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Context of the Region

PART A

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CONTEXT OF THE REGION

A1 Wet Tropics Region

Description of the Region

The wet tropics region is that area of northern Queensland which receives more than 1200mm of annual rainfall. The region is depicted on the Figure 1.

Note: Throughout this manual, the wet tropics region is used to describe this biogeographic region, the Wet Tropics World Heritage Area is used to describe the Wet Tropics of Queensland World Heritage Area.

The wet tropics region is unique in having two world heritage listed areas, the Wet Tropics and the Great Barrier Reef, within its confines. These features, together with a wet tropical monsoonal climate (mostly greater than 1200 mm annual rainfall), vibrant economy and good quality of life, have meant it is perceived as a highly desirable place to live and visit. This is manifest in the substantially increased numbers of residents and visitors over the past decade.

The wet tropics region has three basic landforms; the coastal plain, the coastal rainforest clad ranges and the tablelands. The coastal plain is a relatively narrow feature between the Great Barrier Reef and adjoining rainforest clad coastal ranges.

The wet tropics region has Cairns and Townsville as its major urban centres and generally extends north to Cooktown, west to Herberton and south to Townsville.

The region's natural resources such as land, water, forests, minerals and fisheries are an important component of both the regional economy and natural environment. The region has substantial areas of good quality agricultural land which support a range of

agricultural and horticultural industries (predominantly sugar cane on the coast, beef cattle to the west and intensive irrigated crops on the tablelands).

Urban growth, including rural residential development, is placing considerable pressure on agricultural land and farming industries through loss of land, fragmentation of farm holdings and the introduction of incompatible urban land uses in rural areas.

The region's water resources are used to meet a number of demands including irrigation, urban supplies, power generation, recreation and ecological processes. The region's coastal waters and wetlands play an important role in providing habitat for marine life, which supports important recreational and commercial fishing and marine based industries.

Wet Tropical Forests in the World

Tropical rainforests are of tremendous biological significance. They cover only seven per cent of the Earth's surface yet contain more than half of the Earth's plant and animal species.

Scientific research has highlighted the significance of tropical rainforest as the home of a diverse range of plant and animal life, a major source of atmospheric oxygen and a driving force behind the world's climate and weather patterns. Rainforest products are also being actively studied for their medicinal values.

The rapid disappearance of the world's tropical rainforest has become a global concern. Every year 12 million hectares, or an area the size of Tasmania (about 1.5% of

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Wet Tropics Bioregion and Roads

SCALE 1 : 1 200 000



Wet Tropics Biogeographic Region Boundary, (1200mm Isohyet)

Major road outside WHA

Wet Tropics Plan roads

State-controlled roads

Community access roads

Presentation (unrestricted)

Presentation (restricted)

