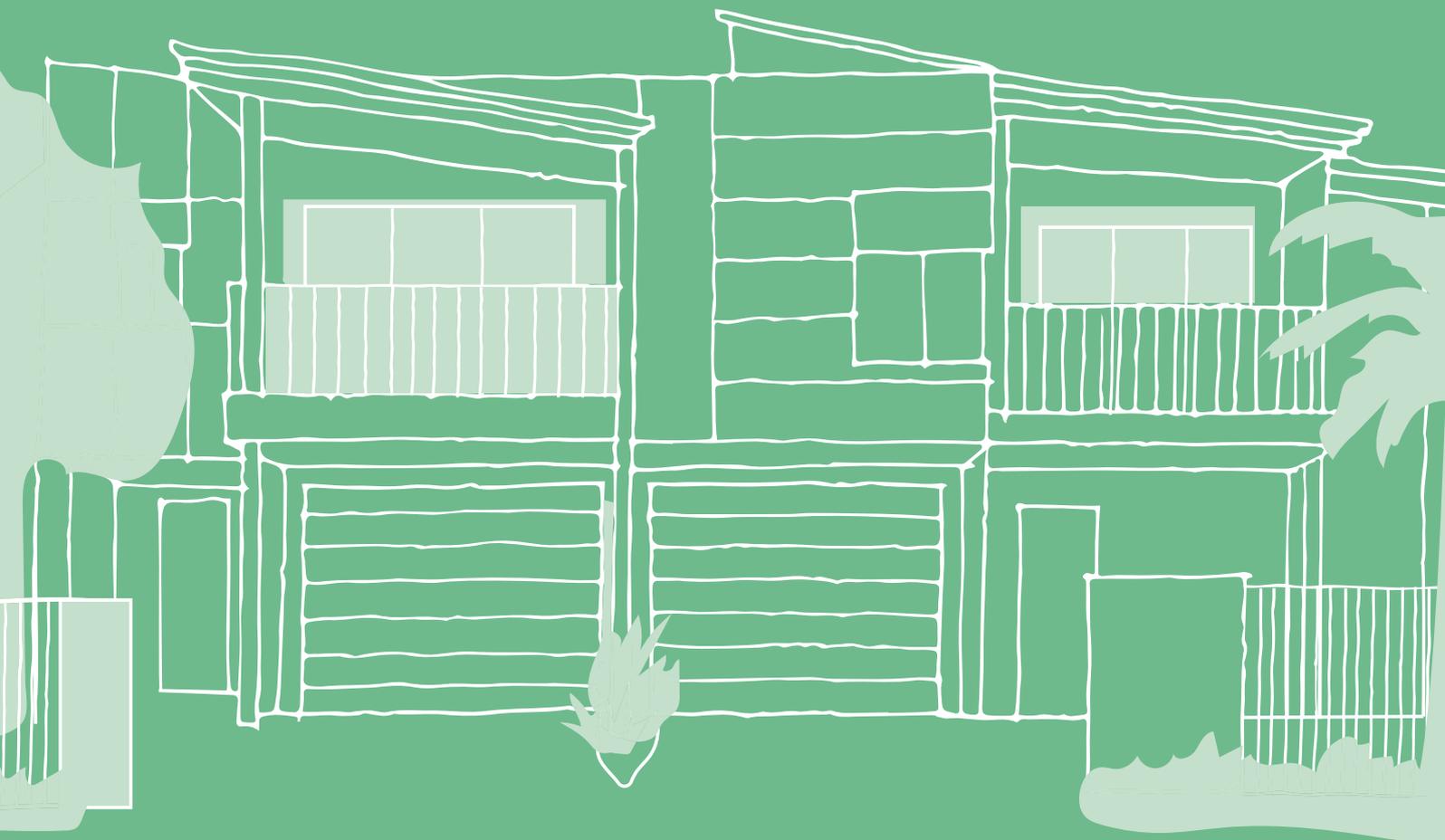
Dual occupancies provide two dwellings on a single site. The dwellings can either be attached with a common wall or detached, and sometimes share features such as a front yard and car parking access.

# DUAL OCCUPANCY

Dual occupancies are perfect for sites in suburban neighbourhoods that could otherwise provide a single detached dwelling. Residents enjoy a similar living arrangement to a detached dwelling but with lower maintenance and housing costs.

Usually surrounded by detached dwellings, dual occupancies should integrate with the neighbourhood context.

The best examples are conscious of their surrounding neighbourhood, and provide shared walls and features to allow for extensive tropical landscaping and separation from neighbouring development for privacy.



## DUAL OCCUPANCY

## Design Guidance

As a first step, analyse and understand the features and characteristics of the site.

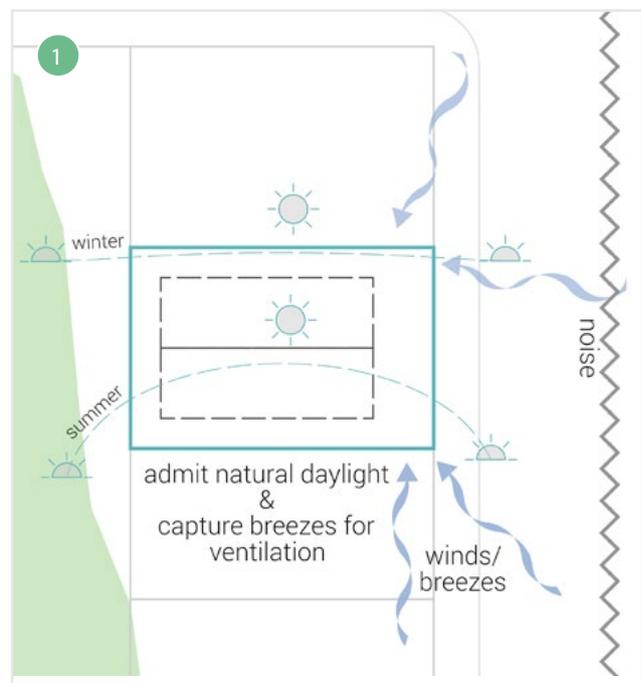


## Sensory and Climatic

One of the fundamental factors of good design is to understand and respond appropriately to the site's surrounding context and climate. This is particularly the case in Cairns, where being able to enjoy indoor and outdoor living is core to the way of life. The following guidance will assist with the design of enjoyable living spaces in a tropical climate.

