LONG-TERM POPULATION GROWTH IN NORTHERN AUSTRALIA

March 2015

1.0 INTRODUCTION

Although populations are small compared with southern Australia, northern Australia is composed of six distinct regional areas.

As the area grows, the pattern of population distribution is changing.

This paper sets out:

- This changing pattern and the leading role of the far northern Cairns and Darwin regions in this changing pattern;
- Why this consistent pattern of change has been happening over a period of time; and
- On a continuation of these long-term trends, what regional population in Northern Australia would look like by 2050.

This paper has been prepared by Cummings Economics for the Cairns Regional Council.

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2.0 THE REGIONS OF NORTHERN AUSTRALIA

Northern Australia covers a large area. Realities of areas and distances leads to a series of six distinct regions, with five of them served by a series of larger regional capitals with distinct commercial servicing regions.

Map 1 shows the six regions and the five regional capitals and the commercial regions they serve.

In the case of Darwin, Cairns, Townsville and Mackay, the regional capitals and their commercial servicing areas are fairly clear.

Although Rockhampton is the regional capital of the Fitzroy and Central West region, unlike Darwin, Cairns, Townsville and Mackay, the region's port is not located at the city, but 100km away at Gladstone. Regional city growth in this region can only be understood by combining the two.

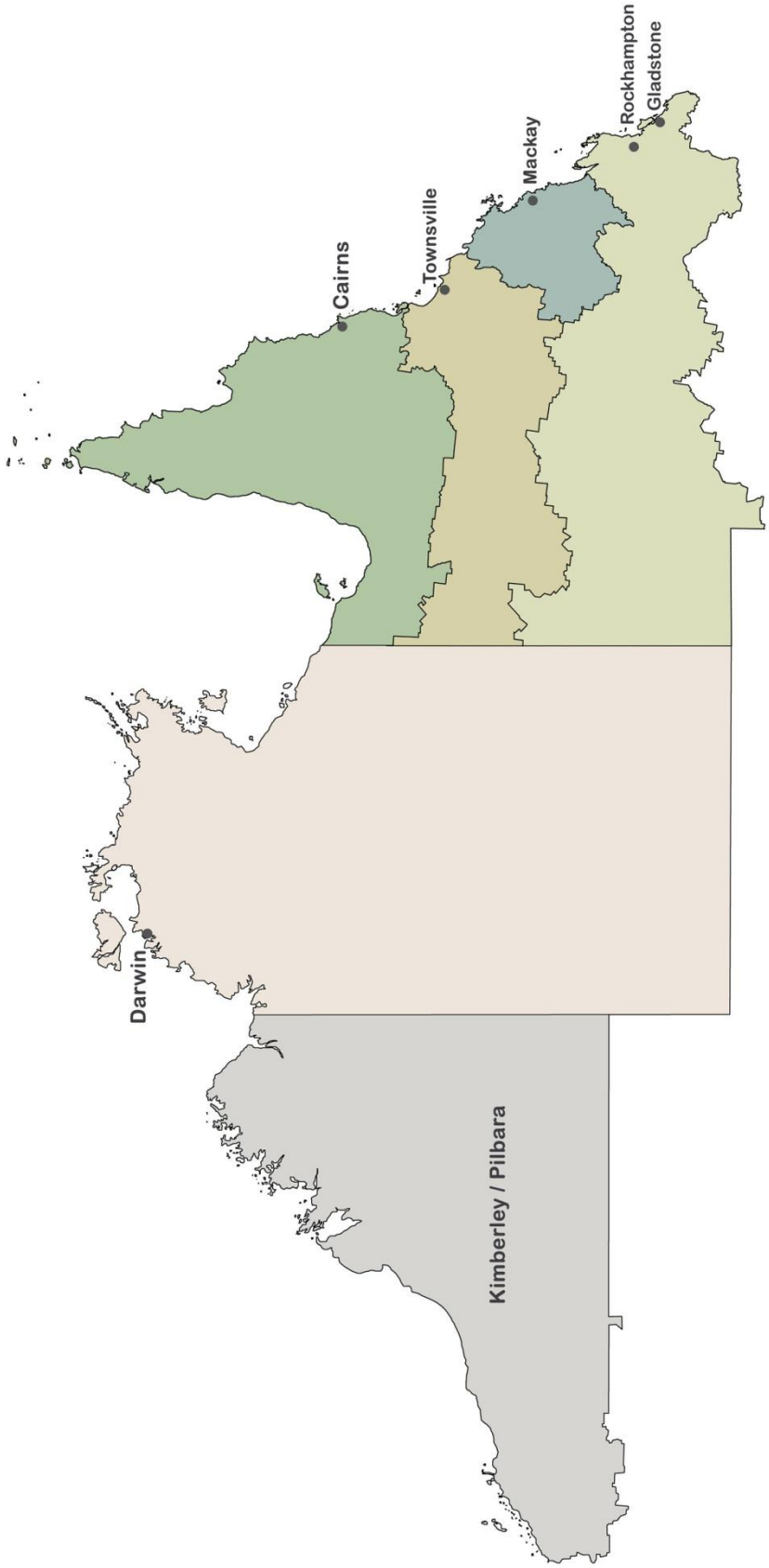
City population boundaries can be complicated to define. Up until 2011, fairly clear city Statistical Districts were being defined by Australian Bureau of Statistics that were reasonably comparable. For this paper, these Statistical District boundaries are used. While the boundaries used can be argued at the fringe, the relatively small figures involved are not likely to change the overall picture presented in the following analysis.

Similarly, there can be argument about fringe regional areas where commercial spheres of influence can overlap to some degree. Again the relatively small figures involved are not likely to change greatly the overall picture.

For this paper, analysis of long-term trends commences in 1976 when the Australian Bureau of Statistics commenced publishing estimated residential populations. Before then, only census count figures were available, that included visitors and did not include residents away.

Appendix 1 sets out statistical notes on the boundaries used.

Map 1 – Northern Australia Regions

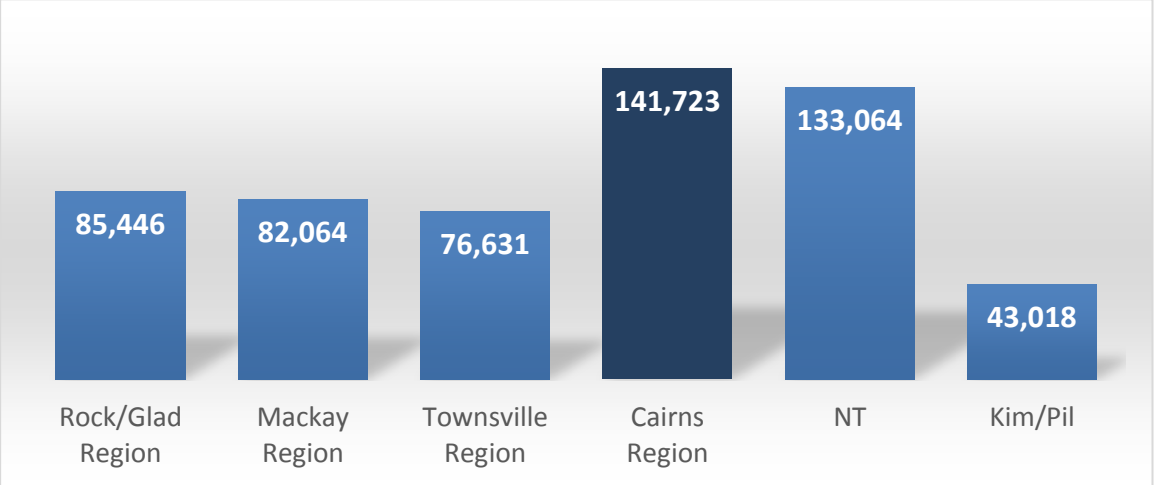


3.0 LONG-TERM POPULATION GROWTH PATTERNS

3.1 Regional population growth patterns

Over the 35 years since estimated residential population statistics began being published by the Australian Bureau of Statistics in 1976, Cairns' commercial servicing region and the Darwin (Northern Territory) region have led regional population growth in northern Australia by a large margin.

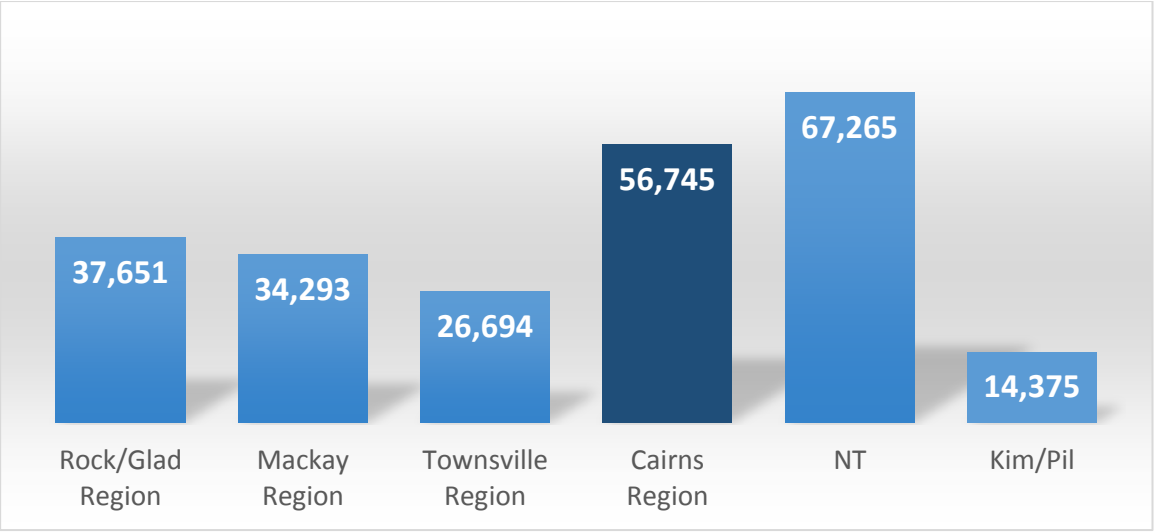
Chart #1: Long-term 35-year Increase in Regional Residential Population, Northern Australia Regions, 1976-2011



Source: Cummings Economics from ABS Cat No. 3218.0 et al.

Examination of the figures by shorter periods indicates that over the 15 years 1976 to 1991, the Northern Territory growth exceeded the Cairns region. In 1976, Darwin population was abnormally low following Cyclone Tracy in 1974 which led to major evacuations. There was a strong return of population over the years following 1976.

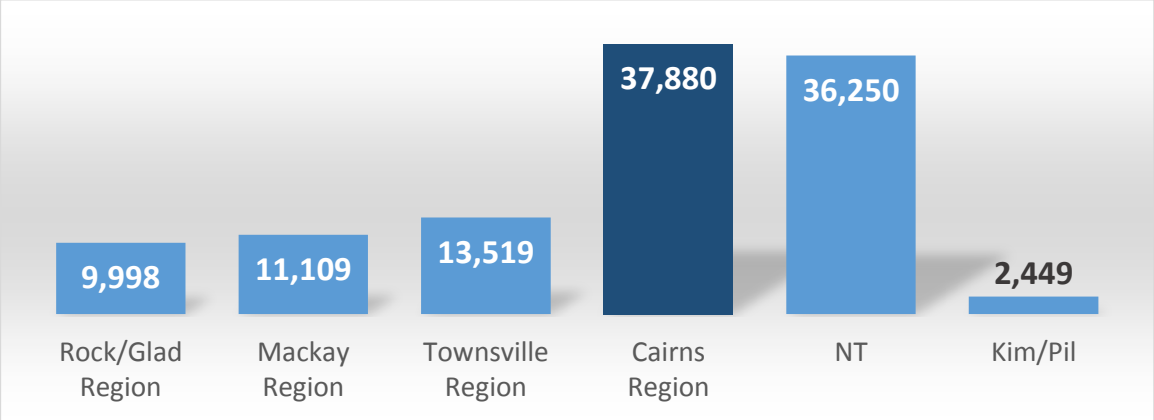
Chart #2: Long-term 15-year Increase in Residential Population Northern Australia Regions, 1976-1991



Source: Cummings Economics from ABS Cat No. 3218.0 et al.

Over the 10 years 1991-2001, the Cairns region led followed by the Northern Territory.

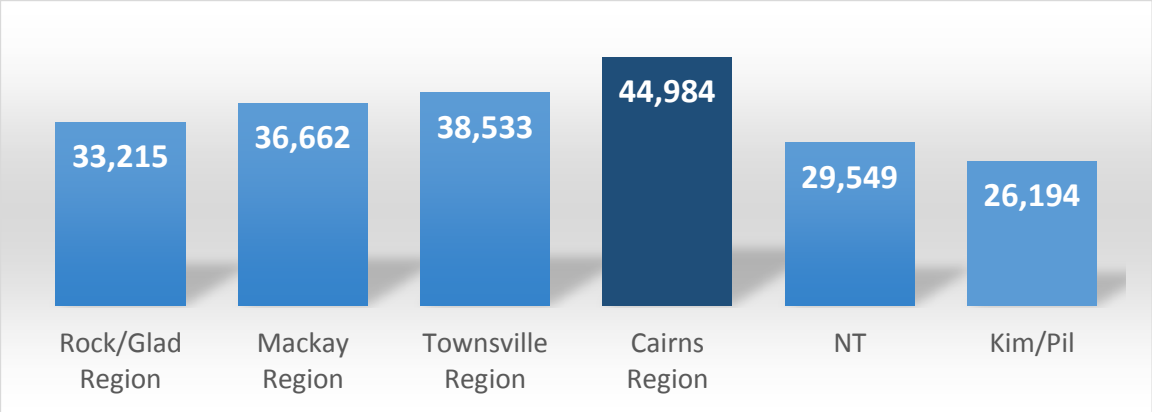
Chart #3: Long-term 10-year Increase in Residential Population, Northern Australia Regions, 1991-2001



Source: Cummings Economics from ABS Cat No. 3218.0 et al.

In the period 2001 to 2011, the Cairns region continued to lead but mainly under the influence of accelerated mining activity increase in the Rockhampton, Gladstone Mackay and Townsville regions advanced to exceed the Northern Territory.

