CAIRNS SHIPPING DEVELOPMENT PROJECT

Environmental Impact Statement

Submission to the
Queensland Coordinator General
by
Cummings Economics
Economic Perspectives

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W S Cummings
B Econ
38 Grafton St
(PO Box 2148)
Cairns Q 4870
phones
07 4031 2888
0418 871 011
email
cummings@cummings.net.au
website
www.cummings.net.au
CUMMINGS ECONOMICS
ABN: 99 734 489 175

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2 - *"Long-Term Regional Population Growth in Queensland Regions"*

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SUMMARY OF MAIN POINTS

1) The project based on offshore placement is highly viable with strong efficiency savings to cruise operators and passengers that lead to very strong benefit cost ratios over the project period.

2) This leads to projected major increases in cruise traffic and strong beneficial economic impacts.

3) Government decisions, in spite of scientific evidence that offshore placement does not pose an environmental threat, means that governments should either:

    - Compensate the community for loss of economic opportunity,
    - Meet additional costs of onshore placement, or
    - Work with the community to find ways to make onshore placement viable and contribute to the city's long-term growth and employment opportunities.

4) The approaches taken and costs portrayed in the EIS need to be reviewed in the interests of finding solutions to viable onshore placement.

5) Cairns and its region have a long track record of strong long-term growth that is likely to continue into the future.

6) Onshore placement can be used:

    - To facilitate long-term development of
        - Industrial land
        - Cairns seaport
    - To open up a major new area for urban growth after Mt Peter
    - To provide more efficient multipurpose road transport routes into the city
    - To enable the Cairns Shipping Development Project to proceed along with future other important capital dredging needs relating to the port and possible continuing onshore placement from maintenance dredging.

7) The Coordinator General should recommend to the Government that it work with the Cairns community to comprehensively re-examine onshore placement with a view to finding positive, innovative and viable solutions that will enhance the city's long-term progress.

1. INTRODUCTION

The following is to provide a response to the Coordinator General in relation to:

- The Ports North Draft Environmental Impact Statement for the Cairns Shipping Development Project;
- The Government's response and comments in relation to the project;
- Some reports and comments by others in relation to the project.

Cummings Economics are knowledgeable about the project:

- The firm has carried out over many years, analysis of issues and trends in relation to the Cairns' regional economy including for most of the key regional organisations including Cairns Regional Council, Advance Cairns, the Cairns Chamber of Commerce, Tropical Tourism North Queensland (TTNQ), Cairns Airport and Ports North.
- In relation to the project, the firm as sub consultants, carried out Economic Analysis for the EIS.
- The firm's market research arm, Compass Research, carried out surveys of community reactions to the proposed project.
- The firm has carried out work in relation to possible tourism ventures in the East Trinity and adjacent areas.

2. PROJECT ECONOMIC IMPACT AND VIABILITY

There seems to be substantial confusion as a result of various statements including those of the Government about the economic and financial mathematics of the project. The following is to help elucidate the situation based on the EIS (refer especially to Appendices D6 Demand and D9 Economic Analysis).

There are two points that need to be made in the first place.

1) There are two major options for capital costs that need to be recognized:

   (i) Placement at sea in a depression in the ocean floor outside the end of the channel;

   (ii) Onshore placement.

   The EIS was initially mainly carried out in relation to Option (i). Analysis of onshore placement was subsequently added.

2) While Ports North is a government owned corporation, this is a commercial investment that has the potential to earn substantial amounts in additional revenue for Ports North and has the potential to generate substantial amounts of additional economic activity and employment in the community.

Funding for this project needs to be seen in the context of it being an investment in an income earning asset and in a different category to spending on social infrastructure (eg. hospitals, schools, etc.).

3. OFFSHORE PLACEMENT OPTION

3.1 Capital and Other Costs

The initial announcement about the costs indicated a sum of $40m to carry out the dredging. The EIS indicates an estimated cost of dredging operations with sea placement would be $60m.

About an extra $30-$40m has been added-in accompanying related wharf improvements of about $12m, start-up costs including the extensive EIS process of about $13m, making a total of about $85m.

It is also expected that a further $18m would need to be spent on follow-up scientific / environmental monitoring.

The larger channel will mean channel maintenance costs will be higher but only by about $400,000 per annum. Capitalised over 25 years at a 7 percent discount rate, this has a present value of about $7m.

If the dredging costs of approximately $60m are added to by all the other costs, including capitalised extra maintenance costs, total costs come through at about $108m in 2014 values.

There is a real question about how much of the above costs should be regarded as accruing to the project to be met by user pays fees.

Clearly the $60m and NPV additional maintenance costs should be regarded as costs which Ports North as a user pays organization, should be expected to recover over time from charges and the additional business the project will generate. The additional $12m for wharf improvements probably needs to be regarded as essential to the project in view of the larger vessels involved.

However it is questionable about how much of the $13m in start-up costs and $18m in monitoring is a legitimate expense for Ports North or for the Government, eg. as part of reef protection costs.

3.2 Cruise Ship Demand

Demand studies were carried out by cruise ship specialists for BMT WBM, into the additional cruise ship activity that the upgrading of the port to take mega-class cruise ships (defined as carrying over 2,000 passengers), was likely to stimulate over and above what could be expected if there was a continuing need for mega ships to lay offshore and transfer passengers to shore at Yorkey's Knob.

Given the sharp increases taking place in the number of cruise ships being built of mega size, and general growth in demand for cruising in the Asia / Pacific region, strong growth was projected.

The important take-out figure is that the project was estimated to result in six million additional passenger port-days (medium projection) over a 25-year project life. The projections indicate almost a doubling in numbers over current in the early phases to about five times the number towards the end of the 25-year period if there was no project,

Apart from cruise ship visits, home-porting is likely to develop. The extent and timing is difficult to project but modelling is based on a conservative assumption of one mega ship from 2021 and two from 2031.

3.3 Efficiency Savings and Project Viability

Research with the cruise industry indicated large efficiency savings for ship operations and passengers of being able to come into port compared with high cost inefficient shore transfers via Yorkey's Knob.

The total cost efficiencies identified came up to a figure approaching $70 per passenger net of berthing costs.

The current constraints on the port also result in inefficiencies for other larger ships including those carrying fuel and fertilisers in and sugar out. Research in the shipping industry indicates that the tidal constraints and inability to have fully-laden ships entering and leaving the port are currently costing operators of the order of $2.7m per annum in additional operating costs.

Upgrading the channel would be necessary for 'home-porting' of mega vessels in the future. Based on conservative assumptions of one mega vessel home-porting from 2021 and two from 2031, operational savings for cruising to Indo / Pacific Island areas to the immediate north compared with home-porting out of Brisbane would be of the order of $1.4m per voyage.

Total efficiency savings are estimated with a Net Present Value (at a discount rate of 7 percent, 4 percent real) as follows:

Visiting cruise ships	$250 m
Large bulk cargo vessels	$60 m
Cruise vessels home-porting (as modelled)	$242 m
Total	**$552 m**

On a straight efficiency benefit / cost analysis, the project romps home with an estimated benefit / cost ratio (at a 7 percent discount rate) without home-porting of 2.7 times the cost and with home-porting of 4.8 times. Only part of these savings would need to be tapped in port charges to make the project commercially feasible. Unfortunately, the EIS does not appear to canvas the capacity of the project to sustain investment on a commercial basis.

Information available from cruise shipping companies indicates that costs of bringing a 2,000-passenger ship into the port is about $35,000, ie. about $17.50 per passenger. Part of this are charges for tugs and other expenses not accruing to Ports North.

The efficiency savings involved and the attractiveness of Cairns as a cruise port points to little difficulty in raising charges to a level that would cover a capital cost of the order of $100 million and not be out of scale with other typical transport facilities such as Cairns airport.

In the early 1980s, Cairns faced a similar need for investment in airport upgrading. The transition of the airport to user pays under local ownership arrangements was a great success in terms of airport viability and economic growth unleashed in the region.

3.4 Economic Impact

Apart from being a potentially viable project for Ports North and providing substantial additional cost savings to ship operations and passengers, the project could be expected to generate substantial additional economic activity in the Cairns region. Cairns is a key port in attracting cruise vessels to Queensland and the SW Pacific. The project will have positive impacts more widely on cruise shipping activity throughout Queensland, across the North and into PNG / Pacific area.

Although there would be some losses of activity through reduction of inefficient activity in transferring visitors ashore at Yorkey's Knob, there will be strong cumulative positive benefits of additional spending from construction activity and spending by additional visitors, crew and ships. Estimates are set out in the following table.

Table #1: Estimated Additional Economic Impact - Direct Additional Expenditure Generated over Project Period – Net Present Value at 7 Percent Discount Rate

	Net Present Value in 2014 prices
Additional Cruise Ship Visits	$743 m
Construction Activity	$102 m
Additional from Home-Porting (as modelled)	$363 m
Additional Impacts on Qld Economy (as modelled)	$133 m
Total	**$1,341 m**
Navy unknown	Unknown
Larger non-cruise shipping trade stimulated	Unknown

Source: Cummings Economics from EIS Appendix D9.

Thus, not proceeding with the project is likely to be giving up additional direct spending in the Queensland economy over the project life of the order of $1.3bn in 2014 prices with future benefits discounted at a 7 percent discount rate.

In terms of actual money at time of expenditure (ie. with inflation and not discounted), the amount foregone could be expected to be of the order of $5bn.

Appendix 1 gives comments on the report prepared by James Cook University for the Australian Marine Conservation Society entitled "Economic Opportunities and Risks of Cruise Tourism for Cairns". This report sought to portray that the economic benefits of the project would be minimal.

3.5 Environmental Aspects

The EIS very clearly demonstrates that offshore placement does not represent an environmental threat to the Great Barrier Reef or the onshore environment.

Decisions by the Federal and State Governments to rule out 'offshore' placement means that, for the project to proceed, onshore placement must occur.

4. ONSHORE PLACEMENT

4.1 General

From the foregoing, it can be taken that the additional revenue that would be generated makes the project with sea placement highly viable with very substantial additional benefits to the cruising industry and to the Cairns economy. The onshore placement only comes into consideration if governments decide to not accept offshore placement.

The EIS analysis concludes that onshore placement places a further major layer of costs on the project that cannot be fully offset by the creation of land with a marketable value. The EIS looks at the costs of onshore placement at a number of locations – East Trinity, Admiralty Island, cane-land at the head of Trinity Inlet, foreshore reclamation and an area at the airport. However it only examines likely value of land created in relation to Trinity East.

Against a background where Governments have ruled against the viable and scientifically supported offshore placement, Governments have three alternatives:

1) Compensate the community for the economic loss. The foregoing analysis indicates that this is likely to have a present value of the order of $1.3 billion.
2) Meet the cost of onshore placement at East Trinity as proposed in the EIS. (Indications are that this will cost of the order of an additional $250 million over and above $100 million for offshore placement.)
3) Develop innovative solutions to get the cost of onshore placement down through reducing costs and creation of land with an economic value that will in total, or mainly, offset the additional costs of onshore placement over a period of time.

While the total identified efficiency benefits of $552 million would still yield a positive benefit cost ratio against a capital cost of $300 million, it is obvious that the interests of the community and the Government will be served by exploring option 3 above, with a view to finding solutions.

The following sets out the view that the analysis of onshore placement options in the EIS is limited and deficient.

It is submitted that much better solutions can be developed if:

1) The project of onshore placement is looked at first and foremost from an economic analysis/commercial perspective.
2) The project's onshore placement technology and costings are reexamined.

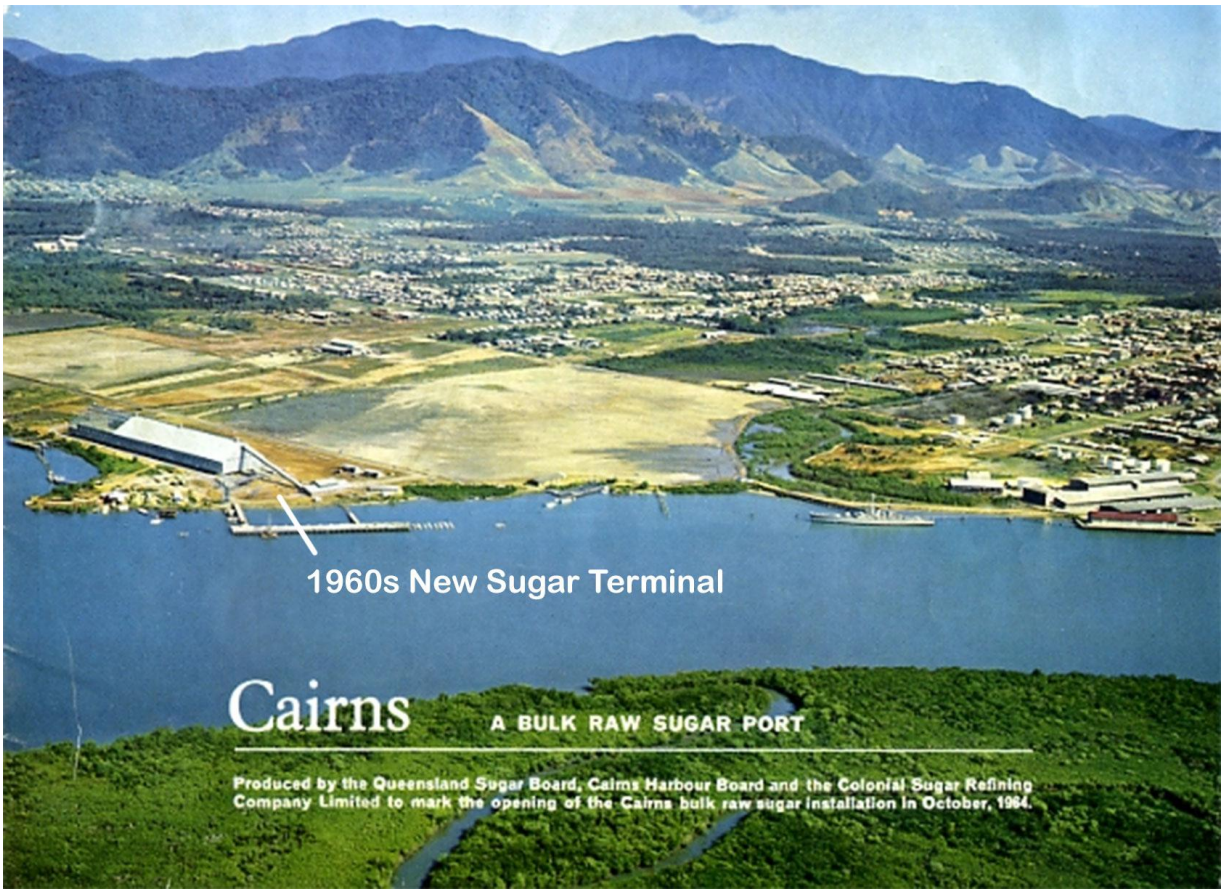
4.2 Previous Experience with Onshore Placement

The central part of Cairns has been built on a series of sand ridges and swamps facing Trinity Bay. Very large parts of the city are built on land reclaimed from swamp and saltpan areas including using dredge spoil.

For many years, Cairns Harbour Board had its own dredge vessel, the "Trinity Bay", and substantial areas of land were reclaimed in the Portsmith industrial area using dredge spoil. This included most of the Portsmith Crown Industrial Estate, created by the Queensland Government in the 1960s to support manufacturing and industrial development.

Photo 1 shows the relevant area being reclaimed in the 1960s. Map 2 shows the area today.

Photo 1 shows the Portsmith area in the 1960s and the area being reclaimed with dredge spoil to form the Queensland Government Crown Industrial Estate.



Google Map 2 shows the area today.

As a preliminary estimate, something of the order of 150-200 hectares of industrial land appears to have been created. Unimproved value of the land as represented by blocks along Redden Street appears to average about $150 per sq metre in 2013. As a preliminary calculation, current unimproved value of the land created is probably of the order of $270-$300m.

The land supports a large part of Cairns' industrial buildings and industrial activity including much involved with Cairns' leading position in northern Australia in maritime servicing, supporting the city's naval base, large reef fleet, coastal trading and fishing fleets.

Located on reclaimed land today is the HMAS Cairns Navy Base with a turnover of about $120m and employing about 900, and the NQEA shipbuilding facility in which has been built the 14 Fremantle patrol boats, the Navy's hydrographic survey vessels (Melville and Leeuwin), and the CSIRO research vessel, Franklin, and various other vessels..

Estimates by Cummings Economics of the value of the region's maritime sector in 2008 put value of direct output of the order of $800 million and direct employment of over 4,000.

Through 'flow-on' effects, the sector supports thousands of extra jobs in the city and could be expected with flow-on effects to support of the order of 12 – 16,000 of the city's population.

Land reclaimed with dredged material takes time to settle and building foundations are not ideal. However much of Cairns, including high rise hotels, sits on similar types of foundations.

4.3 Catering for the Future Growth of Cairns

In relation to the onshore placement issue, there is a need to recognize what future longer-term growth of the city needs to be catered for.

Attached papers "Long-Term Regional Population Growth in Queensland Regions" and "Long-Term Regional Population Growth in Northern Australia" looks back at population growth trends over a 35, 20 and 10-year period. They very clearly identify the leading role of the Cairns region and Cairns city in population growth in regional Queensland and northern Australia. The paper also identifies why this is so and what regional population and city population sizes might be by 2050 if the growth trajectories of the past, extend into the future without any acceleration.

They indicate that on a continuation of long-term trends, we are looking at a regional population in the range of 550,000 to 600,000 by 2050 and for Cairns as the main regional city and hub servicing port, a population in the range of 400,000 to 460,000.

This has major implications for need of land for:

- Port industrial purposes;
- Residential purposes.

The potential role of onshore placement in meeting these needs is discussed further in the following assessment of potential reclamation sites.

4.4 Mathematics of a Long-Term View of Onshore Placement

Past experience indicates that land reclaimed with dredge spoil from the channel can play a major role in supporting long-term development of the city. However land reclaimed with dredge spoil requires a number of years to settle before it can be built on. Trying to make it immediately available to be built on can add a great deal to costs.

The mathematics of cost of settling time is as follows.

Land held onto can be expected to appreciate in value with inflation and with the growth of the city. If appreciation in value of land is three percent per annum for inflation and one percent per annum for growth of the city, the real financial cost of holding on to land costing $100 is the following over a period of time at a 7 percent interest rate:

5 years ..... $16 ..... Ratio 1.16
10 years ..... $34 ..... Ratio 1.34
15 years ..... $56 ..... Ratio 1.56

So if a piece of reclaimed land had a value of $70 per sq metre as is (without further development costs), it would stand a cost of placement of $60.00 per sq metre if it was used in five-years-time, $52 per sq metre in ten-years-time and $45 per sq metre in fifteen-years-time.

A cost of $200m to place 4.3 million tonnes would be $46.50 per cubic metre and at average fill depth of one metre, $46.50 per sq metre.

4.5 Extent of Onshore Placement Needed

It should be kept in mind that banning of offshore placement means that apart from deepening the channel as proposed in the Cairns Shipping Development Study (something not likely to be needed again for a substantial amount of time), there will be a need to find onshore placement locations for capital dredging for the following to proceed over time:

- Expansion of the Marlin marina;
- Extension of the main cargo wharves;
- Extension of the Navy Base;
- The proposed barge ramp project to handle larger barges;
- Wharf expansions at Mourilyan Harbour

Potential costs to the region in opportunities foregone would be very large if these projects were not allowed to proceed.

If offshore placement of maintenance dredging was effectively not allowed to be continued, the whole role of Cairns, as a cruise port, for export of sugar, inward movement of fertilisers and fuel and as a naval base, would gradually go unless onshore placement areas were found.

If the Government is not going to allow offshore placement, there will be no alternative but for them to help organize and pay the cost of onshore placement.

The following looks at potential areas in the light of how they may contribute to the city's future development over a period of time through the creation of reclaimed land with value.

4.6 Economic Assessment of Potential Reclamation Site

The EIS canvasses five potential areas.

Further reclamation of foreshore land to widen the Esplanade Park would need to be at public expense. The Esplanade was widened about a decade ago and there is no evident public demand for a further widening.

The airport fill area is small and probably more economical to fill from other sources. The remote caneland site at the end of the inlet is quite distant from the dredging. The EIS does not examine in detail, the possibility of using a number of reclamation sites rather than just one.

In terms of immediate demand for and value of land, the two optimum sites would appear to be:

- Extension of the Portsmith Industrial area. An area of about 50ha seems suitable and would be worth detailed evaluation.
- Development of additional strategic port land along the northern end of Admiralty Island. Part of this land is sand ridge country. The southern end of Admiralty Island is deep mangroves and environmental and potential economic use factors make it less desirable.
- East Trinity offers an excellent site with large areas of already degraded land. However economic value is dependent on developing a new major urban expansion area on that side of the inlet.

Map 3 illustrates.

The following looks at each of these areas.

Portsmith Industrial Area

This area is about 50ha and is currently being encroached on by waste disposal.

Its reclamation using dredge spoil would create additional industrial land close to the port and the city.

Fifty hectares would be involved. On current land values in the area, potential value when settled would be (in current prices of $150 per sq meter), $75 million in current values.

As a preliminary estimate, if not used for ten years, it would stand a cost of $112 per sq meter to reclaim and develop at an interest rate of 7 percent (inflation rate 3 percent).

Northern End of Admiralty Island

Over the years, the need for wharves with access to deep water has expanded. The northern end of Admiralty Island is the obvious area for expansion of Cairns seaport.

Examination of the degree to which port land usage has expanded over the past 50 years, indicates there can be little doubt that there will be a need for the port to expand into this area in the future.

Over time, apart from enabling expansion of wharves and other port activities such as shipping and naval base operations, it opens up an opportunity to locate activities like the fuel farm and possible future LNG terminals well away from the CBD. The land they are sitting on has high value for other uses.

Although the overall area shaded is of the order of 100 – 150ha, what is not well known is that substantial parts of the northern end of the island is composed of sand ridges and areas for reclamation would be less.

To open out this area, a bridge would need to be built across Smith's Creek to access the island. However Smith's Creek is not wide and this would not be very expensive.

The bridge and opening up the northern end of Admiralty Island would be the first step in a long-term plan put forward by Queensland Main Roads a number of years ago to provide a second direct access into Cairns from the Gordonvale area. This route would take much long distance and heavy transport traffic off the mainly suburban traffic route through Edmonton. (This is raised further in the next section on East Trinity.)

There will need to be an acceptance that reclaimed land will replace some mangroves as already has occurred with previous port expansion.

East Trinity

East Trinity represents an opportunity to place dredged material in an area that has already been affected by development.

A plan to reclaim the area for cane production in the 1960s and 1970s resulted in a bund wall being built to exclude saltwater intrusion, with gates allowing outflow of freshwater runoff during flooding. However cultivation of the land resulted in exposure of acid sulphate soils to the air creating acid runoff problems. The use of the land for farming was not proceeded with. Capping the acid sulphate soils with other fill would get rid of the problem.

The Royal Reef group purchased the land and developed a proposal to open out the area as a major new satellite residential area.

The State Government did not approve the project and is reported to have purchased it for $10m. Instead of capping the acid sulphate, it let the saltwater intrusions back in and treated the area with lime.

In the intervening period, while saltwater was excluded, a small forest of young Melaleuca trees grew up in one area. The reintroduction of saltwater intrusion killed them and there is now an unsightly small forest of dead trees in the area.

It is believed the maintenance of the area including bund walls, gates and large grassed areas is costing the State Government approximately $500,000 a year. A solution that avoided this cost over 30 years would have a net present value of approximately $8.5m at a 7 percent discount rate.

The submission by the "Friends of the Port of Cairns" looks at the whole subject of East Trinity in some detail including the cost estimates made in the EIS and its potential for future urban development and the potential returns from urban development over other areas of the 900 ha reserve.

A UDIA submission further addresses the question of the potential of East Trinity to meet the Cairns' future urban expansion needs.

Traditional owners Mandingalbay are wishing to use sections of the East Trinity reserve and the landing at the mouth of Hills Creek and some of the wetland areas over which they hold native title (especially those areas on the northern side of the reserve), as a base for an eco/indigenous tourism presentation that would extend into Grey Peak National Park.

It is significant that this could proceed alongside the use of the southern section of East Trinity reserve.

An increase in cruise ships through the port as a result of the dredging would create a prime potential market for this project that would be unlikely to eventuate from mega vessels continuing to transfer onshore to Yorkey's Knob. Development of ferry services across the inlet would assist develop the project's customer base.

There are other potential excellent areas for eco/indigenous tourism enterprise development further back in the Murray Prior Range area, and it is possible that the eco/indigenous tourism development is not inconsistent with the long-term development of the whole East Trinity reserve for urban purposes including parks and recreation areas.

The major issues with East Trinity area will be:

1) The initial true cost and how much can be placed in the southern section. There is evidence that the EIS over estimated the cost by a substantial margin, especially if innovative engineering solutions can be developed (see 'Friends of Cairns Seaport' submission), and that improved approaches would result in almost all the dredged material being able to be placed in the southern section of the reserve.

2) How the whole area might be developed over time to maximize the potential value of the land, especially the foreshore areas looking across to the city and a short ferry ride away.

   In the EIS, the potential land usage appears to have been evaluated without input of experienced urban development specialists. Their perspectives and input are potentially of great value in finding solutions (see submission by Urban Development Institute of Australia)..

3) The timing of a need for the area to be opened up for urban development purposes. Obviously Mt Peter area will satisfy needs in the immediate future. Incurring extra cost of trying to bring it on stream in the short run is unlikely to be viable.

   However as the next major expansion area after the Mt Peter area, the East Trinity area has very attractive features.

   First there is a large area, not just the East Trinity reserve, but a great deal of other land in the area including land with views and waterside land. It is land that can be developed without taking out land from cane production.

   The area is potentially close to the city by ferry and, over time, by a bridge over the inlet.

4) In relation to a bridge over the inlet, it should be noted that it is not appropriate to place the cost of such a bridge as an offset against urban development of the reclaimed land of East Trinity reserve alone. The bridging development would:

   - Complement and facilitate port expansion on the northern end of Admiralty Island;
   - Facilitate the development of a great deal of other land in the East Trinity area for urban purposes;
   - As proposed by Main Roads Department, open up a highly efficient second access road into Cairns from the Gordonvale area:
     - That was shorter and more efficient for through traffic to and from the south;
     - That would take long distance and heavy traffic off the mainly suburban traffic route via Edmonton.

APPENDIX 1

Review of Paper Prepared by Joseph Thomas, James Cook University, for the Australian Marine Conservation Society – February 2015

"Economic Opportunities and Risks of Cruise Tourism in Cairns"

It should be noted that the JCU paper was prepared prior to the release of the Cairns Shipping Development Project EIS.