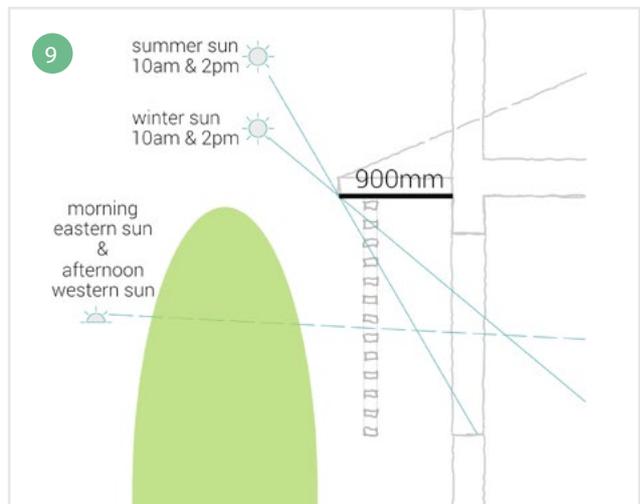
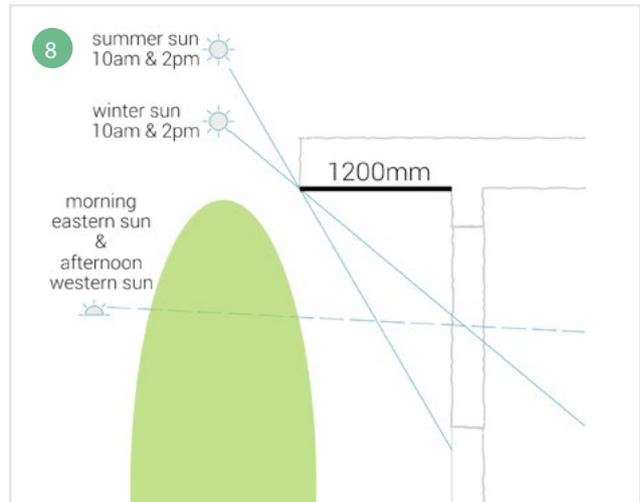
## Sensory and Climatic

- 1 Orientate the development to optimise the number of dwellings that receive maximum daylight and capture prevailing breezes.
- 2 Dwellings should be of a depth that allows for penetration of daylight and breezes.
- 3 Consider the outlook from key habitable rooms for each dwelling.
- 4 Utilise vegetation and landscaping, as well as visual and acoustic privacy elements, to minimise impacts on adjacent development.
- 5 Use built form elements and landscaping to mitigate impacts that affect a comfortable living environment (i.e. noise, visual, urban heat island effect).
- 6 Utilise topography to increase privacy where practicable.



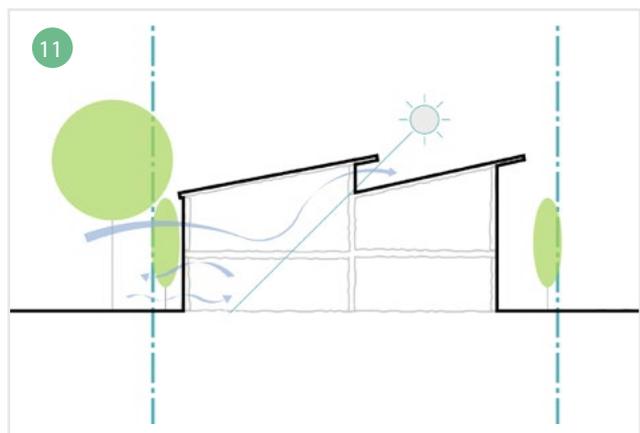
## Shade and shelter

- 7 Consider how the pitch of the roof and depth of the eaves can increase shade, capture rainwater and maximise daylight.
- 8 Provide wide awnings over external openings to provide shade from the sun and shelter from the rain.
- 9 Carefully locate landscaping and vertical screening in conjunction with wide eaves to shade walls and windows, particularly to the south-west.
- 10 Verandahs and balconies that include cooling elements (i.e. fan, operable screening), should be located on facades that are exposed to direct sun.



## Ventilation

- 11 Provide external openings (i.e. windows, balconies, doors) on as many facades as possible to allow for cross-ventilation.
- 12 Promote open plan living to optimise cross-ventilation (i.e. single internal living space, internal louvres).
- 13 Provide facade articulation to allow for more opportunities for external openings.

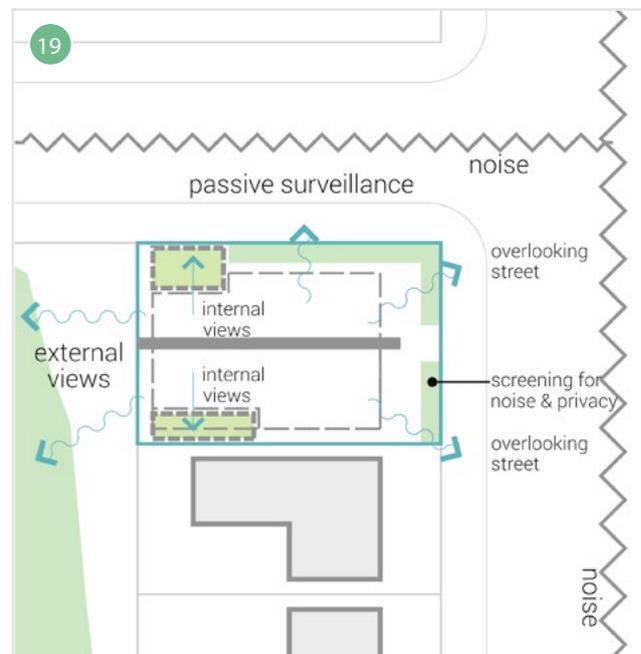


## Streetscape Amenity

How development sits within the neighbourhood contributes to its overall character, appearance and visual identity. Well designed streetscapes can foster a sense of community and safety among the residents through actively encouraging interactions and connections.

### Streetscape Amenity

- 14 Dual occupancies need to integrate with surrounding development, which are typically detached dwelling houses. Consider the most appropriate built form for the dual occupancy development, considering building bulk and scale from the street.
- 15 Ensure the built form addresses the street to contribute to the overall sense of place and identity.
- 16 Ensure both dwellings are unique and provide a sense of ownership from the street (i.e. individual dwelling entrances, unique building design and finishes)
- 17 Carefully consider the streetscape character of all street-facing facades. If the site is located on a corner, respond to both frontages with equal care.
- 18 Ensure habitable rooms are positioned to provide passive surveillance of the street.
- 19 Pay attention to all street frontages with consideration to:
  - » Windows, awnings and balconies,
  - » Dwelling entrances,
  - » Facade articulation,
  - » Building scale and bulk,
  - » Vehicles entrances and car parking,
  - » Landscaping and fencing, and
  - » Passive surveillance of the street.



## Landscaping

Landscaping is one of the main elements that contributes to the quality of a neighbourhood and streetscape amenity. It also plays an imperative role in ensuring development positively contributes to the Cairns tropical character.



