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Towards a Tropical Urbanism for Cairns, Australia

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Abstract

This paper engages with debates about tropical cities and climate responsive design to consider the emergence of two local government master plans and one planning scheme provision explicitly addressing the tropical climate in Cairns, Australia. The undergirding concept of these initiatives is a terminology of Tropical Urbanism, a simultaneously environmental and social/cultural term that captures issues such as climate, lifestyle and identity in the constitution of the urban fabric. Through a detailed reading of the documents, combined with interviews with local architects and planners, this paper positions Tropical Urbanism as an environmentally aware version of New Urbanism and as a distinctive language of urban design emerging in the regional context of tropical Australia. Place-based initiatives such as these are important to improving the design outcomes and sustainability of regional cities, and we suggest Tropical Urbanism could be further reinforced by the social/cultural and political nuances of a more progressive Critical Regionalist approach.

Keywords: Tropical Urbanism, Urban Design, Planning, New Urbanism, Regionalism, Critical Regionalism, Cairns

This study forms part of a larger conversation amongst planners, architects and allied industries about climate responsive planning and urban design in tropical Australia. The city discussed here is Cairns, Queensland, a coastal city nestled between two UNESCO World Heritage areas: the Great Barrier Reef, and the Wet Tropics rainforest. Cairns is a tourism-reliant, regional city of just over 160,000 people, and has a 1.9% growth rate which has created the need for an increased supply of land and housing (Cairns Regional Council, 2020). In 2010 and 2011 two local government master plans reflected this growth and were underpinned by a new concept/term: Tropical Urbanism. One plan set an agenda for rejuvenating the Cairns City Centre, while the other crafted a new template for residential development in the southern growth corridor of the city. The concept/term surfaced again in 2016 when Tropical Urbanism provisions were incorporated into the Cairns Regional Council's local government planning scheme. These three initiatives recognise the need for greater consideration of the tropical climate in urban planning, and integrate sustainability concerns, environmental sensitivity and a new emphasis on lifestyle and culture. Indeed, high temperatures and humidity levels make tropical cities uncomfortable, and how to accomplish good urban design within tropical climates – including responsiveness to regional specificities – is a growing agenda for local governments as well as developers, architects and the tourism industries that shape the city's urban fabric.

In this paper we suggest that engaging with the tropical climate is encouraging a range of professionals to think across all scales of tropical urban design, not just the architecture of individual buildings. Such thinking is evident in the language of Tropical Urbanism: a design vocabulary of shade, greenery and breezes that works across buildings, streets, blocks and neighbourhoods to reflect the distinctive context of tropical north Queensland. In what follows we explore how this terminology depicts the tropical climate in both an environmental and social/cultural sense. More specifically, we show how the concept encourages climate responsive design but also reveals a regionalist, locally significant tropical identity and lifestyle that reflects a wider appreciation and use/meaning of tropical urban space.

In the analysis that follows we compare Tropical Urbanism to New Urbanism, but also to Critical Regionalism as that concept emerged out of specific debates in tropical architecture. New Urbanism is an American urban design movement aimed at reducing car dependence bought about through earlier settlement design, while encouraging higher densities, walking and mixed use. Australia evolved its own Australian Council for New Urbanism (https://www.acnu.org), and in Queensland New Urbanist ideas shaped the *Next Generation Planning* handbook produced by the state government (QDLGP, 2011). The handbook promoted form-based codes to create compact urban form, thus increasing housing diversity, walkable neighbourhoods,

active transport and mixed-use, while also protecting natural environments. The handbook was intended to guide development in the southeast corner of Queensland surrounding Brisbane, but in practice the ideas were picked up across the vast state, thus implementing uniformity across differing climate subregions, geographic features and urban forms. Critical Regionalism, on the other hand, was a movement in architecture initiated by Tzonis and Lefaivre (1981) but made popular by Frampton (1983). The movement expressed resistance to global uniformity in architecture and worked towards a more regionally responsive built environment. Frampton's iteration did not focus on the politics of architecture in former colonies, however, this critical element was evident in the later work of Lefaivre et al. (2001), while Lefaivre and Tzonis' (2012) recent focus has moved to 'regionalist' architecture in a context of globalisation and related issues of identity, community and sustainability. In what follows we argue that Tropical Urbanism draws on a New Urbanism that articulates with Regionalist and Critical Regionalist approaches that mediate between the global and local languages of the built environment.