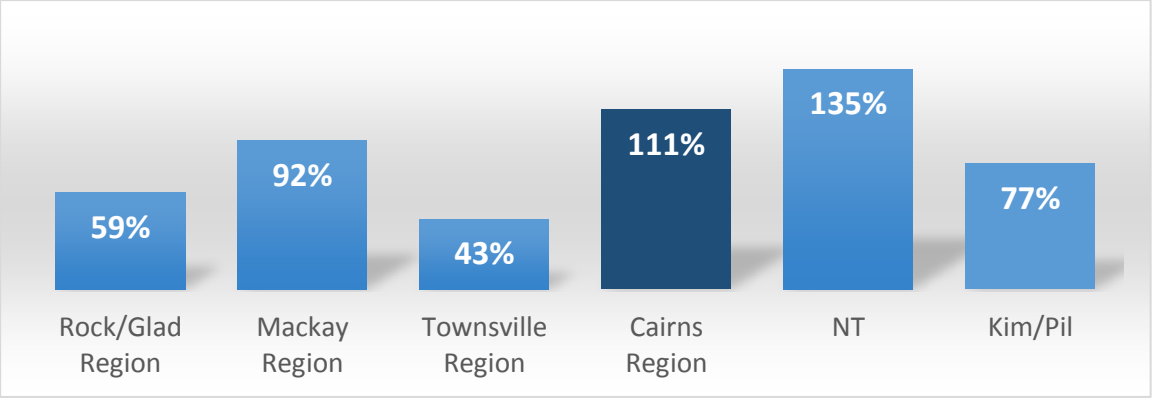
Chart #4: Long-term 10-year Increase in Residential Population, Northern Australia Regions, 2001-2011



Source: Cummings Economics from ABS Cat No. 3218.0 et al.

In growth rate terms, the increases translate into the following pattern with the far northern regions (the Northern Territory and Cairns region), leading and the Mackay region next.

Chart #5: Percent Growth, Regional Residential Populations, Northern Australia, 1976-2011

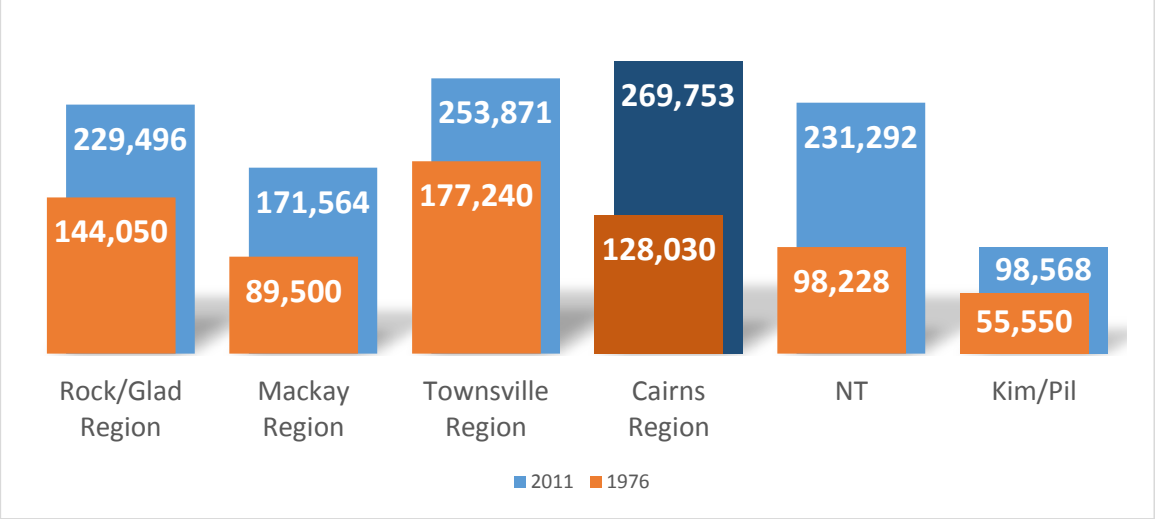


Source: Cummings Economics from ABS Cat No. 3218.0 et al.

The growth pattern has led to the Cairns region moving from being the third largest to being the largest and the Northern Territory coming through to exceed the Rockhampton / Gladstone region as third largest after the Townsville region.

The Pilbara / Kimberley region has grown in residential population to equal that of the Northern Territory in 1976.

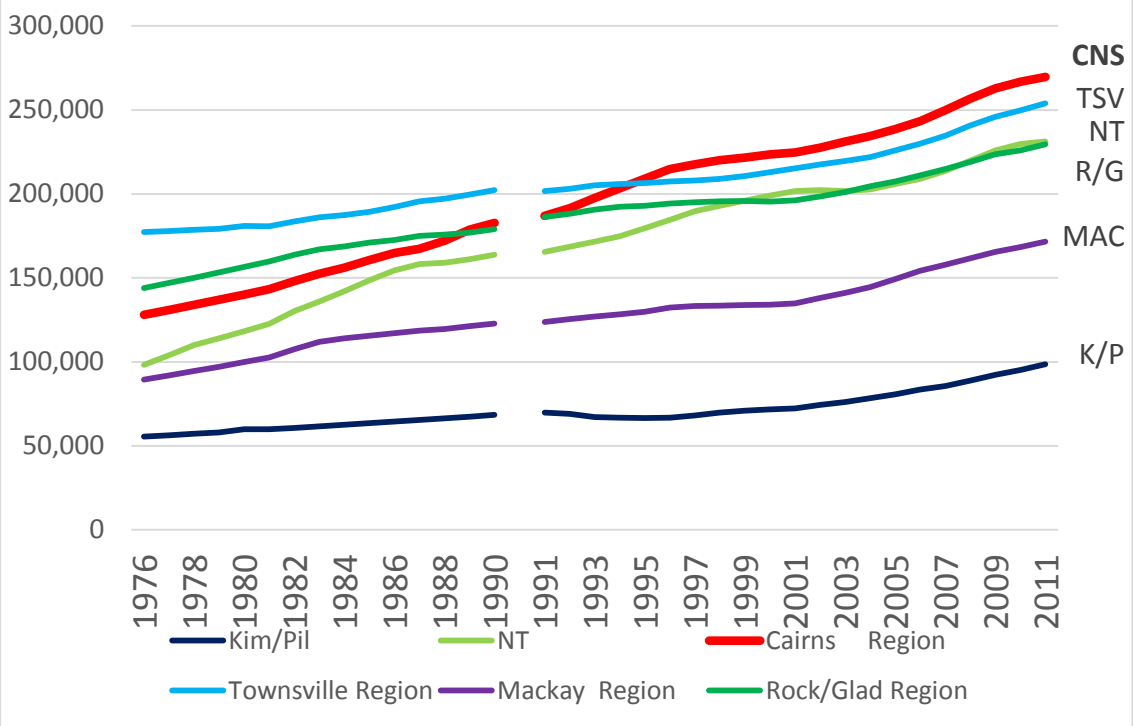
Chart #6: Residential Population, Northern Australia Regions, 1976 and 2011



Source: Cummings Economics from ABS Cat No. 3218.0 et al.

Chart #7 illustrates how the two far northern regions and the Northern Territory have recorded the strongest growth..

Chart #7: Residential Population, Northern Australia Regions, 1976 to 2011

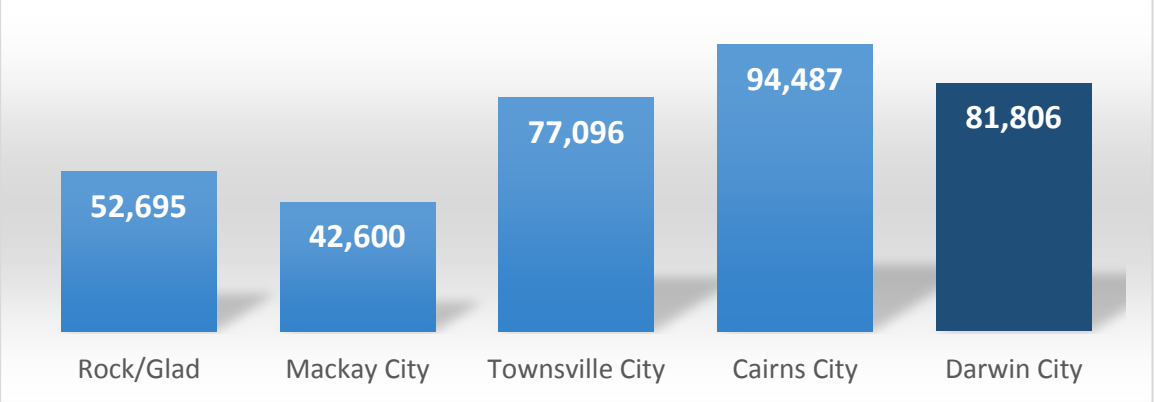


Note: The break 1990-1991 indicates a break in series in some cases involving minor changes in definition of area (see Statistical Notes, Appendix 1).
Source: Cummings Economics from ABS Cat No. 3218.0 et al.

3.2 Regional city population growth

Against this regional background, it is not surprising that Cairns as a regional servicing city has recorded the largest growth in population followed by Darwin and then Townsville.

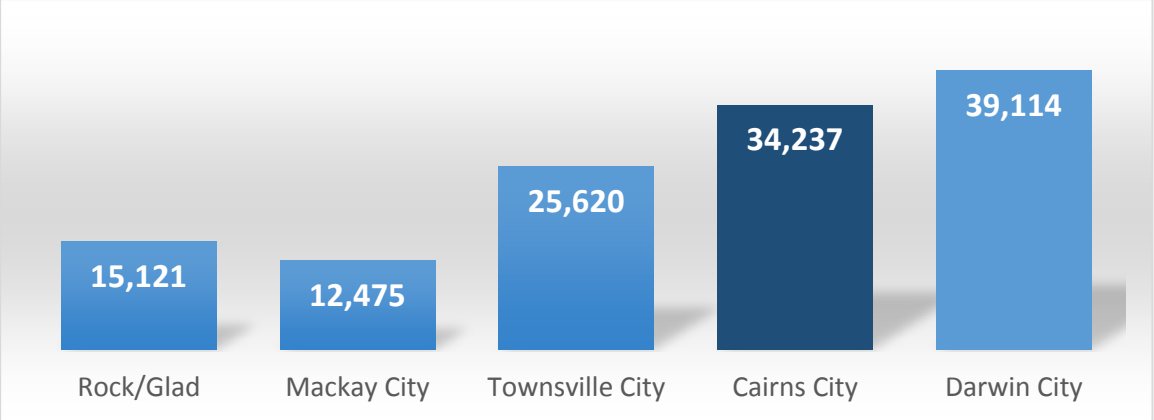
Chart #8: Long-term 35-year Increase in Residential Population, Northern Australia Cities, 1976-2011



Source: Cummings Economics from ABS Cat No. 3218.0 et al.

Looking at the pattern of increases of the northern cities over shorter periods, indicates that in the 15 years 1976 to 1991, Darwin led with recovery from Cyclone Tracy in 1974 a major factor, but with Cairns second.

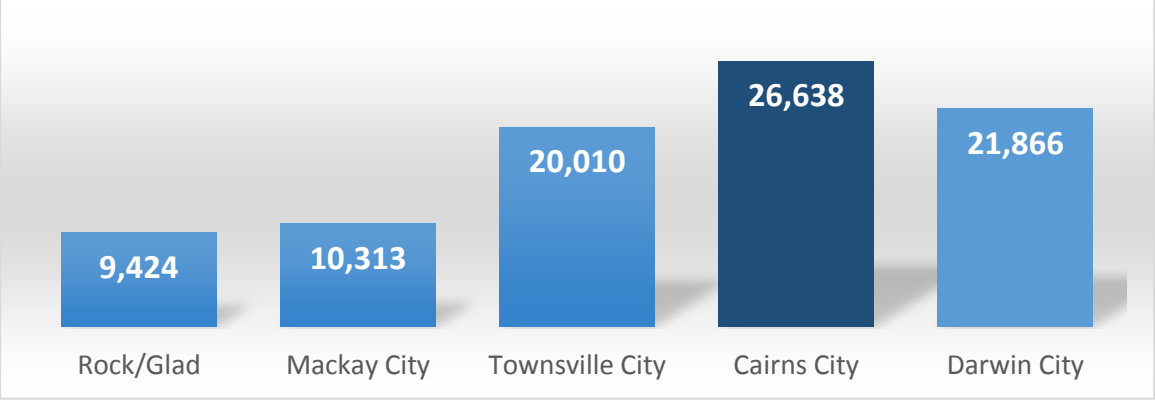
Chart #9: Long-term 15-year Increase in Residential Population, Northern Australia Cities, 1976-1991



Source: Cummings Economics from ABS Cat No. 3218.0 et al.

In 1991-2001, Cairns led with Darwin second.

Chart #10: Long-term 10-year Increase in Residential Population, Northern Australia Cities, 1991-2001

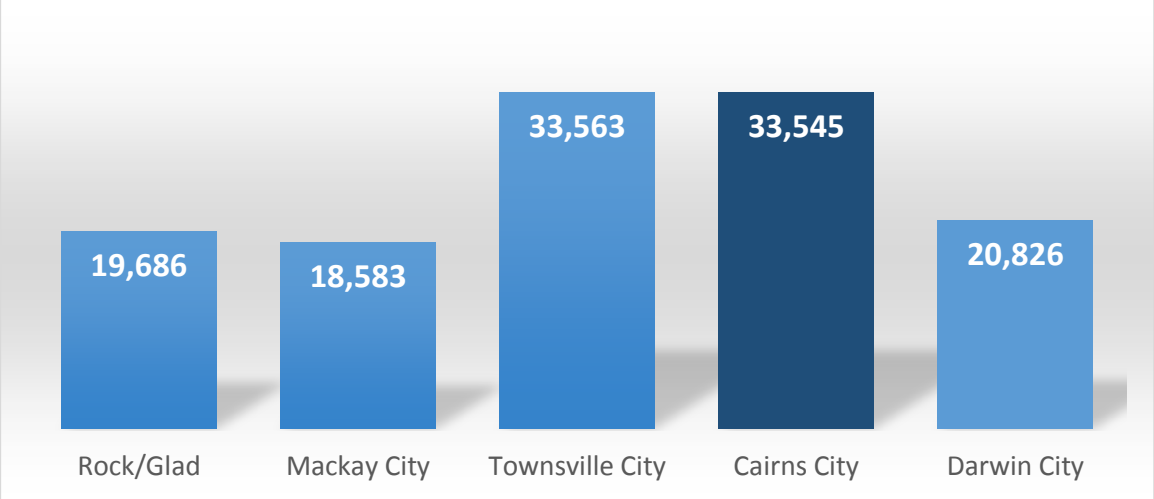


Source: Cummings Economics from ABS Cat No. 3218.0 et al.

Over the period 2001-2011, mainly under the influence of high mineral prices, Townsville, Mackay and Rockhampton rose with Townsville coming up to equal Cairns.

Over the period 2001-2011, Cairns' growth was heavily affected by the Global Financial Crisis and high dollar, while Townsville was benefiting heavily by increased defence personnel being stationed in the city and high mineral prices. This pattern continued in 2013 and 2014 but there is evidence it is currently reversing.