### Landscaping

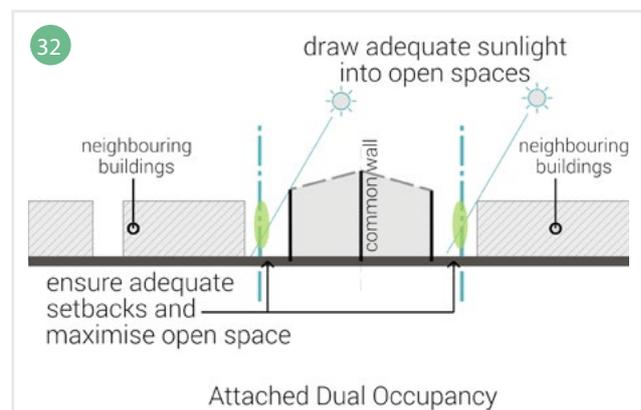
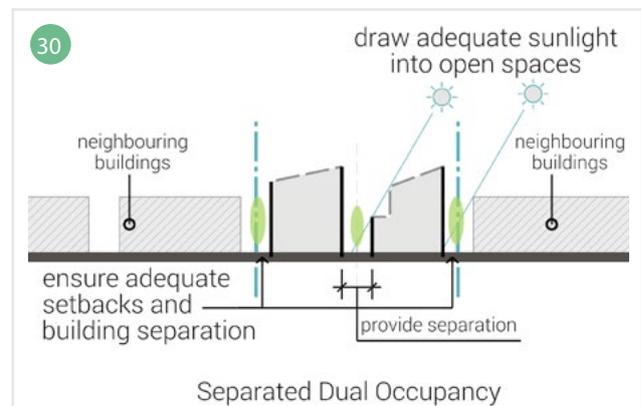
- 20 Landscaped areas need to be sufficient in size to be functional and support the establishment and growth of healthy vegetation.
- 21 Preserve existing vegetation (i.e. mature trees, planting) as part of the design to reinforce the Cairns tropical character and amenity.
- 22 Enhance development with landscaping. Encourage a diversity of species, deep planting and vertical landscaping. Avoid an over-reliance on narrow planting strips, groundcovers and grasses.
- 23 Use landscaping to enhance privacy between dwellings instead of structural screening. Plan sufficient areas for landscaping to deliver the establishment of screening shrubs.
- 24 Site specific landscape design should be considered in conjunction with fencing.
- 25 Dual occupancies that share a common wall should take advantage of larger side setbacks to establish landscaping that can assist with increased privacy and amenity.
- 26 Consider engaging a landscape specialist to assist with understanding the site constraints that will impact on the long-term establishment of landscaping (i.e. soil condition, tree suitability, light, water, maintenance).
- 27 Any proposed planting on the built form should be certified by a Registered Professional Engineer of Queensland and designed by a landscape specialist.

## Setbacks

Setbacks and building separation are intended to maintain privacy for residents and neighbours, increase amenity of the streetscape, minimise noise, maximise natural daylight, increase access to breezes and reduce overshadowing.

### Setbacks

- 28 Aim to align the front setback with the prevailing setbacks within the street to provide a consistent rhythm of development.
- 29 Consider how setbacks can be best utilised to improve privacy, minimise overlooking, and enhance the amenity of adjoining dwellings and neighbouring development.
- 30 Optimise building separation distances between the built form and neighbouring development.
- 31 Setbacks are an opportunity to establish high quality landscaping, and setback widths should be considered in conjunction with landscape planning.
- 32 Dual occupancy dwellings incorporating a common wall are an opportunity for larger side setbacks with high quality landscaping and increased separation to neighbouring development.



## Residential Amenity

All the principles within the guide are designed to maximise residential amenity. When living in a higher density setting, this becomes even more important as space decreases and the quality of the amenity needs to increase.



### Residential Amenity

- 33 Site cover and siting of the dwellings should ensure that dual occupancy sites provide private open space and amenity for residents.
- 34 Use landscaping to provide delineation and additional privacy between adjoining dwellings and neighbouring development.
- 35 Consider the proximity of adjacent dwellings and the street. Consider visual and acoustic privacy, access to daylight and outlook.
- 36 Consider the internal layout of each dwelling to maximise residential amenity and privacy on the site and to neighbouring development.

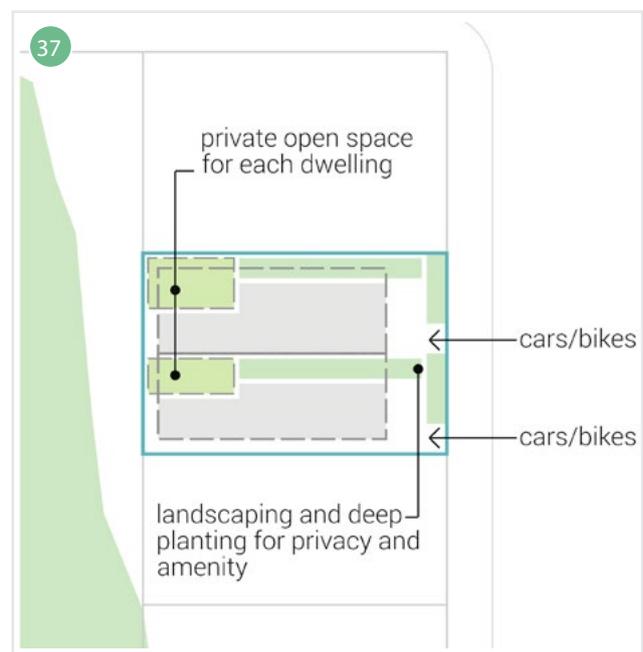
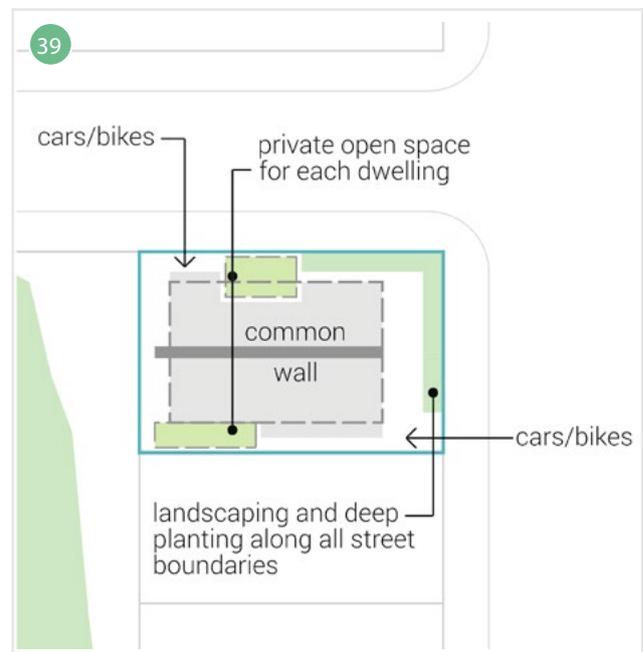


## Open Space

Incorporating open space into the design of development at the beginning helps achieve quality indoor and outdoor living. Well-considered open space will achieve a balance between the site's natural assets and development.