The research detailed below includes an analysis of the two master plans and the planning scheme provision, as well as drawing from targeted interviews with industry professionals. These perspectives suggest the need for a regional vocabulary of tropical design: an urban grammar capable of local expression as well as good climatic and social performance, while at the same time using appropriate tropical materials and means of building (see Bay, 2001, p. 230). First, we provide a brief background to climate responsive planning as a framework for this research. This is followed by an analysis of the two master plans and the new planning scheme provisions, and interviews with stakeholders. We conclude by suggesting that Tropical Urbanism should be fully engaged with social and cultural nuances for a progressive Critical Regionalist approach.

Planning and Designing with Climate

The consideration of local climatic conditions had been a routine aspect of earlier settlement design, but a variety of factors led to its declining significance over time (Eliasson, 2000). In former Anglo-European colonies, such as tropical Australia, this scenario unfolded in particular ways, primarily in terms of altering early climate-adapted architecture and settlement forms through importing designs from far off, mostly temperate, places – including from major centres in the Australian south, which were in turn influenced by the Global North. Not only did this alter ways of living, but it also inhibited local-regional innovation in the planning and design field (Bridgeman, 2003; Tay, 2001; Chang & King, 2011). Even the classic 'Queenslander', the vernacular building style of Cairns from the 1920s – with its distinctive architectural elements and notable adaption to the climate – was not locally produced; rather, it was

a product of early kit homes designed and prefabricated further south in subtropical Brisbane and shipped up to the Far North Queensland city (Heritage Alliance, 2011; Naylor, 2010). The advent of mechanical cooling, and its widespread availability since the 1980s, has significantly worsened the scenario of declining climate design (Fantin et al., 2015). New subdivision developments in Cairns tend to have little climate responsive and sensitive design elements and template-style estates on small lots with few breezeways have led to year-round air conditioning and mounting costs/energy demands for the region (Law, 2019; Law et al., 2021). Indeed, climate-neutral building is a key factor in reducing the need for tropical design and demotes sustainable practices in the process (Tay, 2001; Le Roux, 2003; Bay & Ong, 2007; Winter, 2011; Safarova et al., 2018).

Precedents for climate-informed planning for the Tropics can be gleaned from the contrasting cold-temperate Winter City movement. This movement integrates climate and planning with the goal of increasing liveability and senses of place in cold regions. Originating in Canada, but extending to northern Europe and Japan, it focuses on creating high functioning urban environments that can be used even in harsh winter conditions. The movement strives to reduce the influence of legislative, administrative, economic and political priorities, which typically result in 'thermally neutral' environments devoid of climate considerations and *genius loci* attributes (Pressman, 1996). It is this combination of environment and liveability with a social and political agenda that helps elaborate an agenda for Tropical Urbanism in Cairns. Policies/legislation/regulation for the built environment generated by state and federal governments often default to temperate conditions and this can sometimes mean poor outcomes in the tropical built environment; for instance, green ratings systems that encourage fully sealed buildings, rather than well ventilated ones that better suit the climate (see Law et al 2021; Oppermann, et al., 2017). These temperate-centric policies can map the climatic and ecological difference of the Tropics onto enduring power relations that permeate the relation between northern tropical Australia and the southern temperate cities where state and federal parliaments reside (see Driver & Yeoh, 2000). Stated differently, Cairns is a distant regional city that is governed at a distance. The local government has limited ability for self-determination and planning policies are often shaped by activities in far-off, more populated centres with different urban patterns and priorities (Anderson & Law, 2015). A strong reliance on tourism only complicates this relation between Cairns, and its identity, and the elsewhere(s) of tourism expectations.

In contrast to the cold, harsh climates of the Global North or the far south of Australia, the Tropics are fortunate in that the outdoor environment has a high usability factor, enabling outdoor spaces to be utilised year-round. That said, tropical urban design must still address techniques such as orientation, building mass, adequate green

spaces, and breezeways, to make the city more habitable (Emmanuel, 2005). A critically engaged tropical design might also encourage new ways of engaging with heat/rain/insects, and address the political realm affecting strategic planning. In a multidisciplinary approach incorporating both architecture and planning, Singaporean architect Tay Kheng Soon (2001) partially addressed this gap within his Tropical City Concept. Incorporating broad-scale tropical urban design, he recognises the need to radically integrate regionally responsive elements in both architecture and planning:

> The Tropical City Concept is an attempt to reconceptualise the relationship between architecture and city planning at the metropolitan scale in a sustainable ecological manner. It is an attempt to forge the critical link between the ecology, city planning and architecture.… The Tropical City Concept is a design strategy which attempts to answer the questions of dense urban living in a geographical context but in a manner which acknowledges the sun and the rain as positive elements in design rather than as factors to be shunned. The design of the city cannot any longer be conceptually divided into closed categories such as 'architecture' and 'planning'. Space in the city has to be conceived of as an integrated resource albeit under different responsibilities (Tay, 2001, p. 270).

