Acknowledgements
Cairns: The Rainforest City Master Plan would not have been possible without the collaborative efforts of a number of people and organisations. Cairns Regional Council would like to thank all contributors for their involvement, passion and valuable contributions to Cairns: The Rainforest City Master Plan.

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INTRODUCTION
The Vision

Cairns will be a place where people want to live; where our natural environment defines our city streets; a green, tropical, attractive cityscape that is safe, friendly, and human in scale; a cityscape which embraces sustainable principles and promotes biodiversity.

The Rainforest City promotes resilient landscapes and community health and well being, we embrace our unique natural environment and define our cityscape through our distinctive tropical rainforest environment.
“Landscape design enhances the experience of both residents and visitors and celebrates our unique tropical environment”.
1.0 INTRODUCTION

1.1 How to use this document
Trees like all living things, grow, age and eventually die. It is therefore important that the City has a strategy and a plan to deal with its street trees, where they are planted and what species are to be used to replace trees when they eventually reach the end of their useful life. In short, this document is intended to guide future street tree planting.

The general rule the City has followed in developing this plan is to continue the existing street characters and tree planting as much as possible, unless there are specific problems to address or opportunities for improvement. The City will seldom remove a healthy street tree. Because a certain type of tree is proposed for a street, it does not mean that the City will remove the existing street trees to implement a new species. This will only happen over time, as trees need replacing.

Existing trees will normally be left to grow for their natural life and they will only be removed once they have become a safety issue and an unacceptable hazard. The exception to this might be when major street improvements or upgrade works are required. However, tree removal should always be a “last resort”.

Read Part A
To get an overview of the City in a Rainforest Master Plan documents, and to understand the vision and key principles which guide the Rainforest City Master Plan.

Refer to Part B - Design Guidelines and Part C - Tree Selection
To understand the key components which make up the landscaping of our city streets and parks and to better understand the complex considerations involved in selecting a street tree.

Refer to Part D - Cairns Precincts
The map opposite indicates the many neighbourhoods that make up the Cairns’ Region. To read more about tree selection for your particular area refer to the list of Precincts on page 12 (Part D) and seek the relevant summary page.

For further details of local planning and development follow the links at www.cairns.qld.gov.au

Refer to Part E - Cairns City Centre
If your street lies within the Cairns City Centre (see map opposite).

Planting trees:
Refer to Part B for full guidelines on the placing of street trees
- Select Design Theme in accordance with Design Guidelines (Grove or Avenue)
- Check street tree layouts against the Streetscape Templates
- Place trees in accordance with Street Trees Guidelines to Placement

Selecting trees:
Refer to Part D or E (according to your street location - refer map opposite).
- Check with Street and Park Tree Palettes in Part D Precinct Plans for preferred planting themes and street tree palettes (arterial, sub-arterial and major collector roads only)
- Check the general and specific objectives for the precinct (cross reference the planning overlays where applicable)
- Refer to the Rainforest City tree and plant lists in Part C

For full planting details:
Select planting solution in accordance with Part C Strategies for Improving Tree Planting within the Road Reserve and refer to the relevant FNQROC Standard Drawings: www.fnqroc.qld.gov.au
INTRODUCTION

Cairns Regional Council Boundary (Area covered by Cairns: The Rainforest City Master Plan)
1.2 The Rainforest City
Cairns is the Gateway to two of the world’s greatest natural attractions and World Heritage listed treasures - the Great Barrier Reef and the Wet Tropics Rainforests. Mountains, beaches, tidal wetlands, freshwater lakes, mudflats, mangrove swamps, bays, rivers, estuaries and rich coastal plains are all features of this diverse tropical region.

Located on the east coast of the Cape York Peninsula on a long, narrow coastal strip edged between the Coral Sea and the Great Dividing Range Cairns enjoys spectacular natural surroundings and a unique climate nestled within Australia’s Wet Tropics; a band of tropical rainforest that stretches up the north-east coast of Queensland covering an area of some 8,940 square kilometres. Inscribed on the World Heritage List in 1988 in recognition of its scenic beauty and biological importance these ancient forests are a defining feature of the Cairns Region.

Our unique natural environment has been the foundation for our tourism industry and Cairns maintains its status as a tourist haven because of its tropical character and spectacular natural setting. The Cairns Regional Council defines the region as a place where the rainforest landscape predominates, and a City which nurtures, supports and celebrates Cairns Tropical lifestyle, climate and natural beauty.
Cairns is a unique, highly liveable city that is renowned for its relaxed tropical environment and extensive rainforest setting. The rainforest is a defining character of our region, integral to its economical and cultural life. The Rainforest City covers an area of some 1,607 square kilometres and rainforest accounts for approximately 63% of the greater city area. The rainforests and trees which occupy our region are all part of what is called the ‘urban forest’, which is broadly defined as: the sum of all trees and vegetation that provides valuable ecosystem services which are essential for a healthy liveable city. Our street trees in particular are the most recognisable and important element within the urban forest.