### Open Space

- 37 Provide functional open space for residents that is useable, private, and supplemented with landscaping which provides shade and additional amenity.
- 38 Narrow and deep lots will need to ensure open spaces optimise daylight in relation to their orientation.
- 39 Corner lots give the opportunity for wider and shallower lots so that the dwellings and private open spaces can sit side by side.
- 40 Careful attention is needed for both frontages on a corner lot, for both landscaping for privacy and amenity and facade articulation.
- 41 Where possible, concentrate car parking and non-habitable rooms to the western and/or southern side of the site to leave the northern side for open space with access to daylight.
- 42 Shade private and communal open space to create a comfortable living environment (i.e. trees, operable screening)



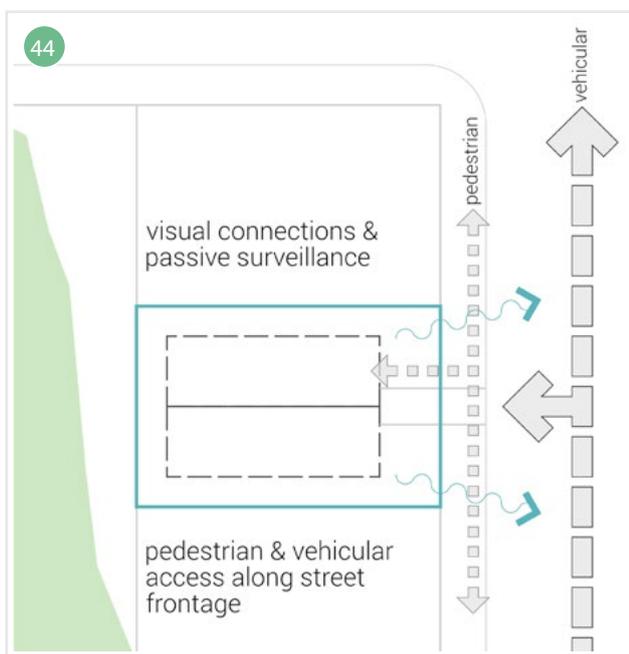
## Access and Circulation

Access to and from the development and each individual dwelling, whether it be by vehicle or foot, is integral to the functional design of dual occupancies. Access has a great impact on legibility, safety, inclusionary design and streetscape amenity. This design guidance aims to minimise the dominance of garages, address the presence of cars on the street, and maximise accessibility.



### Access & Circulation

- 43 Locate access points to effectively integrate with the street network and avoid existing streetscape features (i.e. street trees, power poles).
- 44 Ensure car parking access points are designed to minimise conflicts between pedestrians and vehicles. Provide sufficient front setbacks to garages or carports allow a car to park in the driveway without overhanging onto the front verge and footpath.
- 45 Arrange dwelling entrances and access points to consider the privacy of both the residents and neighbours.
- 46 From the street view, ensure the pedestrian entries and car parking access are legible, and car parking is not dominant. This will ensure there is a visual connection between the dwellings and the street.
- 47 Provide a single car parking access point where practicable to minimise the number of car parking access points along the street and increase the provision for on-street car parking.
- 48 On corner lots where both road frontages are of the same order road, each dwelling could be accessed from a different road frontage. This reduces the impact of additional crossovers in a streetscape but also allows the design to create a sense of individuality and separate ownership.
- 49 Integrate building servicing, operations and maintenance into the design in a holistic and efficient manner (i.e. screened refuse enclosure that are easily accessible, landscaping clear zones around maintenance areas).
- 50 Ensure the provision of space for kerbside refuse collection that does not conflict with on-street car parking.



## Establish the Building Zone

Once the site characteristics and dwelling requirements are understood, establish the building zone. The building zone sets the foundation for how the development will respond to its context and design elements (i.e. sensory and climatic, streetscape amenity, landscaping, setbacks, residential amenity, open space, access and circulation). Once the building zone is established, consider the architectural style and floor plan of the development.

### Establish the Building Zone

51 When the design elements are not considered together, or one is left out, then the development cannot perform to its full potential, nor can it make a positive contribution to the streetscape and neighbourhood.

A good way to visualise this is to think of the proportions of all the development requirements on the ground plane of the site, considering:

- » Required amount of private open space,
- » Maximum site cover requirements,
- » Setbacks and landscaping,
- » Minimising the appearance of car parking and vehicular access,
- » Screening of and access to refuse or services,
- » Existing water connections, sewerage infrastructure and connections to adjoining lots, and
- » On site stormwater management.







# SMALL LOT DWELLINGS & RECONFIGURATIONS

Small lot dwellings and reconfigurations refer to dwelling houses that are established on smaller residential sites (lots less than 450m<sup>2</sup>). This type of housing, and the subdivisions that create smaller residential sites, provides a similar living arrangement to detached dwellings on larger sites but with benefits of higher density living.

Creating smaller lots by reconfiguring existing larger sites is a great way to increase the density of established neighbourhoods. Particular care, however, needs to be given to integrate these lots into existing residential areas with a development pattern and streetscape of large lots with single detached dwellings. Not all neighbourhoods will be suitable for small lots. Small lots can also be integrated into new development areas to increase density, leaving space for more public facilities and natural areas.

Dwellings on small lots are more modest in size – but not design – to their larger detached dwelling counterparts.

The modest size, preferably two storey built form, and other design considerations ensure this housing type overcomes the spatial constraints of the small site. Small lot dwellings and reconfigurations contribute positively to the streetscape when siting, design and landscaping have been well considered.

Access to public amenities such as open space, natural features, outlooks and views are important for small lot dwellings and reconfigurations to substitute the reduced amount of private open space.





## Design Guidance

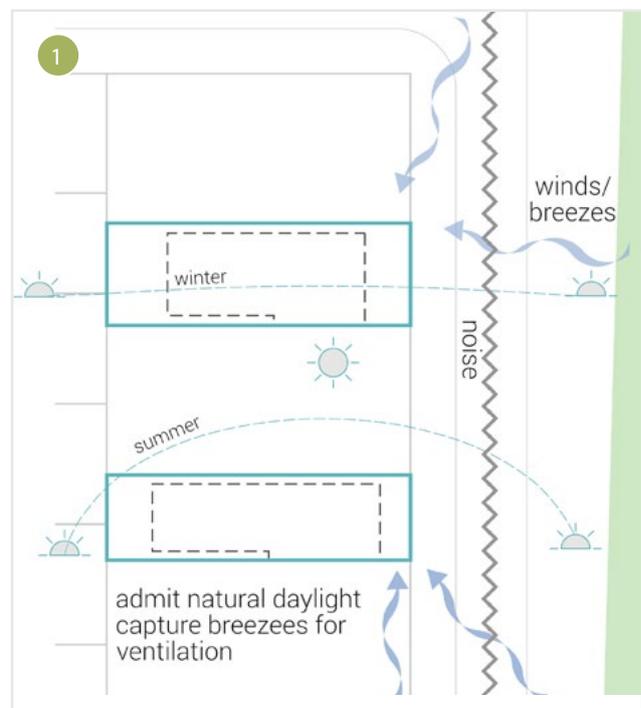
As a first step, analyse and understand the features and characteristics of the site.