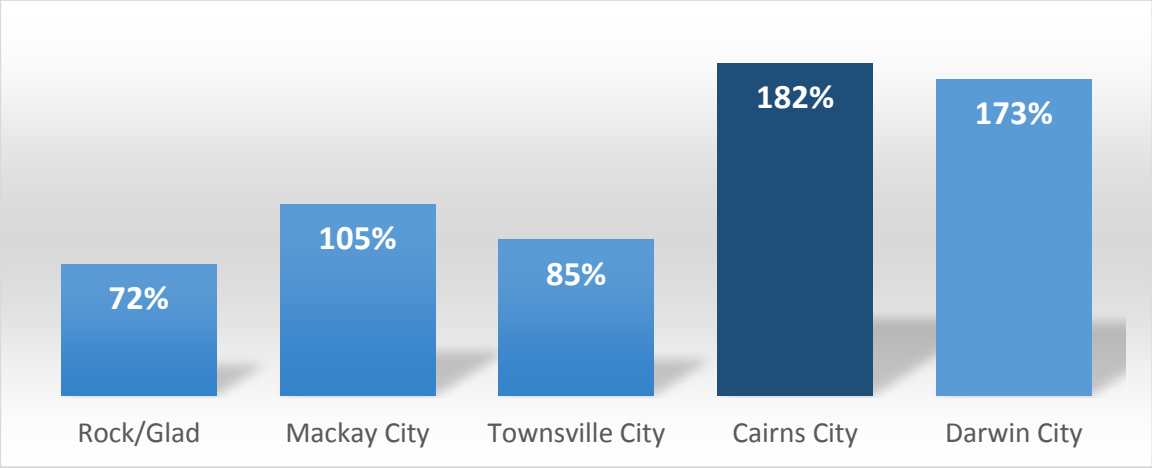
Chart #11: Long-term 10-year Increase in Residential Population, Northern Australia Cities, 2001-2011



Source: Cummings Economics from ABS Cat No. 3218.0 et al.

However in city growth in percentage terms, the two far northern cities of Cairns and Darwin have led with Mackay next.

Chart #12: Population Growth in Percentage Terms, Northern Australia Cities, 1976-2011

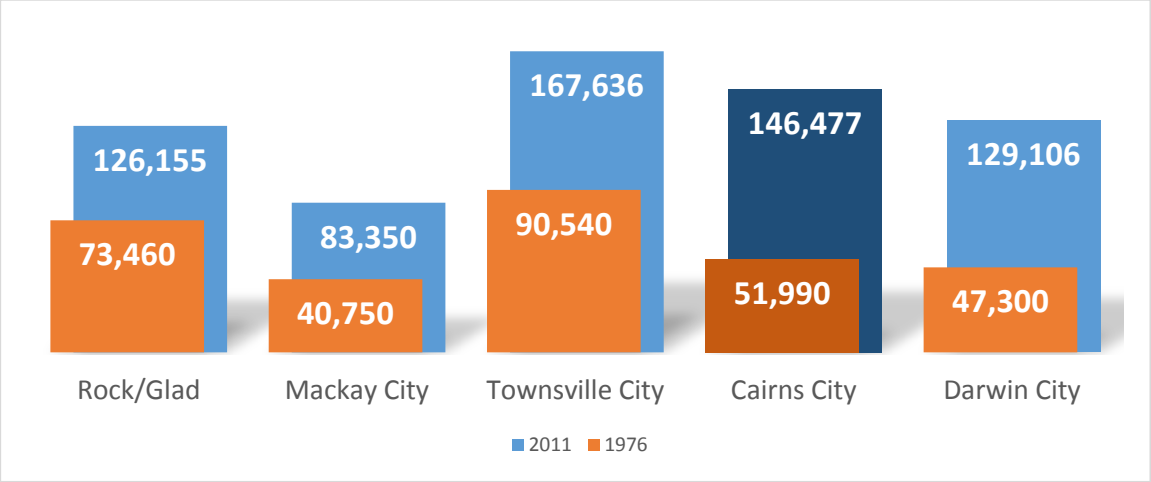


Source: Cummings Economics from ABS Cat No. 3218.0 et al.

This has led to substantial changes in the ranking of regional city sizes.

While Townsville still leads, Cairns has moved from being just over half Townsville's size in 1976 to being 87 percent the size of Townsville in 2011. Cairns and Darwin have passed Rockhampton / Gladstone in size.

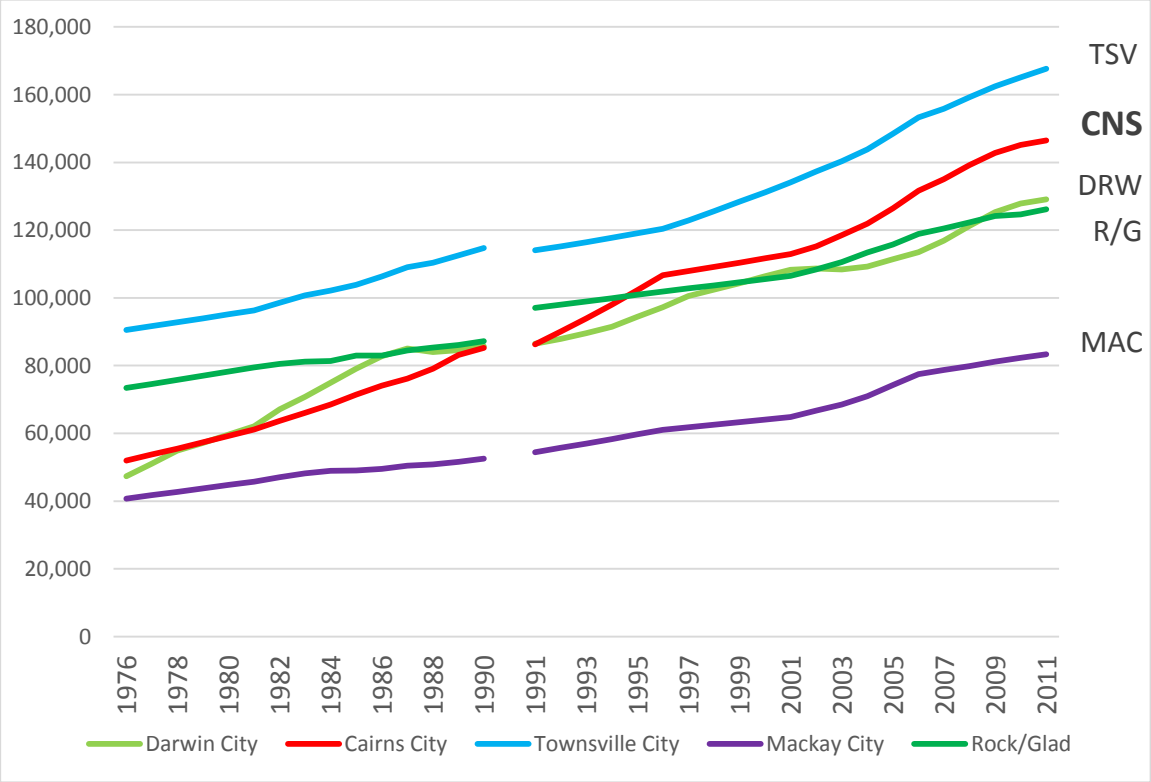
Chart #13: Residential Population Sizes, Northern Australia Cities, 1976 and 2011



Source: Cummings Economics from ABS Cat No. 3218.0 et al.

Chart #14 illustrates the movements by years illustrating the strong growth trajectory of Cairns and Darwin.

Chart #14: Residential Population, Northern Australia Cities, 1976-2011

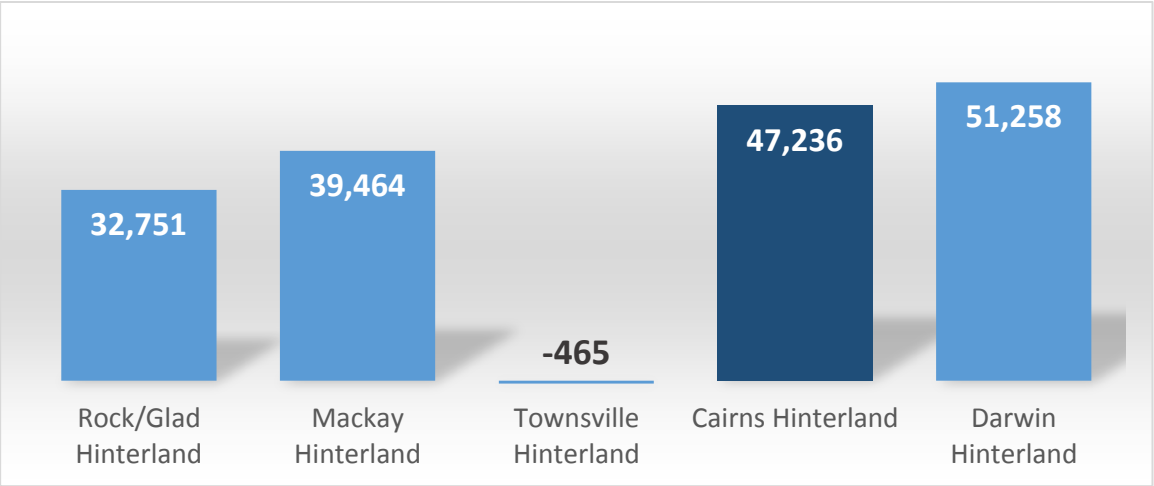


Source: Cummings Economics from ABS Cat No. 3218.0 et al.

3.3 Hinterland growth patterns

Standing behind the growth patterns are differences in growth in hinterland populations serviced by the northern cities. Again, strongest growth has been in the two far northern regions, Northern Territory and Cairns region, followed by the Mackay region which includes the Whitsundays area. There has been no growth in the Townsville hinterland.

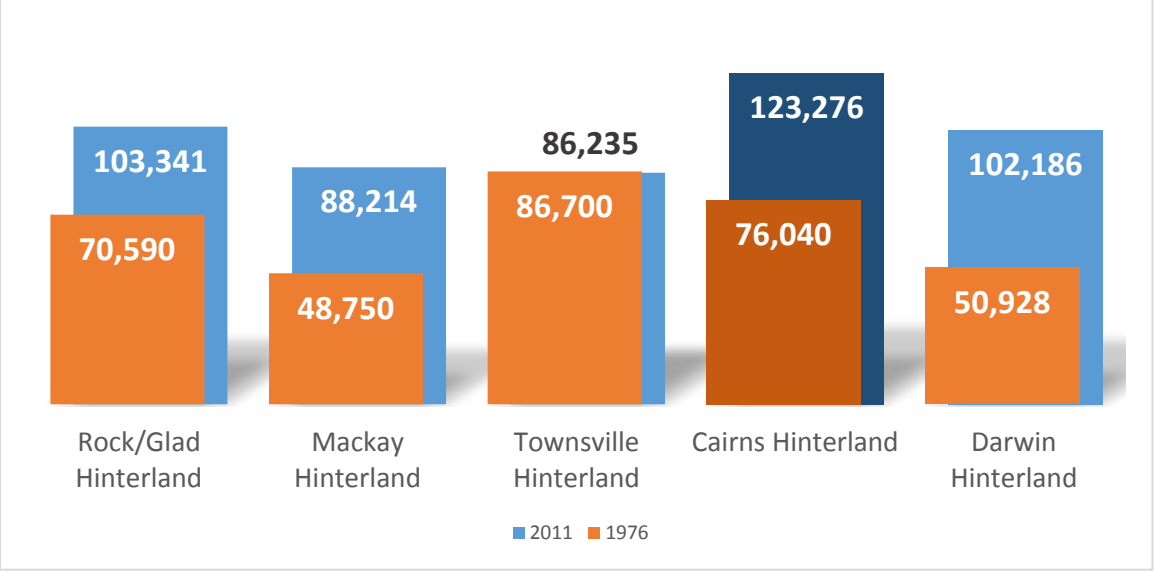
Table #15: Long-term 35-year Increase in Hinterland Populations of Northern Australia Cities, 1976-2011



Source: Cummings Economics from ABS Cat No. 3218.0 et al.

Chart #16 illustrates how Cairns now leads the northern regions in hinterland population by a substantial margin.

Chart #16: Residential Populations, Northern Australia City Hinterlands, 1976-2011

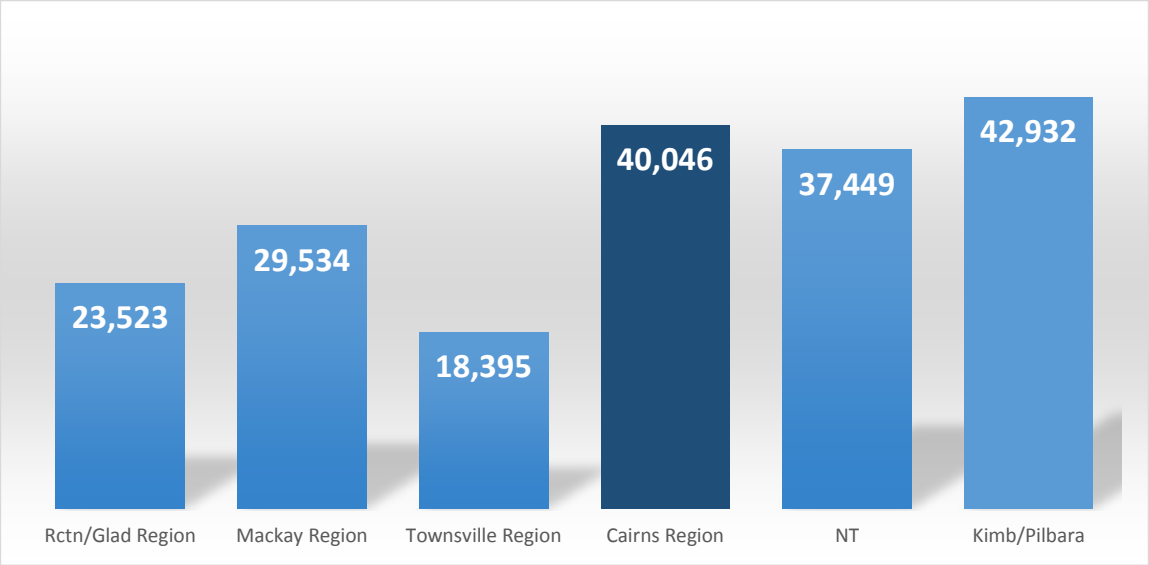


Source: Cummings Economics from ABS Cat No. 3218.0 et al.

3.4 Visitor populations

The following chart shows visitor populations as at 2011 Census. Visitor populations include two major elements of leisure visitors and fly-in/fly-out (FIFO) workers. The large number of FIFO workers in the Pilbara / Kimberley area results in it leading followed by Cairns (mainly leisure visitors), Northern Territory and Mackay region.