While Cairns is not a dense, tropical city like Singapore, Tay's rethinking of how we integrate modern ways of living in the tropical built environment, and his acknowledgement of the impact of colonial legacies, resonates with imported and unresponsive urban development in tropical Australia. Similar to Tay's Tropical City Concept, Tropical Urbanism could be further understood within a Critical Regionalist perspective that argues for a built environment evolving from the specific locale and which is ecological while at the same time offering opportunities for emancipation (Tzonis, et al., 2001). We now turn to defining and giving form to Tropical Urbanism as an emerging, place-based concept in Australia to explore these ideas further.

Tropical Planning in Cairns

Cairns is a city with a tropical climate characterised by distinct wet and dry seasons. Summers are typically hot and humid with daytime temperatures between 23-31˚C and milder winter days between 19-26°C. Summer is locally referred to as the 'wet season' due to the high rainfall, typically more than 2000mm for the season. Cairns summers can also experience tropical cyclones which, like "the big wet", are incorporated into a social/cultural/climatic sense of place (see Spicer, 2016). The earliest layout of Cairns responds to this tropical coastal climate and follows a typical grid pattern. Streets are oriented at an angle to catch prevailing southerly breezes,

indicating climate responsiveness during the city's early establishment in the late 1800s.

Master Plans - Cairns City Centre and Mount Peter

Cairns City Centre, the location of the first master plan examined here, covers a large area, similar in size to the central business district of Brisbane, Queensland's capital city. This is a significant scale in comparison to the two city's populations, with just 160,000 for Cairns and over 2.4 million for Brisbane. The expansive nature of the Cairns CBD, and a culture desiring physical and air-conditioned comfort, means walkability in the city is limited and most people rely on cars to move around. The Plan therefore aims to encourage more walking and legibility/connectivity between three key precincts of the city centre: the Esplanade/Lagoon area (leisure), Cairns Central (retail), and the Reef Fleet Terminal (entertainment) (Figure 1). The Plan aims to enhance walkability partly through enhancing the existing green spaces of the city — for example, the large tropical native fig trees — and greening the main thoroughfares in the district.

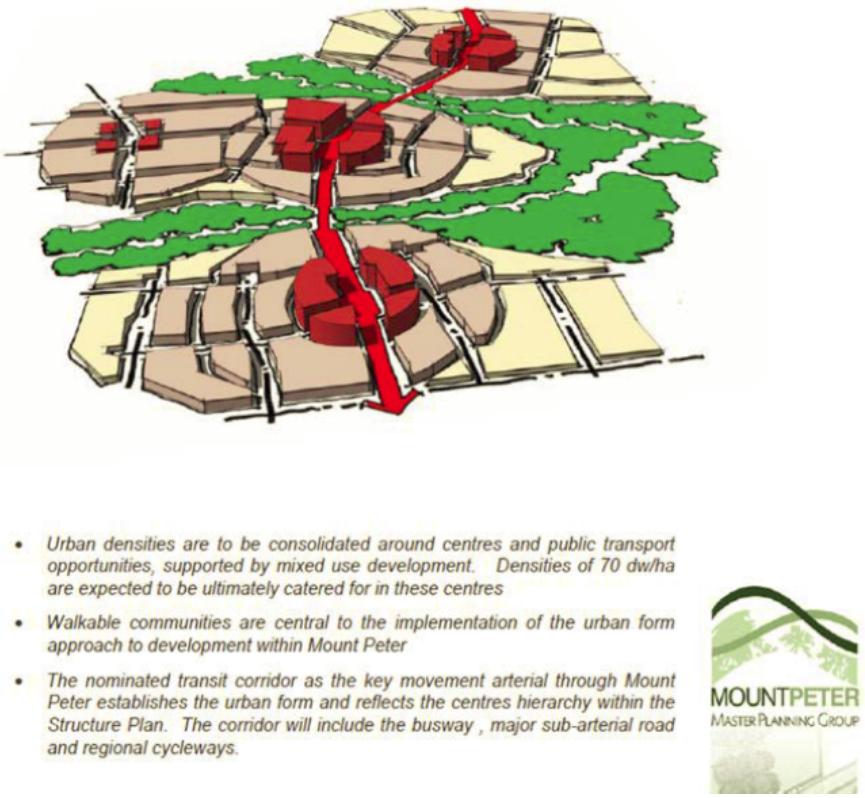
Figure 1 ***Cairns City Centre Master Plan Green Infrastructure***

Architectus proposed enhancing the green spines of the city to encourage walkability (Source: Architectus, 2011)

Mount Peter, the second Plan location, is a rural area located 15 kilometres south of Cairns City itself. The Mount Peter area contains 1,550 hectares of developable land, most of which since early settlement has been farmland. The area was declared a

Master Planned Area in 2008 and is expected to accommodate an ultimate population of 40,000 people over the next few decades. The Mount Peter development is one of the largest master planning exercises undertaken in Queensland and represents "an opportunity for best practice urban planning, infrastructure provision, place making and urban design" (CRC, 2010). As inferred in Figure 2, the development is to be higher density than other suburban areas, be mixed use, walkable and have breezeways and green infrastructure integrated throughout.