### Sensory and Climatic

One of the fundamental factors of good design is to understand and respond appropriately to the site's surrounding context and climate. This is particularly the case in Cairns, where being able to enjoy indoor and outdoor living is core to the way of life. The following guidance will assist with the design of enjoyable living spaces in a tropical climate.

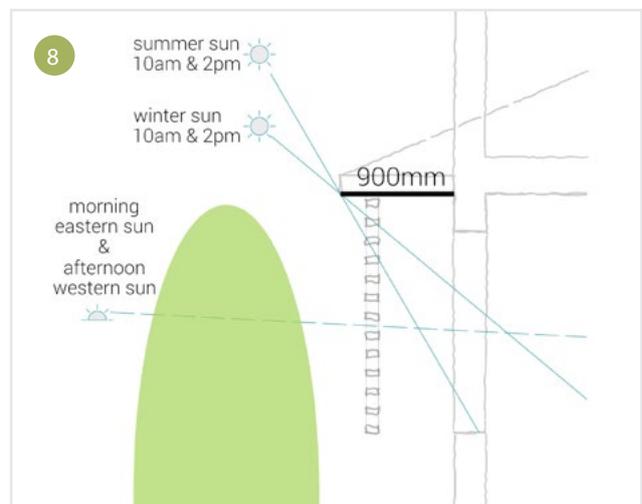
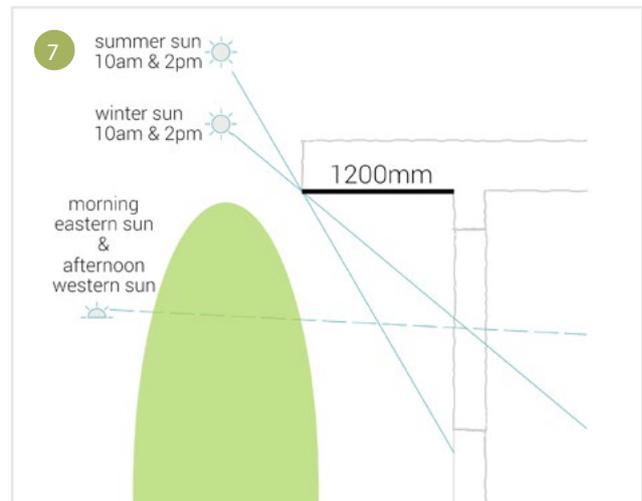
#### Sensory and Climatic

- 1 Orientate the development to maximise daylight and capture prevailing breezes.
- 2 Dwellings should be of a depth that allows for penetration of daylight and breezes.
- 3 Consider the outlook from key habitable rooms for each dwelling.
- 4 Utilise vegetation and landscaping, as well as visual and acoustic privacy elements, to minimise impacts on neighbouring development.
- 5 Use built form elements and landscaping to mitigate impacts that affect a comfortable living environment (i.e. noise, visual, urban heat island effect).



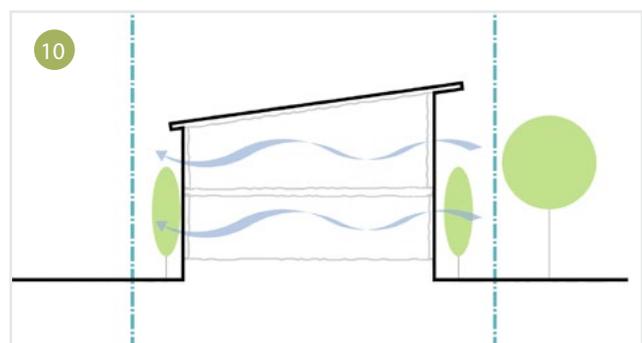
## Shade and shelter

- 6 Consider how the pitch of the roof and depth of the eaves can increase shade, capture rainwater and maximise daylight.
- 7 Provide wide awnings over external openings to provide shade from the sun and shelter from the rain.
- 8 Carefully locate landscaping and vertical screening in conjunction with wide eaves to shade walls and windows, particularly to the south-west.
- 9 Verandahs and balconies that include cooling elements (i.e. fan, operable screening), should be located on facades that are exposed to direct sun.



## Ventilation

- 10 Provide external openings (i.e. windows, balconies, doors) on as many facades as possible to allow for cross-ventilation.
- 11 Promote open plan living to optimise cross-ventilation (i.e. single internal living space, internal louvres).
- 12 Provide facade articulation to allow for more opportunities for external openings.
- 13 Consider setbacks and separation to neighbouring development to ensure access to breezes for cross-ventilation.

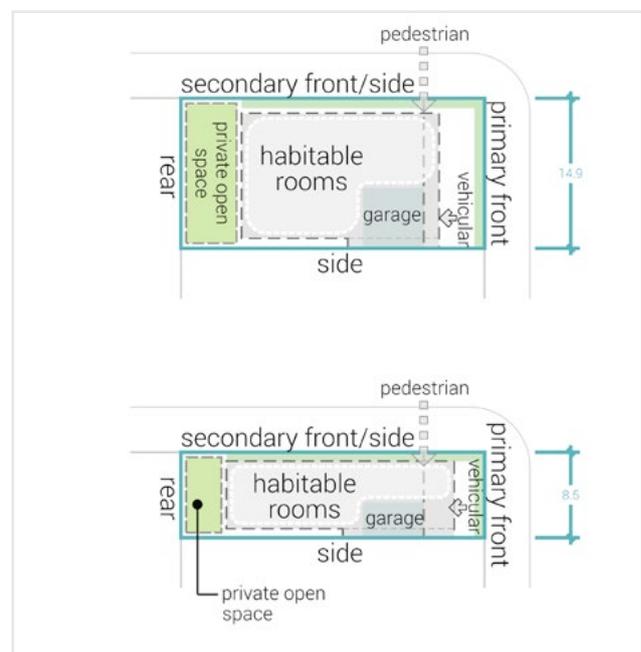
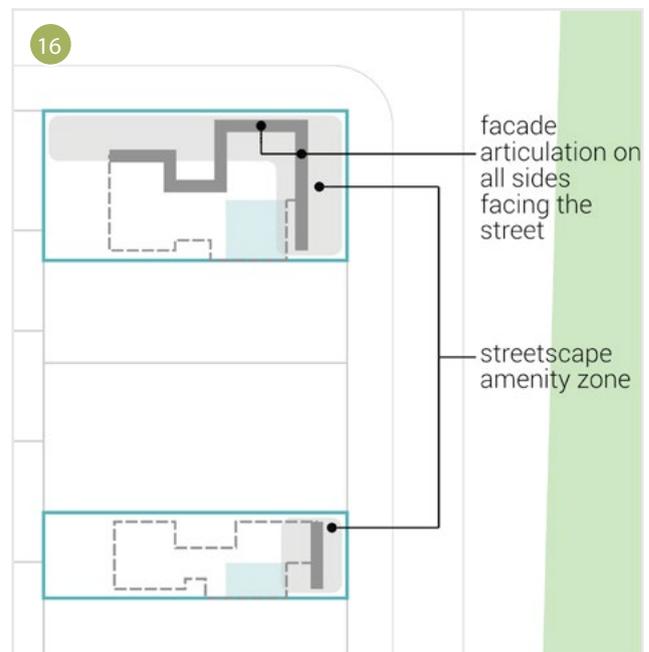