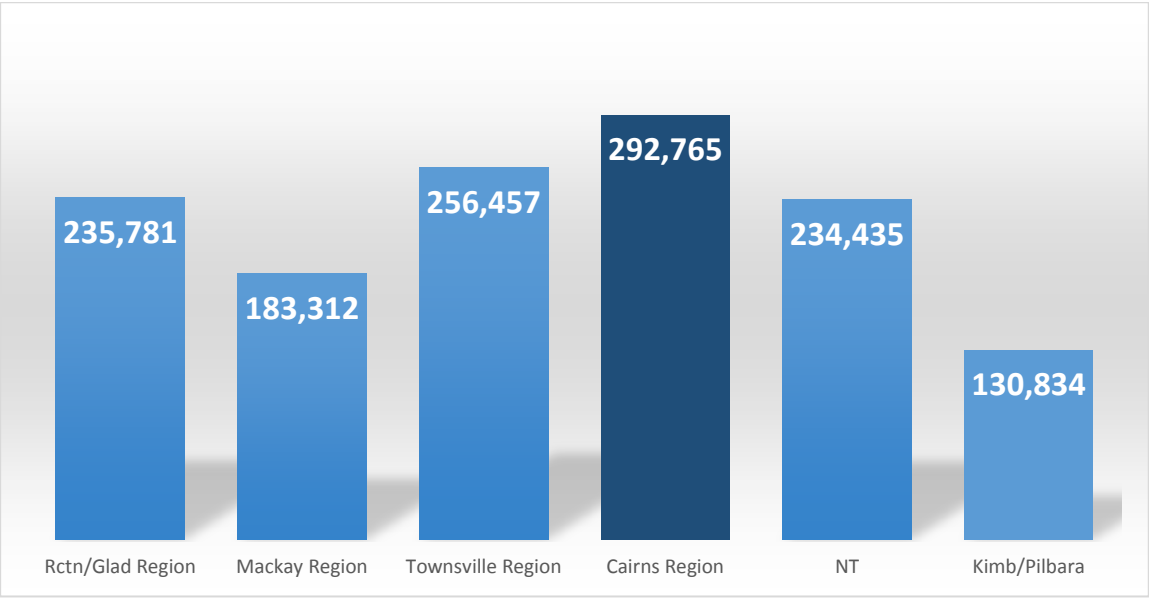
Chart #17: Visitor Numbers[(1)], Regions of Northern Australia, 2011 Census



[(1)] Note: These are visitors from outside the small local area in which they are counted and can include substantial numbers of visitors from within the region. This especially inflates the numbers for the Northern Territory by about 9,000.
Source: Cummings Economics from ABS Census 2011.

In total census count population including visitors but excluding residents away, the Cairns region leads by a substantial margin.

Chart #18: Census Count Population (place of enumeration), Regions of Northern Australia, Census 2011



Source: Cummings Economics from ABS Census 2011.

4.0 WHY?

4.1 General

The following explores why there has been a long-term trend for the Far North's Cairns region and Northern Territory to be leaders in regional growth in northern Australia under the headings:

- Overcoming the tropical Lag
- The location of natural resources
- Strategic location
- Industry composition
- Population composition
- Comparative regional areas.

4.2 Overcoming the tropical lag

Northern Australia stretches deep into the tropics and historically, presented a much greater challenge to an Australian society with technology and most of its population derived from north-western Europe – the further north the greater the challenge. Historically the Cairns and Darwin "Top End" regions being the furthest north, were late being settled and initial progress was slow and hard won.

But the North's tropical regions are not poor in underlying resources and long-term underlying factors have been underpinning accelerated growth from a small base.

- Technology suited to tropical areas has been developed across a broad spectrum affecting industries and everyday living.
- A growing global economy has been reaching out for previously underdeveloped mining, agricultural, marine and tourism resources.
- Transport and communication developments have been breaking down old cost barriers of remoteness from national and world markets.
- Success breeds success factors have been kicking in.

Being the furthest north and previously least developed in relation to potential, the Cairns and the Darwin "Top End" regions have benefited most from these underlying trends.

4.3 The location of natural resources

While a great deal of attention has been paid in recent decades to the mineral resources of the North's regions, what is often not recognised is the disposition of the North's natural (biological) resources. These underlying biological resources tend to be strongest across the far northern regions and especially in the Cairns region. This natural resource base has underpinned:

- Expanding primary industries;
- Expanding tourism;
- Superior lifestyle opportunities.

Pattern of natural biological resources

Northern Australia with 40 percent of Australia's land area accounts for 60 percent of water runoff.

Map, Appendix 1, shows water runoff by river basins highlighting the strong role of the far northern Cairns region and Darwin "Top End" region in this pattern.

Within Queensland, the Cairns region accounts for 60 percent of the State's water runoff and 26 percent of the nation's total.

Satellite technology and CSIRO modelling is now giving a picture of how this translates into measures of underlying plant growth potential – the rate at which carbon is absorbed from the atmosphere. (Maps, Appendix 2, illustrate.)

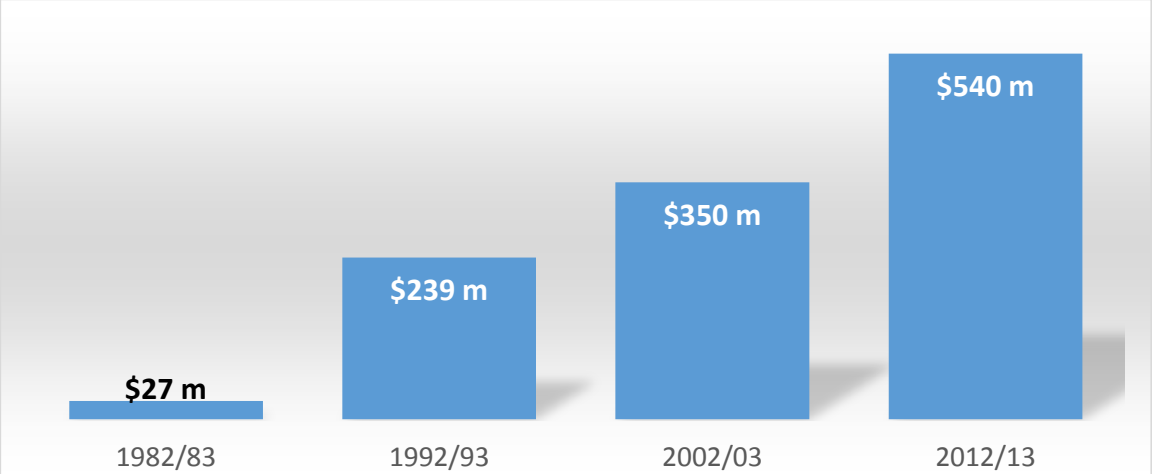
Modelling CSIRO data indicates that average plant growth per square metre is higher in tropical Australia, as measured by absorption of carbon from the atmosphere, than southern Australia. In the Cairns region, it is almost double the remainder of Queensland and of tropical Australia in general.

Primary industries, a growth sector

Agriculture is regarded as a stagnant sector in most parts of Australia. However especially in the Cairns region, it has been a growth sector over recent decades. Major breakthroughs have included:

- Mechanisation of sugar harvesting and bulk transport. A major new growing area and new mill have been established in the Mareeba district.
- The introduction of tropical adapted Brahman breeds into cattle herds and development of live cattle exports to Asia has resulted in increases in cattle herds and turnoff across the North.
- Sealing of roads linking the Cairns region to southern markets and more efficient road transport vehicles has seen a major new sector added to the Cairns regional economy in the production of tropical fruits, offseason produce and ornamentals.

Chart #19: Gross Value of Fruit Production, Cairns Region [(1)]

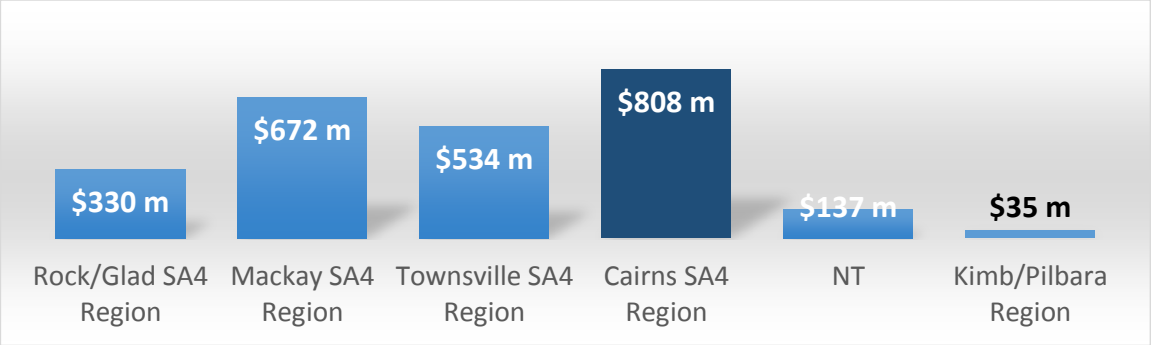


(1) Note: Cairns region defined as Far North Statistical Division 1982-83 to 2002-03 and Cairns SA Level 4 in 2012-13 $542m plus estimate of production Queensland Outback Far North $16m.

Source: Cummings Economics from ABS data.

Cattle turnoff is spread across the North. In crop production, the Cairns region leads. However potential across the Far North is still underdeveloped compared with resource potential. In the Cairns region, and new agricultural districts are currently opening up in the Gulf and Cooktown areas.

Chart #20: Gross Value of Crops, Northern Australia Regions, 2012-13 $m



Source: Cummings Economics from ABS Cat No. 7503.0 et al.

Marine resources

Marine resource development across the North in recent decades has been led by the two far northern regions, especially by the ports of Cairns, Darwin and Karumba.

Cairns is now one of the largest fishing industry ports in Australia.

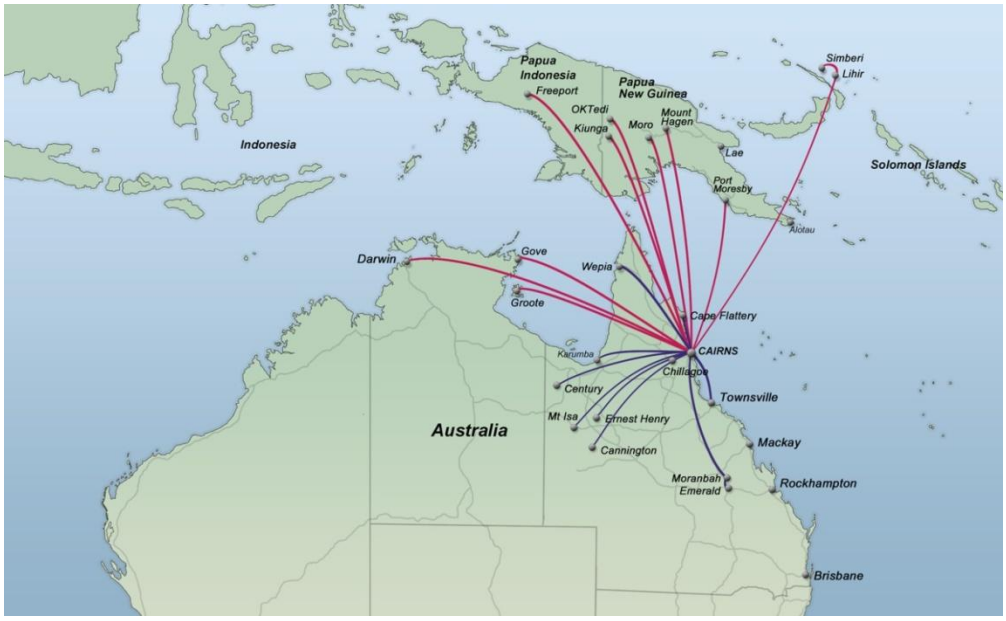
Diversified mining resources

While value of mining production in the Cairns region is lower than the Townsville, Mackay, Rockhampton / Gladstone and Pilbara regions, it is diversified and being further north has no 'fly-in' from Brisbane. Value of production is moving back up again, with the South of Embley bauxite project likely to proceed in the near future and the Aurukun bauxite to follow.

Darwin's growth has been boosted by the development of offshore gas.

However Cairns' interaction with mining extends well beyond its regional borders, in a way that is not equalled by Queensland's other regional cities. Because of its population, lifestyle advantages and strategic position, Cairns has air links to supply workforce and other services into mining operations over a large area including Central and North West Queensland, Northern Territory, Papua Indonesia and Papua New Guinea.

Map 2 – Northern Australia Fly-in / Fly-out / Mining Services Hub



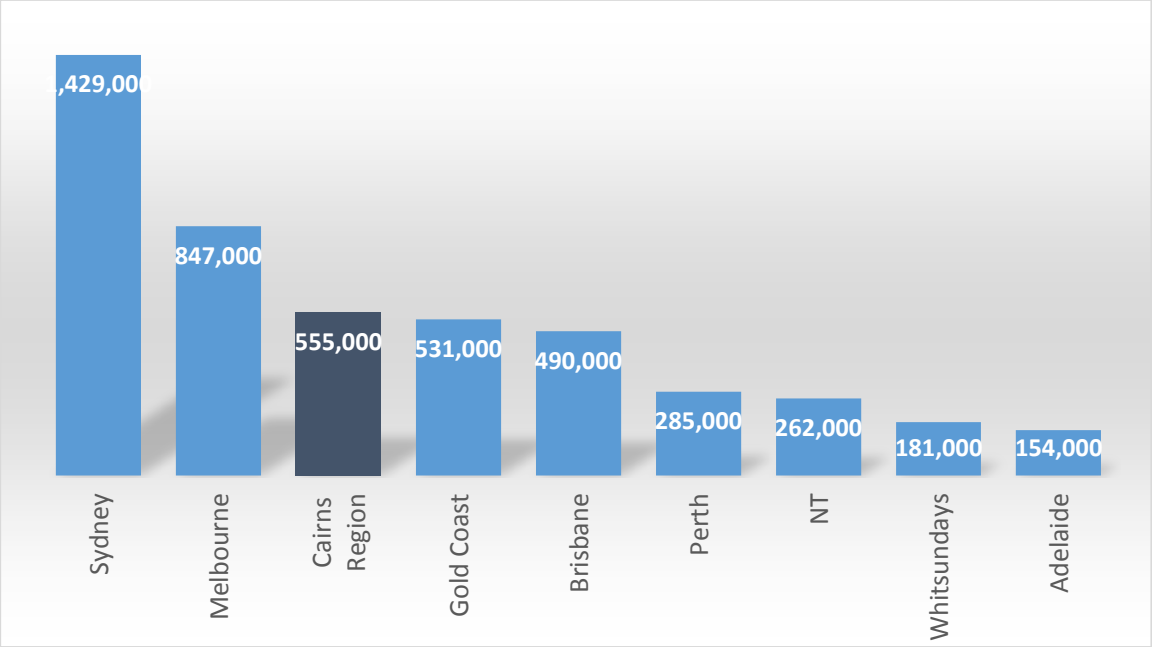
A foundation for leading tourism growth

The Cairns region's outstanding natural (biological) resources have also provided a foundation for rapid tourism development in recent decades.