Figure 2 ***Mount Peter Urban Densities and Transit Corridors***



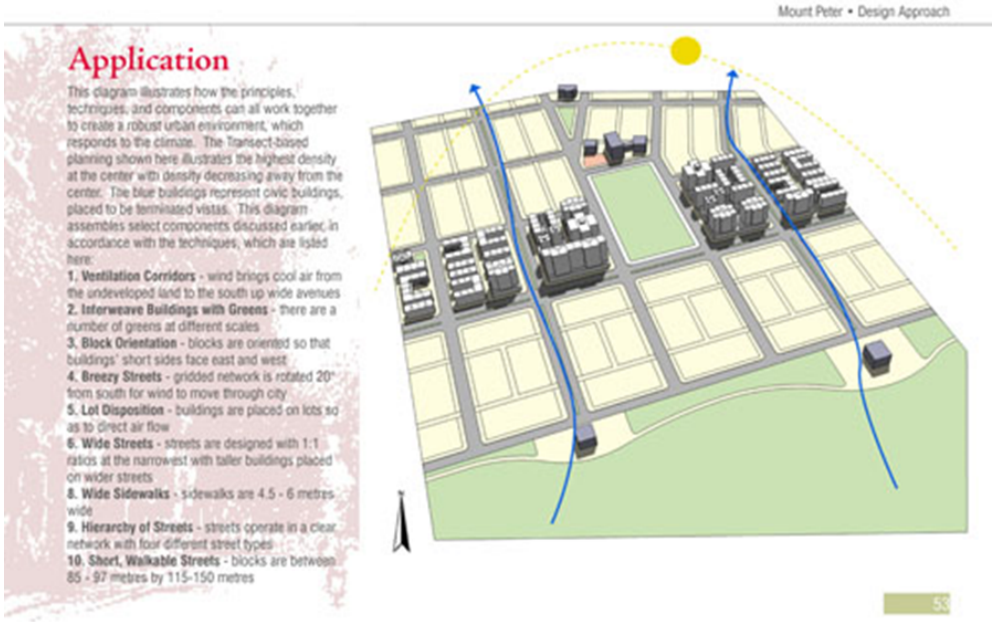
The Mount Peter master plan proposed higher densities, walkable communities and strong transit corridors along the major routes (Cairns Regional Council, 2010)

The two Plans are intended for different urban planning applications – the Cairns City Centre Master Plan is for a mixed-use city centre and the Mount Peter Master Plan is for a residential subdivision – but in this sense they provide insight into a range of tropical urban spaces and their uses. Both consciously and deliberately deploy the language of Tropical Urbanism and help define the concept as a guiding model for future urban growth.

The two Plans are similar in the way they depict Tropical Urbanism, particularly in the way they distinguish two distinct tropical realms: climatic and social/cultural. The Mount Peter Master Plan devotes much attention to climate, for example, with the

Mount Peter Design Approach featuring extensive details about the tropical climate, climatology and appropriate design techniques for climate-sensitive design, for instance: block orientation, ventilation corridors, wide shady streets, outdoor rooms, etc. (Figure 3). The Cairns City Centre Master Plan also explores the tropical climate – encouraging substantial tree plantings to cool the city's microclimates – but places more emphasis on the lifestyle and identity of tropical Queensland. This is particularly evident in the conceptual images throughout the Plan, creating new typologies such as 'verandahs' and outdoor 'tropical urban living rooms' which emphasise how the Cairns lifestyle can be reflected in, but also enhanced by, urban design.

Figure 3 ***Design responses for the Mount Peter Master Plan***



Design responses include ventilation corridors, interweaving buildings with greens, block orientation, breezy streets, lot disposition, wide streets, wide sidewalks, hierarchy of streets and short walkabout streets (Source: DPZ Pacific, 2011)

The Mount Peter Master Plan strongly emphasises the climatic aspect of tropical urban design, with associated documents detailing a 'catalogue' of appropriate urban design principles and techniques for use in Cairns. These were categorised into: urban planning techniques, building design techniques, and building materials and components. Also included were various climatology charts and graphs detailing sun paths, wind behaviours, and temperature and humidity conditions. These equate to specific techniques that can be incorporated within all levels of tropical urban design, from the building itself to its context and neighbourhood. The Mount Peter Master Plan also considered the social realm, particularly in terms of the incorporation of green, public spaces, and efforts to enhance senses of place and identity of the area.