The JCU report's analysis is relevant to the EIS Demand Study and the Economic Analysis provided in the EIS.

The following provides comments on the JCU paper.

General

- It is largely an academic paper by people with very little detailed knowledge or understanding of the cruise industry.

Out of Date

- Most of the research papers cited are old, certainly 1996, 2004 and 2006 are far too old to be considered relevant to the cruise industry of today.
- The paper appears to take a very short-term and "current" view of the growth potential of the Australian market when any infrastructure investment requires a medium to long term view. The paper continuously quotes references relating to 2006 and earlier at which time the industry operated very differently.

Chinese Market

- The paper suggests that the Chinese market will not be a major source of cruise visitors in 10 years. Given the amount of ships, resources and focus that the cruise industry is investing in the Asian region, the cruise industry seriously questions this conclusion.

Attractiveness of the Australian Market

- The paper appears to question the attractiveness of Australia as a future deployment destination. This ignores the geographic proximity of the Australasia region to Asia and the natural hedge of the Asian northern hemisphere deployments with the Australasian southern hemisphere deployments. The paper's assertion that "the local market serves principally to absorb excess capacity created by the introduction of mega ships into the larger and more established markets" is incorrect.

Position of PNG

- PNG is becoming one of the fastest growing South Pacific destinations out of Australia. The following analysis illustrates this in terms of cruise ship calls to PNG destinations:

  2012 = 65

  2015 = 130

  2016 = 158

  Cairns is located between the major cruise home ports of Sydney/Brisbane and PNG.

Large Mega Ships

- The paper talks about mega class ships and the "barrier" of the Panama Canal. RCL have deployed their largest and newest cruise ship in the Chinese market and have just announced that its sister ship (Ovation of the Seas) will be launched in Sydney in late 2016.

Growth

- The growth of calls to Australia continues unabated. Based on some recent analysis, calls into Sydney (the jewel destination of Australia) are trending as follows:

  2014/15 = 303 calls

  2015/16 = 325 calls

  2016/17 = 446 calls

- There appears to be no attempt to analyse future ship calls to Cairns even though most of the major cruise lines have published itineraries well into 2017. Therefore, figures for the 2014/15, 2015/16 and 2016/17 should be available on which to make some 2-3 year estimates and then some future trend projections.

Cruise Visitor Numbers

- The report quotes a lot of details re ships, capacity pax numbers etc. but overall, any material differences between the CLIA figures and other sources are immaterial. It should be noted that the Ports North data is a calendar year and CLIA's data is a fiscal year.

- It's interesting they did not access the Cruise Down Under Report by Access Economics which has been published every year since 2006 and probably has the most consistent economic data on the cruise industry in Australia. Similarly the reports done for Carnival weren't referred to, these have data reports by external bodies.

- Page 13-the conclusions re deployment locally are out of date

Negative Orientation

- In accordance with the policy position of the Australian Marine Conservation Society, a negative view is promoted. Some of the references are of authors who have been opposed to the cruise industry for many years and seem to bolster their academic income by talking/preaching to opposition groups in various destinations where cruise facilities have been proposed.

Other Matters

- Section 3.2-the comments on the Pacific Dawn and sister P&O ships ignores the fact that these ships are old, very un-manoeuvrable and almost certainly will be replaced by larger ships from the Carnival group before too long

- Section 4.3 omits to mention that cruise liners plan their itineraries 2-3 years in advance and having been caught by cruise facilities not being completed by the advertised time they seldom commit to use the new facilities until at least 2 years after their completion and even then probably only on a trial basis using a single ship.

LONG-TERM POPULATION GROWTH IN REGIONAL QUEENSLAND

March 2015

1.0 INTRODUCTION

Over a period of time, major changes have been taking place in the distribution of population in regional Queensland outside of the south-east corner of the State.

This paper sets out:

- This changing pattern and the leading role of Cairns and the Cairns region 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 Queensland would look like by 2050.

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

W S Cummings B Econ
38 Grafton St (PO Box 2148) Cairns Q 4870
Phones **07 4031 2888 / 0418 871 011**
Email **cummings@cummings.net.au**
Website **www.cummings.net.au**
CUMMINGS ECONOMICS
ABN: 99 734 489 175

2.0 THE QUEENSLAND REGIONS

Queensland outside of the south-east corner of the State covers a large area. Realities of distances lead to the area being served by a series of regional capitals with distinct commercial servicing regions.

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

In the case of Cairns, Townsville, Mackay and Toowoomba, 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 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.

Wide Bay Burnett region is effectively two regions based on the two regional urban areas Bundaberg (Burnett) and Hervey Bay/Maryborough (Wide Bay). In this analysis, Bundaberg, Hervey Bay / Maryborough are treated as the equivalent of one city.

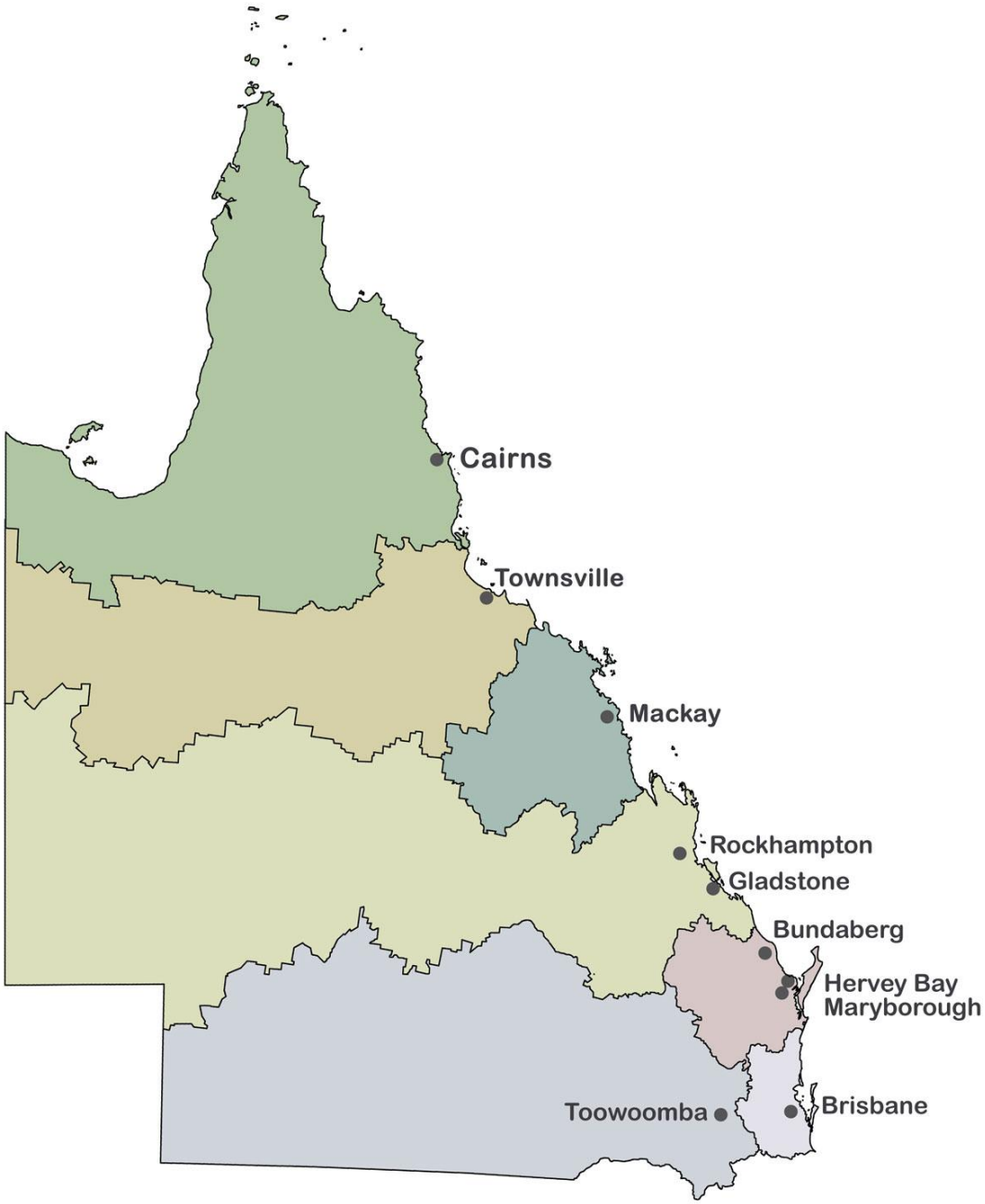
City population boundaries can be complicated to define. Up until 2011, fairly clear city Statistical Districts were being defined by Australian Bureau of Statistics that were reasonably comparable. For this paper, these Statistical District boundaries are used. While the boundaries used can be argued 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 – Queensland Regional Cities and Commercial Servicing Regions



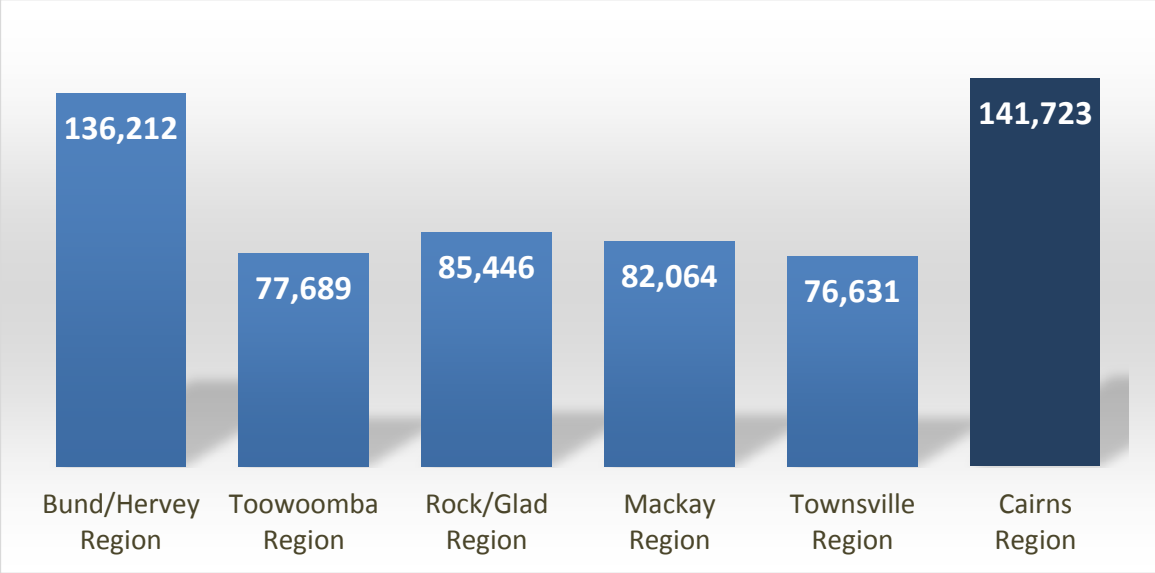
Source: See Statistical Notes Appendix 1 for boundary definitions.

3.0 LONG-TERM POPULATION GROWTH PATTERNS

3.1 Regional population growth patterns

Since estimated residential population statistics began being published by the Australian Bureau of Statistics in 1976, the Cairns' commercial servicing region has led regional Queensland's population growth along with the Bundaberg/Hervey (Wide Bay Burnett) region by a substantial margin.

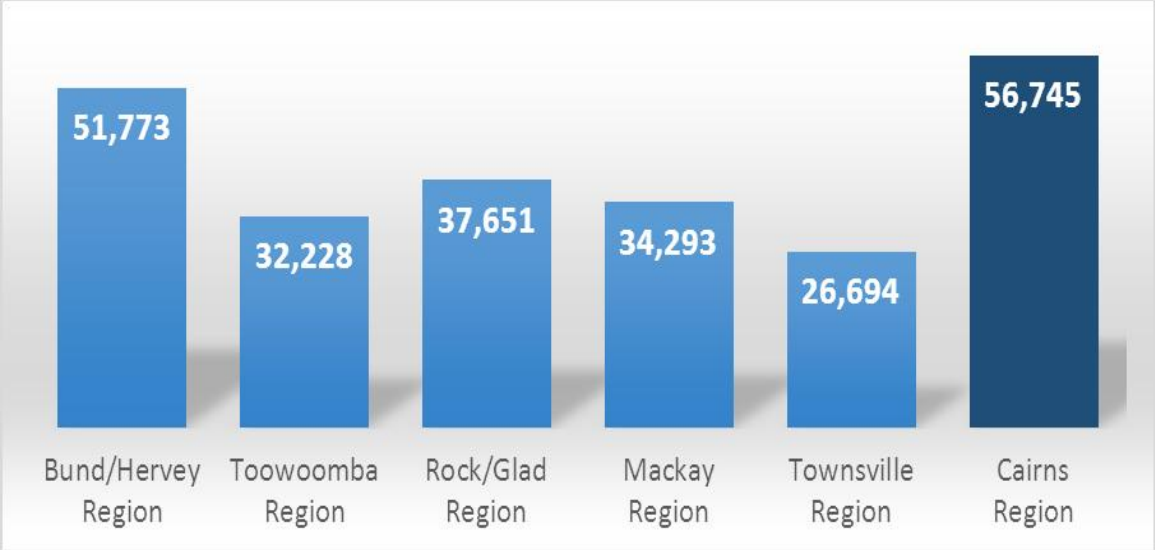
Chart #1: Long-term 35-year Increase in Regional Residential Population, Commercial Servicing Regions of Queensland Regional Cities, 1976-2011



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

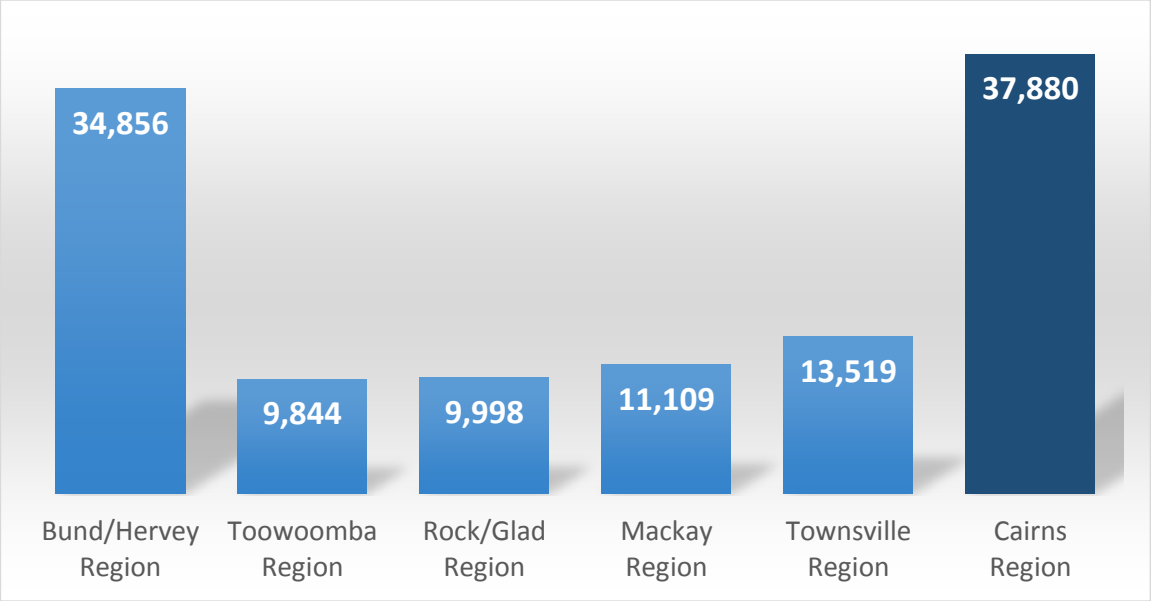
There can be short-term fluctuations. However examination of the figures by shorter periods indicates the basic pattern of the Cairns and Wide Bay Burnett regions leading growth continuing over time.

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



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

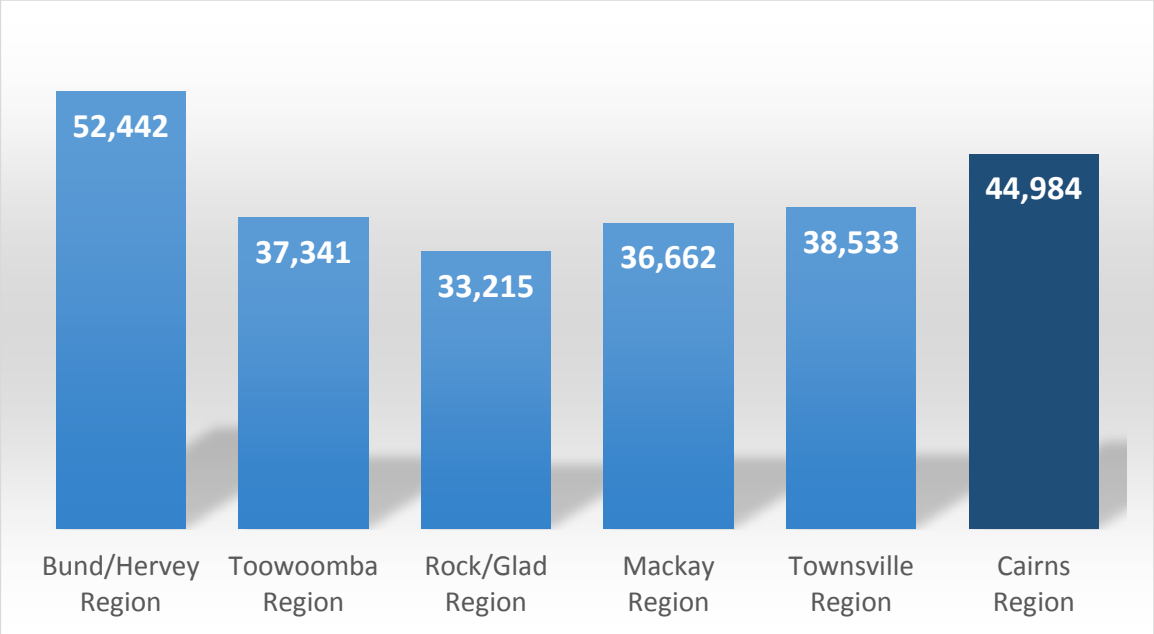
Chart #3: Long-term 10-year Increase in Residential Population, Queensland Regions, 1991-2001



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

Mainly under the influence of accelerated mining activity in the 2001 to 2011 period, growth in the Rockhampton, Gladstone Mackay and Townsville regions advanced but still remained behind the Cairns and Wide Bay Burnett regions.

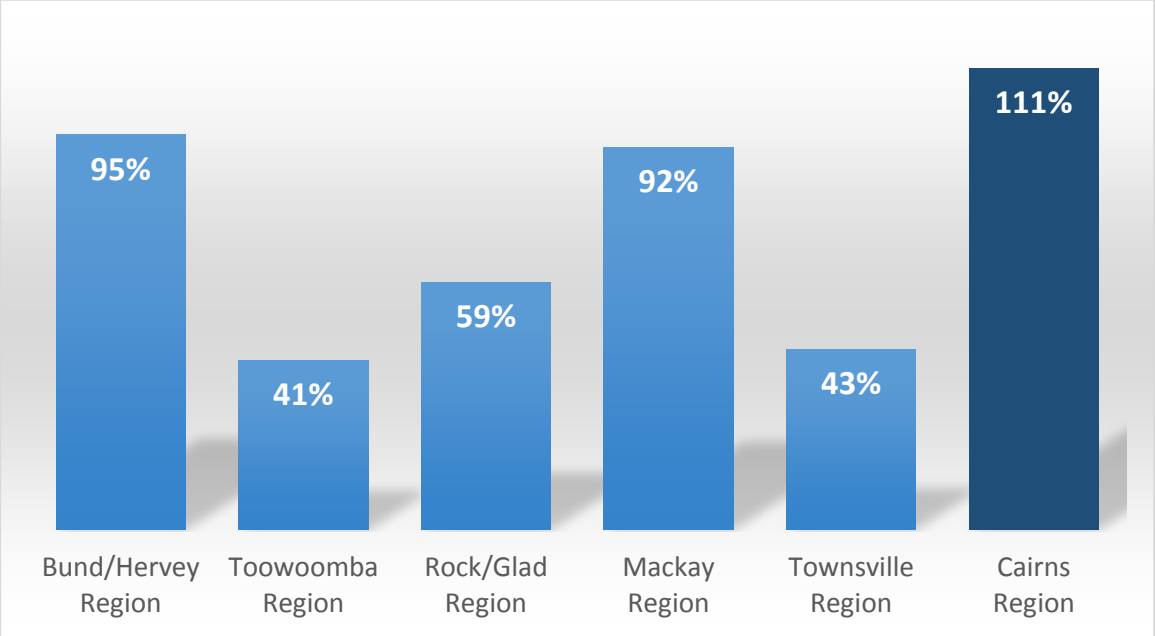
Chart #4: Long-term 10-year Increase in Residential Population, Queensland Regions, 2001-2011



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

In percentage growth rate terms, the increases translate into the following pattern, with the Cairns commercial servicing region leading by a substantial margin, Wide Bay Burnett and the Mackay regions next, and the Toowoomba and Townsville commercial regions lowest.

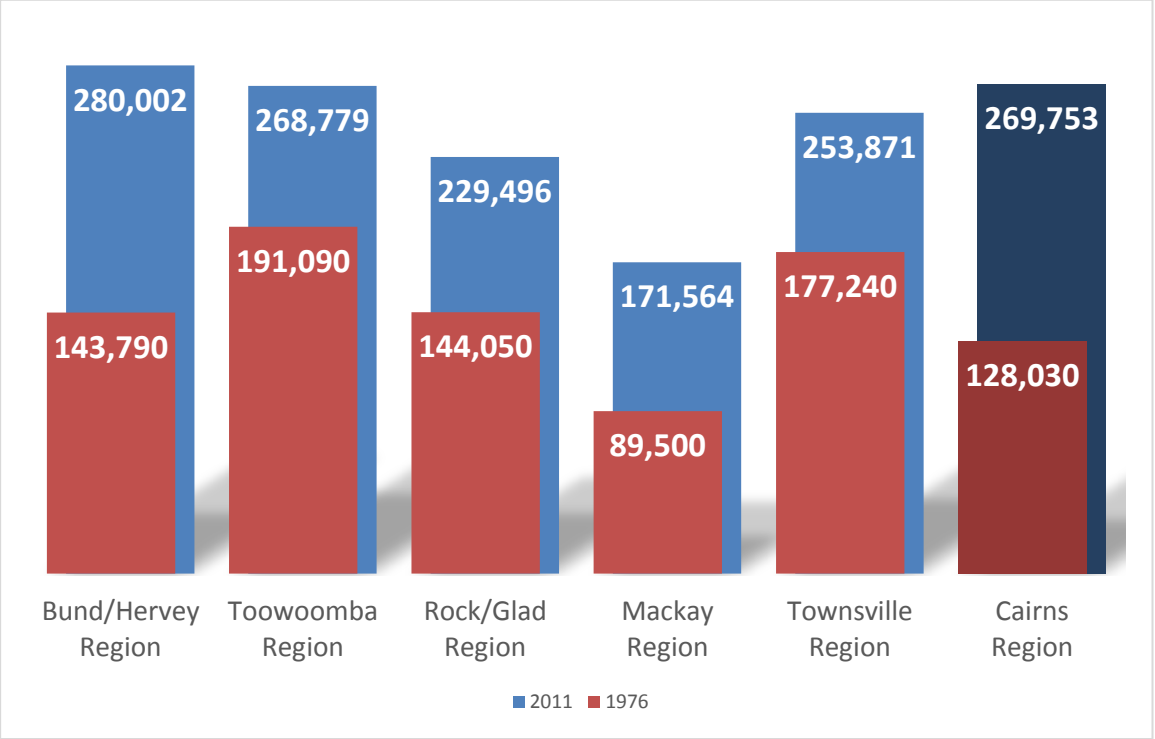
Chart #5: Percent Growth - Residential Population, Queensland Regions, 1976-2011



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

This has meant that the Cairns region, the second smallest in population in 1976, is now close to the Wide Bay Burnett region and up with the formerly larger Toowoomba region and ahead of the formerly larger Rockhampton/Gladstone and Townsville regions.

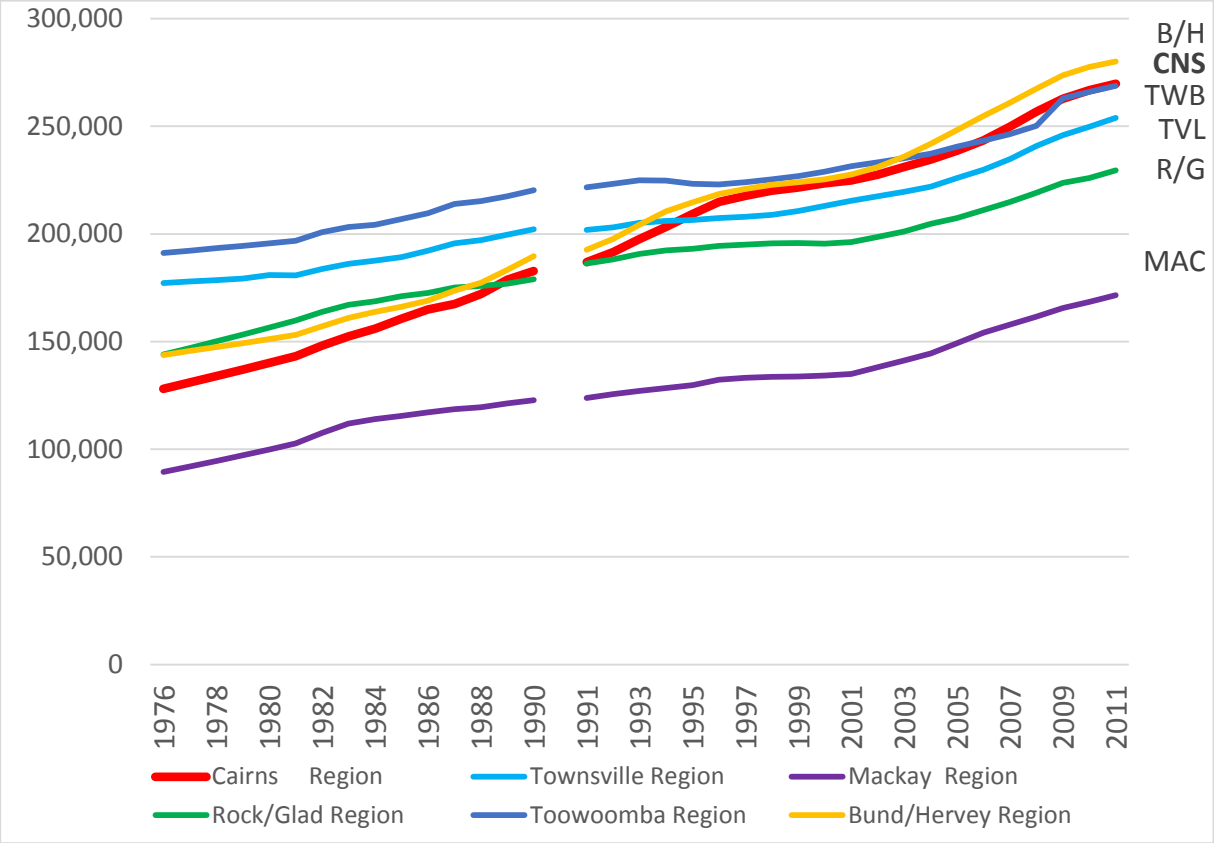
Chart #6: Residential Population, Queensland Regions, 1976 and 2011



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

Chart #7 illustrates how the Cairns region and the Bundaberg / Hervey regions have been tracking up to now lead in total residential population.