The Great Barrier Reef (close offshore and easily accessible), coastal beach scenery, mountains, the Tablelands and World Heritage rainforests, provide a world class quality and combination of tourism resources that attracts domestic visitors and plays a major role in attracting international visitors to Australia.

The region's tourism resources are so powerful that in tourism visitation, the Cairns region leads regional Queensland and across the North. In international holiday visitors, it leads the Queensland regions and sits next to Sydney and Melbourne.

Chart #21: International Holiday Visitors to Australia – Leading Regions, 2012-13



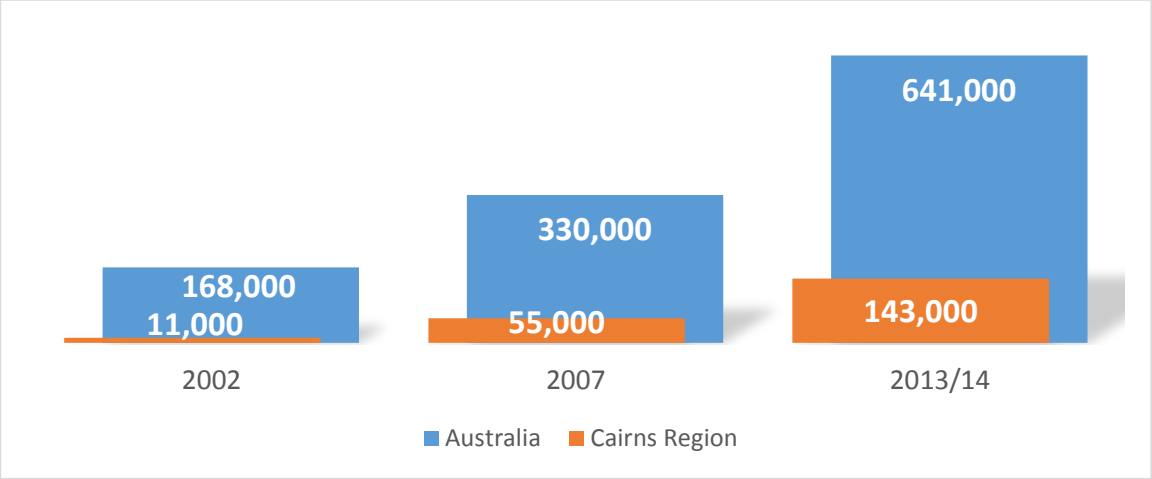
Source: Tourism Research Australia, International Visitor Survey.

Other northern regions especially benefitting from tourism growth, have been the Northern Territory (the Red Centre and "Top End"), the Whitsundays area and to a lesser extent, the Kimberley region in Western Australia.

Cairns is currently playing a leading role in tapping into the new wave of tourism coming out of China. Growth 2002 to 2013-14 of Chinese visitors represents a 13-fold increase compared with Australia overall of four times.

The multi-billion dollar Aquis Integrated Resort project aims to tap into and further expand the burgeoning Chinese and other international markets.

Chart #22: Chinese Visitors to Australia and Cairns Region



Source: Tourism Research Australia, International Visitor Survey.

The basis for an outstanding lifestyle

The Cairns region's natural beauty provides the basis for an outstanding, new, first world tropical lifestyle. Technological improvements have been overcoming old negatives including widespread introduction of air-conditioning and advances in health services and housing. Build-up of population is resulting in improved education and cultural facilities. Tourism brings with it superior recreation, shopping and dining.

Cairns, the Tropical Coast and Tablelands have become a desired place in which to live making it easier to attract and hold population.

Similar lifestyle factors have also particularly advantaged growth of population in the Mackay / Whitsundays region.

4.4 A strategic location

The world does not stop at Australia's northern border. Cairns and Darwin are Australia's closest cities to the massive growing economies of the Asia / Pacific region.

Cairns along with Darwin interact with the Asia / Pacific region much more than other Australian regional cities (See **Map 3**).

Cairns and Darwin have substantial flying distance/time advantages over the major metropolitan centres of southern Australia. This not only helps its tourism development but also trade and business links and in fields like seafood exports and international education.

Cairns is the northern terminus of Australia's relatively efficient east coast road, rail and air network and a natural supply point for shipping and air services further north into Papua New Guinea, the Pacific and eastern Indonesia. It has strong trade, business and social links with Papua New Guinea and its six million population. Cairns is the Australian buying base for the giant Freeport-McMoRan mine in Papua Indonesia with direct shipping and air services with a value of the order of $200m a year.

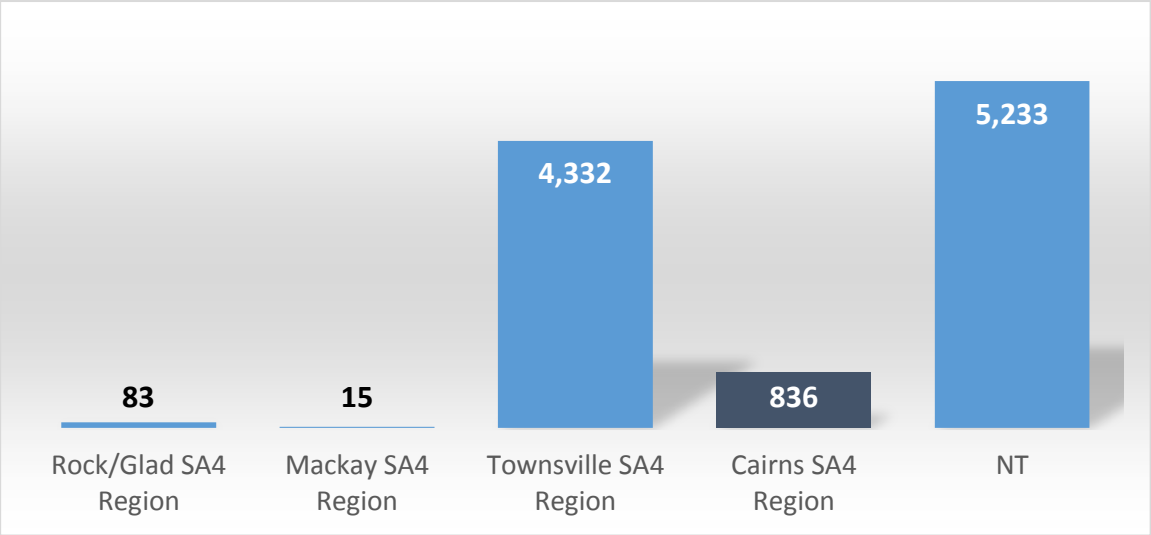
Map 3 – Regular International Air Services

Darwin has air and shipping services into Indonesia and East Timor. Townsville has shipping links with Papua New Guinea ports.

Darwin, Townsville and to a lesser extent Cairns, benefit especially from defence bases - Darwin army, navy and air; Townsville army and air; Cairns navy.

Cairns and Darwin especially benefit from border protection including immigration, customs and air surveillance operations.

Chart #23: Defence Employment – Main Northern Regions, Census 2011



Source: Cummings Economics from ABS Census 2011.

4.5 Industry composition

The North's regional economies are heavily dependent on those industries earning income from outside their regions, especially agricultural and pastoral industries, marine industries, mining and tourism.

Historically the pattern of the North's regional development was heavily affected by pastoral development, especially sheep in the Central and North West, leading to the early development of Rockhampton and Townsville with railway lines deep into the interior. More recent development has been dominated by expansion of cropping, fisheries, tourism and mining.

Cairns' economy has relatively high earnings from the agricultural, marine and tourism sectors as opposed to mining. This has been an advantage.

For every dollar of value of production, mining generally has a much lower impact on regional employment and population than the agricultural, fishing and tourism sectors. Mining projects will often involve large initial investment in construction with lower on-going operational employment. Out of the large values of output recorded, a very high proportion goes outside the region to head offices and shareholders in the south. There are often large inputs imported from outside the region and more recently large 'fly-in' workforce especially into the Rockhampton / Gladstone, Mackay and Townsville regions from Brisbane.

By contrast, the strong development of agricultural, marine and tourism resources in the Cairns region has resulted in strong, more self-contained local development with greater flow-on to local jobs and population.

While these sectors also have fluctuations in markets, they are generally not as strong as world mineral price fluctuations.

While tourism is an important sector in the Cairns region, it is wrong to believe that the Cains region is over dependent on tourism. In fact the markets of Cairns region's industries are highly diversified. Its tourism markets are highly diversified with substantial overseas components along with a large domestic sector.

The Cairns region's agriculture is highly diversified, again with a substantial domestic market for its horticultural products. Minerals and fisheries' markets are diversified.

While not nearly as high as Darwin and Townville in government spending, the Cairns region, because of the navy base and northern surveillance activity, is not low in government spending compared with the northern regions other than Darwin and Townsville.

Thus while tourism and construction experienced sharp slow-downs over the period 2008 to 2011, the Cairns region's population continued to grow, albeit at a slower pace.

Being the furthest Queensland city from Brisbane, the development of business services and local manufacturing is less supressed than the southern regional cities by competition from Brisbane based services and factories.

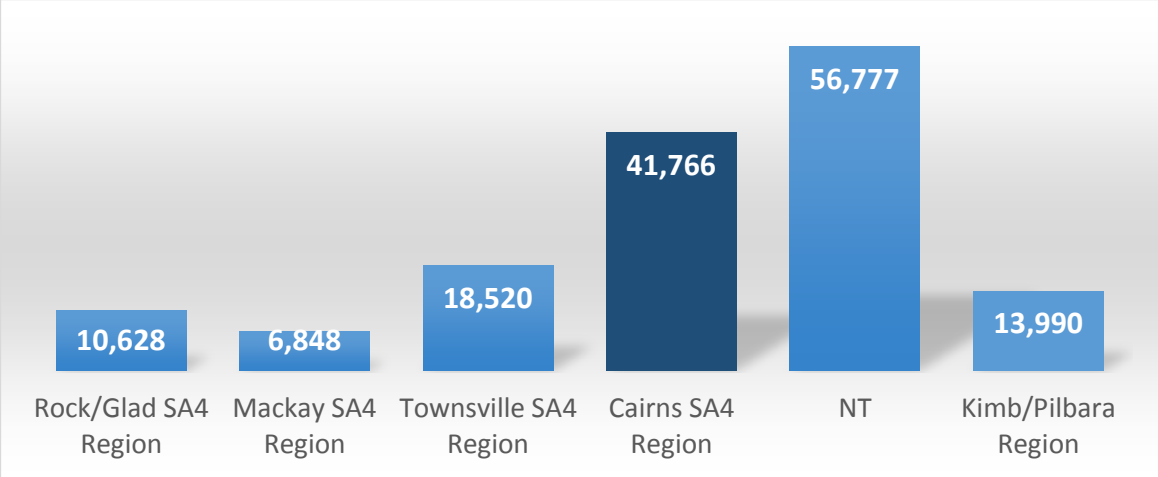
Similar to the Cairns region, relatively large agricultural and tourism sectors have strengthened employment and population growth in the Mackay / Whitsunday region.

A substantial tourism sector has been important to the growth of the Northern Territory and Darwin. Darwin also benefits from its distance from the southern metropolitan centres.

Population composition

Denser pre-European indigenous populations in the regions along the far northern coasts and lower historical levels of development have resulted in the majority of population being indigenous in the Peninsula/Torres/Gulf region, most of the Northern Territory and the Kimberley region.

Chart #24: Indigenous Population, Northern Australian Regions, Census 2011



Source: Cummings Economics from ABS Census 2011.

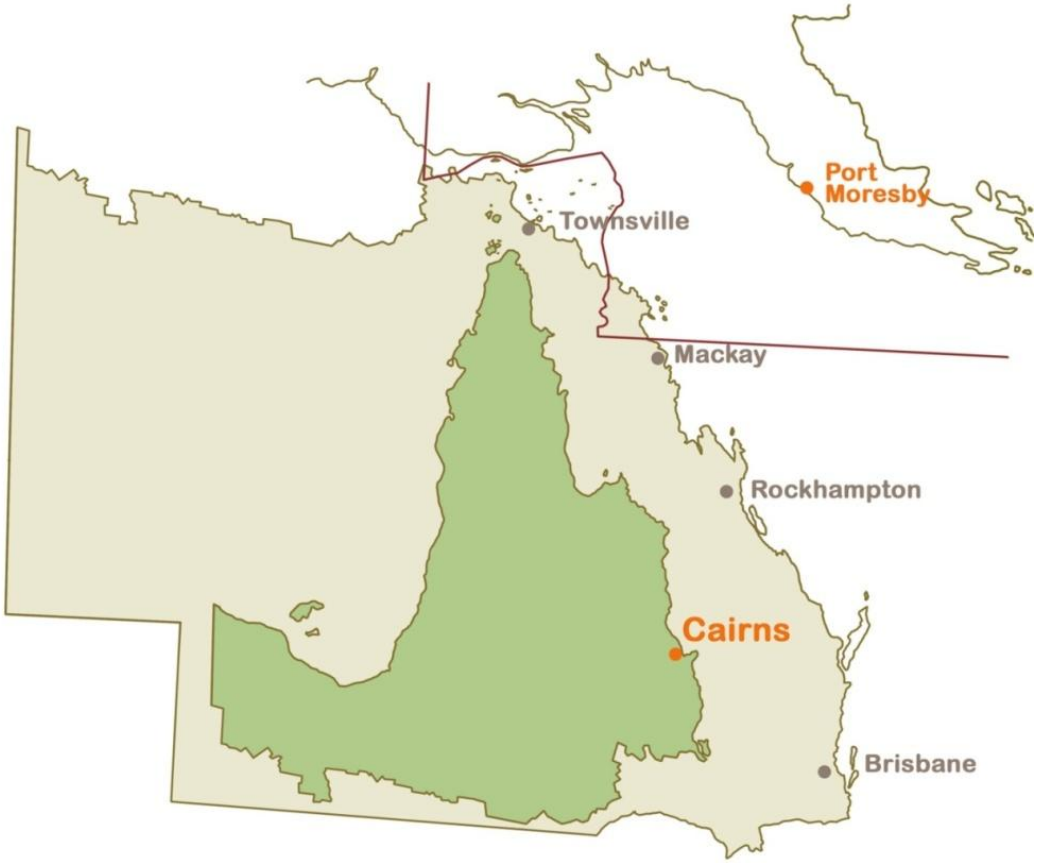
Indigenous population is experiencing relatively high birth rates and increasing life expectancies resulting in population growth faster than national averages. This trend is favourable to population growth in the far northern regions based on Cairns and Darwin.

