



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.

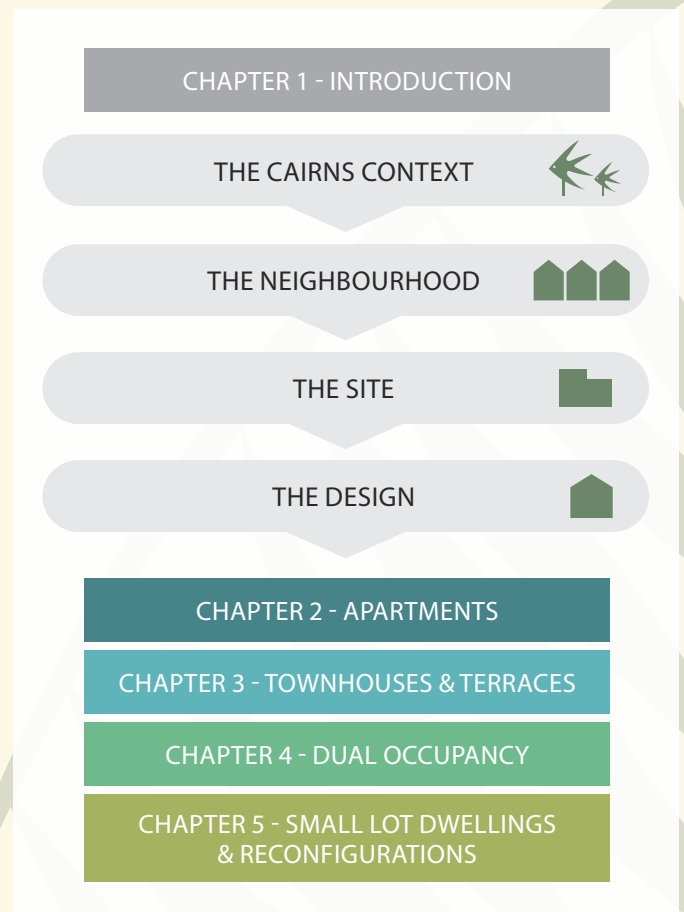
How the Design Guide is structured

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.