Chart #7: Residential Population, Queensland Commercial Servicing Regions of Queensland Cities, 1976-2011



Note: The break 1990-1991 indicates a break in series, in some cases involving minor changes in definitions of areas (see Statistical Notes, Appendix 1).

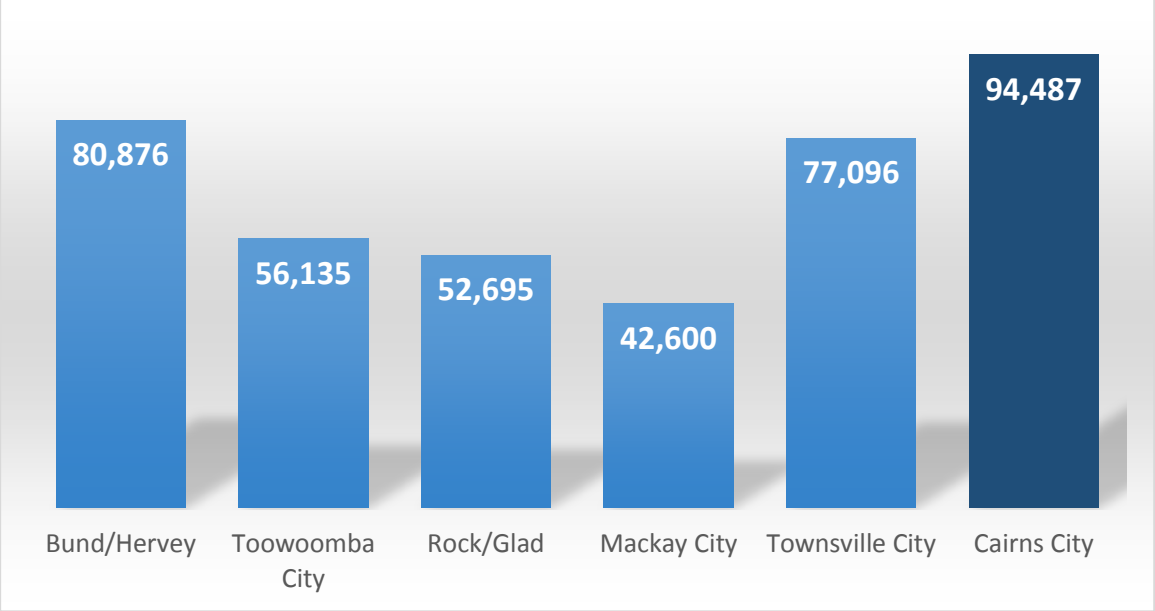
Source: Cummings Economics from ABS Cat No. 3218.0 et al.

While the later estimates for 2012 and 2013 put the Rockhampton, Gladstone, Mackay and Townsville regions' population growth marginally ahead of the Cairns and Wide Bay Burnett regions, this has been under the influence of the mining boom, major construction of LNG plants at Gladstone and the stationing of an extra army battalion and other units in Townsville. With the collapse in mineral and energy prices that has occurred recently, the recent stronger growth in these regions is now receding. Current indications are that a new accelerated rate of growth is underway in the Cairns region, especially under the influence of a lower Australian dollar.

3.2 Regional city population growth

Against the foregoing background, it is not surprising that Cairns as a regional servicing city has recorded the largest growth in population followed by Bundaberg/Hervey Bay and Townsville next.

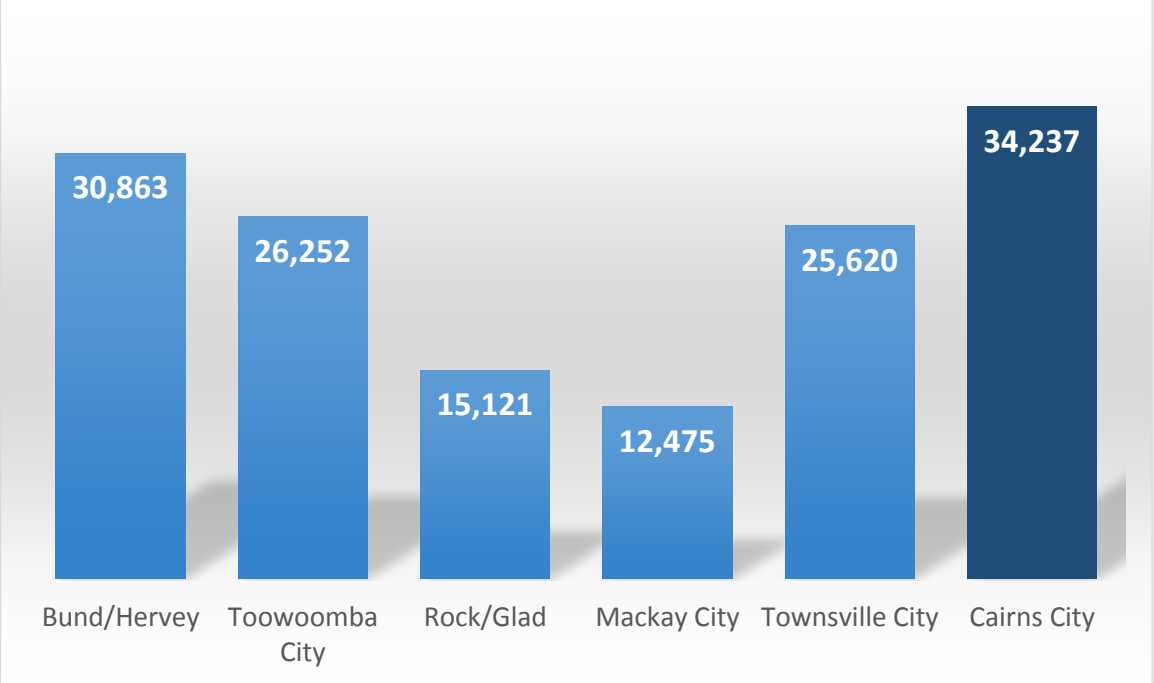
Chart #8: Long-term 35-year Increase in Residential Population, Queensland Regional Cities, 1976-2011



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

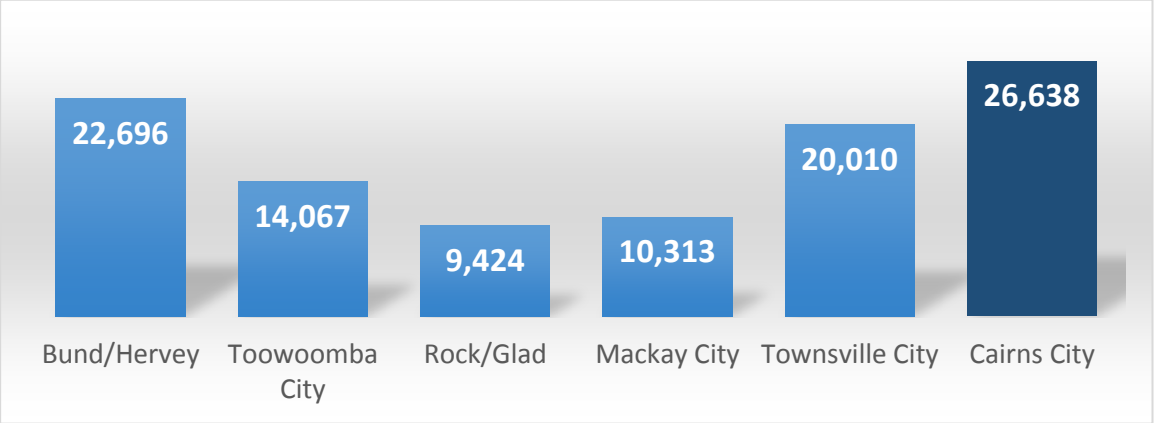
This pattern has been fairly consistent over time.

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



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

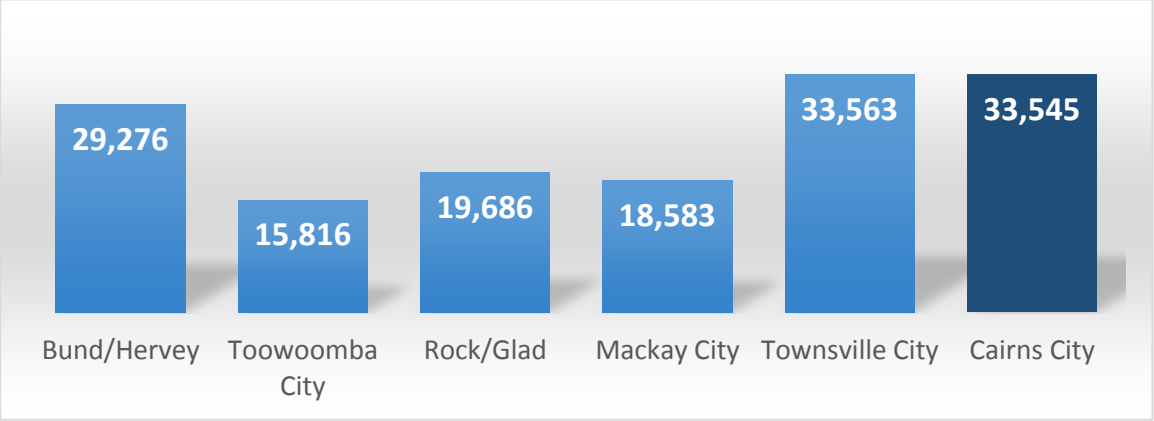
Chart #10: Increase in Residential Population, Qld Regional Cities, 1991-2001



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

However over the period 2001-2011, Townsville came up to equal Cairns when Cairns' growth was heavily affected by the Global Financial Crisis and high dollar, and Townsville was benefiting heavily by increased defence personnel being stationed in the city and high mineral prices. This pattern continued in 2012 and 2013, but there is evidence it is currently reversing as mineral prices recede while Cains reaccelerates.

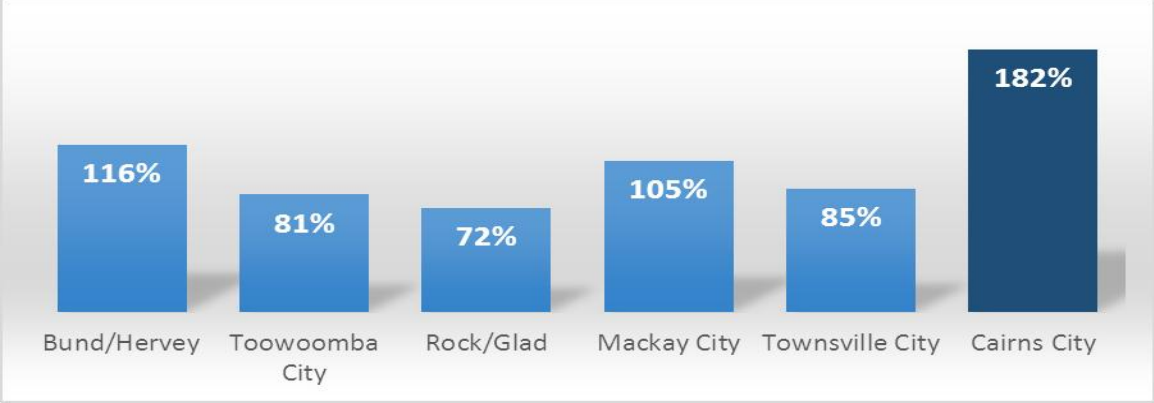
Chart #11: Increase in Residential Population, Qld Regional Cities, 2001-2011



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

In percentage terms, city growth has been led by Cairns by a large margin, followed by Bundaberg/Hervey Bay and Mackay.

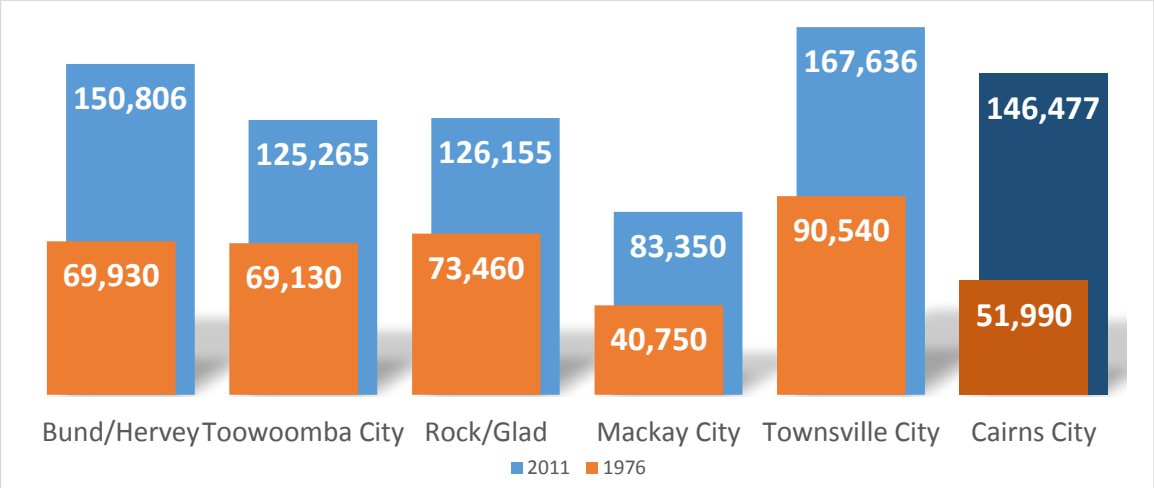
Chart #12: Percent Growth – Residential Population, Queensland Regional Cities, 1976-2011



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

This has led to substantial changes in the ranking of regional city sizes with Cairns moving from being about half the size of Townsville and second smallest in 1976 to overtaking Toowoomba and Rockhampton/Gladstone to being up with combined Bundaberg/Hervey Bay and close to Townsville in size in 2011.

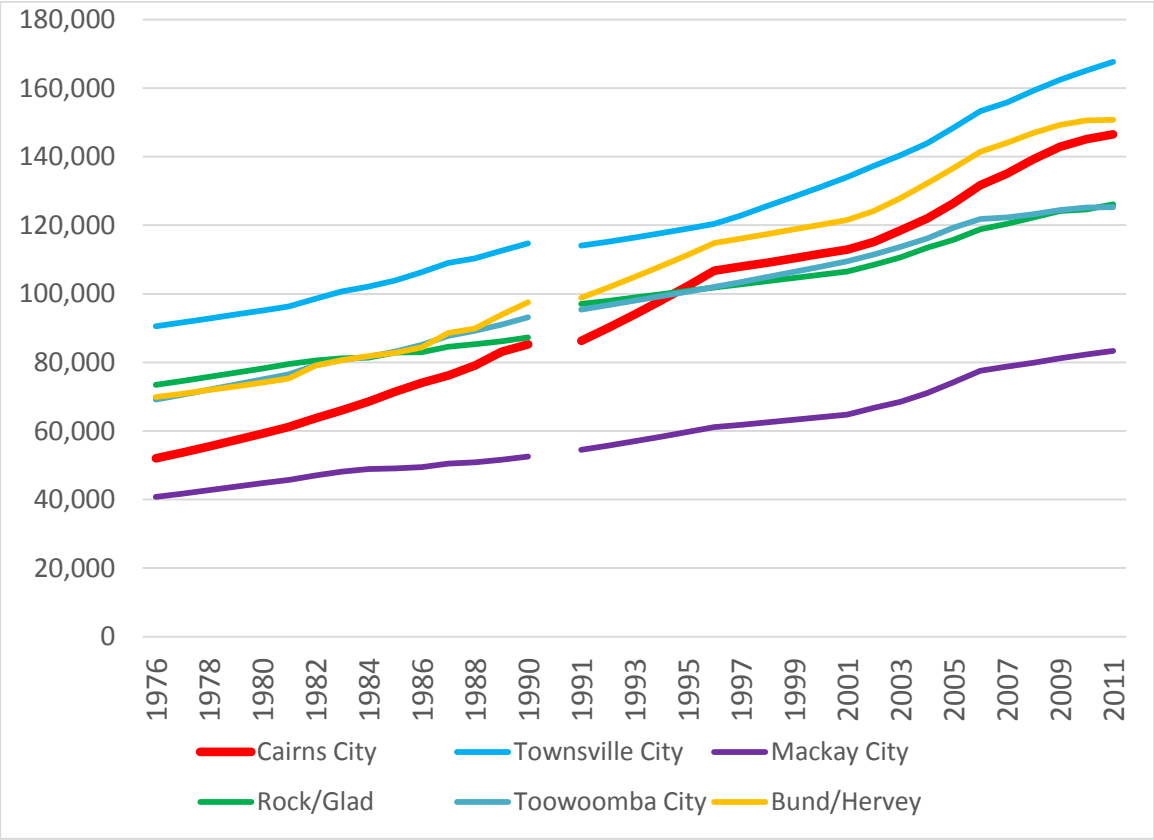
Chart #13: Residential Population Sizes, Queensland Regional Cities, 1976 and 2011



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

Chart #14 illustrates the movements by years, again illustrating the strong growth trajectory of Cairns and Bundaberg/Hervey Bay.

Chart #14: Residential Population, Queensland Regional Cities, 1976-2011



Note: The break 1990-1991 indicates a break in series, in some cases involving minor changes in definitions of areas (see Statistical Notes, Appendix 1).

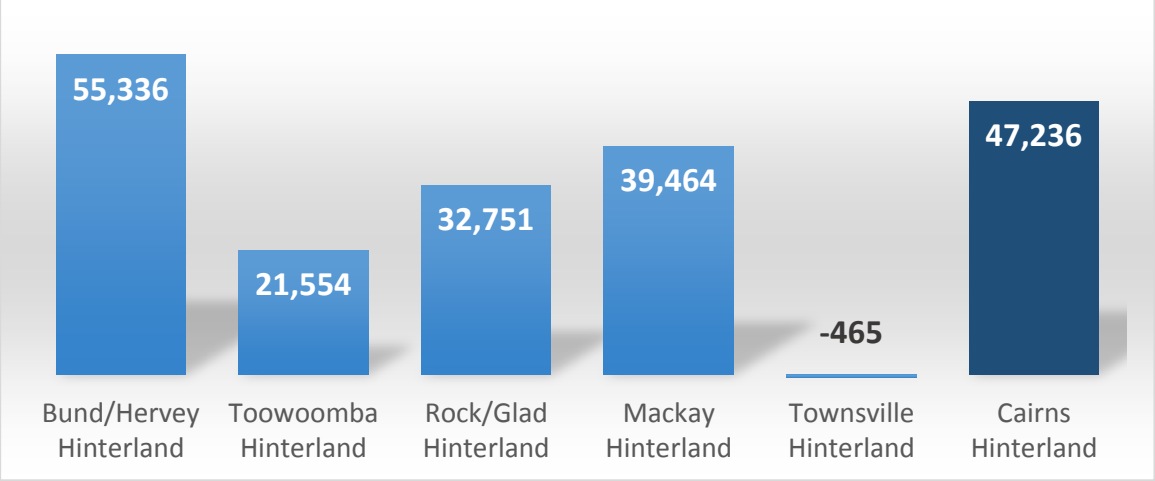
Source: Cummings Economics from ABS Cat No. 3218.0 et al.

3.3 Hinterland growth patterns

Standing behind the city and regional growth patterns are differences in growth in hinterland population serviced by the regional cities. Strongest growth has been in the Wide Bay Burnett and Cairns regions followed by Mackay which includes the Whitsundays area.

Toowoomba, Rockhampton/Gladstone and Townsville hinterlands have been particularly affected by declining populations in the south-west, central-west and north-west areas. The Townsville hinterland population recorded a small overall decline.

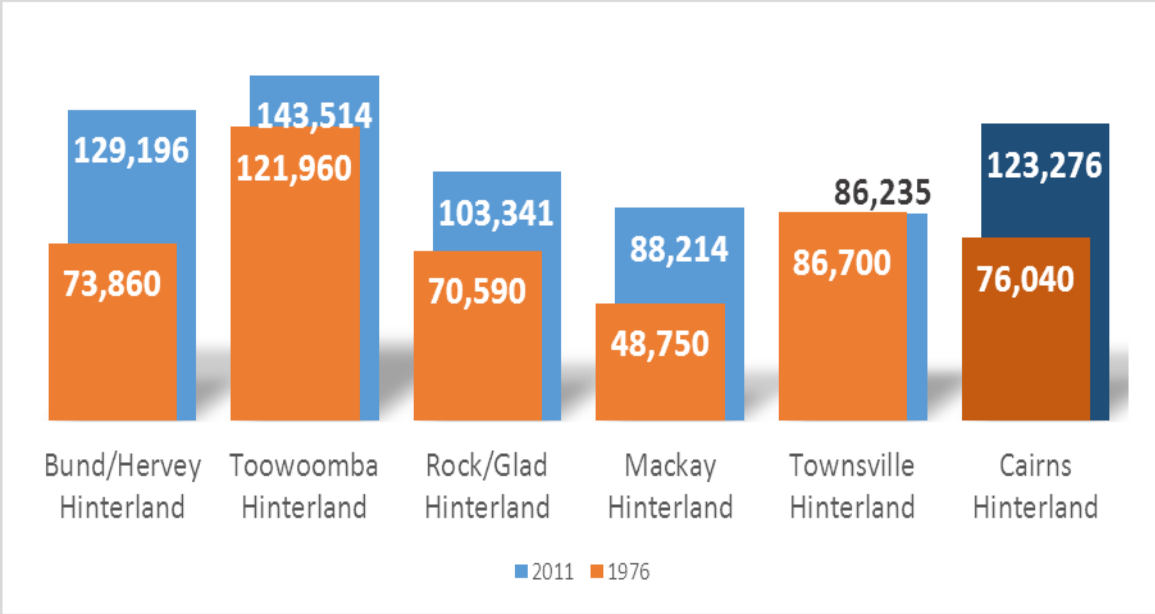
Table #15: Long-term 35-year Increase in Hinterland Residential Population, Queensland Regional Cities, 1976-2011



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

Chart #16 illustrates how Cairns has passed the Townsville and Rockhampton / Gladstone hinterlands and is close to Bundaberg / Hervey and Toowoomba hinterlands.

Chart #16: Hinterland Residential Population, Queensland Regional Cities, 1976 and 2011

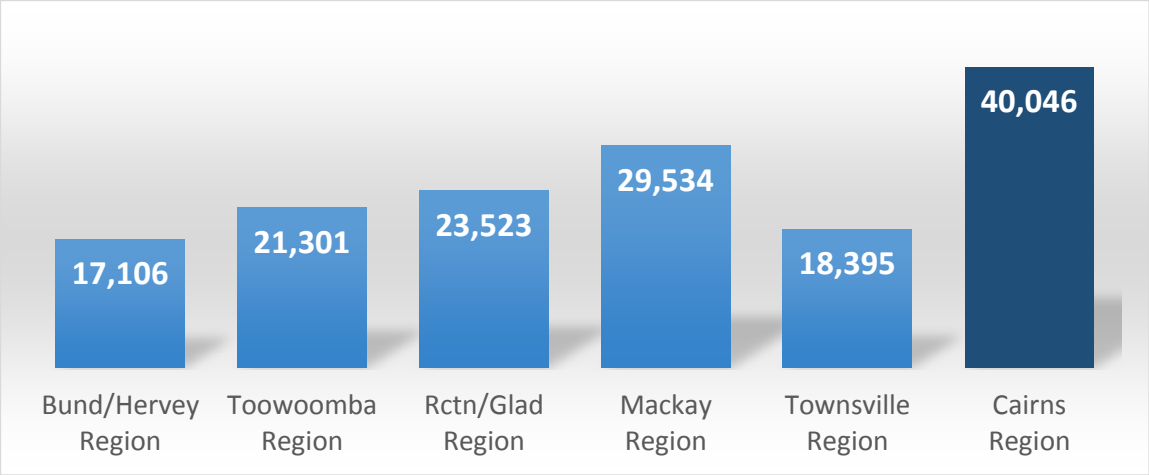


Source: Cummings Economics from ABS Cat No. 3218.0 et al.

3.4 Visitor populations

Apart from its strong position in residential population, the Cairns region also leads with largest on-the-ground visitor populations with the Mackay Whitsunday region next.

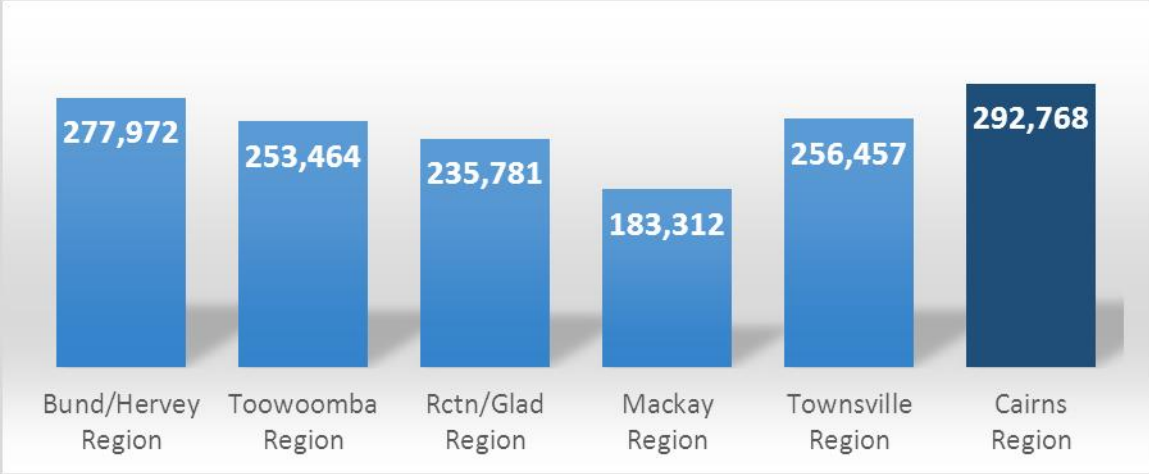
Chart #17: Visitor Numbers, Intrastate, Interstate and International, 2011 Census



Source: Cummings Economics from ABS Census 2011.