Management roads

Major rivers

World Heritage Area

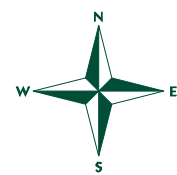
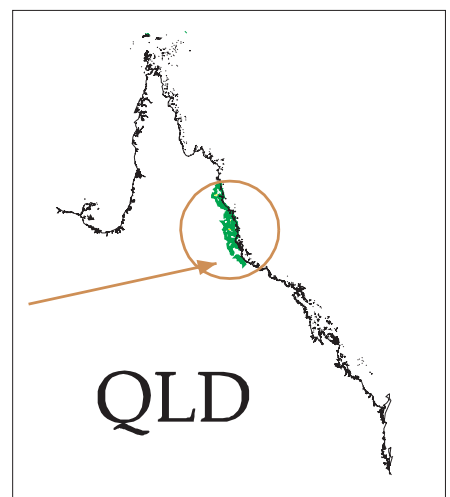
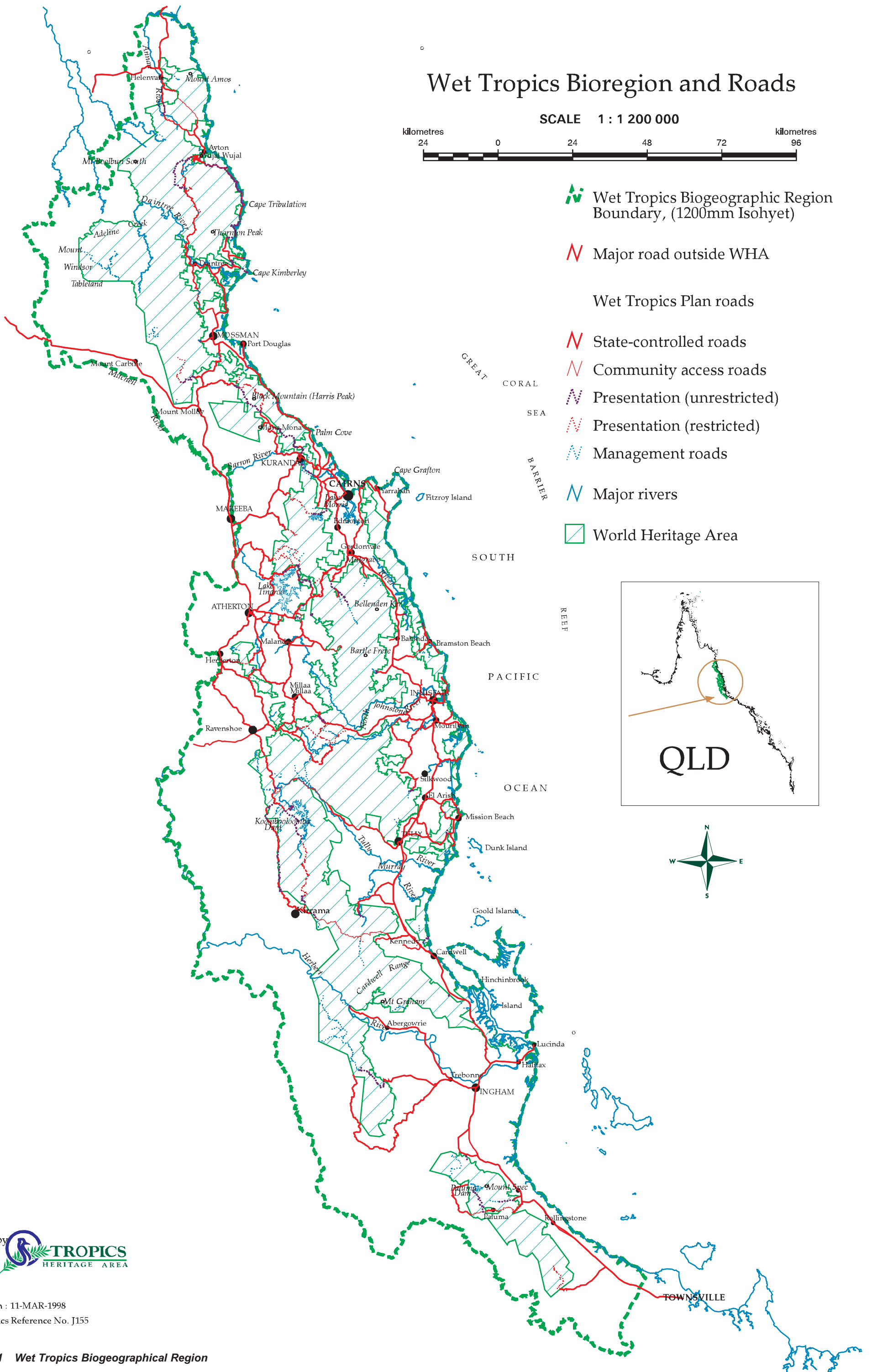
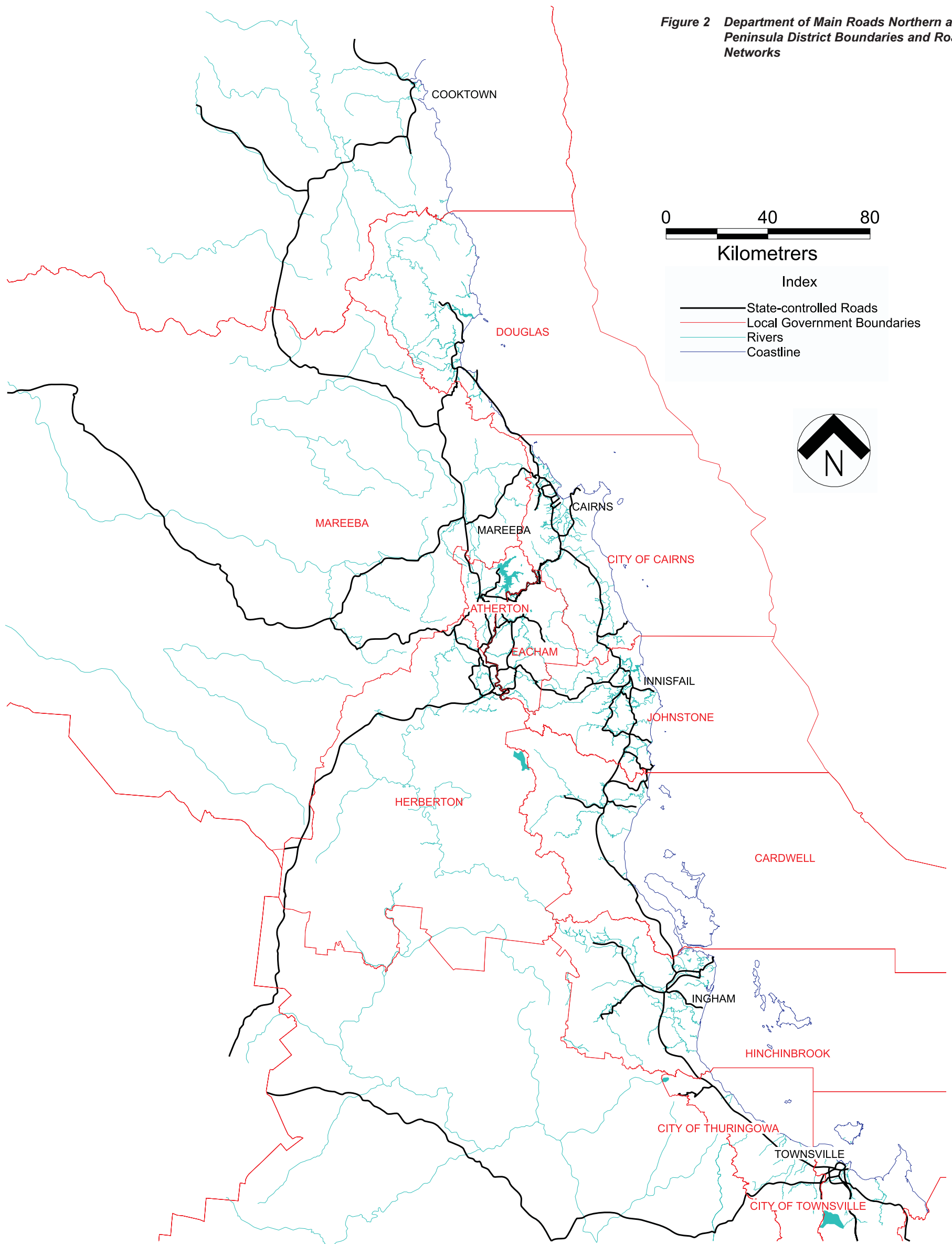