Developing and promoting a strong Tropical Urbanism will enable Cairns to respond to the challenges of environmental sustainability as well as reinforce its international prestige and distinctiveness. The Cairns Regional Council recognises the importance of our city centre and its potential to be an outstanding, internationally recognised exemplar of Tropical Urbanism; creating a built environment i.e. streets, spaces, and buildings which is uniquely tropical; verdant, shaded, open and lush, with an architecture of deep verandas and shaded cool retreats. Cairns can be a compelling, must-visit Tropical City, a cultural hub celebrating our unique Indigenous, European and multicultural heritage, our creativity, and our close association with Micronesia and South East Asia.
The Rainforest City area is some 1,600 square kilometres with over 1000 sqkm of forest, which amounts to 63% of the total land area.
1.3 The Urban Rainforest

1.3.1 What is the Urban Rainforest?
The “urban rainforest”, in the context of the Cairns Regional Council is simply the population of trees and vegetation within our urban environment. It incorporates trees and vegetation in streets, parks, gardens, river and creek corridors, including areas of remnant vegetation and national parks and reserves. Urban forests provide critical ecosystem services such as air and water filtration, shade, habitat, oxygen, carbon sequestration and nutrient cycling. The urban forest also provides the ‘connection to nature’ that is often perceived to be missing in our urban areas.

An urban forest provides a multitude of benefits for the ecosystem, the economy and community health and wellbeing. It is essential that we acknowledge and build upon those benefits now to ensure the best future for our city – an urban forest loved and enjoyed by our children and their children.

Urban forestry, as opposed to arboriculture and horticulture, allows us to consider the cumulative benefits of an entire area's tree population, such as a town or city. Looking holistically then at the urban forest and its associated ecosystem services, we can begin to consider the broader issues of climate change, urban heat island effects and population growth that can be influenced by the presence of an urban forest, but also how they will impact on our future urban forest.

Cairns Regional Council has made a commitment to biodiversity conservation. Fragmentation, isolation and associated impacts affect the viability of much of our natural vegetation communities Protecting and re-establishing a connection between these communities is of prime importance (follow the links in Planning Schemes at www.cairns.qld.gov.au).

Cairns Regional Council will implement distinctive styles of street tree planting based on our rainforest species; encouraging the use of Water Sensitive Urban Design and establishing “Green City Corridors”, which can help reconnect our fractured natural plant communities.

1.3.2 Sustainability
The Rainforest City Master Plan applies a sustainable approach to the provision of street and park trees within the Cairns area.

Sustainable principles
- Offer a selection of tree species suitable to the environmental conditions of the Cairns area.
- Promote the use of native trees to benefit and Enhance our biodiversity and make links to our Natural Environment.
- Promote best practice in tree planting to reduce tree failure.
- Promote the concept of the “urban forest” to provide widespread green cover for our city streets.
- Promote the use of Water Sensitive Urban Design.
1.3.3 Council initiatives

Cairns Regional Council Biodiversity Policy

Council has adopted a Biodiversity Strategy to inform and guide Council’s actions to conserve biodiversity over the next ten years. This strategy provides an overview of the significant biodiversity of the region and identifies opportunities for Council to improve its management practices to protect and restore biodiversity. The strategy includes a list of actions to be undertaken, providing a clear plan for how Council can act to protect, value and restore the region’s biodiversity.
The Cairns Regional Council has a strong revegetation programme and protecting and strengthening our natural environment is a core principle of our corporate plan. The planting of street and park trees can make a useful contribution to this commitment through the use of endemic species, those native to the Cairns Region and which will contribute to the overall biodiversity of our urban forest. Planting our streets with appropriate and diverse native species will encourage wildlife and provide a valuable source of nectar for our native birds.

Cairns Regional Council supports all landcare groups, community groups, schools and individual landowners that are engaging in genuine revegetation projects.

In terms of Council responsibilities, the Natural Resource Management Unit maintains two native plant nurseries that supplies local tree planting groups as well as Council tree planting and revegetation/restoration activities such as Cattana Wetlands, Cairns Central Swamp, Reef Rescue projects, River Improvement Trust projects and Tropical Tree Day.