In census count population that includes visitors and excludes residents away, the Cairns region now leads Queensland's regions.

Chart #18: Census Count – Population Place of Enumeration, Census 2011



Source: Cummings Economics from ABS Census 2011.

4.0 WHY?

4.1 General

It is easy to explain the strong growth of the Bundaberg / Hervey (Wide Bay Burnett) region as population in South East Queensland spreads northward along the coast.

The following explores why there has been a long-term trend for the Cairns region to be a leader in regional growth.

The following identifies five major underlying factors:

1) The large area covered by the Cairns region;

2) The region's tropical location and historical lag in development;

3) The strength of the region's natural resources;

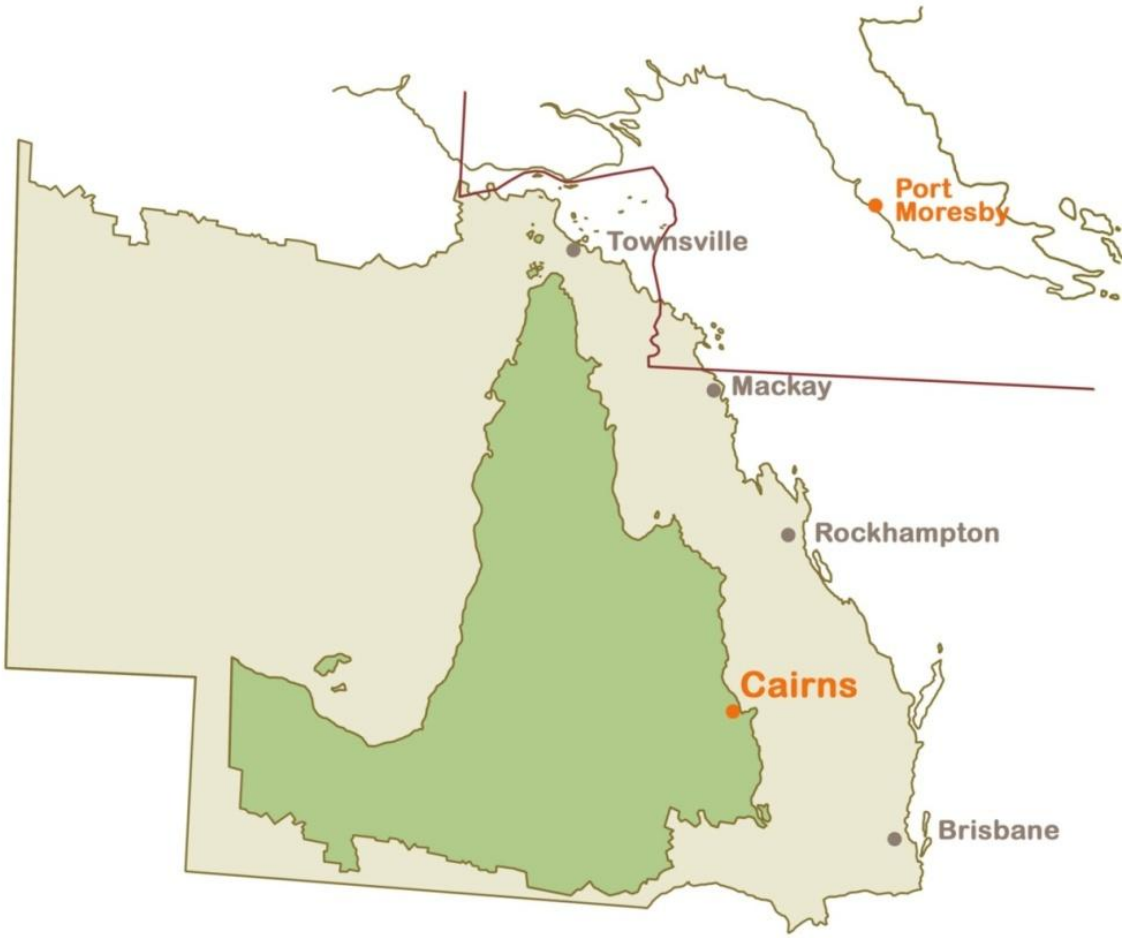
4) The region's strategic location;

5) The region's diversified industry composition.

4.2 Queensland's largest region

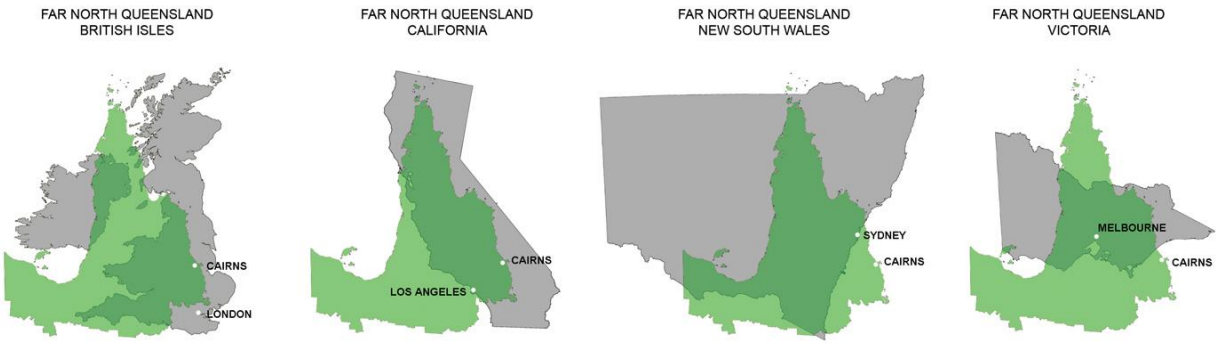
Queensland is a large state. Within Queensland, the Cairns region covers the largest area. It covers half Queensland's latitudes and is as deep from north to south as New South Wales. In area, it is 1½ times the size of Victoria and covers an area equivalent to the British Isles.

Map 2 – Area and distances compared with rest of Queensland



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

Map 3 – Comparative areas and distances



4.3 Overcoming the tropical lag

Queensland 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 region being the furthest north, was late being settled and initial progress was slow and hard won.

But Queensland'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 product 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.

Queensland's transition from being the "Cinderella State" of the 1960s to being a "Front Runner" has in large part been due to the progress made in its tropical areas.

Being the furthest north and previously least developed in relation to its potential, the Cairns region has benefited most from these underlying trends.

4.4 The strength of the region's natural resources

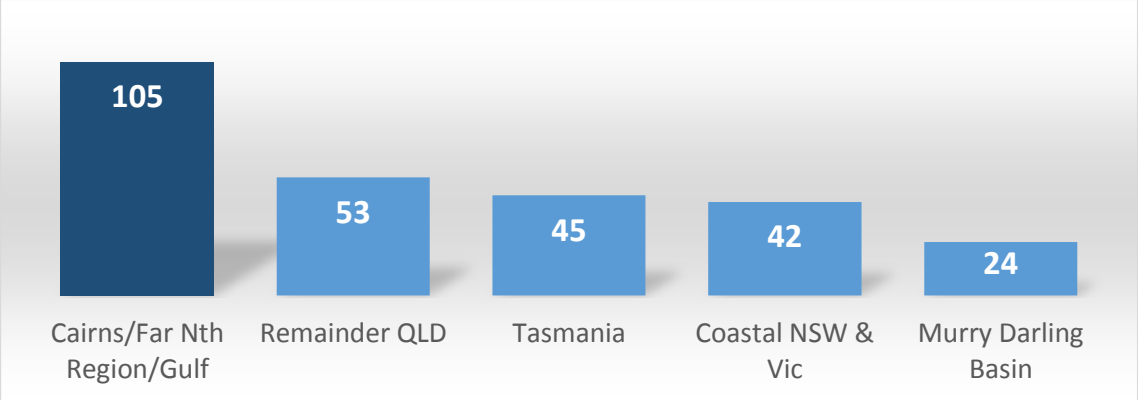
While a great deal of attention has been paid in recent decades to the mineral resources of central and northern Queensland, what is often not recognised is how the Cairns region leads the state in natural (biological) resources. This natural resource base has underpinned:

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

Leading in natural biological resources

The Cairns region accounts for over 60 percent of Queensland's water runoff and some 26 percent of the national total.

Chart #19: Mean Annual Water Runoff - Australian Regions Compared, million mega litres



Source: Australian Land and Water Resources Atlas.

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

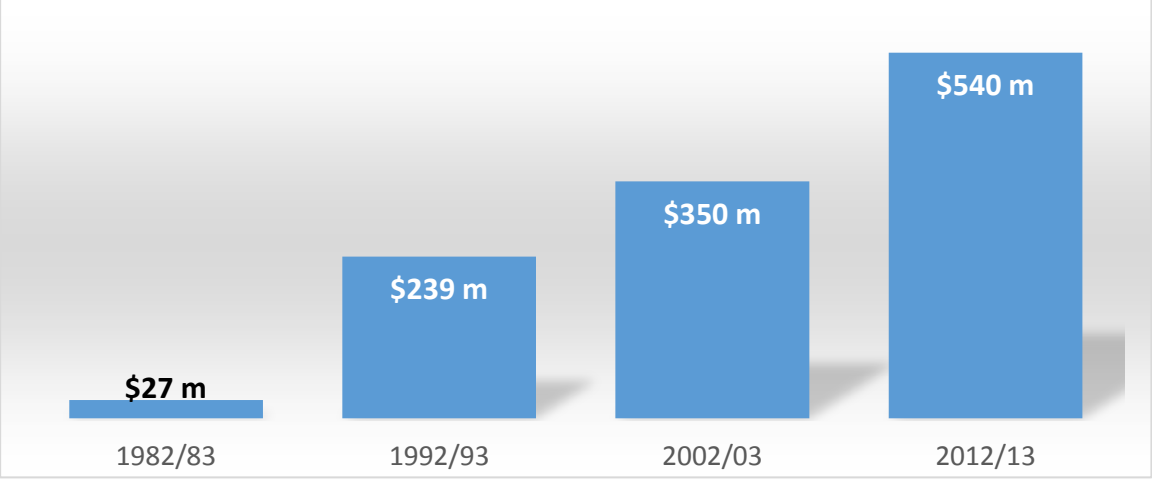
Modelling CSIRO data indicates that average plant growth per square metre in the Cairns region, as measured by absorption of carbon from the atmosphere, is almost double the remainder of the State.

Primary industries, a growth sector

Agriculture is regarded as a stagnant sector in most parts of Australia. 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.
- 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 #20: Gross Value of Fruit Production, Cairns Region [(1)]

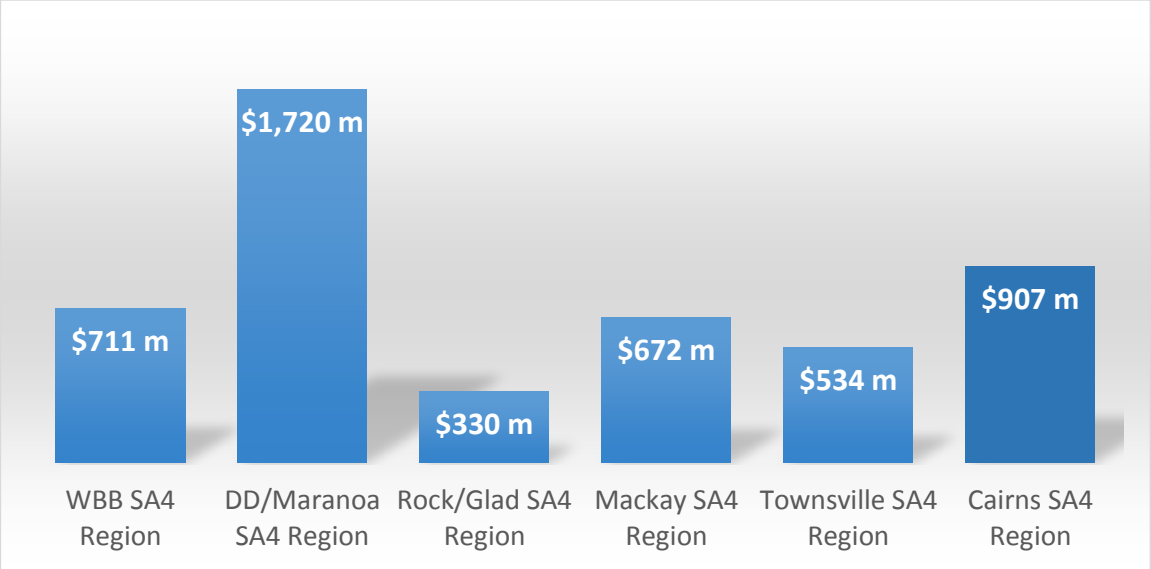


(1) Note: Cairns region defined as Far North Statistical Division 1982-83 to 2002-03 and Cairns SA Level 4 in 2012-13 $542m plus estimate of production Queensland Outback Far North $16m.

Source: Cummings Economics from ABS data.

The Cairns region now leads in crop production outside the Darling Downs / Maranoa region. However it is still underdeveloped compared with resource potential and new agricultural districts are currently opening up in the Gulf and Cooktown areas.

Chart #21: Gross Value of Crops, Queensland Regional Areas, 2012-13 $m



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

Marine resources

The Cairns region with the northern half of the Great Barrier Reef, the Torres Strait and Gulf, dominates Queensland's marine biological resources.

The Cairns region accounts for over 60 percent of Queensland's coastline and leads in fisheries production. Cairns has developed as one of the largest commercial fishing industry ports in Australia.

Diversified mining resources

While value of mining production in the Cairns region is lower than the Townsville, Mackay and Rockhampton / Gladstone hinterland 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.

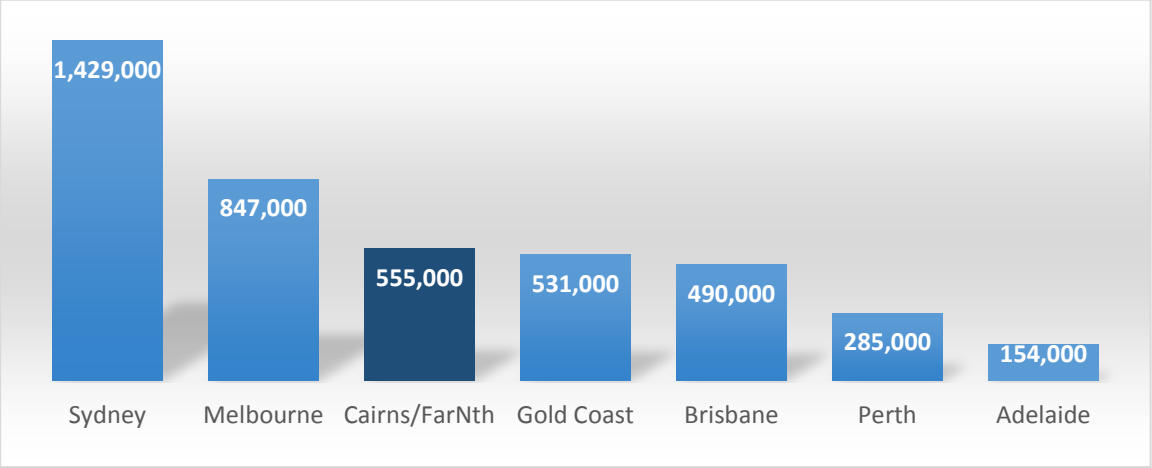
A foundation for leading tourism growth

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

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. In international holiday visitors, it leads the State and sits next to Sydney and Melbourne.

Chart #22: International Holiday Visitors to Australia – Leading Regions, 2012-13

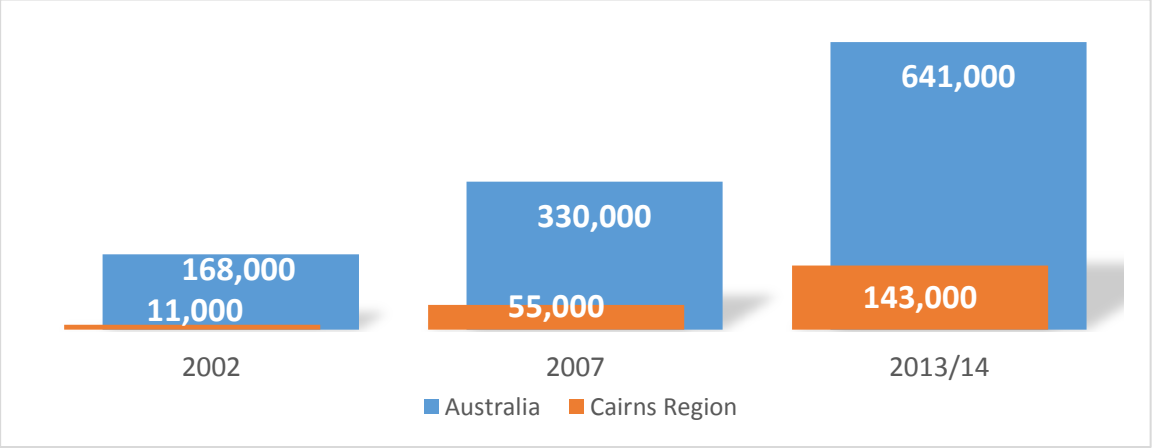


Source: Tourism Research Australia.

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 #23: Chinese Visitors to Australia and Cairns Region



Source: Tourism Research Australia.

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.

4.5 A strategic location

The world does not stop at Queensland's northern border or its western border. Cairns is Queensland's closest city 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.

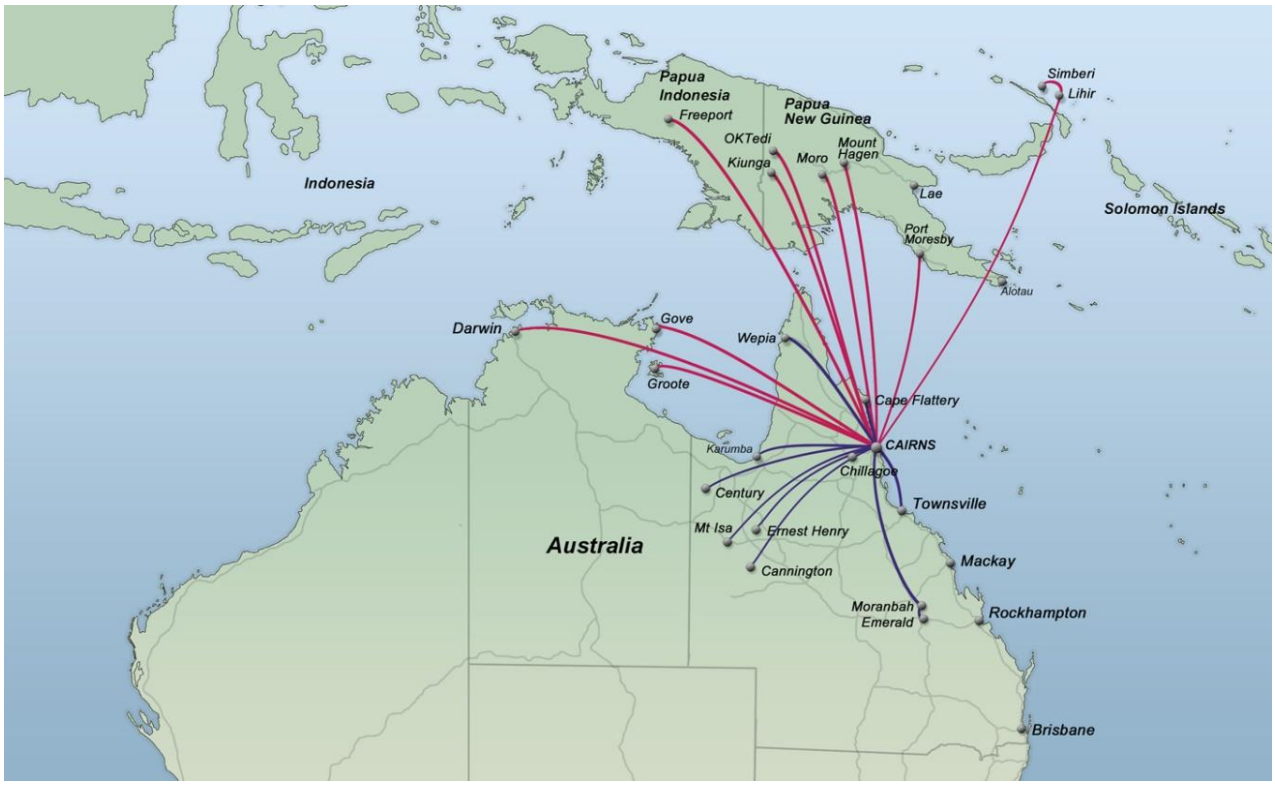
Cairns has substantial flying distance/time advantages over the major metropolitan centres of southern Australia. This not only helps its tourism development but also trade and business links and in fields like seafood exports and international education.

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.

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.

Indeed, 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 3 – Northern Australia Fly-in/Fly-out / Mining Services Hub



4.6 Diversified industry composition

Queensland'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 Queensland's regional development was heavily affected by pastoral development, especially sheep in the South and Central West, leading to the early development of Toowoomba, Rockhampton and Townsville. 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. 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 have fluctuations in markets, they are generally not as strong as world mineral price fluctuations.

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

Its agriculture is highly diversified, again with a substantial domestic market for its horticultural products.

Minerals and fisheries are diversified.

While not nearly as high as 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 Queensland regions other than Townsville.

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

Being the furthest 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.

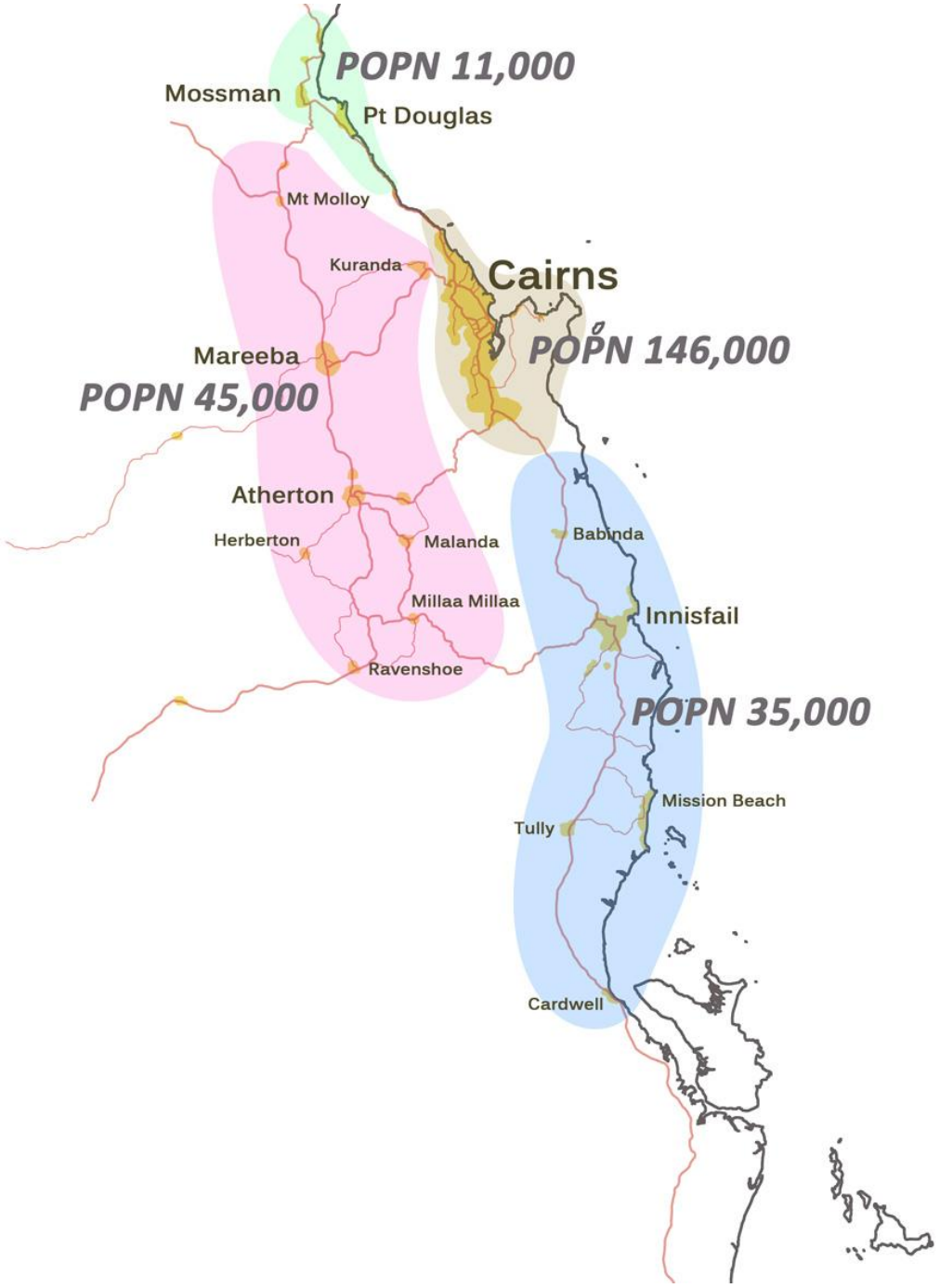
4.7 A core regional population and business concentration in the north

Immediate regional population

As a result of the foregoing influences, the Cains region has been developing as the core business region in the north of Queensland.