## Streetscape Amenity

How development sits within the neighbourhood contributes to its overall character, appearance and visual identity. Well designed streetscapes can foster a sense of community and safety among the residents through actively encouraging interactions and connections.

### Streetscape Amenity

- 14 In an infill context, address the development to the street to effectively integrate the built form with neighbouring development and respect the local context.
- 15 In new areas of development, ensure the built form addresses the street to contribute to the overall sense of place and identity of the new neighbourhood.
- 16 Carefully consider the streetscape character of all street-facing facades. If the site is located on a corner, respond to both frontages with equal care.
- 17 Ensure habitable rooms are positioned to provide passive surveillance of the street.
- 18 Care needs to be taken to integrate small lots into established residential neighbourhood and streetscape, with large lots and single detached housing. Consider the design and context, including limiting the number of small lots in a row.
- 19 Pay attention to all street frontages with consideration to:
  - » Windows, awnings and balconies,
  - » Dwelling entrances,
  - » Facade articulation,
  - » Vehicle entrances and car parking,
  - » Landscaping and fencing, and
  - » Passive surveillance of the street.



## Landscaping

Landscaping is one of the main elements that contributes to the quality of a neighbourhood and streetscape amenity. It also plays an imperative role in ensuring development positively contributes to the Cairns tropical character.



### Landscaping

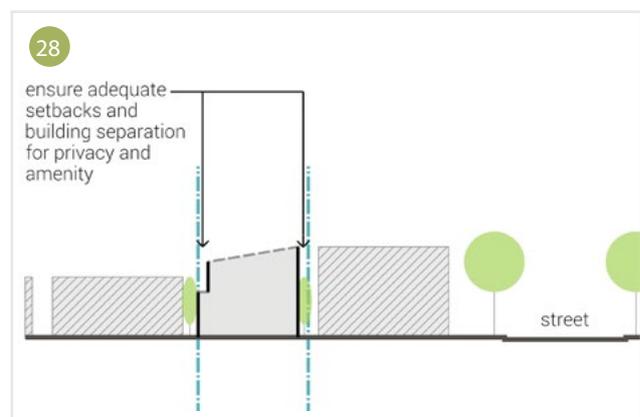
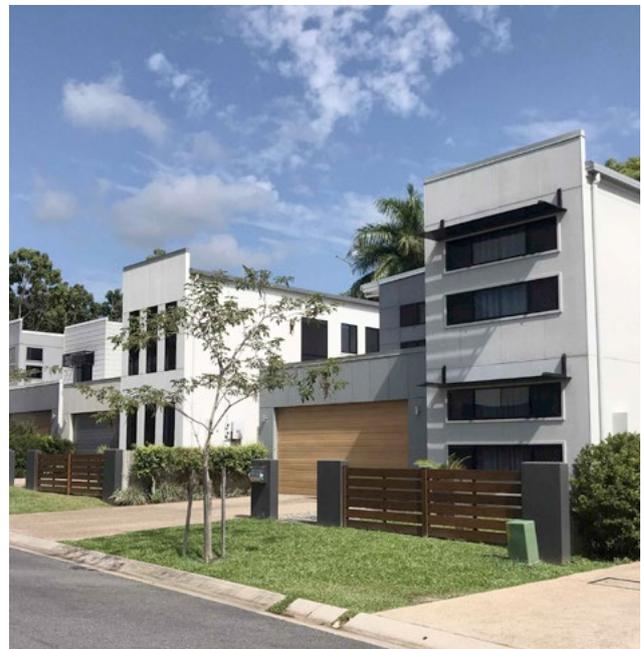
- 20 Landscaped areas need to be sufficient in size to be functional and support the establishment and growth of healthy vegetation. Landscaping strips may be smaller due to the narrow lot frontage and will need to consider how planting can be established (i.e. appropriate tree and plant species, vertical landscaping).
- 21 Preserve existing vegetation (i.e. mature trees, planting) as part of the design to reinforce the Cairns tropical character and amenity.
- 22 Enhance development with landscaping. Where possible, provide a single space for a larger tree. Encourage a diversity of species and avoid an over-reliance on groundcovers and grasses.
- 23 Use landscaping to enhance privacy between residents and neighbours instead of structural screening. Plan sufficient areas for landscaping to deliver the establishment of screening shrubs.
- 24 Site specific landscape design should be considered in conjunction with fencing.
- 25 Consider engaging a landscape specialist to assist with understanding the site constraints that will impact on the long-term establishment of landscaping (i.e. soil condition, tree suitability, light, water, maintenance).
- 26 Any proposed planting on the built form should be certified by a Registered Professional Engineer of Queensland and designed by a landscape specialist.

## Setbacks

Setbacks and building separation are intended to maintain privacy for residents and neighbours, increase amenity of the streetscape, minimise noise, maximise natural daylight, increase access to breezes and reduce overshadowing.

### Setbacks

- 27 Aim to align the front setback with the prevailing setbacks within the street to provide a consistent rhythm of development.
- 28 On small lots, setbacks and landscaping still need to be provided and be of an appropriate width.
- 29 In an infill context, greater setbacks may be required to integrate with existing neighbourhood.
- 30 Where a rear lot (battle-axe style lot), increase side setbacks to improve privacy, minimise overlooking, increase landscaping and enhancing the amenity of adjoining dwellings and neighbours.
- 31 Consider a two storey design to ensure that development can achieve appropriate setbacks.