**Cattana Wetlands**

As part of the 150th anniversary of Queensland, a partnership between the Cairns Regional Council and the Queensland State Government began an extensive rehabilitation project for this former 80 hectare site formerly used for sugar cane production and the extraction of sand and gravel.

Council has built on surviving areas of rare Feather Palm Forest and created a wetlands with boardwalks, walking tracks, bird hides and viewing platforms providing a new and much loved community nature reserve just 20km from the Cairns City centre.

Council has planted over 10,000 native trees and 60,000 native plants at the Cattana site with continued planting to follow over coming years.

For more details on the Cattana Wetlands visit the council website and follow the links @ www.cairns.qld.gov.au
1.4 The benefits of trees
Cairns Regional Council acknowledges that trees are an important urban element that can transform the city's streets and provide environmental, aesthetic, cultural and economic benefits. In the long term, they can create a sense of place and enhance public domain.

Some of the key environmental benefits include:
- Carbon sequestration and storage. A single mature tree can absorb carbon dioxide at a rate of 21 kg/year and release enough oxygen back into the atmosphere to support 2 people's needs.
- Shading of pavement, cars and buildings, thereby reducing our energy consumption. Shading of asphalt pavements can also extend its life by as much as 40%.
- Removal of many gaseous pollutants by absorbing them with normal air components through the stomates in the leaf surface. (eg. Sulfur Dioxide, Ozone, Nitrogen Oxide)
- They also capture and remove particulate matter and dust from the air.
- Acting as natural pollution filters. Their canopies, trunks, roots, and associated soil, filter polluting particulate matter out of the flow away from the stormwater and creeks. Reducing the flow of stormwater reduces the amount of pollution that is washed into a drainage area. Trees also use nutrients like nitrogen, phosphorus, and potassium which can otherwise pollute streams.
- Intercepting and reducing rainfall and runoff and reduced erosion of soils.
- Providing habitat and a food source for urban fauna.

Some of the key economic benefits include:
- Improving economic performance by increasing the attractiveness of businesses and tourism areas. People typically linger, shop and dine longer in tree-lined streets.
- Reducing energy consumption, through shading and reductions in the “urban heat island” effects.
- Shops, apartments and housing in well planted areas usually attract high rents and sale prices.

Some of the key community benefits include:
- Calming traffic, slowing speeds, and providing a buffer between pedestrians and cars. They are also useful in delineating and signifying curves in a street.
- Improved sociological benefits with studies showing correlation of well planted areas with reduced social services, domestic violence, and strengthened community ties.
- Creation of feelings of relaxation and well-being. Hospital patients, for example, are shown to recover quicker and with fewer complications when in rooms with views of trees. Workers and students are also shown to be more productive when their environments have views to trees.
- Improving comfort and amenity as street tree canopies can shade pedestrians, diminish traffic noise, screen unwanted views and reduce glare.
- Defining precincts and links with history. Tree lined streets can provide orientation, and contribute to the city's character.
- Providing a human scale that contrasts with the large buildings that typify some inner city streets.
- Providing seasonal interest and natural beauty through foliage and their interesting leaf patterns, flowers, bark, fruit and canopy.
- Providing a link to nature and a source of delight.
1.5 What is the purpose of the Rainforest City Master Plan?

Key Objectives

To mitigate and adapt to climate change

- Build a resilient urban forest that can tolerate and continue to thrive in future climatic extremes
- Ensure a diversity of tree species and ages to maximise resilience against pests and diseases
- Increase overall vegetation biomass to assist in storage and sequestration of carbon

To reduce the urban heat island effect

- Build a functioning healthy urban forest canopy to provide shade and cooling to reduce heat absorption and emission by the built environment
- Develop public spaces to improve human thermal comfort and maximise health benefits
- Capture more stormwater to increase filtration into the soil and enable maximum evapotranspiration

To become a Water Sensitive City

- Promote the use of innovative techniques for Water Sensitive Urban Design
- Use alternative water sources for irrigation to reduce potable water use
- Ease stormwater flows and peaks by replacing impervious surfaces with porous materials to reduce heat absorption and encourage soil moisture retention

To design for health and wellbeing

- Provide cool shaded spaces in summer; sunlight access in winter
- Plan and manage the urban forest to ensure longevity of green spaces for future generations
- Create well-designed public spaces to encourage outdoor activity, social connectedness, respite, exercise and general sense of wellbeing

Design for Liveability and Cultural Integrity

- Design landscapes to reflect the cultural integrity, identity and character of Cairns
- Lead by example in the creation of world class tropical spaces, parks and streetscapes
- Design spaces for people to reconnect with nature
- Design spaces that create a sense of place and enable reflection and tranquility