Figure 1 Wet Tropics Biogeographical Region

Figure 2 Department of Main Roads Northern and Peninsula District Boundaries and Road Networks



the total extent of tropical rainforests globally) is destroyed through large scale clearing and burning (IUCN 1991).

Australia contains less than one-thousandth of the world's tropical rainforests, but its wet tropical rainforest is one of the most significant regional ecosystems in the world. The World Heritage listing of the Wet Tropics World Heritage Area demonstrates Australia's commitment to preserve tropical rainforests.

Australia is well placed to set an example for rainforest management and to demonstrate the economic benefits of protecting the rainforest. Australia can also provide ideas and information for the developing nations that have minimal funds to spend on the preservation of World Heritage areas. The Manual may also be relevant to such countries.

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Wet Tropics of Queensland World Heritage Area

In December 1988 the tropical rainforest areas of north-east Queensland were inscribed on the World Heritage List by the World Heritage Committee. As a result of the listing, the area is now known as the Wet Tropics World Heritage Area.

The Area comprises nearly 900 000 hectares and extends 400 kilometres along the North Queensland coastline. The wet tropics region of Queensland is Australia's most floristically rich area at both the family and genera level. A survey of plant records registered with the Queensland Herbarium indicates that the region's flora of higher plants exceeds 3500 species. At least 1160 species of higher plants representing 523 genera of 119 families are recorded from the region's rainforests. Seventy-five of these genera are Australian endemics with 43 of these entirely restricted to this region. Some 710 species are endemic to Australia, with 500 (or 43% of the total regional species) endemic to wet tropical closed canopy forests.

Although representing less than one-tenth of one per cent of the land surface of the Australian continent, the Area contains the only habitat for 76 species of animals that are regarded as rare, vulnerable or endangered.

The Area provides an unparalleled living record of the ecological and evolutionary processes that shaped the flora and fauna of Australia over the past 415 million years when first it was part of the Pangaeon landmass, then the ancient continent Gondwana (which included India, Antarctica and parts of Africa and South America in Palaeozoic and Mesozoic times) and for the past 50 million years an island continent.

Wet Tropics Management Plan

The *Wet Tropics Management Plan 1997* was approved by Governor in Council on 7 August 1997 and takes effect on 1 November.

The *Wet Tropics Management Plan 1997* sets out a regulatory framework for management of the Wet Tropics World Heritage Area in accordance with the *Wet Tropics World Heritage Protection and Management Act 1993*.

With regard to roadworks in the Wet Tropics World Heritage Area the plan has a number of implications:

- the Area is divided into four zones which have different levels of integrity, remoteness from disturbance, intended physical and social setting and management purposes;
- roads are classified (with different implications for access and road maintenance and building) as:
 - State-controlled;
 - Community access;
 - Presentation (unrestricted);
 - Presentation (restricted); and
 - Management Roads;

- various activities are prohibited or are subject to a permit from the Wet Tropics Management Authority (or other government agency);
- maintaining a road is prohibited unless a permit is obtained in all zones, building a road requires a permit and is only allowed subject to a permit in zones C and D;
- permits are decided in accordance with the most important consideration, “*the likely impact ...on the area’s integrity*”, in accordance with the precautionary principle, considering prudent and feasible alternatives and taking into account World Heritage values and community considerations;
- the plan states that a permit to build a road may only be issued if there is “*no net adverse impact on the integrity of the area or there is no prudent and feasible alternative*” and that roadworks should be confined to land already cleared or otherwise degraded;
- roadworks requiring clearing will only receive a permit if they will reduce the impact on the integrity of the Area or are needed for public safety, a community service, access to a residence or are required to “*properly manage the area*”.

A document “*Protection Through Partnerships*” has also been published by the Wet Tropics Management Authority to set out policies for implementing the Wet Tropics Management Plan 1997. Of particular interest is that the document specifically encourages the development of a Code of Practice for Roadworks.

A2 Great Barrier Reef Marine Park

On the 26 October 1981 the Great Barrier Reef Marine Park was recognised and listed as a World Heritage Area. The Great Barrier Reef Marine Park is a natural treasure stretching more than 2 000 km from Cape York to just north of Fraser Island. The park covers an area of 348 200 km² and contains a diverse array of natural, cultural and historical features. Inscription as a World Heritage area is an obligation for the Australian Government and relevant Management Authorities to design and implement policies and management practices which aim to preserve and protect this unique, dynamic ecological system.

The Great Barrier Reef Marine Park is protected by Australian and Queensland Legislation and management policies. This is imperative due to the rapidly increasing demands from tourism, fishing and industry. Whilst diverse and beautiful, the Great Barrier Reef supports a range of activities and industries that stand to adversely impact the Reef if not managed correctly. These include:

- tourism;
- fishing;
- shipping and port related activities;
- mariculture; and
- recreational activities eg. game fishing, diving, coral viewing etc.