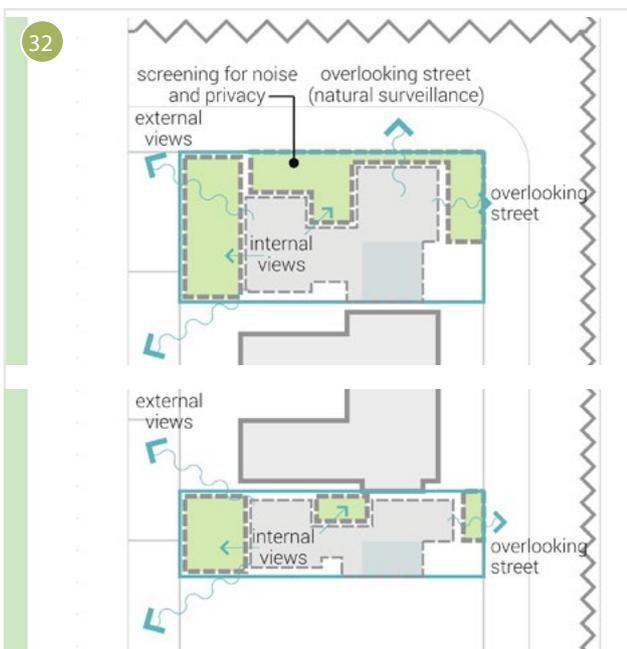
## Residential Amenity

All the principles within the guide are designed to maximise residential amenity. When living in a higher density setting, this becomes even more important as space decreases and the quality of the amenity needs to increase.



### Residential Amenity

- 32 Site cover and siting of the dwelling should ensure that the development is not too large for the small lot and can still provide open space and amenity for residents.
- 33 Use landscaping to provide delineation and additional privacy to neighbouring development.
- 34 Consider the proximity of adjacent dwellings and the street. Consider visual and acoustic privacy, access to daylight and outlook. Ensure air conditioning units are located to mitigate amenity and ventilation impacts on neighbouring development.
- 35 Consider the internal layout of the dwelling to maximise residential amenity and privacy on the site and to neighbouring development.

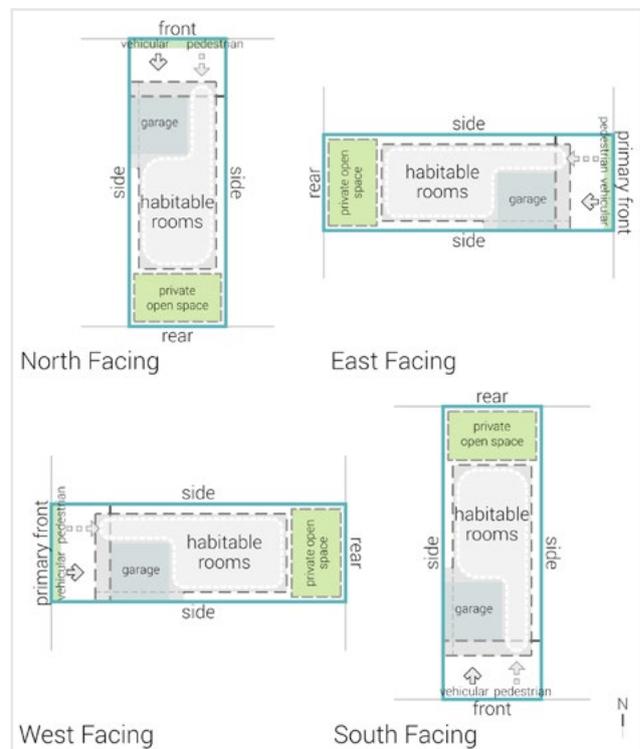


## Open Space

Incorporating open space into the design of the dwelling at the beginning helps achieve quality indoor and outdoor living. Well-considered open space will achieve a harmonious balance between the site's natural assets and development.

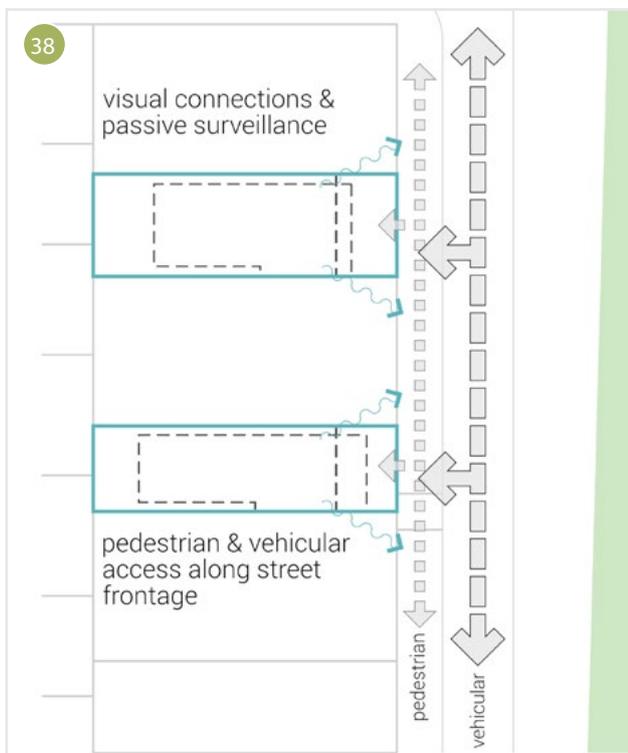
### Open Space

- 36 When reconfiguring lots in an infill context, consider how narrow and deep lots will respond to:
- » Maximising daylight to internal living spaces in relation to their orientation.
  - » Where possible, concentrate car parking and non-habitable rooms to the western and/or southern side of the site to leave the northern side for shaded outdoor open space with access to daylight.
- 37 Corner lots give the opportunity for wider and shallower lots so that the dwelling and open space can sit side by side.



## Access and Circulation

Access to and from the dwelling, whether it be by vehicle or foot, is integral to the design and will have a great impact on legibility, safety, inclusionary design and streetscape amenity. This design guidance aims to minimise the dominance of garages, address the presence of cars on the street, and maximise great living spaces.



### Access and Circulation

- 38 Locate access points to effectively integrate with the street network and avoid existing streetscape features (i.e. street trees, water meters, power poles).
- 39 Ensure car parking access points are designed to minimise conflicts between pedestrians and vehicles. Provide sufficient front setbacks to garages or carports allow a car to park in the driveway without overhanging onto the front verge and footpath.
- 40 Where a small lot is too narrow to accommodate a double garage or carport, consider tandem car parking.
- 41 Provide enough space for on-street car parking, light poles, street trees, stormwater and other essential infrastructure between car parking access points.
- 42 Where possible, car parking access points should aim to provide for one on-street car parking space at the front of each lot. In the streetscape, these features should be co-ordinated to ensure the location of car parking access points and streetscape features do not limit on-street car parking.
- 43 Ensure the provision of space for kerbside refuse collection that does not conflict with on-street car parking.