Neither Plan defines Tropical Urbanism explicitly, instead they use case studies and examples to demonstrate the concept. For example, the Cairns City Centre Master Plan features a section titled Tropical Urbanism: Verandas, Colonnades, the Green City, which describes how the tropical climate can be integrated within the built environment while harnessing "local architecture to express tropicality and unique qualities of the locale" (Architectus, 2011, p.50). The plan develops a 'tropical urban living room' concept featuring amply shaded gathering spaces to represent new ways of being outside in the city (Architectus, 2011, p.46). In addition to the plantings and shaded spaces recommended for particular nodes, the Cairns City Centre Master Plan also recommends that "Tropical Urbanism provisions to encourage use of green walls, roofs, sky gardens, planted courtyards and gardens at street level" are integrated into future planning scheme amendments (Architectus, 2011, p.51). What the Plan aims to achieve is a lush, cool city, with a vibrant, pedestrian-oriented town centre. This encourages people to enjoy outside spaces rather than shelter from them. Therefore, the Cairns City Centre Master Plan tends to describe Tropical Urbanism in lifestyle terms, while the Mount Peter Master Plan emphasises the design principles required to achieve such an outcome.

A content analysis of the master plans and associated documentation revealed twelve key principles aligned with Tropical Urbanism:

- Walkability
- Connectivity and legibility
- Mixed-use spaces and buildings
- Diversity of housing types
- 'Quality' tropical urban design
- Increased density (with fragmentation to enable breeze permeation)
- Quality public transit networks, transit-oriented development
- Sustainability and local environment considerations
- Quality public spaces, including extensive open space
- Sense of place and tropical identity
- Climatically responsive urban design (across all scales)
- Regionally appropriate urban design (incorporating key local qualities such as rainforest elements, vistas, local fauna, cultural heritage, etc.)

These principles bear resemblance to the tenants of New Urbanism, but also stress the need for specific design measures to enhance the tropical built environment. Incorporating elements like rainforest vistas and harnessing the existing pre-air-conditioning architecture (which feature shade and sheltering elements) and cool 'in-between' spaces, will help to "create a rich, tropically unique architecture" (Architectus, 2011).

Planning Scheme Provisions – CairnsPlan2016

The final example where the language of Tropical Urbanism is articulated and reworked is the recent planning scheme of the Cairns Regional Council. New provisions added to the local planning scheme were based on research conducted by Council along with a team of consultants and was titled Tropical Urbanism – Cairns City Image Study (Cairns Regional Council 2016). The study was a critical appraisal of the city's policies on the height, density and design of tall buildings and attempted to define the concept of Tropical Urbanism as the integration of landscaping and tropical design elements into the built environment. The research outcomes, incorporated within the CairnsPlan 2016, give examples of development that explicitly express the idea of Tropical Urbanism, including:

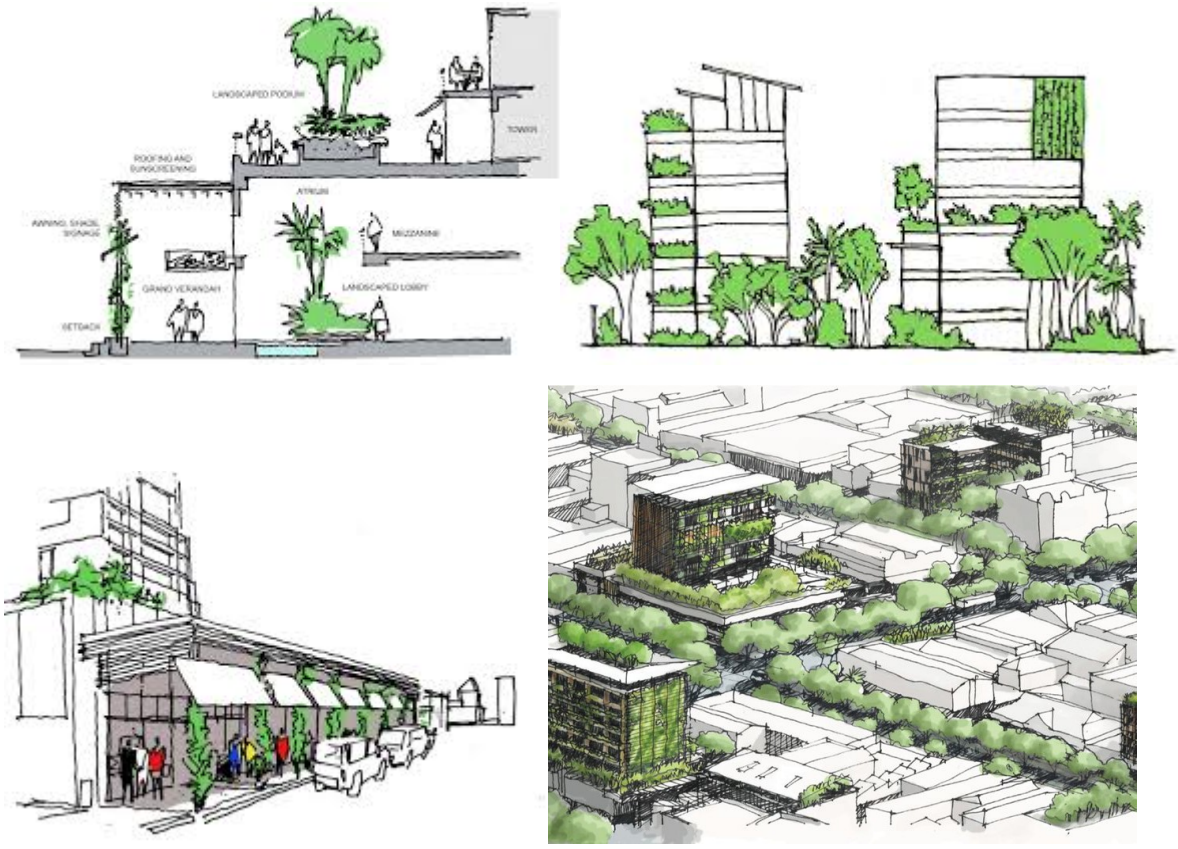
- Shelter from sun and rain
- A contrast of light and shade
- Sufficient spaces around and between buildings
- Minimisation of radiant heat and heat island effects
- Air circulation, breeze permeation and passive cooling
- Generous outdoor living spaces with large window and balcony openings
- Floor-to-ceiling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

To achieve Tropical Urbanism, the CairnsPlan 2016 suggests that any proposed development must meet several outcomes:

- Articulation and façade treatments
- Separation and setbacks
- Building width
- Walls on boundaries
- Views and vistas
- Horizontal landscaping
- Vertical landscaping
- Street canopy
- Car parking sleeving
- Human scale
- Mid-block connections

Two elements of the provisions are worth detailing here. First is the 'street canopy', which is an "architectural expression of the natural rainforest canopy which takes the humble street awning to a new paradigm" (Cairns Regional Council, 2016). Second is 'vertical landscaping' which encourages plant growth as part of building façade coverage to contribute to the city's public realm. Together these provisions embrace shade and greenery to produce streetscapes that reflect the Cairns environment as well as a sense of identity and lifestyle (Figure 4). As expressed on the Cairns Regional Council website: "One of the key outcomes was a focus on integrating lush landscaping and rainforest-like canopies into urban street frontages, to create cool shaded public spaces. These signature design elements aim to promote tropical streetscapes that celebrate, preserve and promote the city's much-loved character and identity" (Cairns Regional Council 2016).

Figure 4 ***Illustrations from the Tropical Urbanism provisions in the CairnsPlan 2016***



Illustrations to demonstrate podium-style verandahs, vertical landscaping and street canopies (Source: CairnsPlan 2016, Cairns Regional Council 2016)

Green facades in the tropics are of course not new, and one only needs to consider some of the ground breaking projects of WOHA in Singapore, for example Parkroyal and Oasia Novena (Schröpfer and Menz 2019). Green facades have also been

incorporated across larger urban centres in Australia such as in Brisbane, Sydney and Melbourne. Architectural street canopies are perhaps more novel in terms of how they articulate a new urban vernacular, especially for taller buildings, but it is also important to note that the research for these provisions took place against a background of proposed developments, including designs by international architectural firms, which would see the building height of the city generally increase (see Figure 5). Nova City, a large and mixed-use set of glass towers proposed by Singapore's Aspial Corporation, including one commercial tower and six residential blocks providing 1250 apartments in the city centre, was being proposed as a new destination and lifestyle experience in parallel with Council discussion. The nearby C3 proposal was also being touted as the highest building permitted in the city and included rooftop penthouses, sky lounges, almost 800 boutique style apartments and commercial/retail space at the bottom for street level activation. Syrian Ghassan Aboud's Crystalbrook Collection of luxury hotels were similarly transforming the hotel landscape of Cairns to encourage and accommodate high-end tourism. All these developments are unprecedented in the regional city and would change the look and feel of Cairns, with many fearing developers were pressuring the city to be more like the Gold Coast, the high rise holiday destination of Australia's warm south. Large towers also have the potential to block breezeways and views to the unique rainforest-clad hills that surround the city. In this sense Tropical Urbanism in CairnsPlan 2016 was always bound up with conversations about the future height of buildings, their design features and how high-density buildings would articulate with the public realm. So does this urban language really reflect a new approach to the tropical built environment? Or is it, as Swyngedouw (2013) suggests in a different context, a greening strategy that merely reflects the status quo?