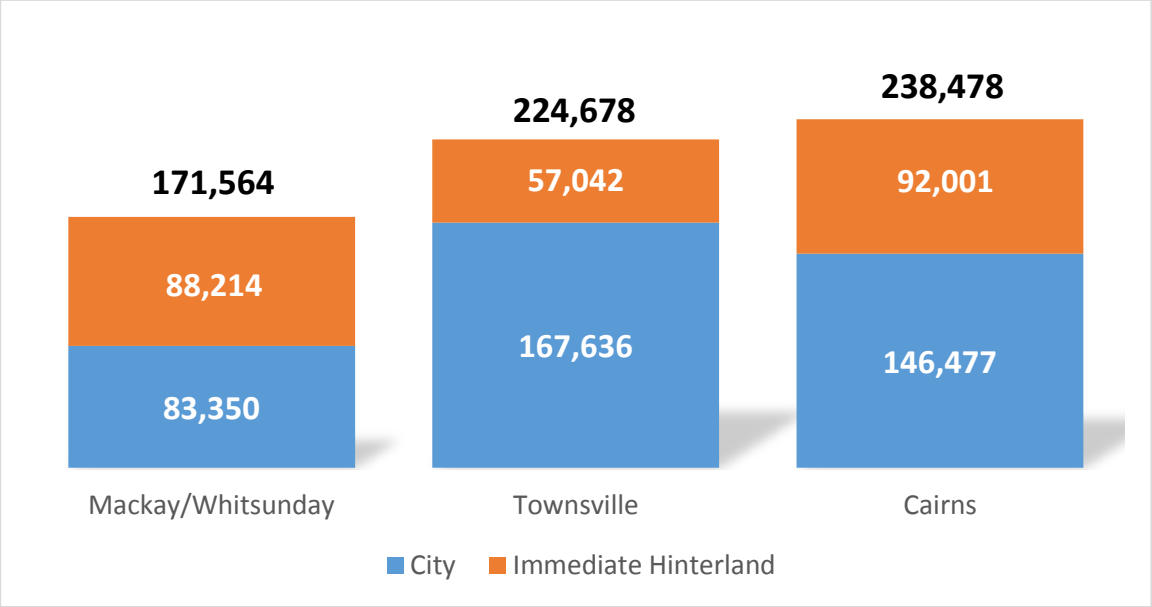
As **Map 4** illustrates, surrounding Cairns is a network of towns within a short drive (based especially on agricultural, marine industries and tourism), resulting in a concentration of population not found to the same extent around the other northern cities.

Map 4 – 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 #24: City and Immediate Regional Populations, 2011



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

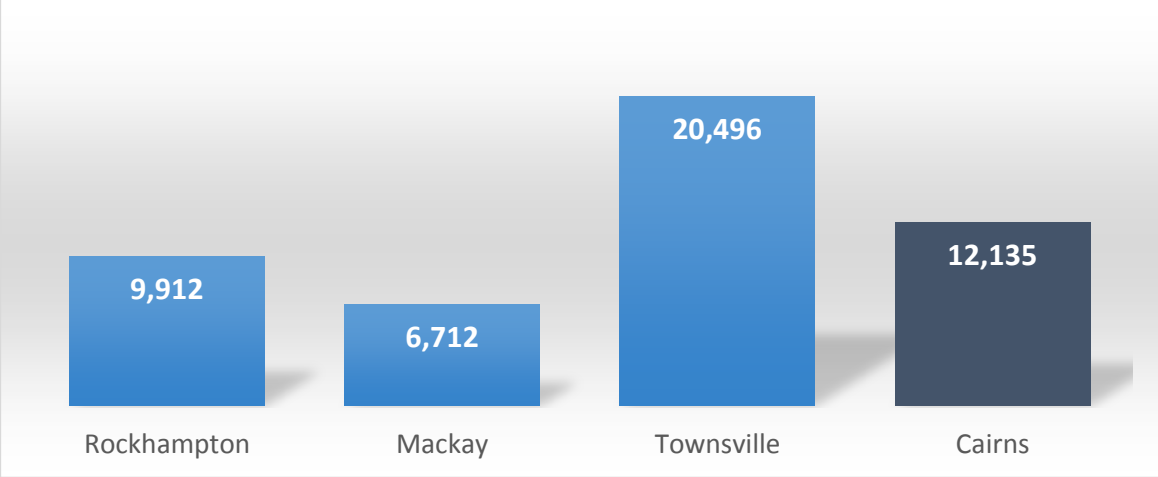
This large immediate hinterland population and the activity it generates can increase the market for Cairns based businesses and services.

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 DAFF office are on the Tablelands. The region's foundry is at Innisfail.

Influence of government employment

Townsville's city population in relation to the other regional cities is especially boosted by government employment.

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

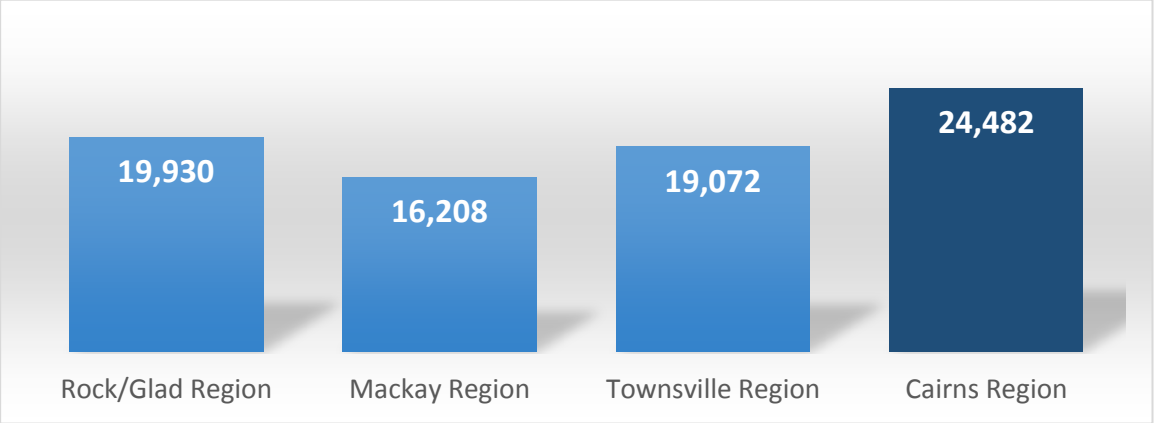


Source: Cummings Economics from ABS Census 2011.

Leadership in business

The leading 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 #26: Number of Businesses – Queensland Northern Regions, 2012



Source: Cummings Economics from ABS 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, education, health and arts and entertainment gives an indication of the strength and depth of the Cairns region's leading business and services role in Queensland's 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 and latest statistics available indicate that it is close up behind Rockhampton/Fitzroy and Townsville regions with their larger mineral and primary processing units, in employment and turnover.

Table #27: Manufacturing in Northern Australia, 2006/07[(1)]

Regions [(2)]	Number of locations	Employment	Sales of goods & services
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.*
(1) Note: Latest available. *(2) Note: Statistical Division boundaries.*
Source: Cummings Economics from Australian Bureau of Statistics Cat. 82210DO010.

Table #28: Number of Businesses by Industry - Manufacturing, 30th June 2012

	Manufacturing
Cairns Region (SA4)	841
Townsville Region (SA4)	606
Mackay Region (SA4)	519
Fitzroy Region (SA4)	563

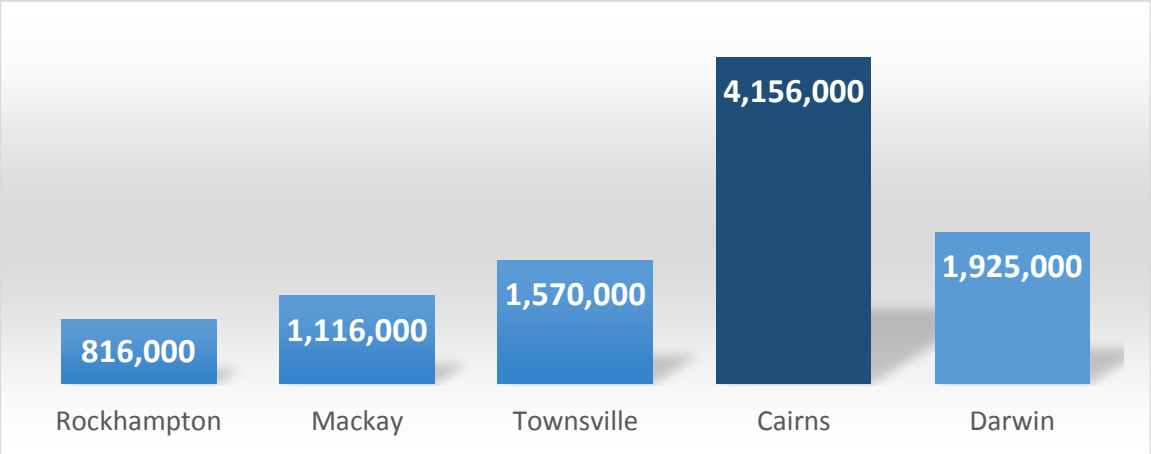
Source: Cummings Economics from Australian Bureau of Statistics Regional Statistics.

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

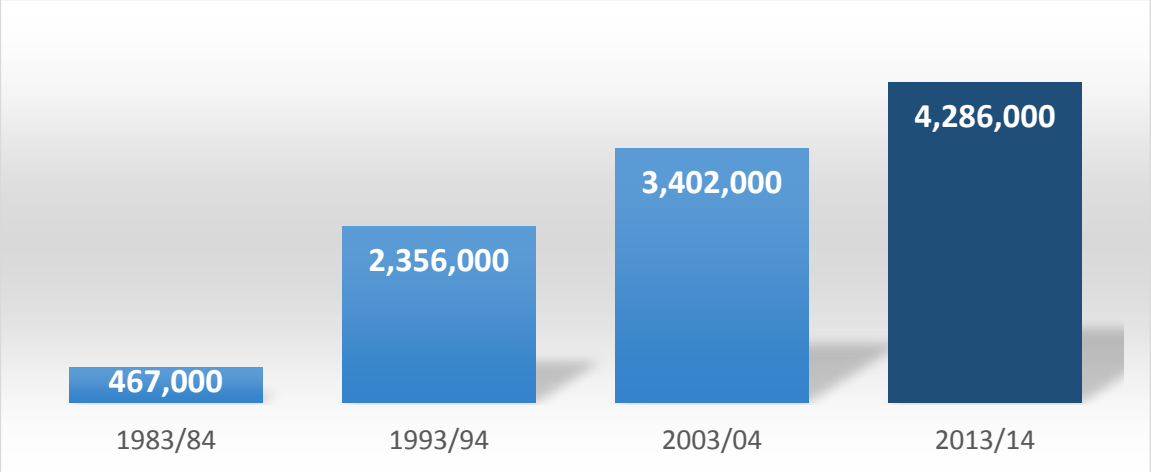
Population, tourism and strategic location, leads Cairns to being the major airport hub in the north with direct international links to 11 cities in the Asia / Pacific region.

Chart #29: Passenger Movements Airports – Tropical Australia, 2012-13



Source: Bureau of Industry Transport and Regional Economics.

Chart #30: Growth in Passenger Movements – Cairns International Airport



Source: Cummings Economics / 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 Queensland's major aircraft servicing centre outside South East Queensland, drawing business also from the wider Asia Pacific region and including the leading aviation training centre outside South East Queensland.

Table #31: Estimated Value of Airport Operations – Cairns Airport, 2010-11

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

Source: Cairns Airport Pty Ltd / Cummings Economics.

Marine activity

The Cairns region's 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 #32: Tonnage Loaded and Unloaded - Seaports by Regions, 2012-13

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

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

Cairns seaport is also home to important coastal shipping operations to the near north as well as Australia's largest tourism fleet, one of Australia's largest fishing fleets and Australia's north eastern naval base. This large fleet in national terms is backed up by three slipway operations and the largest marine servicing activity sector in Queensland outside the south-east corner. It also draws business from the nearby Asia Pacific region and includes the major marine training centre outside the south-east corner.

Table #33: Estimated Value of Port Related Operations – Cairns Seaport, 2013-14

Output Value	**$830 m**
Direct Employment	**3,800**

Source: Ports North / Cummings Economics.

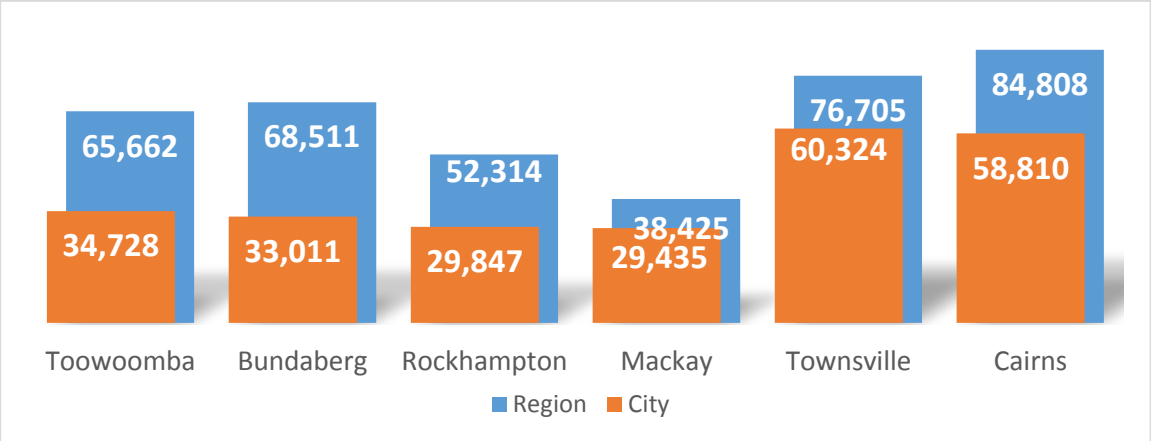
Education

With its overseas air service networks and lifestyle advantages, Cairns is the leading location in Queensland outside the south-east corner for international education establishments. Its previously under-developed university sector is now one of the fastest growing in Queensland with a second university campus now under development.

Health

The Cairns region is the largest outside the south-east corner for hospital admissions.

Chart #34: Admitted Episodes of Care – Queensland Main Regional Hospitals and Regions, 2013-14

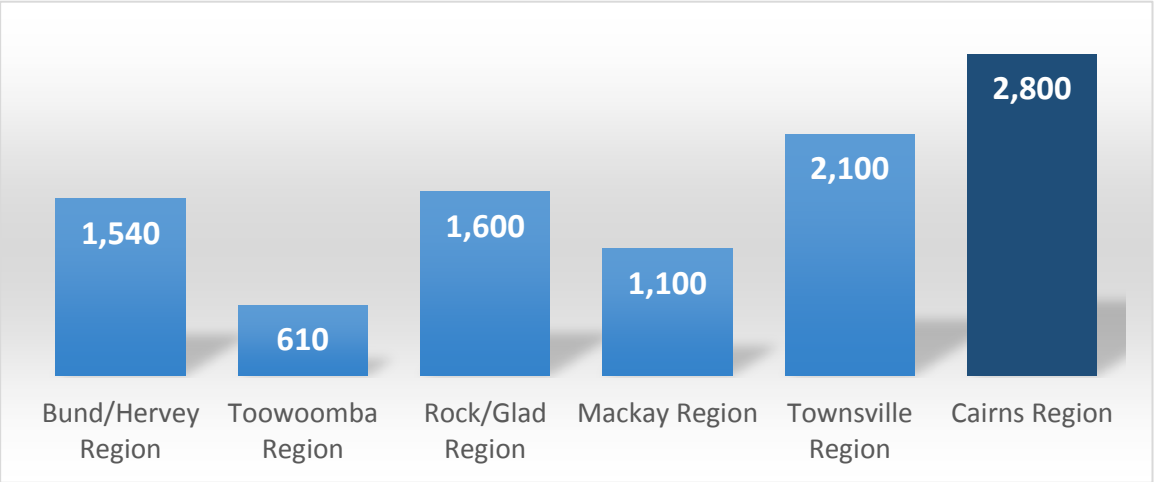


Source: Queensland Health.

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.

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



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

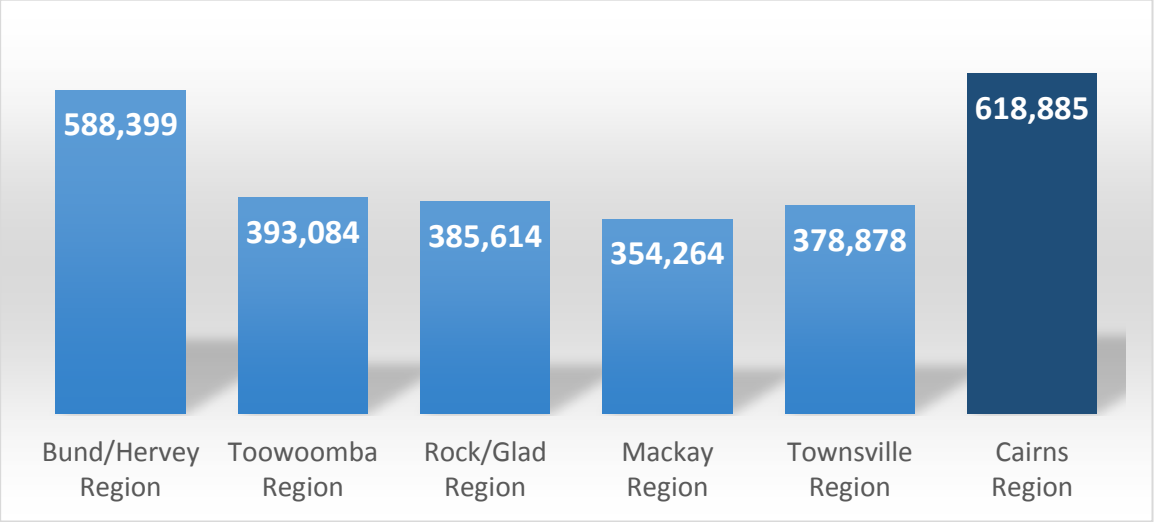
5.0 PROJECTING FORWARD

It can be expected that the type of underlying influences that have driven long-term regional growth in the past are likely to continue into the future.

Regional populations

On the long-term growth trajectory of the 35 years 1976 to 2011, it can be expected that the Cairns and Wide Bay Burnett regions would pull away and by 2050 be the largest by a substantial margin, each with a population larger than Tasmania's current population.

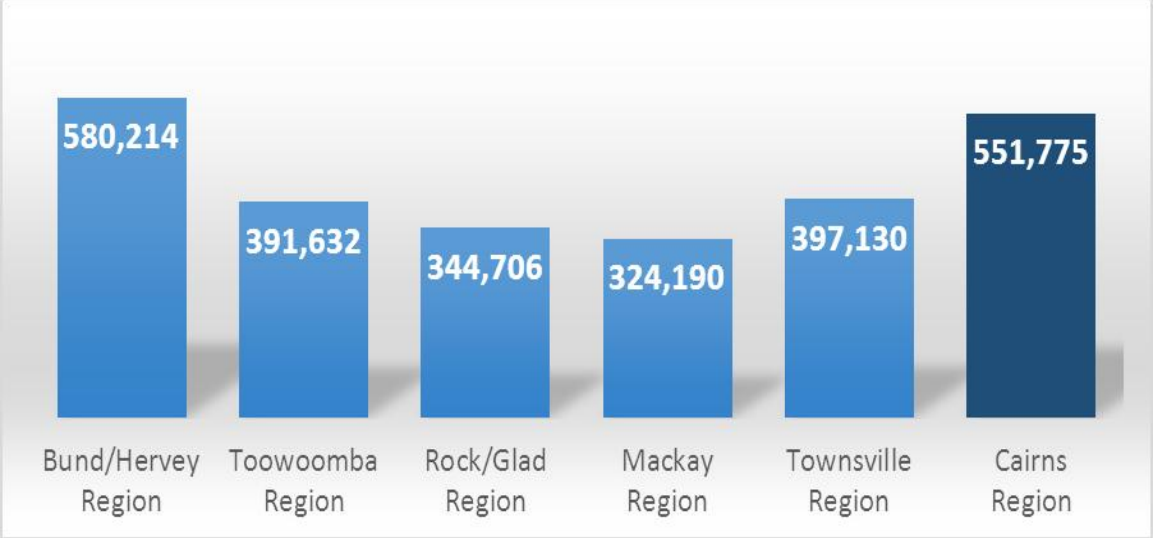
Chart #36: Projected Residential Population - 2050, Qld Regions (based on growth rate 1976-2011)



Source: Cummings Economics from ABS data.

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

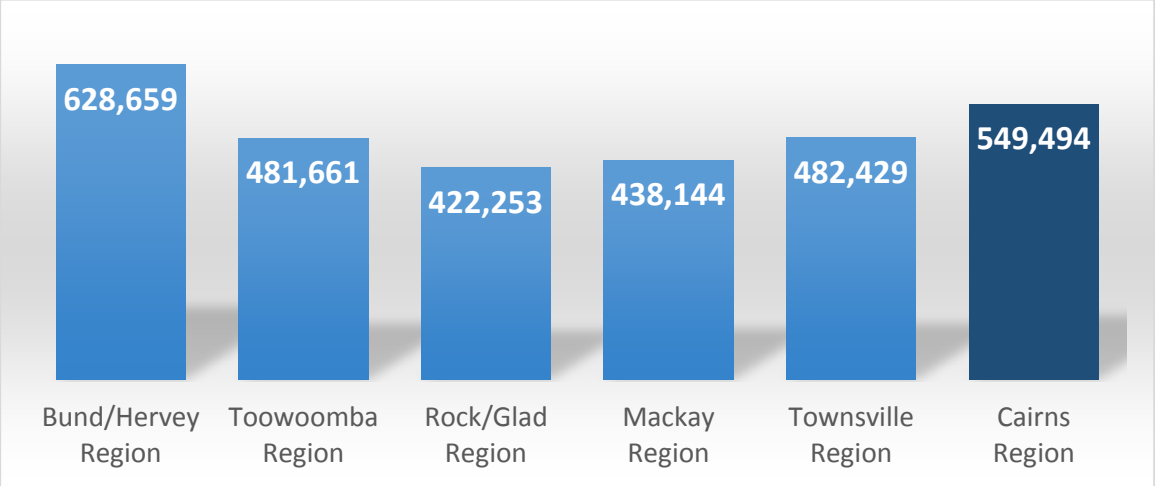
Chart #36: Projected Residential Population - 2050, Qld Regions (based on growth rate 1991-2011)



Source: Cummings Economics from ABS data.

On the growth trajectory of the 10 years, 2001-2011, Cairns region and Wide Bay Burnett would be the largest but the other regions closer up towards them.

Chart #37: Projected Residential Population - 2050, Qld Regions (based on growth rate 2001-2011)



Source: Cummings Economics from ABS data.

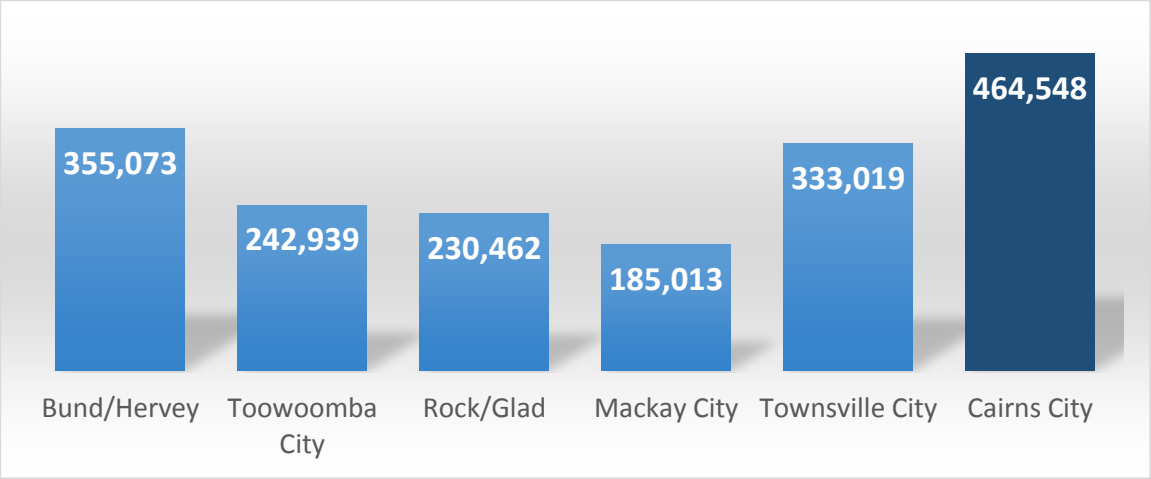
The projections indicate that on past growth trajectories, by 2050, the regions could be expected to have the following range of populations.

Bundaberg / Hervey Region	580 – 630,000
Cairns Region	550 – 620,000
Toowoomba Region	390 – 480,000
Townsville Region	380 – 480,000
Mackay Region	320 – 440,000
Rockhampton Gladstone Region	320 – 420,000

City populations

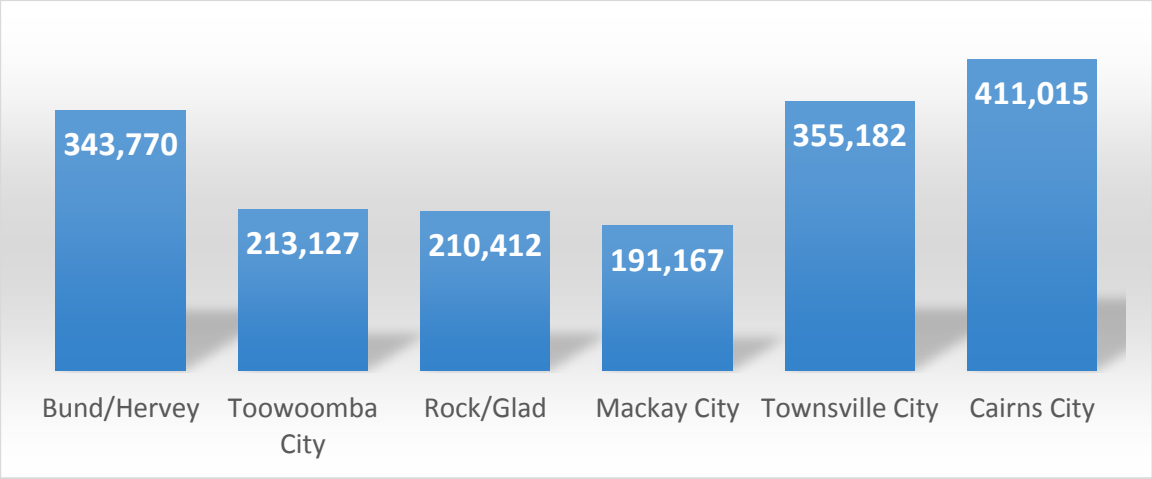
The following charts show projected city populations by 2050 based on past 35 years', 20 years' and 10 years' growth rates.