## Establish the Building Zone

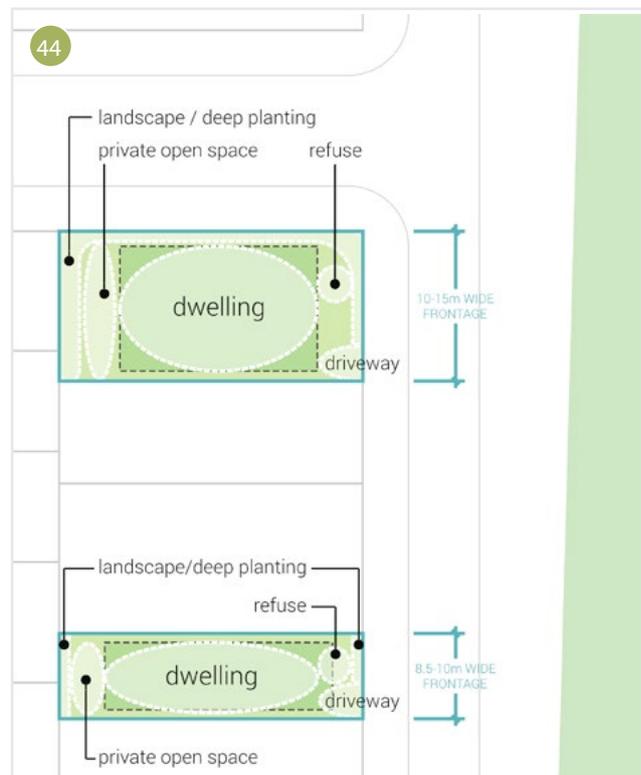
Once the site characteristics and dwelling requirements are understood, establish the building zone. The building zone sets the foundation for how the development will respond to its context and design elements (i.e. sensory and climatic, streetscape amenity, landscaping, setbacks, residential amenity, open space, access and circulation). Once the building zone is established, consider the architectural style and floor plan of the development.

### Establish the Building Zone

44 When the design elements are not considered together, or one is left out, then the development cannot perform to its full potential, nor can it make a positive contribution to the streetscape and neighbourhood.

A good way to visualise this is to think of the proportions of all the development requirements on the ground plane of the site, considering:

- » >1m landscaping to street frontages for deep planting,
- » Private open space per dwelling (16m<sup>2</sup> to 20m<sup>2</sup>, depending on primary street frontage width),
- » Number and width of car parking access points to be minimised as much as possible,
- » Screening of and access to refuse or services,
- » Existing water connections, sewerage infrastructure and connections to adjoining lots,
- » Separation of water meter and electricity cabinet, and
- » On site stormwater management.





# Glossary

Access and circulation refers to the ways in which people move into and around an area or development.

Articulation is defined within Schedule 1 of CairnsPlan 2016.

Breezeway is a roofed, often open, passage connecting two buildings.

Breeze permeation refers to the extent to which breezes are able to flow through a building without being restricted or blocked.

Building bulk refers to the size, scale and proportions of buildings or other structures and their relationship to each other, their site, open areas and the street.

Building services are the systems installed in buildings to make them comfortable, functional, efficient and safe. Examples include air conditioning, lifts and fire hydrants.

Building zone is a three-dimensional extent of where a building and associated structures may be built on a site.

Climate responsive refers to building design that reflects the local weather conditions. The design accounts for factors like seasonality, intensity of the sun, wind, rainfall and humidity.

Communal open space refers to areas on private property that are provided for the recreational and common use of residents of the property.

Context-sensitive design refers to a design that is sensitive and responsive to its surroundings, through careful planning, consideration, and tailoring designs to the project's circumstances.

Cross ventilation is the use of windows, doors or vents on opposite sides of a building to facilitate the circulation of air.

Crossover refers to the part of the verge where vehicles cross to enter a property. This part is commonly known as part of a driveway.

Deep planting is defined within Schedule 1 of CairnsPlan 2016.

Facade is an exterior wall or surface of a building that is exposed to public view.

Habitable room is defined within Schedule 1 of CairnsPlan 2016.

Household is defined within Schedule 1 of CairnsPlan 2016.

Housing typology is a type of residential development, defined by the number of dwellings and built form, such as an apartment, townhouse or terrace, dual occupancy or small lot dwelling.

Infill development is defined within Schedule 1 of CairnsPlan 2016.

Inclusionary design makes development usable by everyone, regardless of age, needs and circumstance. It is based on the simple principle that designing for the widest range of people creates better designs and benefits everyone.

Landscaping is defined within Schedule 1 of CairnsPlan 2016.

Legibility is defined within Schedule 1 of CairnsPlan 2016.

Liveable housing supports the health, needs, wellbeing and quality of life of the residents. Liveability is usually affected by residential amenity, open space provision, comfort and access.

Mezzanine is an intermediate storey (or storeys) in a building which is open to the floor below.

Operable screening refers to louvres or screens that can be moved along tracks or opened to allow for or reduce ventilation and daylight.

Open plan living refers to the elimination of barriers such as walls and doors that traditionally separated distinct functional areas in a dwelling, such as combining the kitchen, living room and dining room into a single great room.

Passive design is design that works with the environment to exclude unwanted heat or cold and takes advantage of the sun and breezes, therefore avoiding or minimising the need for electric heating or cooling.

Passive surveillance is the subconscious, ongoing, casual observation of the streetscape implied by such things as activity, front verandahs, windows or gardening.

Rear lot is defined within Schedule 1 of CairnsPlan 2016.

Reconfiguring a lot is defined within the Planning Act 2016.

Road hierarchy refers to the categorisation of roads according to its role and function within the transport network.

Sense of place refers to the relationship between people and a spatial setting. A sense of place is unique to each individual, as it is influenced by how a person perceives places.

Setback is defined within Schedule 1 of CairnsPlan 2016.

Siting is the location of where a building and associated structures are on a site.

Streetscape is defined within Schedule 1 of CairnsPlan 2016.

Structural screening refers to screens for privacy or visual amenity that are constructed from building materials.

Tropical urbanism is defined within Schedule 1 of CairnsPlan 2016.

Urban heat island effect is when urban areas become significantly warmer than surrounding areas due to less green cover and more hard surfaces which absorb, store and radiate heat.

Ventilation refers to the provision of fresh air to a dwelling or development.

Vertical landscaping refers to landscaping provided at ground level, which at its maturity, will cover the facade of building or landscaping that is provided at multiple levels of a building. Examples include planter boxes, green walls, trellis planting, landscaping on top of podiums or rooftop gardens.