Figure 5 ***The changing urban landscape of Cairns (Nova and C3 proposals)***

Source: http://www.c3cairns.com.au/location.php

Tropical Urbanism as Critical Regionalism

In their analysis of shaded walkways and greenery in defining what is meant by tropicality, Harun and Abdullah (2018) suggest that these urban forms represent important cultural tropes in defining a regional framework for tropical design in Southeast Asia. This is also true for the Cairns version of Tropical Urbanism and could be a mimicking of advances in green infrastructure as articulated in other places like Singapore. As one architect interviewed for this research claimed:

> At the moment the term Tropical Urbanism is more a construct of a group of eager professionals scattered across the globe (planners, architects, environmentalists) looking to brand a new field in which to differentiate their skills and generate work.... This may sound cynical, but it does appear to have 'popped up' as a phrase on everyone's tongue rather recently.... If you pause and think a moment, there has been no clamouring to parse the urbanisms of other climate zones such as Mediterranean, Marine, Continental, Semi-arid Sub-arctic. People who are using the term are trying to copy the New Urbanist approach of categorizing place but have done so before assessing the real issues that underlay the place.
>
> – Architect

There is also the question of whether the tall glass towers initiated by Singapore's Aspial Corporation are bound up with planning scheme amendments in parallel with Council discussions, and whether they have a place in the tropics. In this regard the Cairns variety of Tropical Urbanism might fall short of late 20th century approaches in architecture that counter the placelessness of much contemporary building design. The evolving Cairns vernacular should ideally consider the uniqueness of site and location, be inspired by local climate and cultures, reflect regionalist approaches to design and perhaps learn from other tropical locations internationally (Lefaivre & Tzonis, 2001). In this sense Tropical Urbanism can articulate with notions of regionally responsive architecture as expressed by Australian architects such as Glen Murcutt and firms such as Troppo Architects (Goad, 1999). A tropical regionalist approach means an architecture that connects the indoors and outdoors, responds to the seasons, the heat, the rain, but also the informality of life in Australia (Anderson & Law, 2013). Troppo Architects have evolved a particularly distinctive architecture that responds to the tropical environment through adjustable skins and porous building envelopes and embraces the informality of the Australian lifestyle.

Cairns-based architects and planners interviewed for this research had their own interpretations of Tropical Urbanism. The definitions and principles they offered were similar, often reflecting on the tropical lifestyle:

> [Tropical Urbanism is] an urbanism which responds very strongly to climate and place … [with a] connected series of places and buildings, probably at a higher density, that responds to a tropical setting … [it is] where the public spaces are places of public exchange and interaction and there is a lot of life between the buildings.
>
> – Architect

> In its simplest form [Tropical Urbanism] is protection from the weather (from the sun or the rain), through awnings in streets or trees in streets, and that protected journey for cyclists or pedestrians … [Tropical Urbanism] makes it walkable, it makes it bearable from a climatic perspective, makes it interesting and connects you and makes you active.
>
> – Planner

> …if nothing else we should have [Tropical Urbanism] for sense of place, and ownership, identity, and that thing that distinguishes us from … somewhere else. It's for the point of difference as much as anything. How we design is different. Branding it, owning it, and being proud of it is important.
>
> – Planner

There were many similarities in terms of how Cairns architects and planners depicted the key principles of Tropical Urbanism. Their focus on density and liveability are both important components of New Urbanism, while the need for local relevance and an engagement with place are important to regionalist approaches to design. One of the architects combined both of these perspectives suggesting that the master planning processes were "a platform to talk about the principles of New Urbanism, applied in a tropical climate, with specific reference to traditional urban approaches to climatic-sensitive planning and design". This architect went on to suggest:

> [The] really interesting thing about working in the tropics is, if you want to make cities that are more sociable and that are higher density and more sustainable, you have to be able to invite people into the outdoors. And to invite people into the outdoors … means you must be very clever about designing for climate and making sure those spaces … are climatically comfortable and inviting. So [architecture

> and planning] really go hand in hand; you cannot do one without the other.
>
> – Architect