4.6 Comparative regional areas

Reference to **Map 1** of the regions indicates the larger areas covered by the Northern Territory and Kimberley / Pilbara regions. It also indicates the relatively large area covered by the Cairns region among the Queensland regions.

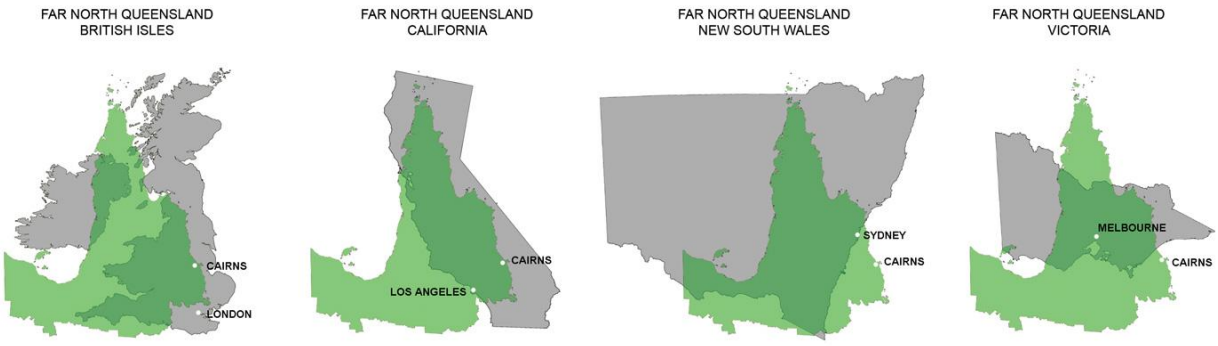
The Cairns region covers half Queensland's latitudes and is as deep from north to south as New South Wales. In area, it is 1½ times the size of Victoria and covers an area equivalent to the British Isles.

Map 4 – Comparative area and distances with rest of Queensland



Cairns Region..... 9° south to 19° south
Rest of Queensland .....19° south to 29° south

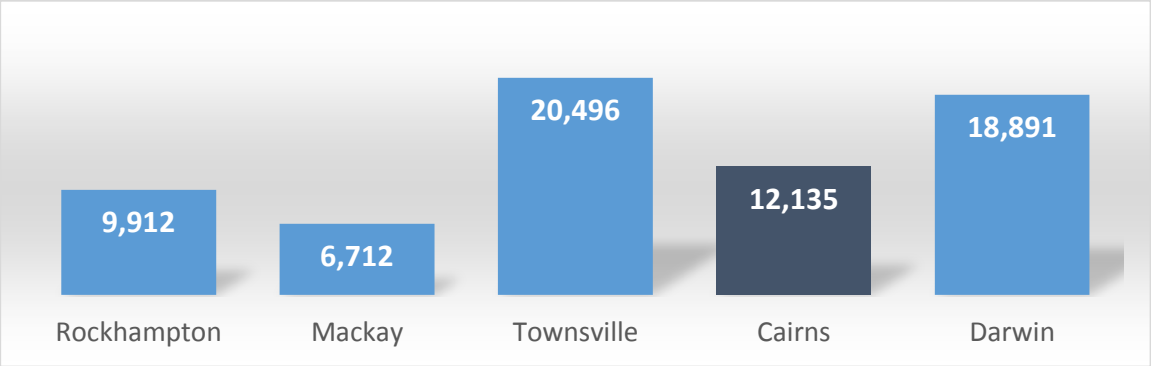
Map 5 – Comparative areas and distances



4.7 Core regional population and business concentrations in the north

Government employment plays a major role in increasing the population of Darwin and also of Townsville despite its stagnant hinterland population.

Chart #25: Government Employment, Northern Australian Cities, 2011



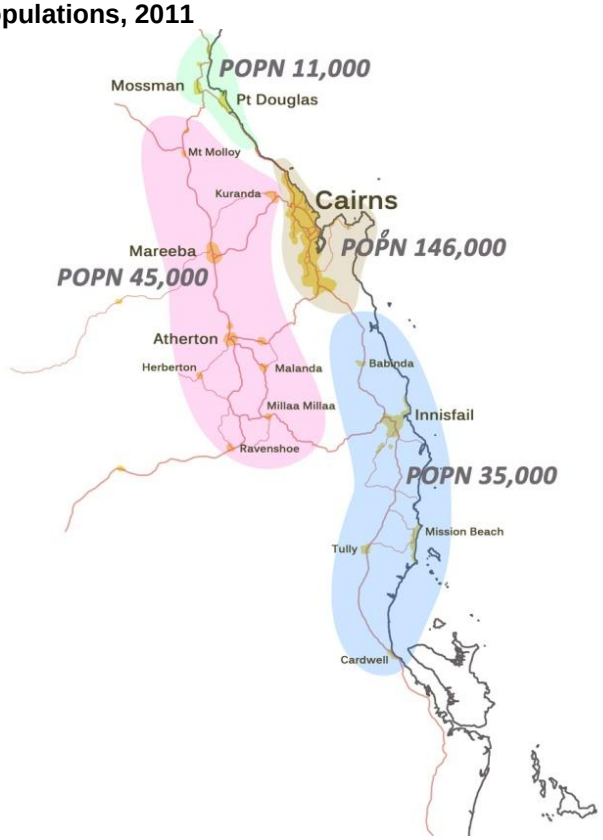
Source: Cummings Economics from ABS Census 2011.

Taking these large government employment impacts into account, emphasises the degree to which the Cairns region has been developing as a core business services region in northern Australia.

Immediate regional population

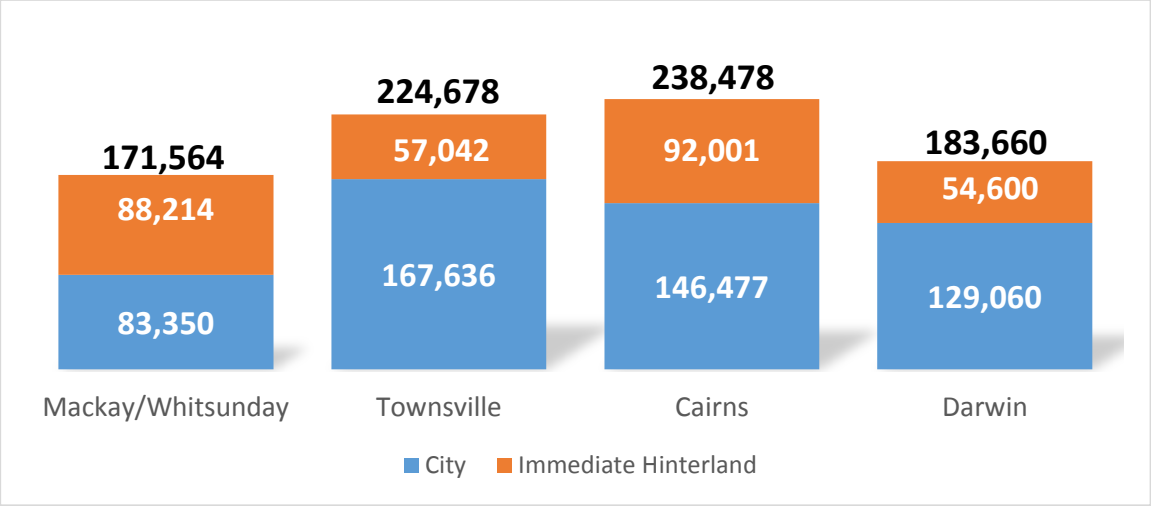
As **Map 6** illustrates, surrounding Cairns is a network of towns within a short drive (based especially on agricultural, marine industries and tourism), resulting in a concentration of population not found to the same extent around the other northern cities.

Map 6 – Cairns and Immediate Hinterland Townships and Districts and Estimated Residential Populations, 2011



Thus, Cairns and its immediate hinterland area leads the northern cities and near hinterland areas in population.

Chart #26: City and Immediate Regional Populations, 2011



Note: Darwin's immediate hinterland is taken to include Katherine, East and West Arnhem and Tiwi Islands.
Source: Cummings Economics from ABS Cat No. 3218.0 et al.

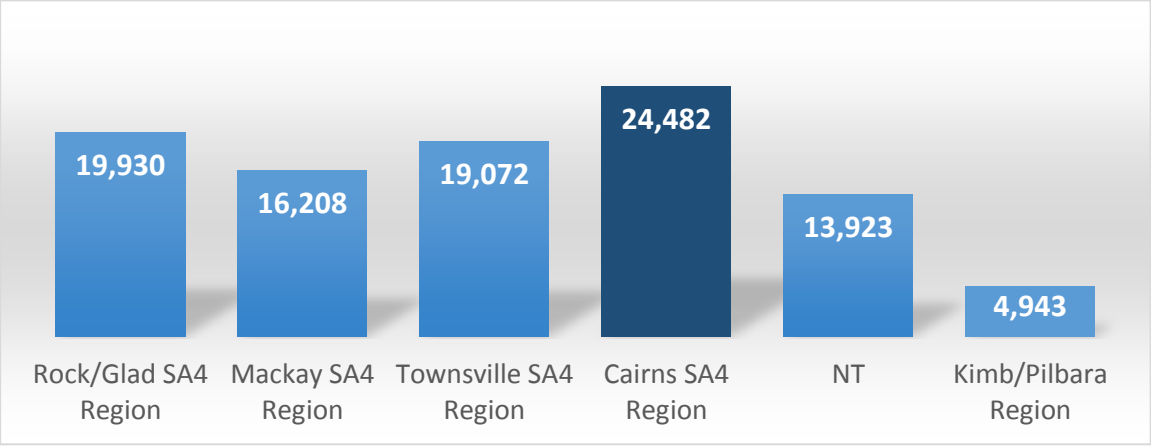
This large immediate hinterland population and the activity it generates can increase the market for Cairns based businesses and services.

The substantial hinterland centres can also provide suitable locations for regional facilities outside of Cairns itself that are not available to the same extent around the other northern regional cities. For instance, in the Cairns region, the major corrective services centre, Lotus Glen and the major Primary Industries office are on the Tablelands. The region's foundry is at Innisfail.

Leadership in business

The role of Cairns as a core / leading business region in the North is reflected in business activity. Above all, the Cairns region is private enterprise driven and leads the northern regions by a long way in number of businesses.

Chart #27: Number of Businesses, Northern Australian Regions, 2012



Source: Australian Bureau of Statistics Regional Data.

As might be expected, the Cairns region leads in a whole range of business activity.

The following information on fields like manufacturing, aviation, marine activities, and arts and entertainment gives an indication of the strength and depth of Cairns' leading business and services role in the northern regions.

Manufacturing

The Cairns region's core business role in the North is reflected in the fact that it leads the northern regions in number of manufacturing establishments. Latest statistics available indicate that in employment and turnover, it is close up behind Rockhampton/Fitzroy and Townsville regions with their larger mineral and primary processing units.

Table #28: Manufacturing in Northern Australia, 2006/07

	Number of locations	Employment	Sales of goods & services
Kimberley/Pilbara	197	851	na
Northern Territory	506	3508	na
Cairns/Far North	**962**	6382	$3286 m
Townsville/North	653	7137	**$4260 m**
Mackay	585	4836	$1648 m
Rockhampton/Fitzroy	586	**8110**	$3600 m
Total	**3489**	**30824**	**$17294 m**
			(plus NT, Kimberley & Pilbara)

☐ *Denotes highest recorded.*
Source: Cummings Economics from Australian Bureau of Statistics Cat. 82210DO010.

Table #29: Number of Businesses by Industry - Manufacturing, 30th June 2012

	Manufacturing
Cairns Region (SA4)	841
Townsville Region (SA4)	606
Fitzroy Region (SA4)	563
Northern Territory	493

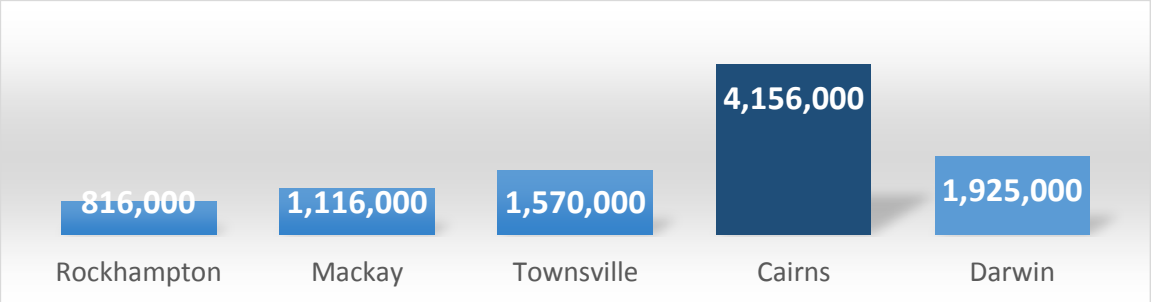
Source: Cummings Economics from Australian Bureau of Statistics Regional Statistics.

The Cairns region's leading position in number of manufacturing businesses reflects not only its population. It reflects the degree to which the city has developed 'skills' based manufacturing and services, especially in the marine and aviation sectors that find markets outside the region including in the wider Papua New Guinea / Asia / Pacific area.

Aviation development

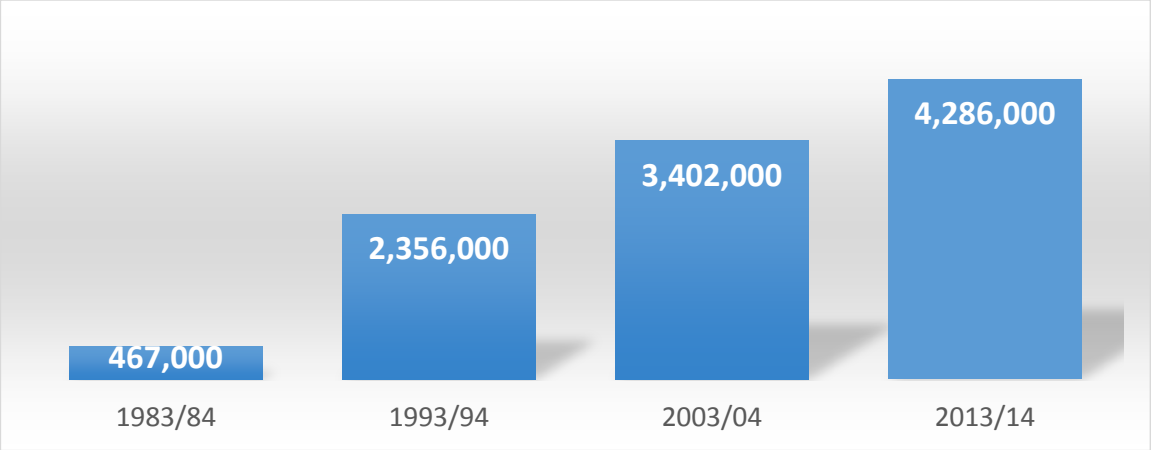
Population, tourism and strategic location leads Cairns to being the major airport hub in the North with Darwin next. Cairns has direct international links to 11 cities in the Asia Pacific region.