Chart #38: Projected Residential Population - 2050, Qld Regional Cities (based on growth rate 1976-2011)



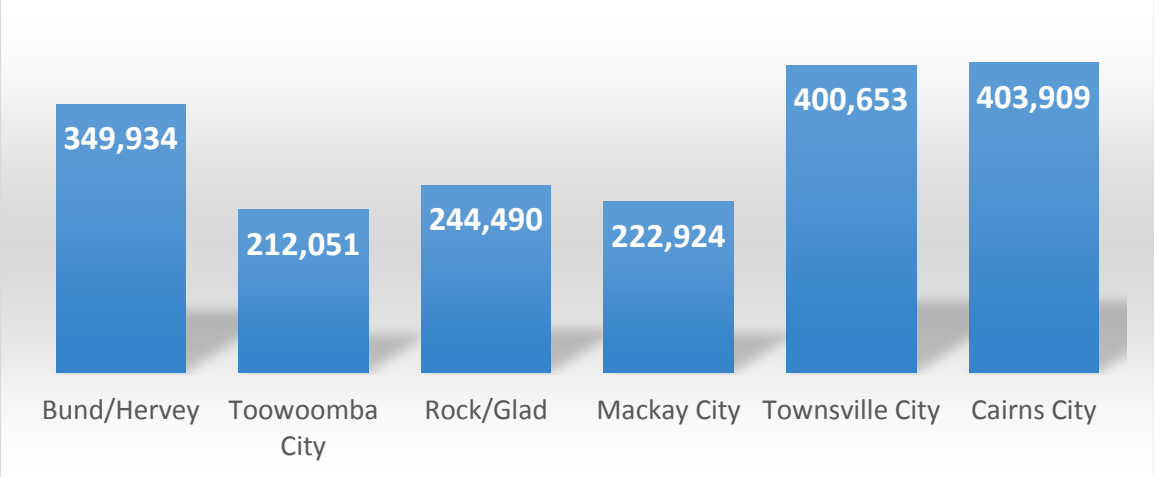
Source: Cummings Economics from ABS data.

Chart #39: Projected Residential Population - 2050, Qld Regional Cities (based on growth rate 1991-2011)



Source: Cummings Economics from ABS data.

Chart #40: Projected Residential Population - 2050, Qld Regional Cities (based on growth rate 2001-2011)



Source: Cummings Economics from ABS data.

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

Cairns	400 – 460,000
Townsville	330 – 400,000
Bundaberg / Hervey	330 – 350,000
Toowoomba	210 – 240,000
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 remain ahead of the combined Bundaberg / Hervey Bay / Maryborough populations.

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.

Bundaberg Region – Wide Bay Burnett Statistical Division.

Toowoomba Region – Darling Downs and South West 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.

Bundaberg, Hervey Bay, Maryborough – 1976 to 1990 Bundaberg, Hervey Bay and Maryborough SLAs. 1991 to 2011 Bundaberg, Hervey Bay and Maryborough SA Level 3s.

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)

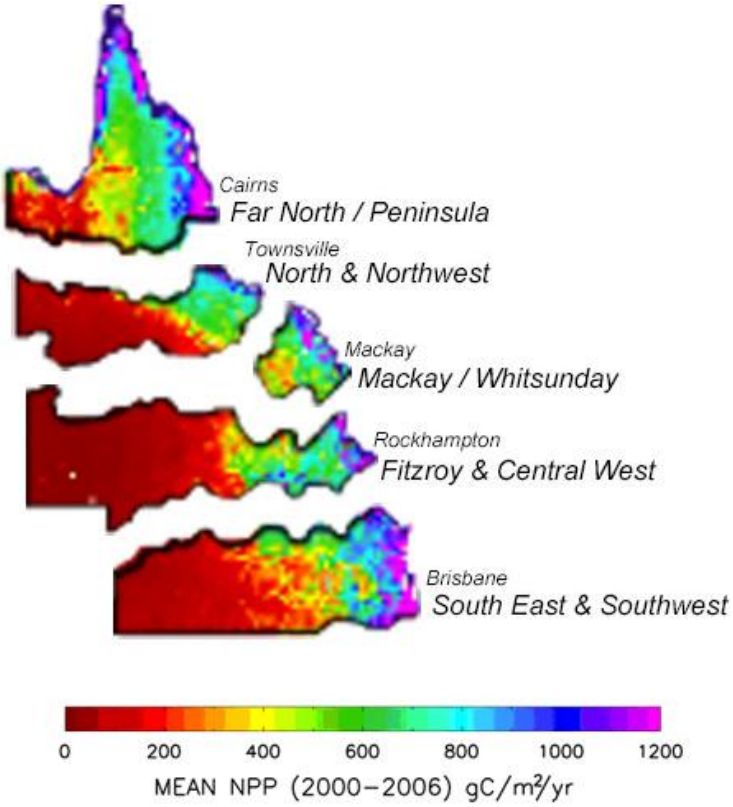
Rockhampton – Fitzroy SA4 (equivalent pre 2011 Fitzroy SD)

Bundaberg – Wide Bay Burnett SA4 (equivalent pre 2011 Wide Bay Burnett SD)

Toowoomba – Darling Downs SD

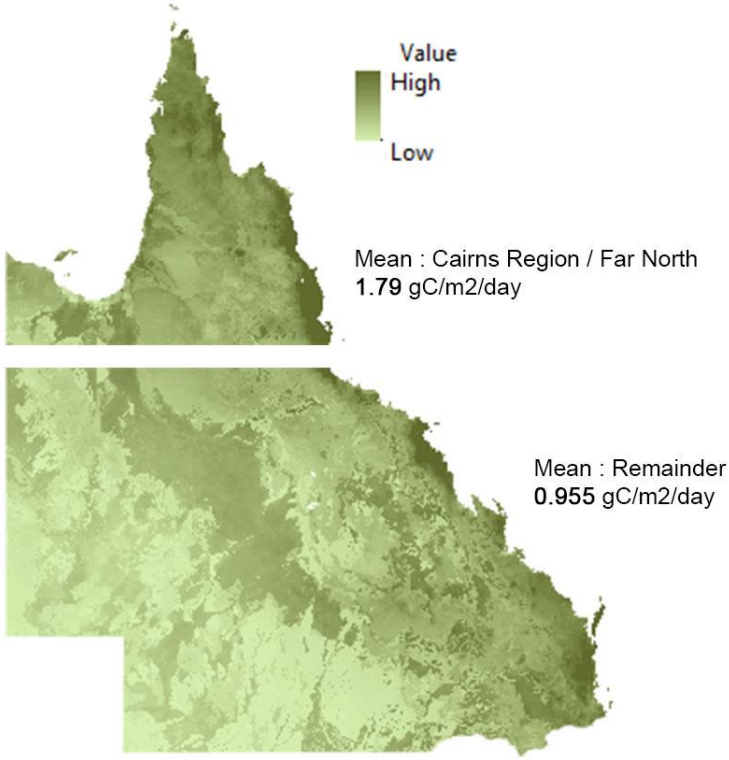
APPENDIX 2

Queensland Regions – Indicator of Plant Growth
Net Primary Productivity – Rate of Carbon Absorption by Plant Growth)



Source: University of Montana, Numerical Terradynamic Simulation Group from Modis Satellite Data.

Queensland - Estimates of NPP–Net Primary Productivity
(Absorption of Carbon by Plant Growth)



Source: CSIRO.

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.

W S Cummings B Econ
38 Grafton St (PO Box 2148) Cairns Q 4870
Phones **07 4031 2888 / 0418 871 011**
Email **cummings@cummings.net.au**
Website **www.cummings.net.au**
CUMMINGS ECONOMICS
ABN: 99 734 489 175

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.

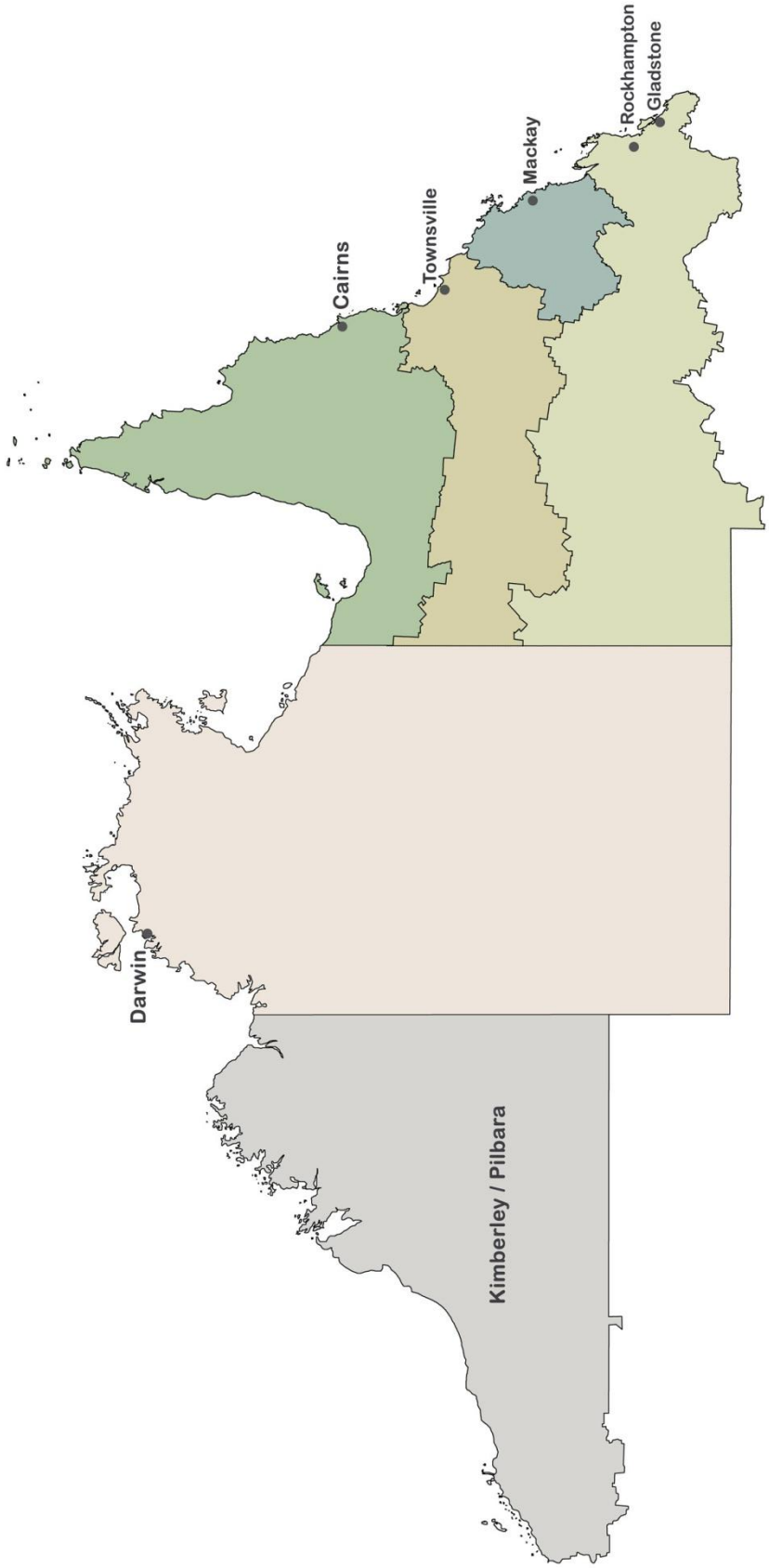
City population boundaries can be complicated to define. Up until 2011, fairly clear city Statistical Districts were being defined by Australian Bureau of Statistics that were reasonably comparable. For this paper, these Statistical District boundaries are used. While the boundaries used can be argued 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

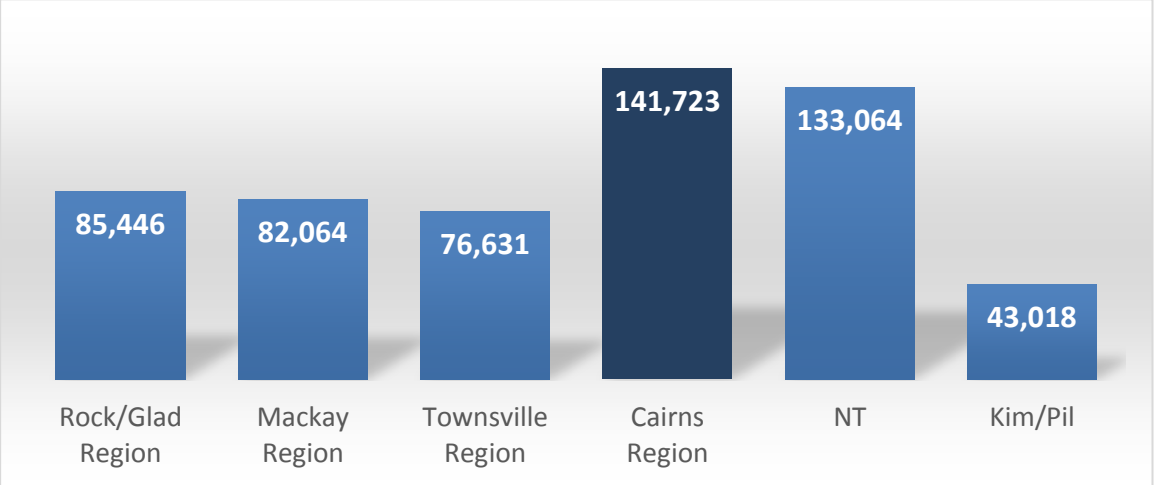


3.0 LONG-TERM POPULATION GROWTH PATTERNS

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.

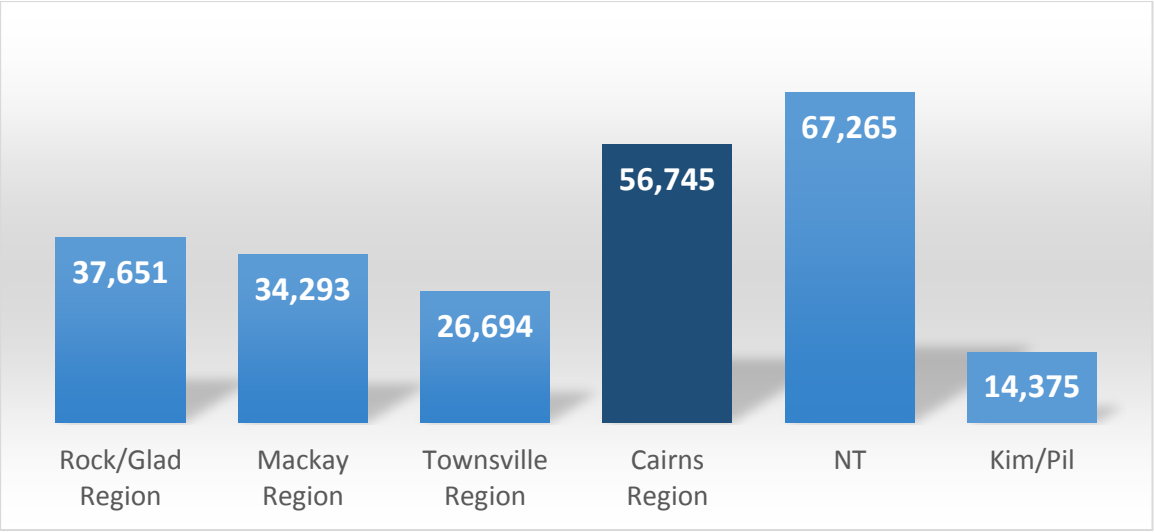
Chart #1: Long-term 35-year Increase in Regional Residential Population, Northern Australia Regions, 1976-2011



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.

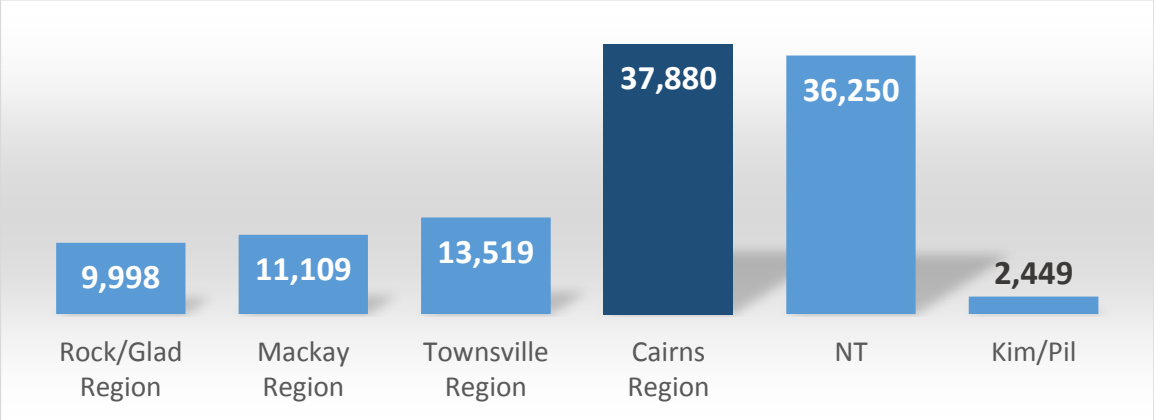
Chart #2: Long-term 15-year Increase in Residential Population Northern Australia Regions, 1976-1991



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.

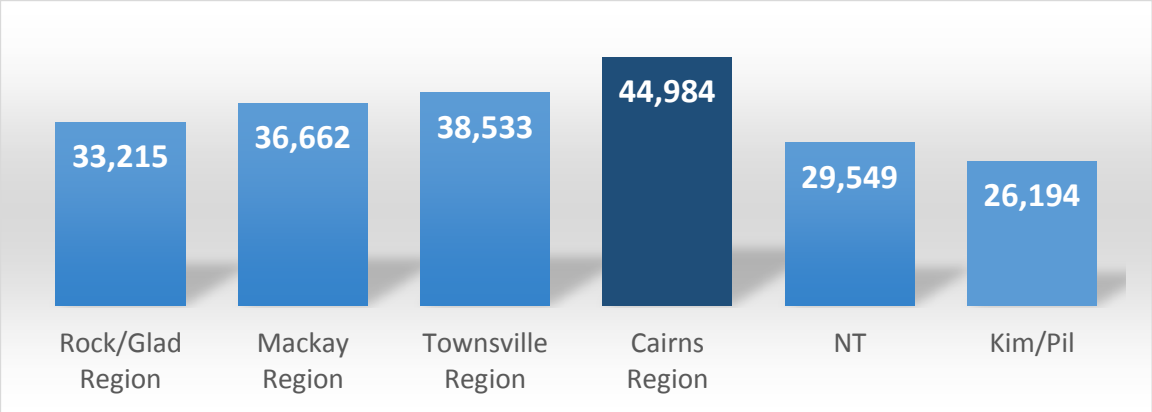
Chart #3: Long-term 10-year Increase in Residential Population, Northern Australia Regions, 1991-2001



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.

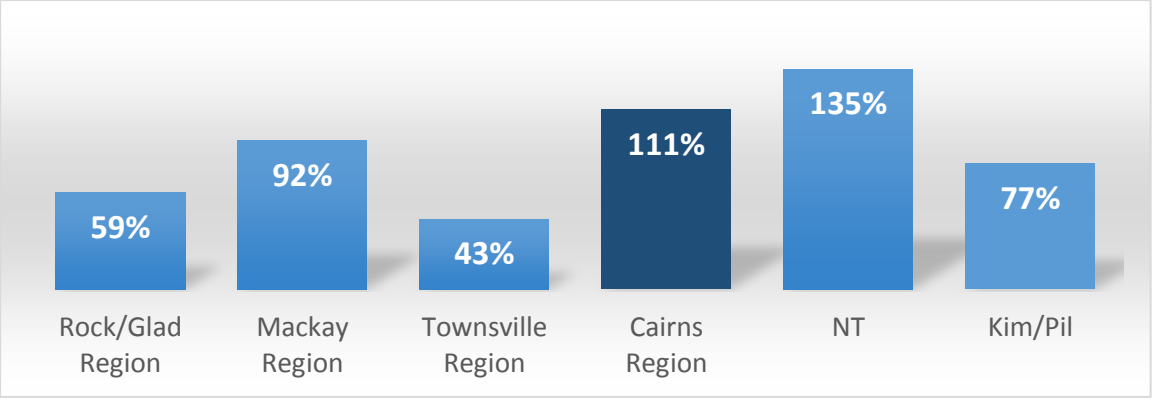
Chart #4: Long-term 10-year Increase in Residential Population, Northern Australia Regions, 2001-2011



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

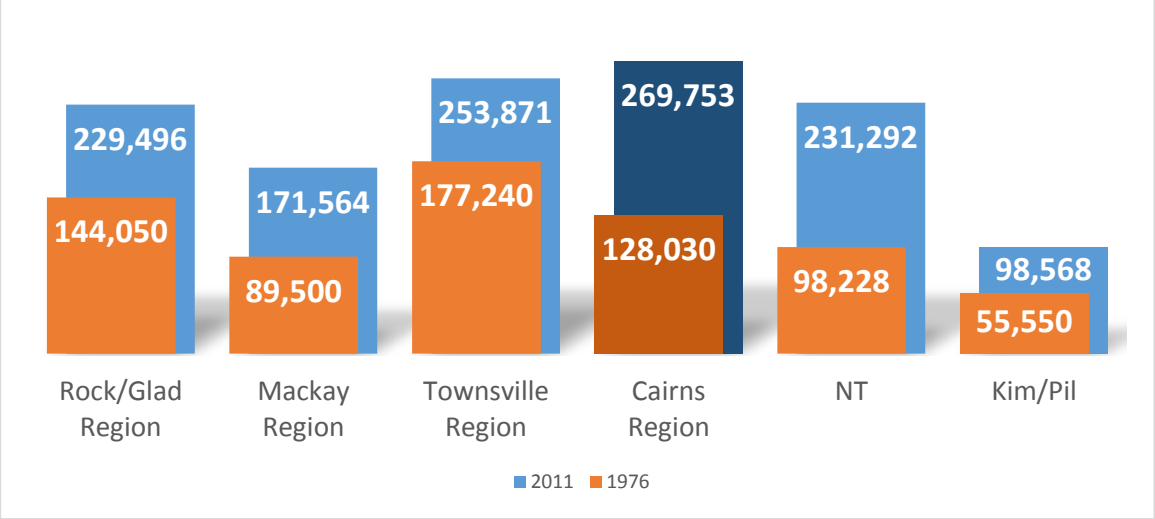


Source: Cummings Economics from ABS Cat No. 3218.0 et al.

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.

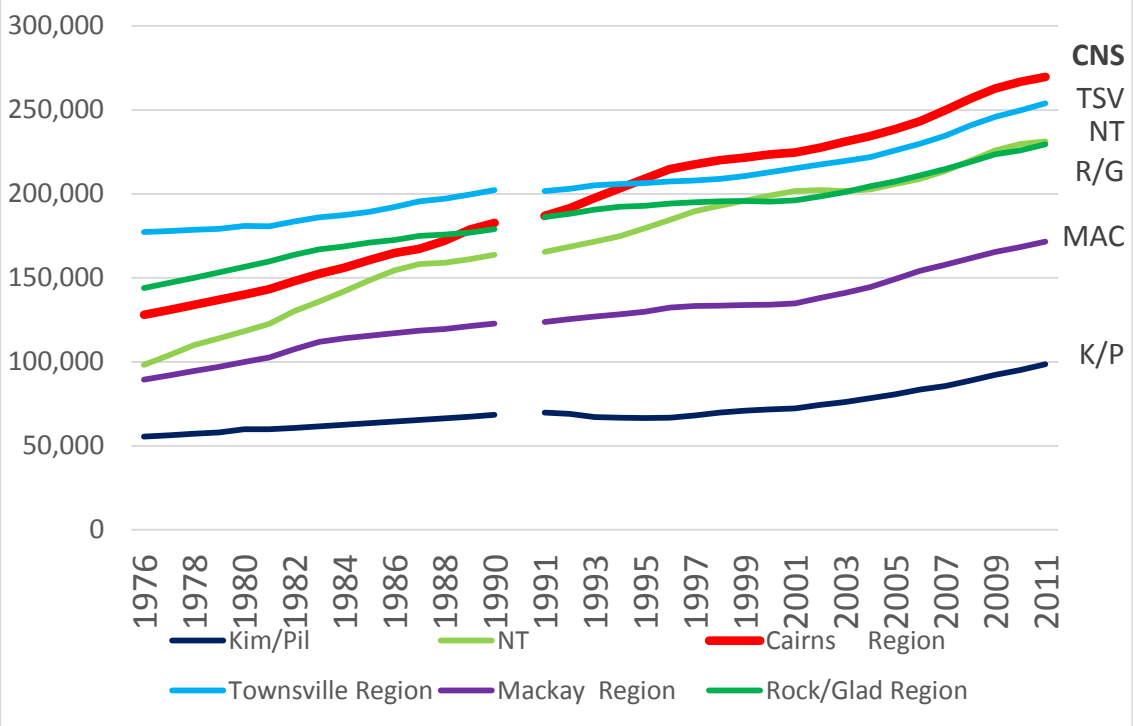
Chart #6: Residential Population, Northern Australia Regions, 1976 and 2011



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

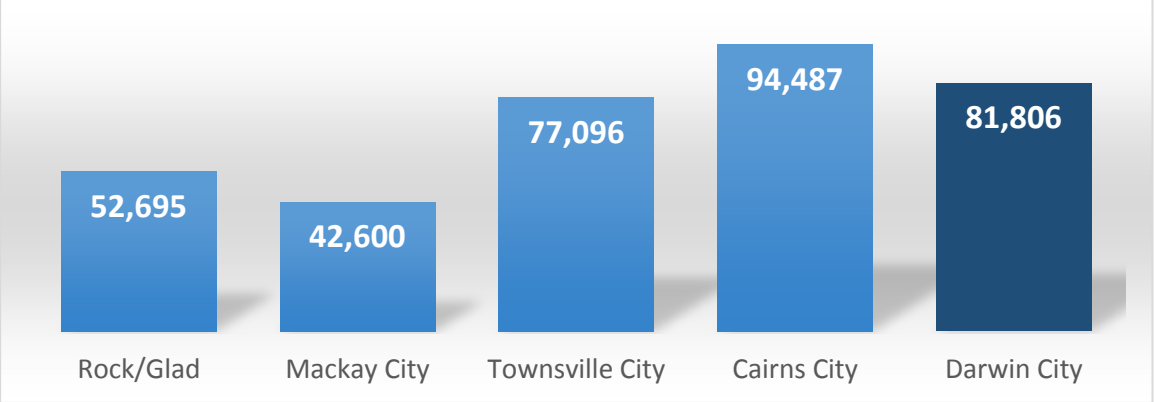


Note: The break 1990-1991 indicates a break in series in some cases involving minor changes in definition of area (see Statistical Notes, Appendix 1).
Source: Cummings Economics from ABS Cat No. 3218.0 et al.