While the architects and planners highlighted the need for a multi-scale approach to climate consideration in tropical urban design, they also highlighted extensive and complex political and economic barriers to this. Two key political barriers to good tropical city design relate to leadership and the standardisation of policy. One planner highlighted the challenge of electoral swings: "it comes back to leadership – you can't have that if with every change of local, state or federal government there's a polarized swing. It has to be understood and owned by the leadership for time". Another architect suggested:

> First, the city needs to be a priority. So, in the minds of politicians and citizens, the city needs to be a priority. There needs to be a desire and a general political will to invest in the public realm and see that as a worthwhile thing to do. And developers need to be able to see that there is a dividend for them in having a great public realm and having more people who want to be outside [in] a more compact city.
>
> – Architect

While leadership was considered important, the standardisation of policy was the most referenced barrier to tropical planning. One planner identified project homes as a particular problem, and an element in the failure of the vision for a sustainable Mount Peter to be realised in final construction. While architects and planners spend much time considering local issues to generate improvement, standardised policies often resulted in unintended consequences which were detrimental to good tropical design. It was generally perceived that state-wide policy, typically generated from South East Queensland, creates barriers to achieving more appropriate planning in Far North Queensland:

> Everything that we've seen in Queensland has been very subtropical and that presents a number of challenges. Whether that was coming from state policy – or I guess even consultant expertise – it wasn't actually coming from a tropical perspective.
>
> – Planner

Thus, for example, the small block sizes and urban forms influenced by New Urbanism and promoted in the *Next Generation Planning* handbook (QDLGP, 2011) produced by the Queensland government, might not be appropriate for Cairns. Further barriers preventing the integration of climate knowledge in tropical urban design were

economic and included cost – and perception of cost. These are often the same barriers that hinder good urban design elsewhere, and there is always a struggle to find money to invest in the public realm. There is also the question of where the money should come from (private sector, local/state government) and where the community believes the money should be spent. As one architect queried: "Do we spend lots of money on new roads? Or do we spend it making cities better to walk around? They're big choices." These questions and the larger concerns they raise alert us to a common theme expressed by the planners and architects interviewed for this research – that Tropical Urbanism is bound up with the idea of a better city.

Conclusion

This notion of Tropical Urbanism being bound up with the idea of a better city, in turn, leads to further thematic questions that could be used to frame the city's projected development over the next few decades. Could a renewed interest in Tropical Urbanism provide a language for urban transformation in Cairns? Could the relationship between built form, city planning and landscaping expressed by Tropical Urbanism be a defining characteristic of the region's identity? Could renewing the city's focus on climate-responsiveness and tropical lifestyle help produce an urban environment that reflects the city's UNESCO World Heritage credentials: A City in a Rainforest?

The built environment should reflect the aspirations and desires of the people of Cairns, many of whom choose to live in the city for its outstanding environmental values. Place-based climate considerations that once shaped the city have decreased over time for many reasons including the rise of mechanical cooling, the governance of building codes and catering to international tourist tastes and styles. New high-density developments might also compromise the character of the low-rise city, and urban growth has the potential to lack tropical identity. Tropical Urbanism is thus an important innovation in this space: a climate responsive urban design, capable of working across different planning scales – building, street, block and neighbourhood – and creating new vernacular forms. It is perhaps for these reasons that the CairnsPlan 2016 policy won the 2017 National Planning Institute of Australia (PIA) Award for Planning Excellence, followed by two Queensland PIA awards. Judges commented that it "represents a significant contribution of tropical expertise that can be offered, transferred and adapted to suit the needs of other tropical cities, with Cairns defining itself as a leader worldwide in the area of Tropical Urbanism" (PIA 2017).

Place-based initiatives such as these are important to improving the design outcomes and sustainability of tropical, regional cities. But the Cairns variety of Tropical Urbanism could be further reinforced by social/cultural and political nuances of a more

progressive Critical Regionalist approach. These approaches could further open discussions to local Indigenous senses of place, environment and climate as they pertain to urban design and architectural form (Fantin & Fourmile, 2014). To retain a progressive edge, a progressive Critical Regionalist approach must remain a conversation that resists design from elsewhere: whether that be importing high density glass tower designs or being governed from distant centres. In this sense we advocate a Tropical Urbanism that embodies the progressive aspects of New Urbanism and Critical Regionalism for better urban outcomes: ones that address a more compact urban form, housing diversity, walkable neighbourhoods and mixed-use while also protecting environmental values. Such an urbanism would simultaneously work towards a more regionally responsive built environment that expresses the distinctive outdoor-oriented lifestyle of the city. Although the documents and interviews interrogated here do not articulate critical perspectives in and of themselves, they do suggest a concept that extends beyond urban greenery and beautification. In this sense Tropical Urbanism could provide an important precedent for other regional, postcolonial, tropical cities.

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