To create healthier ecosystems

- Support healthy ecosystems in order to provide maximum benefits in terms of clean air, water and soils
- Expand and improve biological and structural diversity

To position Cairns as a leader in Australian urban forestry

- Create world class open spaces, parks and streetscapes
- Increase Australian-tropical based urban forestry research
- Inform and involve the community in decision-making for landscape adaptation and change
- Increase the public profile and understanding of the attributes, role and benefits of the urban forest

Direct and improve street tree planting

- Direct the most appropriate species and planting techniques for the many potential tree sites in Cairns — the right tree for the right location
- Establish a street tree species palette suited to the environmental conditions of the Cairns’ public realm
- Reinforce and enhance the special characteristics of city precincts using distinct street tree planting
- Create striking Avenues and Gateways that reflect Cairn’s unique Tropical Environment
- Establish green city corridors by providing high quality street trees
- Improve street tree establishment and survival rates
- Provide clear guidelines to ensure a consistent approach towards the provision of street trees in the City of Cairns

To link the natural environment with our streetscapes, and allowing the rainforest to become a defining characteristic of our region. A place where people want to live

- A place where our natural environment defines our city streets
- A green, tropical, attractive cityscape that is safe, friendly, and human in scale
- A cityscape which embraces sustainable principles and promotes biodiversity
1.6 Who will use this document?
The Cairns: The Rainforest City Master Plan is intended for use by:

Cairns Regional Council – to clearly define the character of future works and to allow for the preparation of distinct projects which make up the Cairns Precincts.

Development Proponents and Design Professionals – to give a clear direction for future works and the development of detailed design for the various projects to be delivered.

The General Public - to foster a better understanding of future changes to the Cairns City Centre and surrounding districts.

1.7 How is this document structured?
The Cairns: The Rainforest City Master Plan provides a guide to the provision of street and park trees, and associated landscaping for Cairns.

The Cairns: The Rainforest City Master Plan is divided into the following sections:
- **Part A Introduction** - context, document objectives
- **Part B Design Guidelines** - key landscape design strategies, design guidelines including the streetscape templates
- **Part C Tree Selection** - nominates the tree palette
- **Part D Cairns Precincts** - nominates the tree palette and design objectives for each precinct
- **Part E Cairns City Centre** - provides a detailed master plan for the city centre
1.8 Glossary of terms

<table>
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<tr>
<th>Term</th>
<th>Definition</th>
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<tr>
<td><strong>Urban Forest</strong></td>
<td>The “urban forest”, in the context of the Cairns Regional Council is simply the population of trees and vegetation within our urban environment. It incorporates trees and vegetation in streets, parks, gardens, river and creek corridors, including areas of remnant vegetation and national parks and reserves.</td>
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<tr>
<td><strong>Landscape Design</strong></td>
<td>Landscape Design is the art of arranging or modifying the features of a landscape, and urban areas, etc., for aesthetic or practical purposes and is usually divided into hardscape design and softscape design. This will include planting and paving, signage and furniture as well as place making.</td>
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<tr>
<td><strong>Districts</strong></td>
<td>For the purposes of this document districts the Cairns Region has been divided into districts.</td>
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<tr>
<td><strong>Precincts</strong></td>
<td>For the purposes of this document precincts refer to the distinct neighbourhoods which make up our city areas.</td>
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<tr>
<td><strong>Streetscape</strong></td>
<td>The visual appearance of a road, including the rhythm of the built form elements such as roads, street furniture, vegetation and open space that combine to form the streets character.</td>
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<tr>
<td><strong>Sightlines</strong></td>
<td>The clear line of sight from one vehicle to another, generally at intersections, roundabouts and driveways. Sightlines protect both vehicles and pedestrians and need to make allowance for small children.</td>
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<tr>
<td><strong>Street Hierarchy and Road Hierarchy</strong></td>
<td>The hierarchy of streets and roads is an urban design and traffic management technique for separating vehicular through-traffic from local streets.</td>
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<td><strong>Road Reserve</strong></td>
<td>Refers to the entire road section from edge of property boundary to edge of property boundary.</td>
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<td><strong>Median</strong></td>
<td>Refers to the centre portion of the road reserve, and is typically a kerbed island or series of islands.</td>
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<td><strong>Shoulder</strong></td>
<td>Refers to the edge of the road reserve between the edge of the traffic lane and the back of the kerb or road edge.</td>
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<tr>
<td><strong>Verge</strong></td>
<td>Refers to the area between the back of the kerb and the property boundary, also known as the nature strip. This area is often an extension of the property line where no fences exist.</td>
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