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.

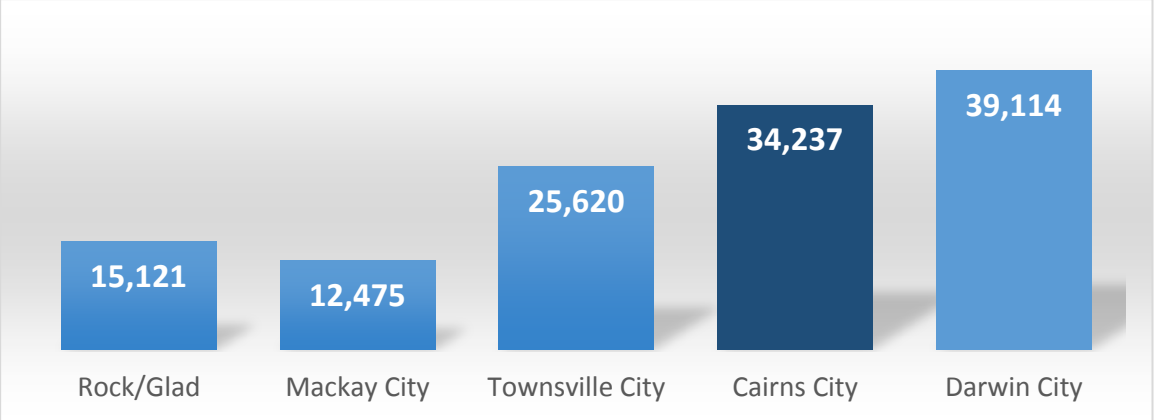
Chart #8: Long-term 35-year Increase in Residential Population, Northern Australia Cities, 1976-2011



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.

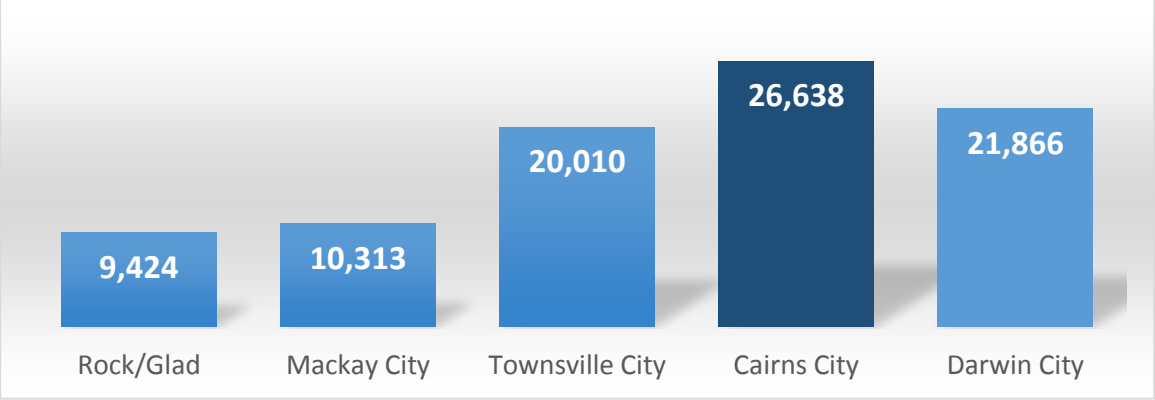
Chart #9: Long-term 15-year Increase in Residential Population, Northern Australia Cities, 1976-1991



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

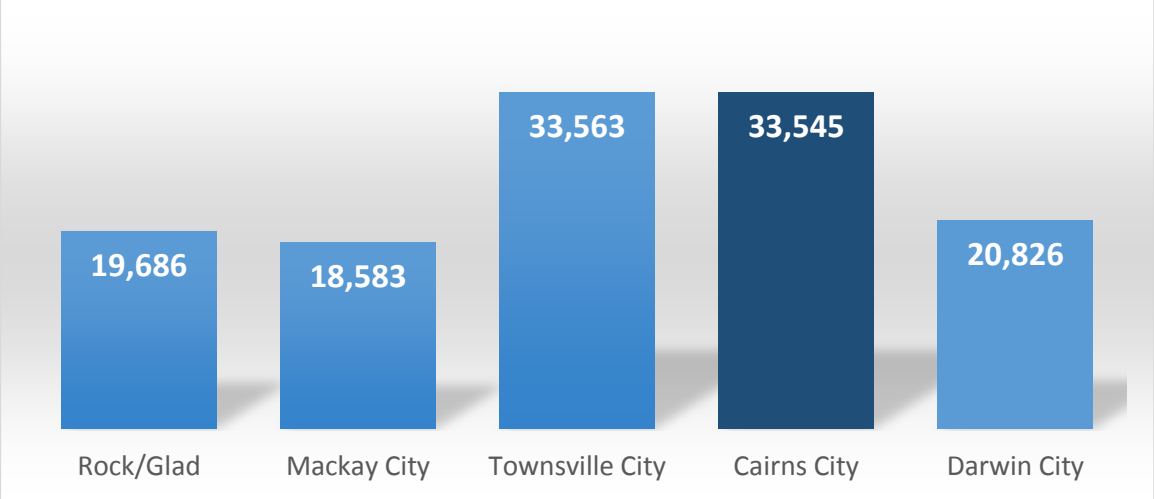


Source: Cummings Economics from ABS Cat No. 3218.0 et al.

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.

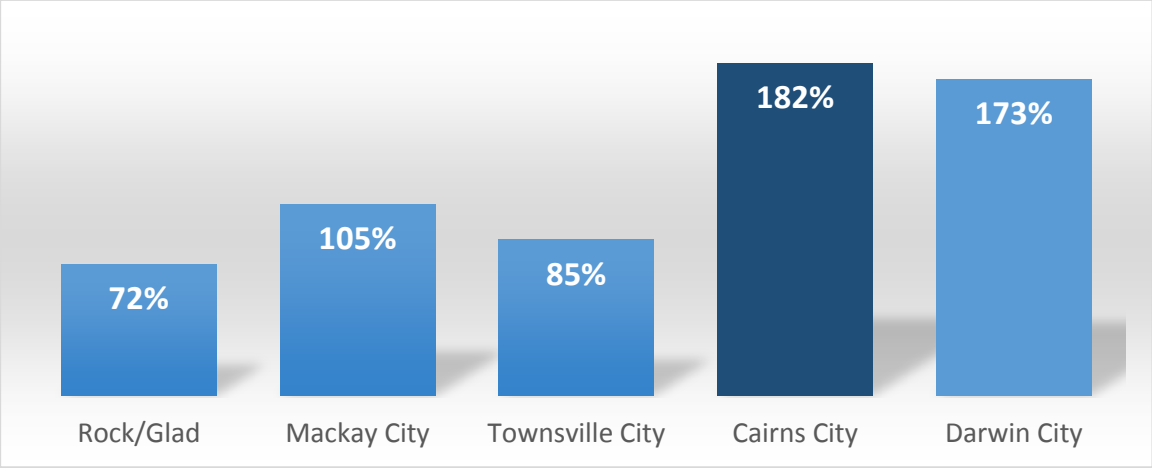
Chart #11: Long-term 10-year Increase in Residential Population, Northern Australia Cities, 2001-2011



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

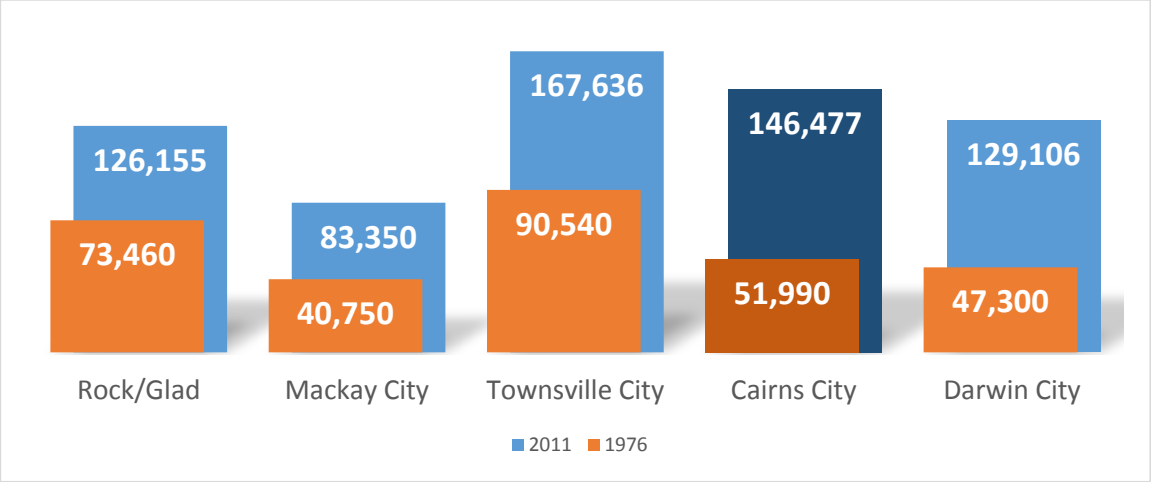


Source: Cummings Economics from ABS Cat No. 3218.0 et al.

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.

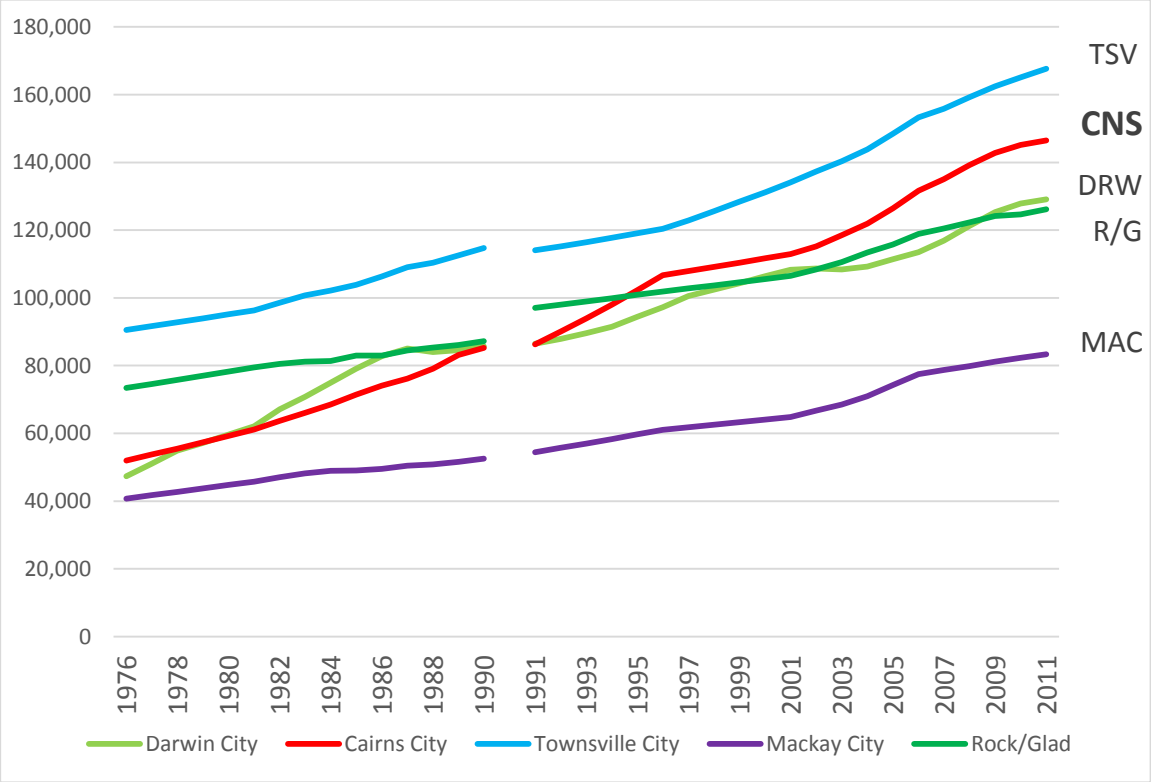
Chart #13: Residential Population Sizes, Northern Australia Cities, 1976 and 2011



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

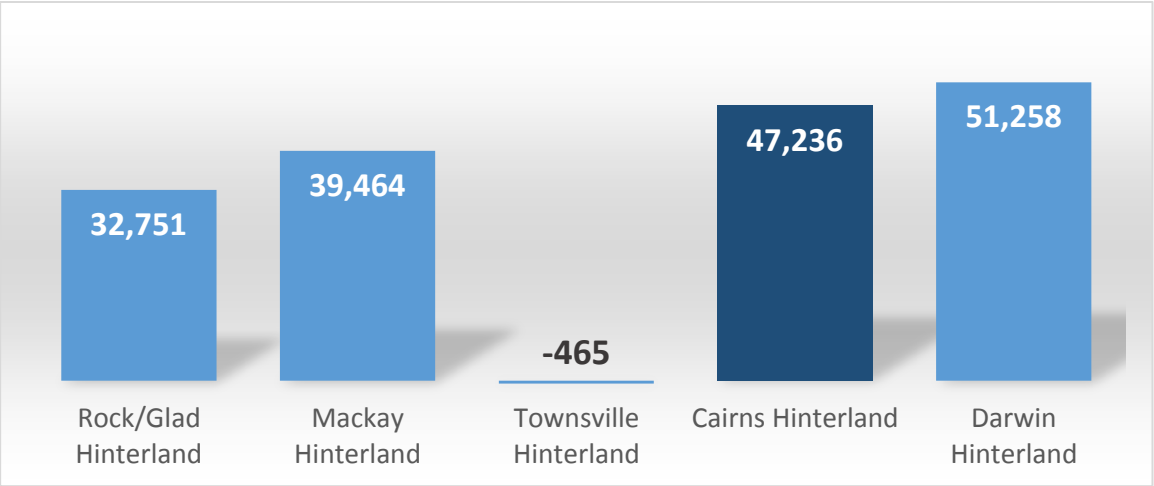


Source: Cummings Economics from ABS Cat No. 3218.0 et al.

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.

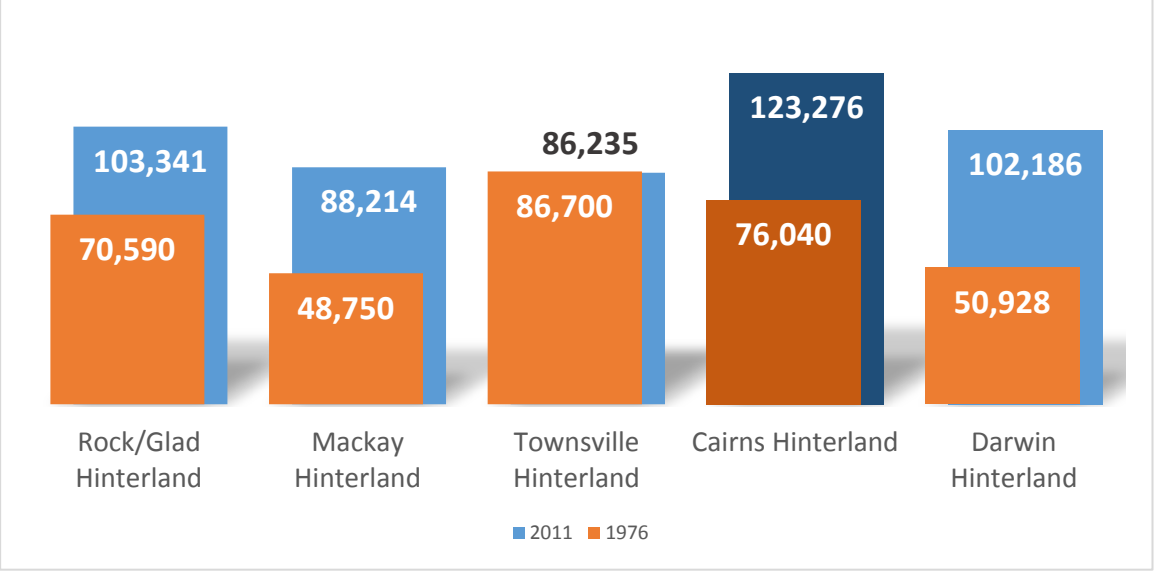
Table #15: Long-term 35-year Increase in Hinterland Populations of Northern Australia Cities, 1976-2011



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

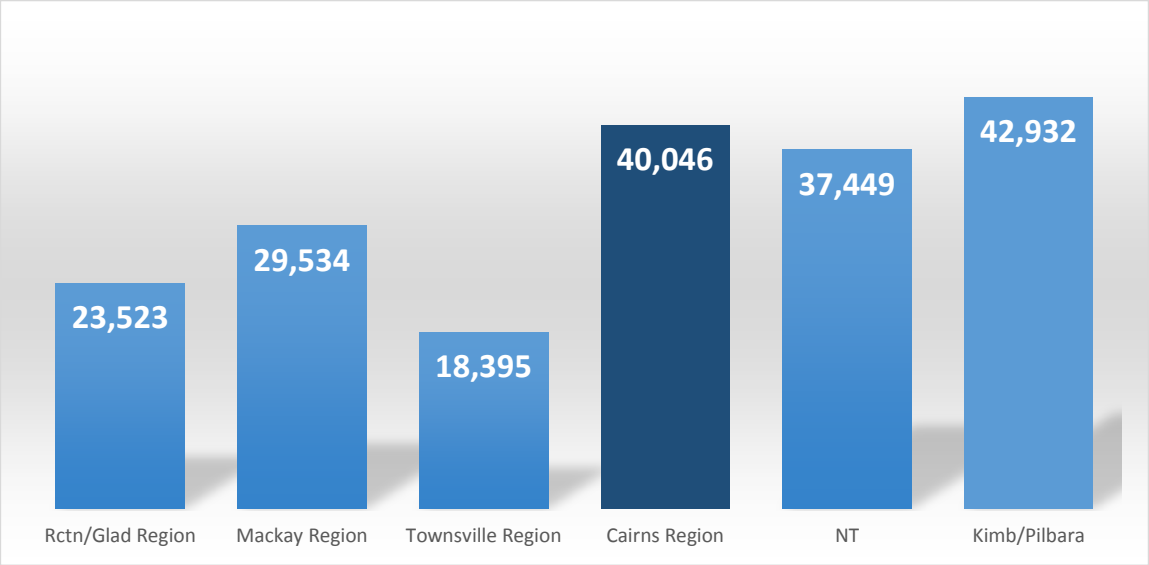


Source: Cummings Economics from ABS Cat No. 3218.0 et al.

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.

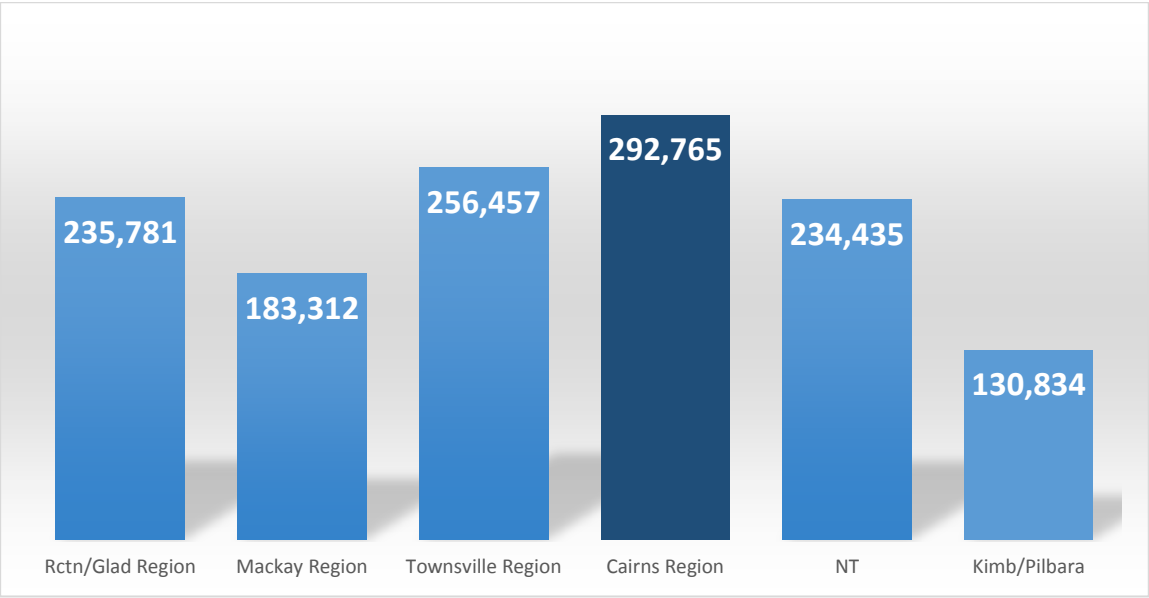
Chart #17: Visitor Numbers[(1)], Regions of Northern Australia, 2011 Census



[(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.)

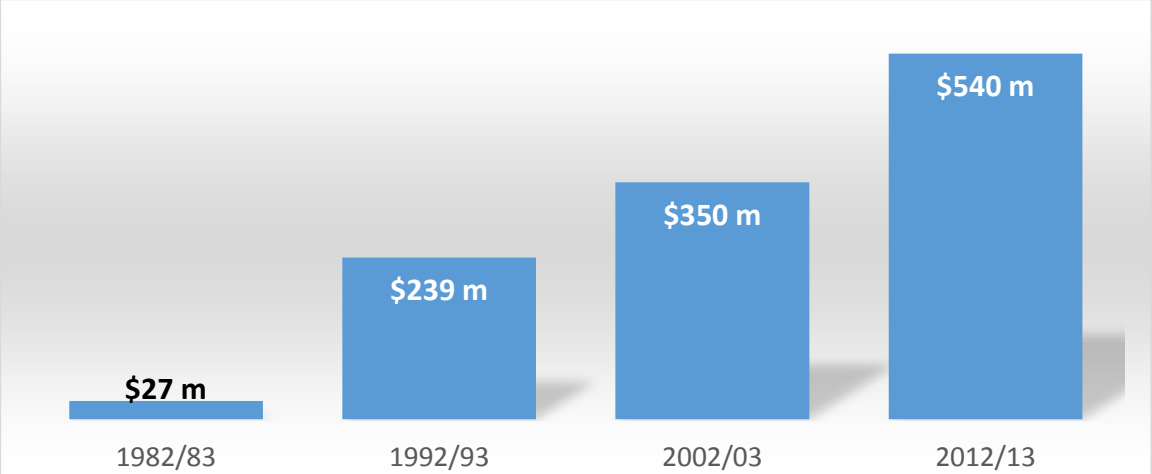
Modelling CSIRO data indicates that average plant growth per square metre is higher in tropical Australia, as measured by absorption of carbon from the atmosphere, than southern Australia. In the Cairns region, it is almost double the remainder of Queensland and of tropical Australia in general.

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)]

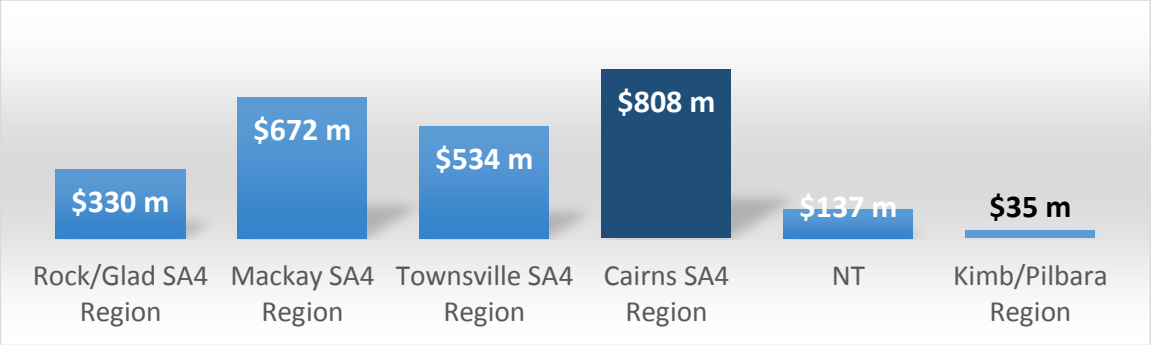


(1) Note: Cairns region defined as Far North Statistical Division 1982-83 to 2002-03 and Cairns SA Level 4 in 2012-13 $542m plus estimate of production Queensland Outback Far North $16m.

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.