Chart #30: Passenger Movements Airports – Tropical Australia, 2012-13



Source: Bureau of Industry Transport & Regional Economics.

Chart #31: Passenger Movements – Cairns International Airport



Source: North Queensland Airports.

Especially backing up this role, is the region's large fleet of small aircraft and proximity to Papua New Guinea. Cairns has developed as the leading aircraft servicing centre in the North followed by Darwin, drawing business also from the wider Asia Pacific region and including the leading aviation training centre in the North.

Table #32: Estimated Value of Airport Operations – Cairns Airport, 2010-11

Output Value	**$630 m**
Direct Employment	**2,400**

Source: Cairns Airports Pty Ltd / Cummings Economics.

Marine activity

Five export ports of Mourilyan, Cairns, Cape Flattery, Weipa and Karumba handle tonnages greater than the Townsville region, Northern Territory, Tasmania and the State of South Australia.

Table #33: Tonnage Loaded and Unloaded Seaports by Regions, 2012-13

	Million Tonnes
Mackay Region	**117**
Fitzroy Region	**86**
Brisbane/Bundaberg	**37**
Cairns/Far North	**34**
Townsville/North	**18**
cf South Australia	**26**
Northern Territory	**15**
Tasmania	**8**

Source: Cummings Economics from Bureau of Industry Transport & Regional Economics and Qld Transport.

Cairns is home to important coastal shipping operations as well as Australia's largest tourism fleet, fishing fleet and Australia's north-eastern naval base. This fleet is backed up by three slipway operations and the largest marine servicing activity sector in regional Queensland and the North.

Table #34: Estimated Value of Port Related Operations – Cairns Seaport, 2013-14

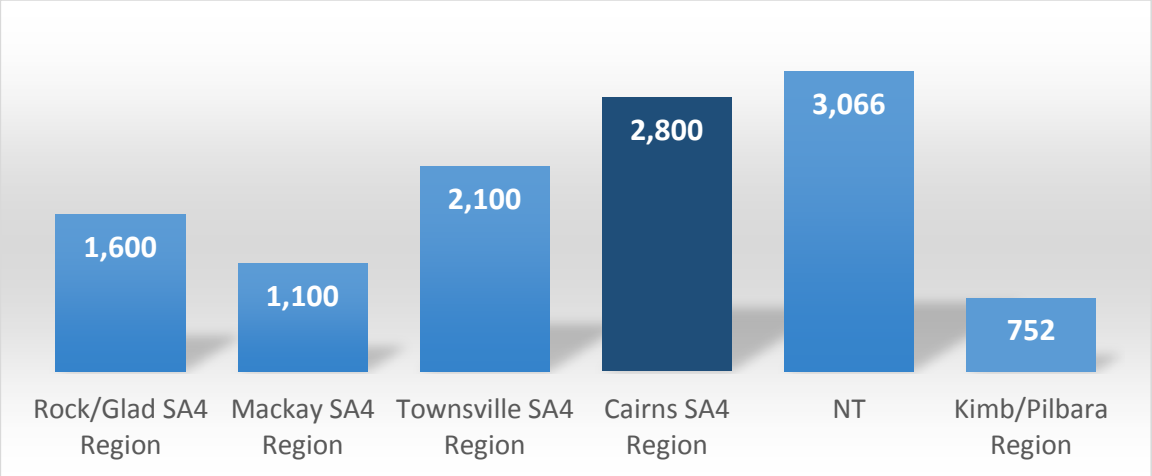
Output Value	**$83 m**
Direct Employment	**3,800**

Source: Ports North / Cummings Economics.

Creative industries

Size of population, the Cairns region's growing attractiveness as a place to live, tourism, and a stimulating social and natural environment, are reflected in the Cairns region's growing role in cultural and creative activity outside Queensland's south-east corner. The Cairns region leads in employment in the arts, entertainment and creative industry classifications in Queensland. However especially because of the high employment generated in the indigenous art in the Red Centre and government sectors, the Northern Territory ranks highest.

Chart #35: Employment in Cultural and Creative Industries, 2011



Source: Cummings Economics from Australian Bureau of Statistics, 2011 Census data.

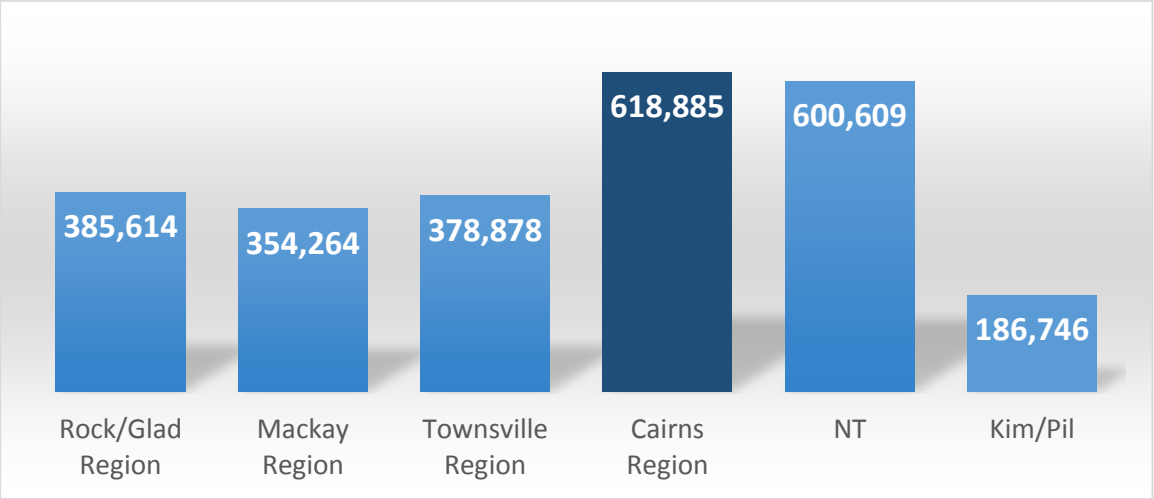
5.0 PROJECTING FORWARD

It can be expected that the type of underlying factors that have driven long-term regional growth in the past will continue into the future.

Regional population

On the long-term growth trajectory of the 35 years 1976 to 2011, it can be expected that the Cairns region and Northern Territory will pull away as the largest in population in northern Australia and by 2050 lead by a substantial margin, with a population larger than Tasmania's current population.

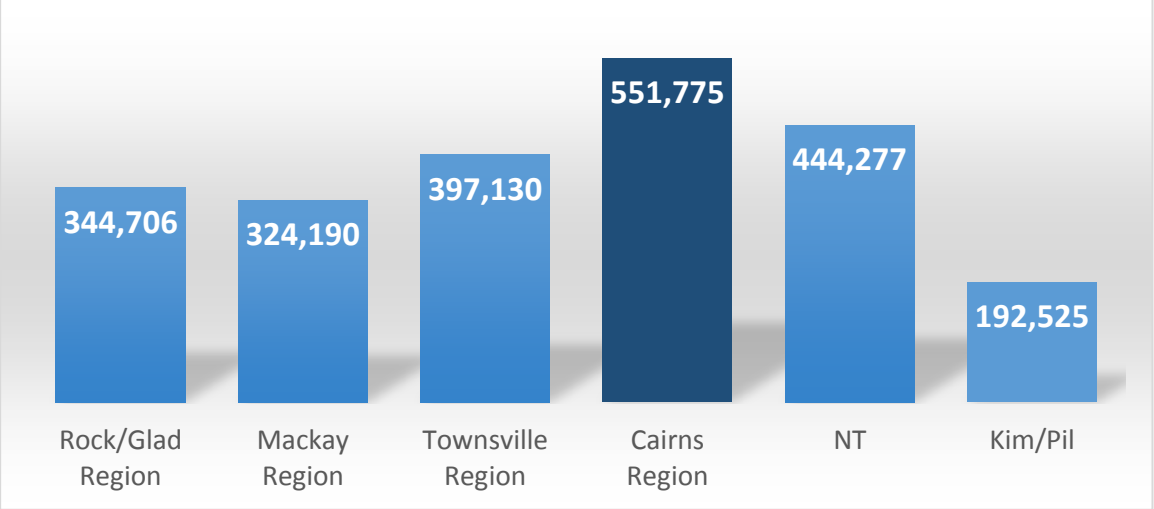
Chart #36: Projected Residential Population - 2050, Northern Australia (based on growth rate 1976-2011)



Source: Cummings Economics from ABS data.

On the growth trajectory of the 20 years, 1991-2011, a similar picture emerges.

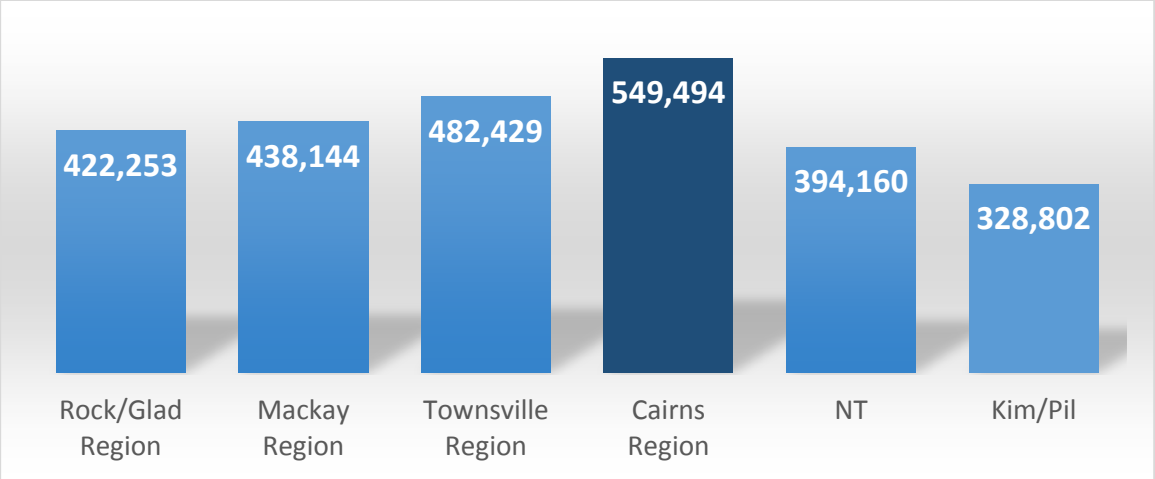
Chart #37: Projected Residential Population - 2050, Northern Australia (based on growth rate 1991-2011)



Source: Cummings Economics from ABS data.

On the growth trajectory of the 10 years, 2001-2011, the Cairns region will again be the largest but the other Queensland regions closer up towards the Cairns region and ahead of the Northern Territory.

Chart #38: Projected Residential Population - 2050, Northern Australia (based on growth rate 2001-2011)



Source: Cummings Economics from ABS data.

Based on forward projection of longer trend rates, it could b expected that the northern Australia regions would be in the following ranges by 2050:

Cairns Region..... 550 – 620,000

Northern Territory ..... 400 – 600,000

Townsville Region ..... 380 – 480,000

Rockhampton / Gladstone Region .... 340 – 420,000

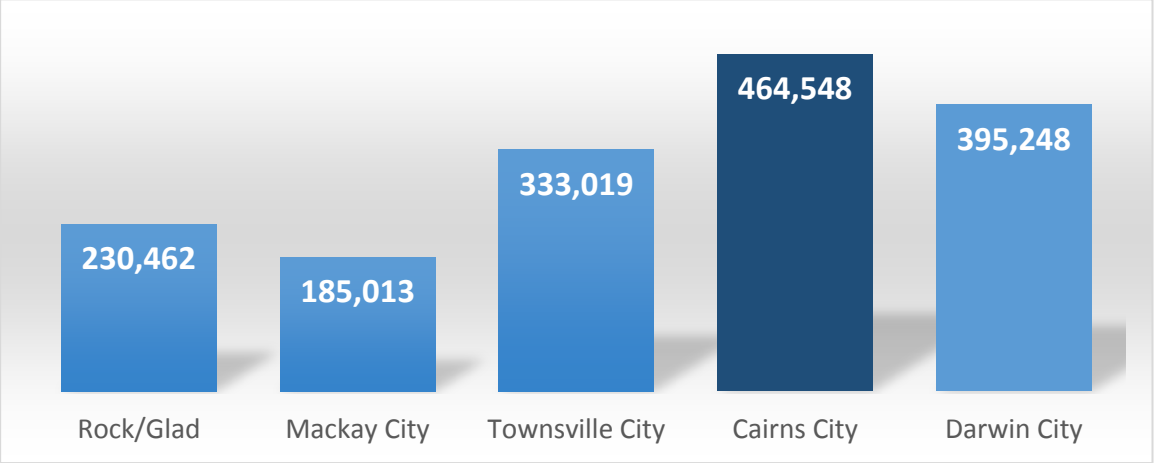
Mackay Region..... 320 – 440,000

Kimberley / Pilbara ..... 190 – 330,000

City populations

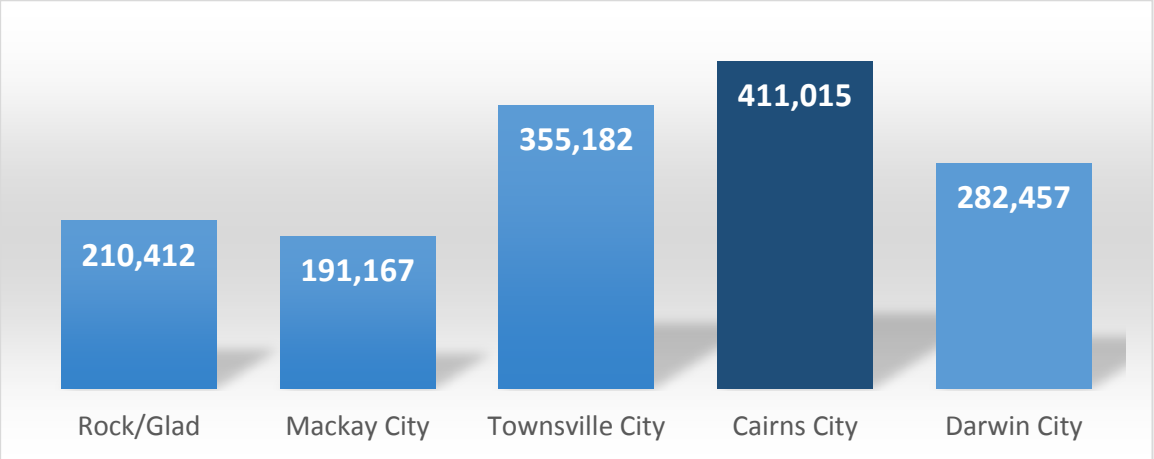
The following charts show projected city populations by 2050 based on past 35 years', 20 years' and 10 years' growth rates.