The coastline which fronts the entirety of the Great Barrier Reef Marine Park supports a range of land based activities which include:

- urban development;
- cane growing;
- grazing; and
- horticulture.

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These activities need to exercise best practice to ensure the sustained well-being of the Marine Park and minimise any significant, localised impacts.

Road corridor planning, design, maintenance, construction and operation needs to reflect the sensitivity and importance of the Great Barrier Reef as a unique natural resource and natural wonder.

The wet tropics region being an area of rapid growth, essentially needs to implement a management system that minimises any significant adverse impacts which may compromise the inter-generational equity of the reef.

and April, when 75 to 90 percent of the annual rainfall is recorded. Daily totals in excess of 250 mm are frequently recorded. Rainfall totals for individual years may vary widely from long-term averages, due largely to the incidence of cyclones.

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A3 Regional Climate

Many of the distinctive features of the region relate to the high rainfall and diverse terrain. Seasonal variations in climate are much less than in the southern temperate areas with generally two seasons only, "the wet" and "the dry". Rainfall varies markedly throughout the biogeographical region and some parts are the wettest in Australia.

The height and orientation of the coastline with respect to the prevailing moist south-east to north-east air stream significantly influences rainfall. The highest average annual rainfall is experienced in the Area between Cairns and Tully, inland to the edge of the Atherton Tablelands.

Rainfall on the Atherton Tableland decreases rapidly westward. The mean annual rainfall ranges from about 1 200 to 8 000 mm. However, Mt. Bellenden Ker, at an altitude of 1 561 m, has recorded as much as 10 472 mm over an eight month period (January to August 1979) and has received 1 140 mm of rain in a 24 hour period (Tracey 1982). Rainfall intensities at this station are amongst the highest recorded in the world.

The rainfall is distinctly seasonal with the highest rainfall registrations in the region occurring in the period between November

Intense tropical cyclones are a feature of the region's climate. Cyclones are a major factor shaping the structural and floristic differentiation of the vegetation - particularly with respect to forest mosaics of the coastal lowlands.

By comparison with other tropical rainforest areas of the world, the wetter parts of the region lie at the "extremely wet" end of the hydrological spectrum. The occurrence of widespread overland flow also appears to be rare in wet tropical rainforests elsewhere.

Temperatures vary throughout the Area due to the effects of altitude and distance from the coast. Highest temperatures tend to occur in January and the cooler temperatures during June, July and August when frosts may be experienced in the higher areas, particularly on the Atherton Tableland. The coastal belt experiences a mean daily temperature range of 25°C to 36°C. The upland/tablelands are cooler with mean daily temperatures ranging from 17°C to 28°C with mean daily winter temperatures ranging from 9°C to 22°C.

Table 1 Mean Monthly Rainfall for Selected Locations

Location	Biogeographical Region												Annual Total
	Mean Monthly Rainfall in Millimetres (mm)												
	Mean Rain Days												
	Jan	Feb	Mar	Apr	May	Jun	July	Aug	Sep	Oct	Nov	Dec	
Atherton	288.5 15.9	304.7 15.5	257.5 16.3	106.3 13.4	60.3 11.7	46.3 10.0	30.0 8.3	24.3 6.5	22.1 5.1	27.3 4.9	74.2 6.8	171.9 10.8	1417.5 124.4
Cairns	406.1 17.8	433.4 18.8	424.3 19.3	197.9 17.4	99.9 14.2	49.1 9.3	30.0 9.1	27.4 8.0	34.8 7.6	40.5 8.1	88.9 9.5	176.8 13.5	2008.9 152.8
Mareeba	202.2 15.6	237.5 17.0	197.7 15.7	45.6 11.0	24.7 7.7	15.6 5.2	6.6 3.4	6.6 3.2	4.6 2.1	15.7 3.3	55.0 5.9	102.1 10.2	921.6 101.4
Tully	615.6 16.3	740.7 18.2	763.5 19.5	524.4 17.8	341.2 16.4	202.2 12.1	150.1 11.3	131.3 9.8	115.1 8.7	101.4 8.2	161.1 9.3	260.2 10.7	4111.7 157.2

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