Chart #39: Projected Residential Population - 2050, Northern Australia Cities (based on growth rate 1976-2011)



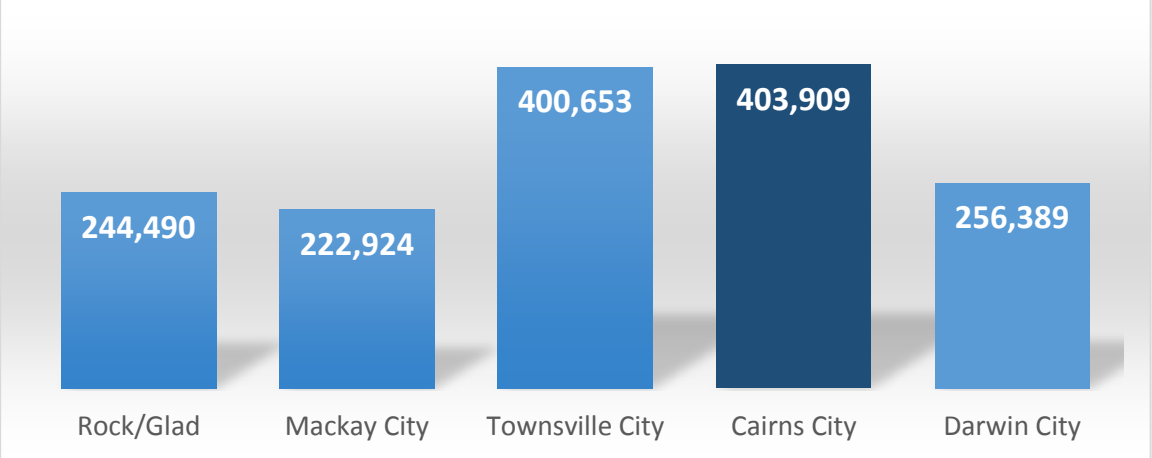
Source: Cummings Economics from ABS data.

Chart #40: Projected Residential Population - 2050, Northern Australia Cities (based on growth rate 1991-2011)



Source: Cummings Economics from ABS data.

Chart #41: Projected Residential Population - 2050, Northern Australia Cities (based on growth rate 2001-2011)



Source: Cummings Economics from ABS data.

The charts indicate that on past growth trajectories, by 2050, the northern regional cities would be in the following ranges:

Cairns ..... 400 – 460,000

Townsville ..... 330 – 400,000

Darwin ..... 260 – 400,000

Rockhampton / Gladstone ..... 210 – 240,000

Mackay ..... 180 – 220,000

The figures indicate that on a continuation of past trends, Cairns as a city will pass Townsville in size but Townsville probably remain ahead of Darwin.

APPENDIX 1

Statistical Notes

Commercial servicing regions - equate with the following AGSC areas as defined by Australian Bureau of Statistics up to 2011:

Cairns region – Far North Statistical Division plus Gulf shires of Carpentaria, Burke, Mornington and Doomadgee.

Townsville Region – North and North West Statistical Divisions less Shires of Carpentaria, Burke, Mornington and Doomadgee.

Mackay Region – Mackay Statistical Division including Bowen Shire.

Rockhampton Region – Fitzroy and Central West Statistical Division.

Northern Territory – State Territory.

Kimberley / Pilbara – Kimberley and Pilbara Statistical Division.

Cities - City populations are defined as follows:

Cairns – Cairns Statistical District. Because of a boundary change 1976 to 1991, it is taken as Cairns Statistical District as defined in 1976 plus an estimated additional population to take account of a boundary change ranging from 2,500 in 1976 to 3,844 in 1991.

Townsville – Townsville Statistical District.

Mackay – Mackay Statistical District.

Rockhampton / Gladstone – 1976 – 1990 – Rockhampton Statistical District plus Gladstone City. 1991 – 2011 – Rockhampton and Gladstone Statistical Districts.

Toowoomba –.1976 to 1991 Toowoomba City plus a sliding factor to bring up to Toowoomba Statistical District population in 1991. 1991 to 2011 Toowoomba Statistical District.

Darwin – Darwin Statistical Division.

Kimberley / Pilbara – not applicable.

Immediate regions - are defined as Australian Bureau of Statistics at 2011 as:

Cairns – Cairns SA4 plus Queensland Outback – Tablelands SA3

Townsville – Townsville SA4 (equivalent pre 2011 North SD)

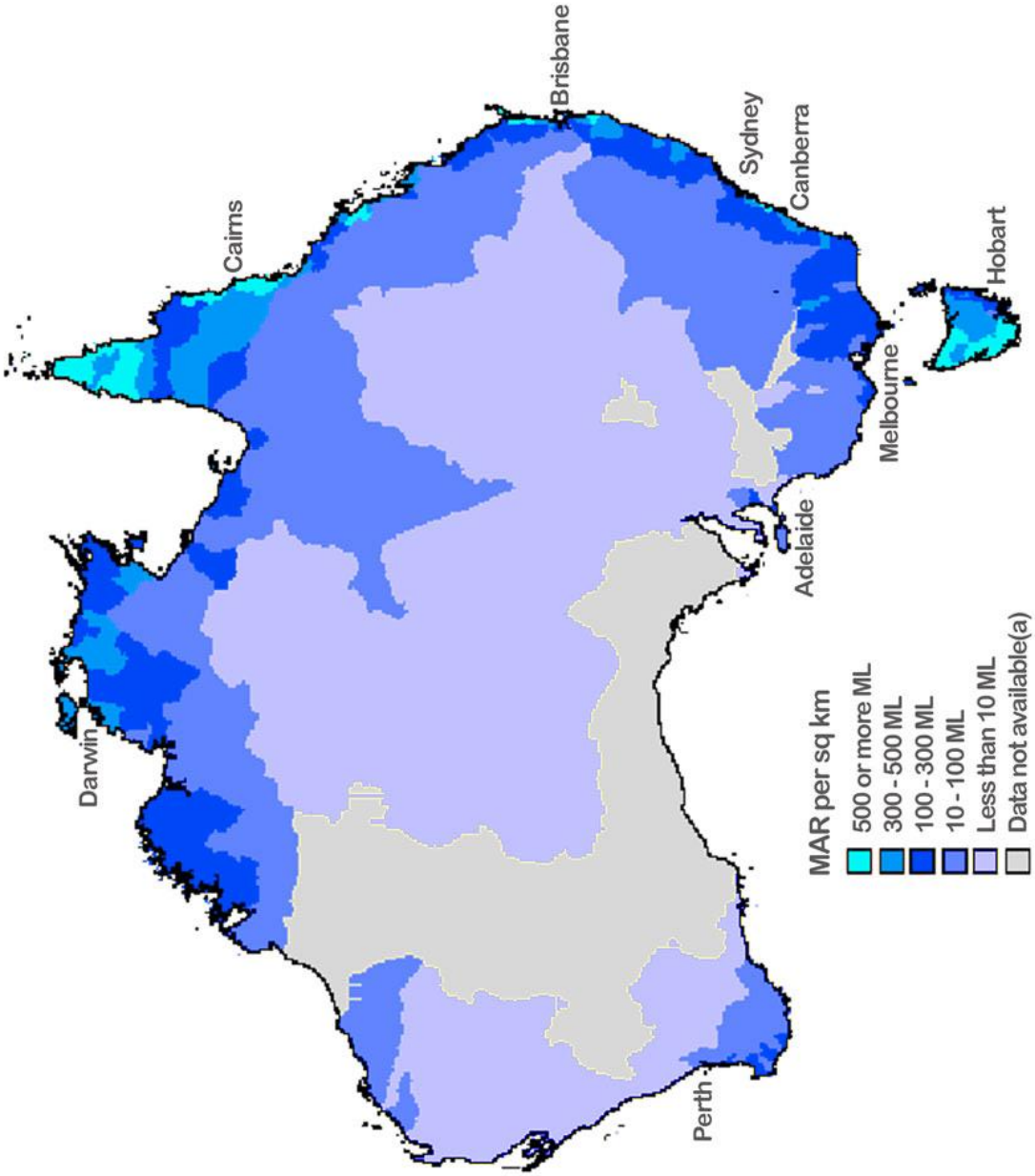
Mackay – Mackay SA4 (equivalent pre 2011 Mackay SD)

Rockhampton – Fitzroy SA4 (equivalent pre 2011 Fitzroy SD)

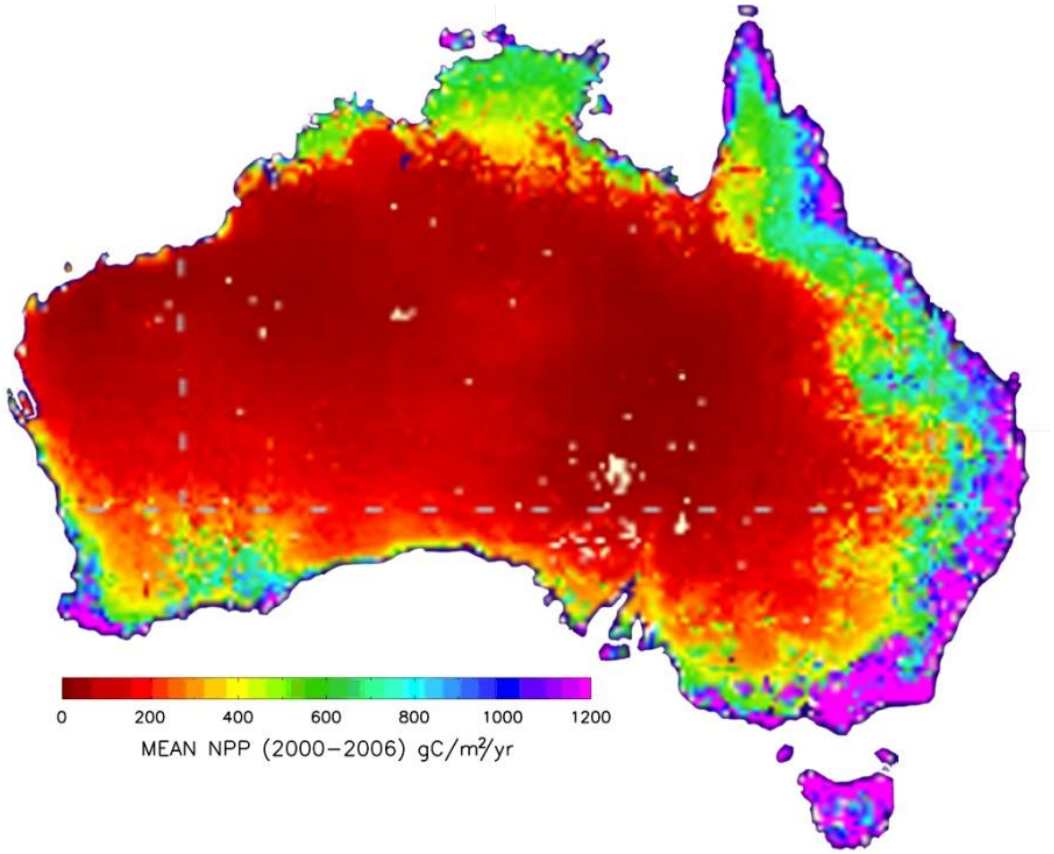
Darwin – Darwin SA4 plus Northern Territory Outback – Katherine, East Arnhem and West Arnhem (including Tiwi Islands) SA2s.

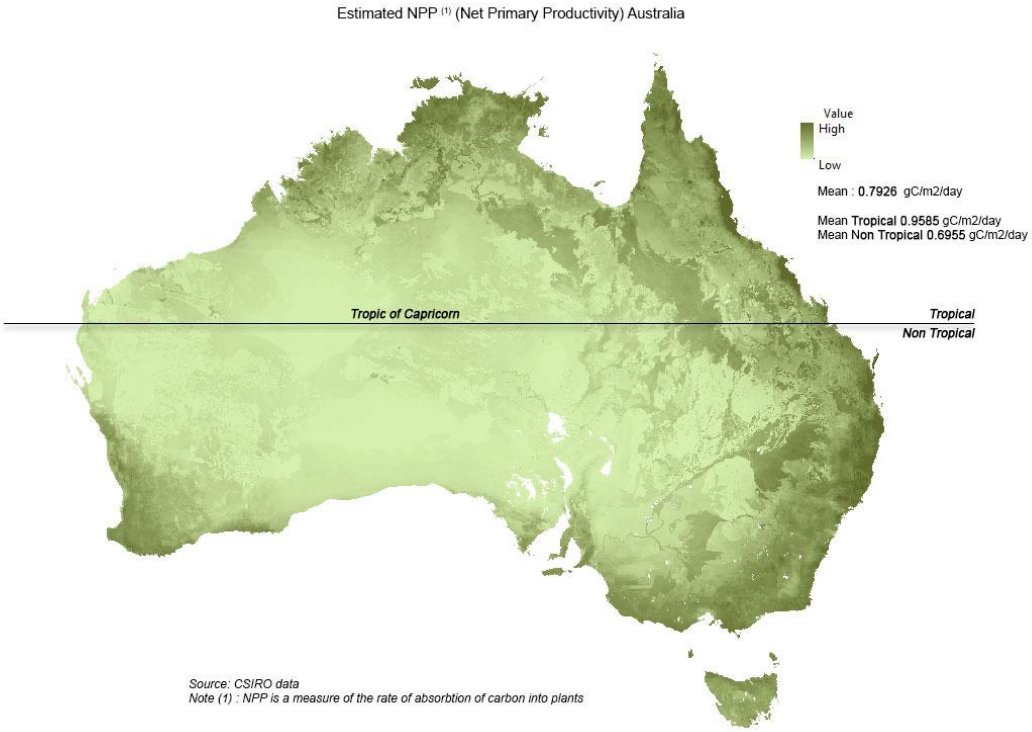
APPENDIX 2

Map – Water Runoff by River Basins



Map - NPP (Net Primary Productivity), Australia – Satellite Derived



Source: University of Montana from Modis Satellite Data, 2000 - 2006

Map - NPP Australia Wide, CSIRO Data