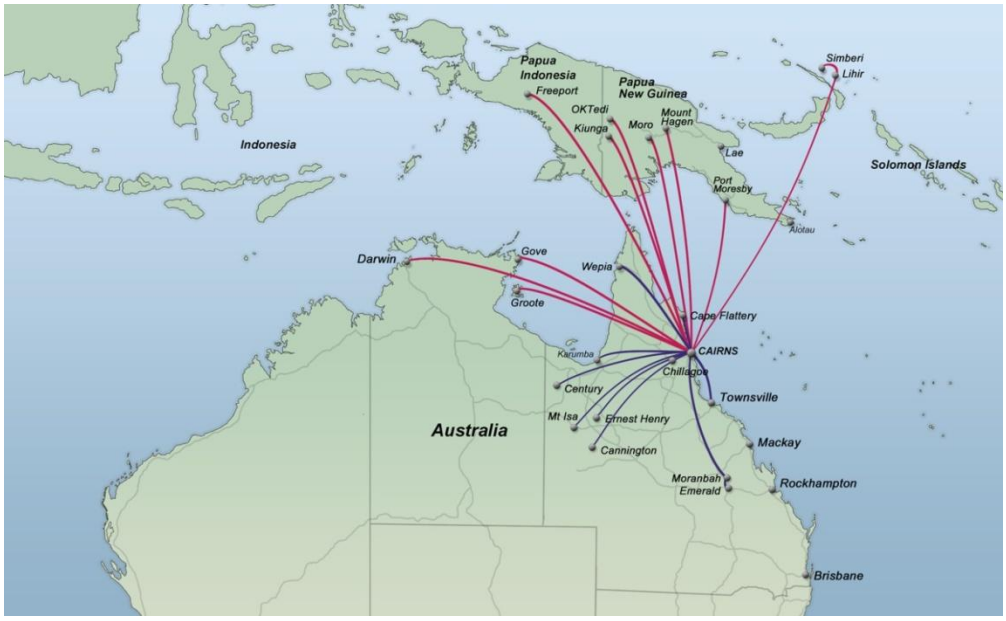
Diversified mining resources

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



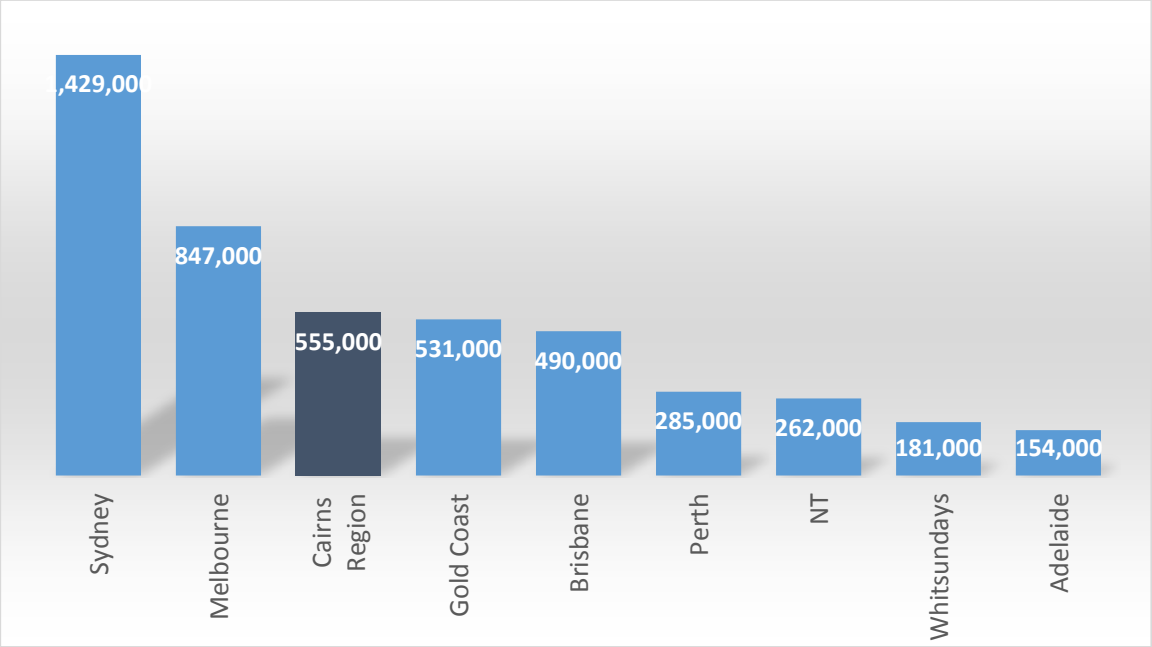
A foundation for leading tourism growth

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



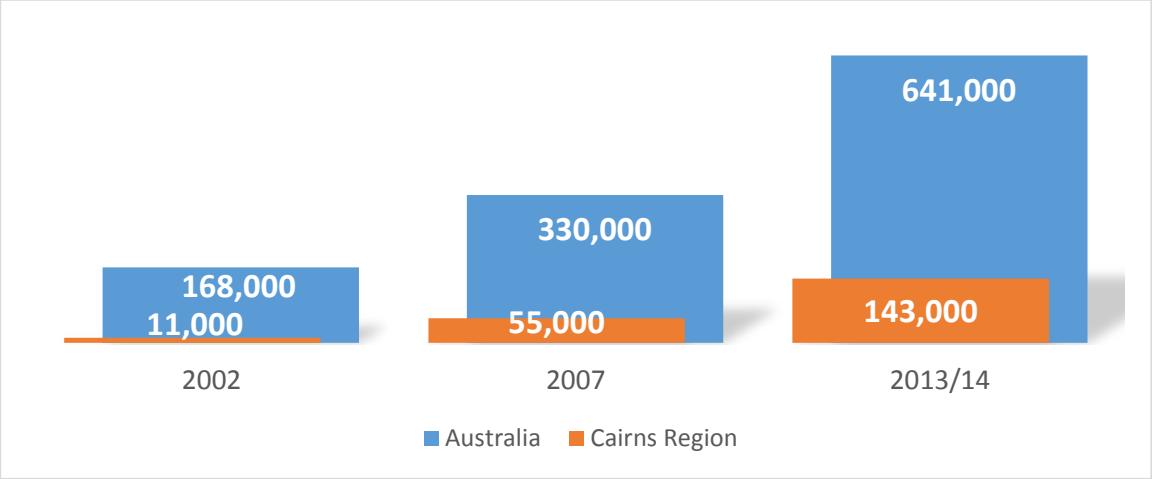
Source: Tourism Research Australia, International Visitor Survey.

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.

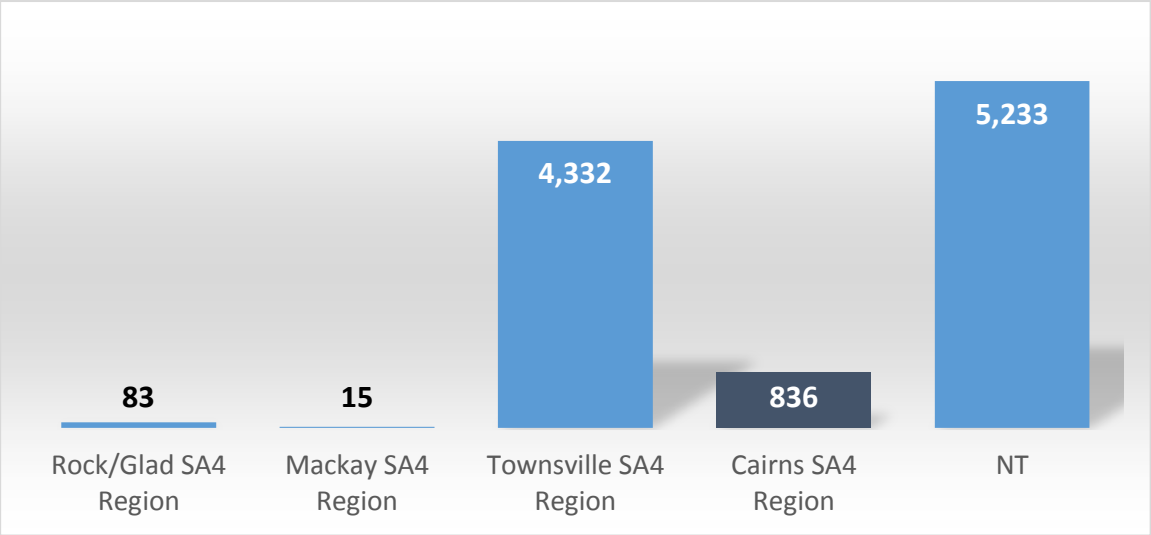
Map 3 – Regular International Air Services

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.

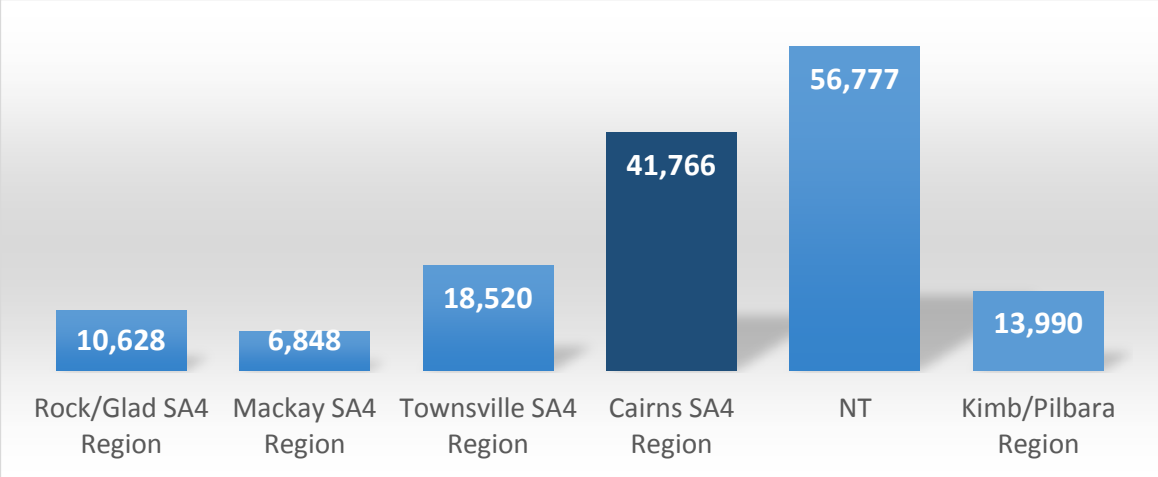
Similar to the Cairns region, relatively large agricultural and tourism sectors have strengthened employment and population growth in the Mackay / Whitsunday region.

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.

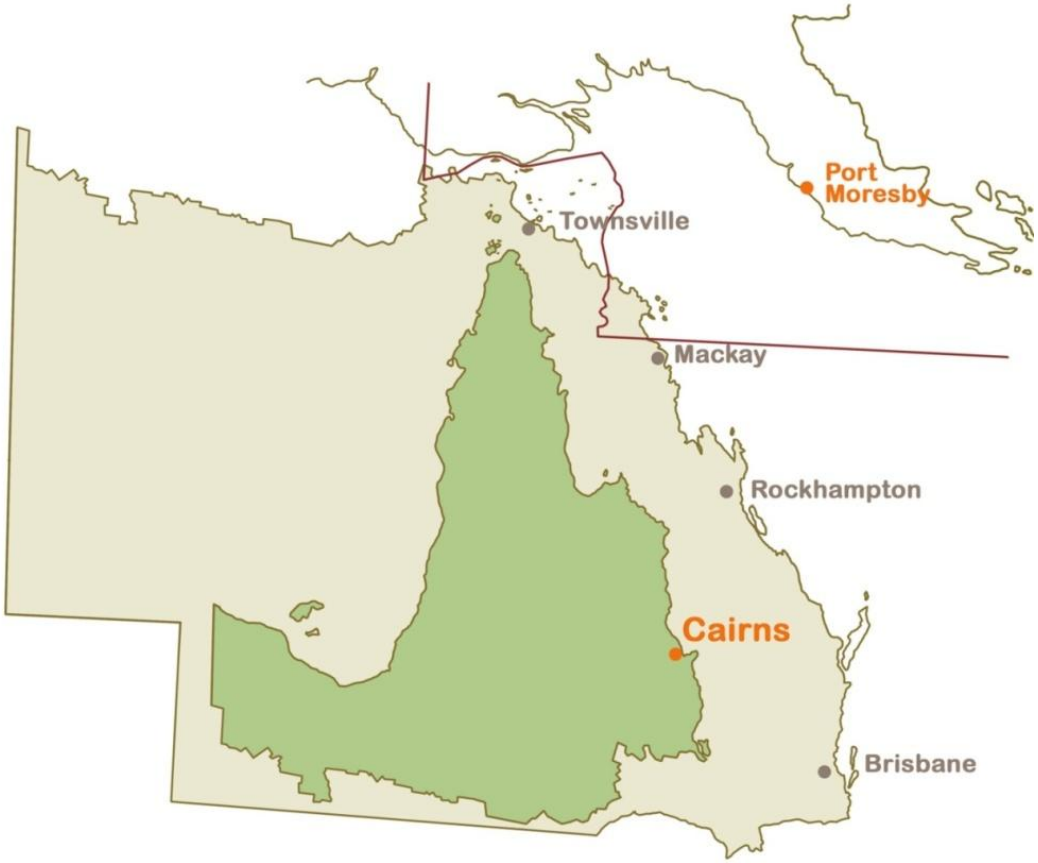
Indigenous population is experiencing relatively high birth rates and increasing life expectancies resulting in population growth faster than national averages. This trend is favourable to population growth in the far northern regions based on Cairns and Darwin.

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.

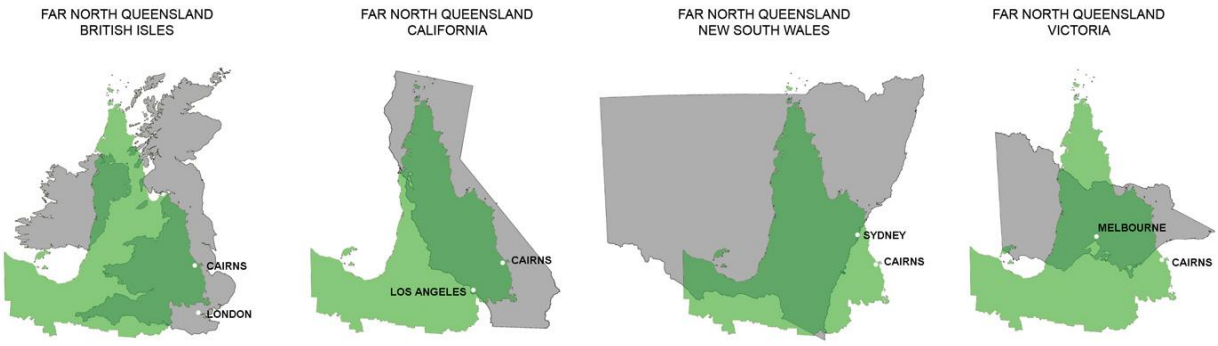
The Cairns region covers half Queensland's latitudes and is as deep from north to south as New South Wales. In area, it is 1½ times the size of Victoria and covers an area equivalent to the British Isles.

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

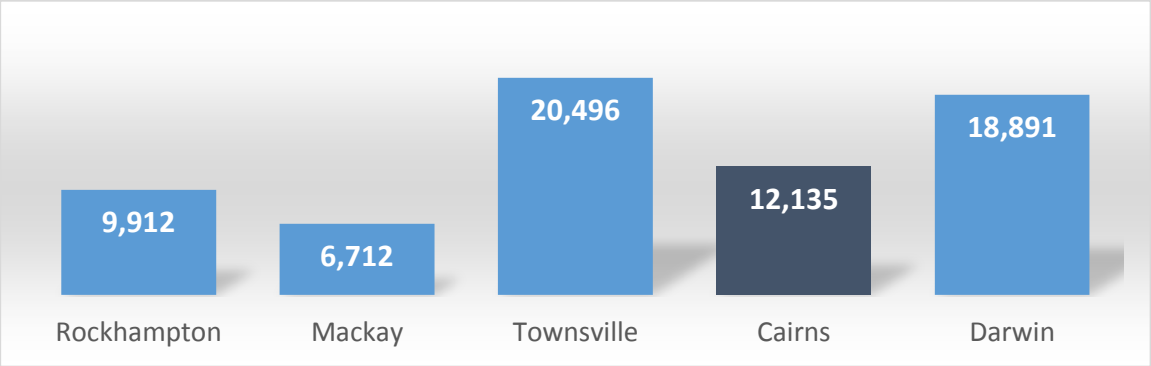
Map 5 – Comparative areas and distances



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



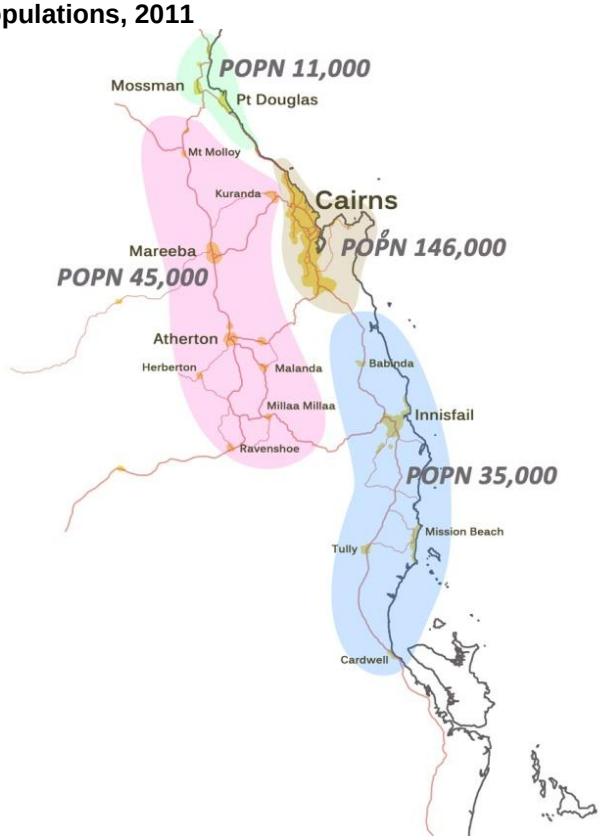
Source: Cummings Economics from ABS Census 2011.

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

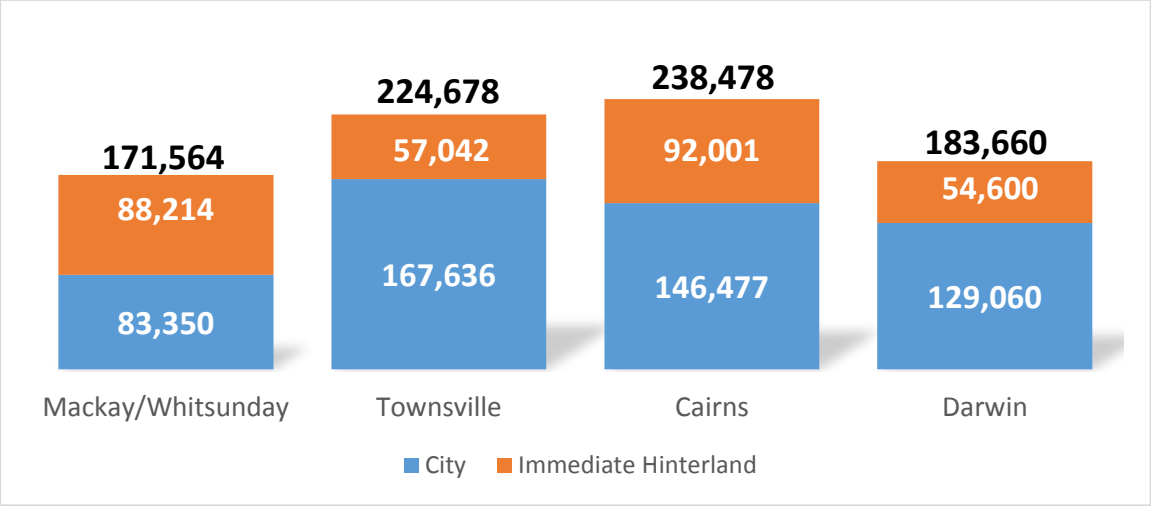
As **Map 6** illustrates, surrounding Cairns is a network of towns within a short drive (based especially on agricultural, marine industries and tourism), resulting in a concentration of population not found to the same extent around the other northern cities.

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.

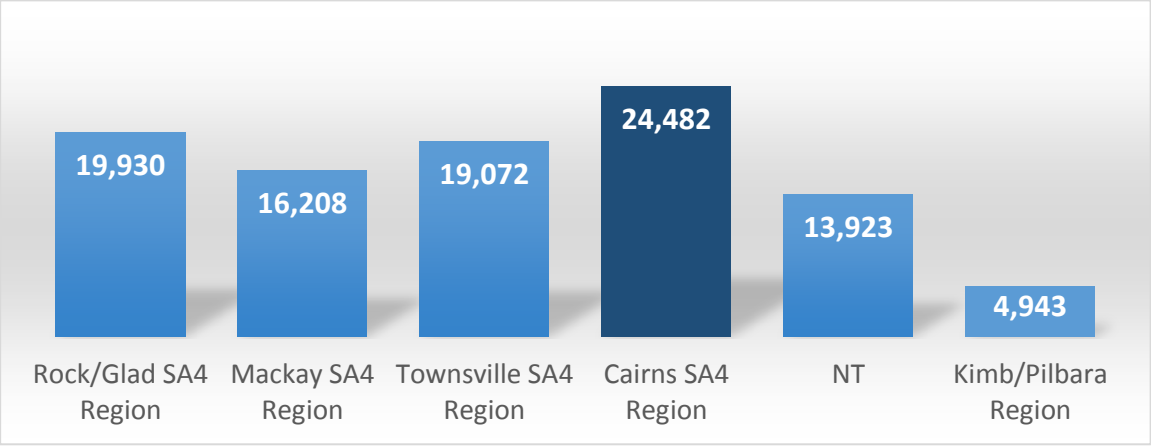
This large immediate hinterland population and the activity it generates can increase the market for Cairns based businesses and services.

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

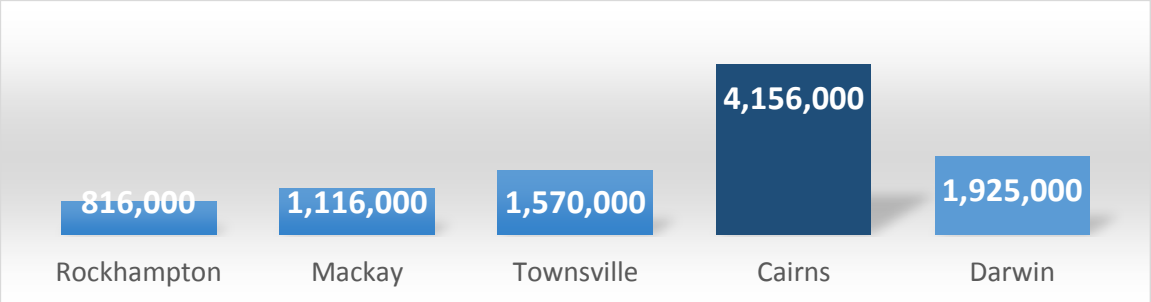
Source: Cummings Economics from Australian Bureau of Statistics Regional Statistics.

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

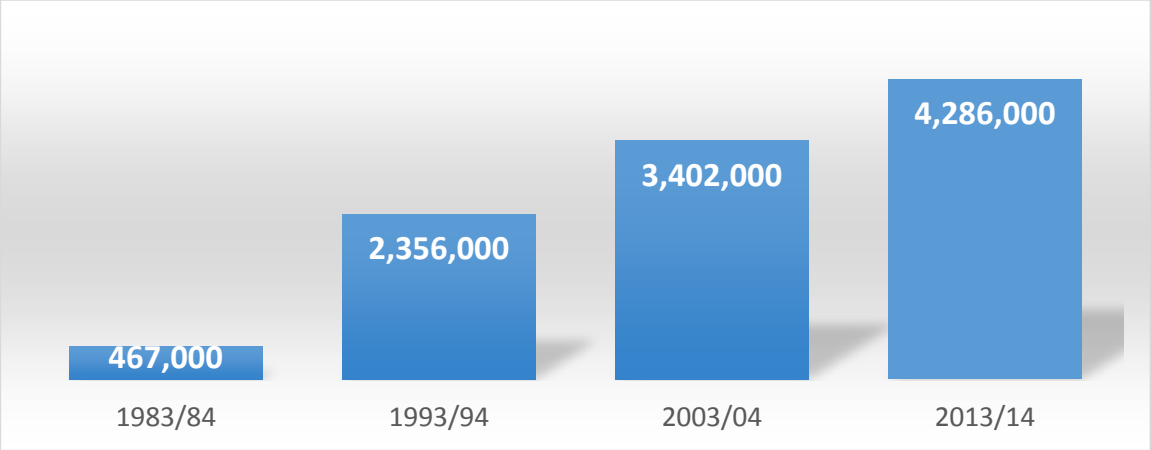
Population, tourism and strategic location leads Cairns to being the major airport hub in the North with Darwin next. Cairns has direct international links to 11 cities in the Asia Pacific region.

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

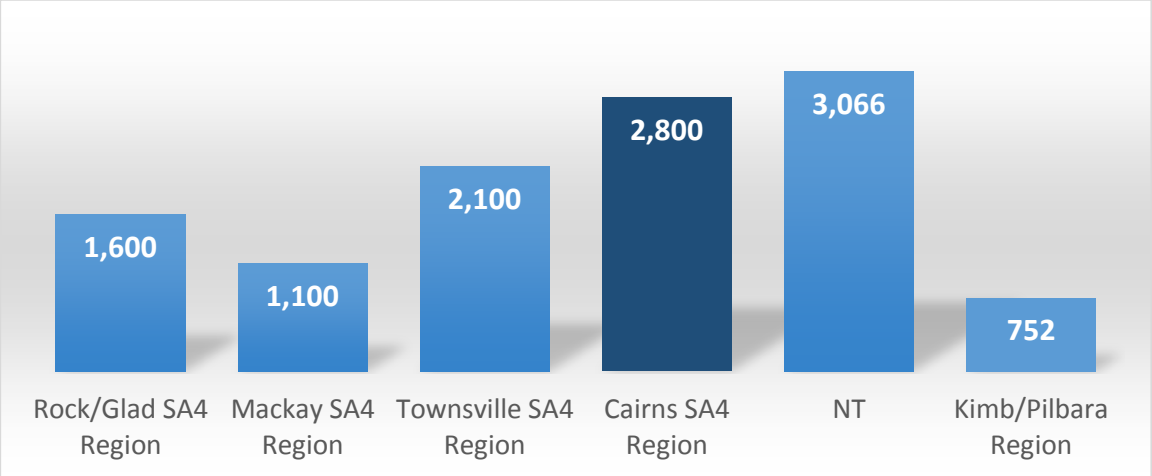
Output Value	**$83 m**
Direct Employment	**3,800**

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.

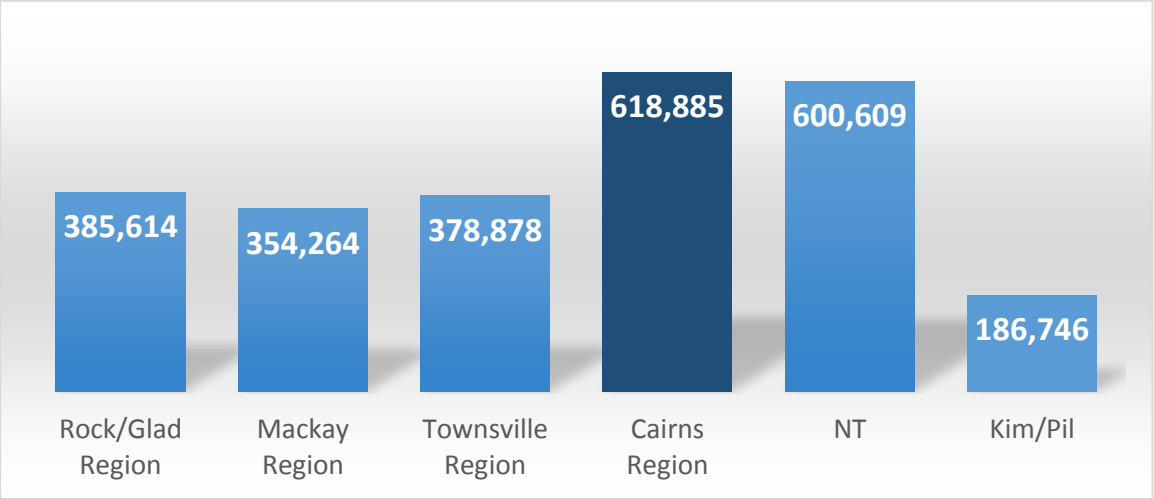
5.0 PROJECTING FORWARD

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.

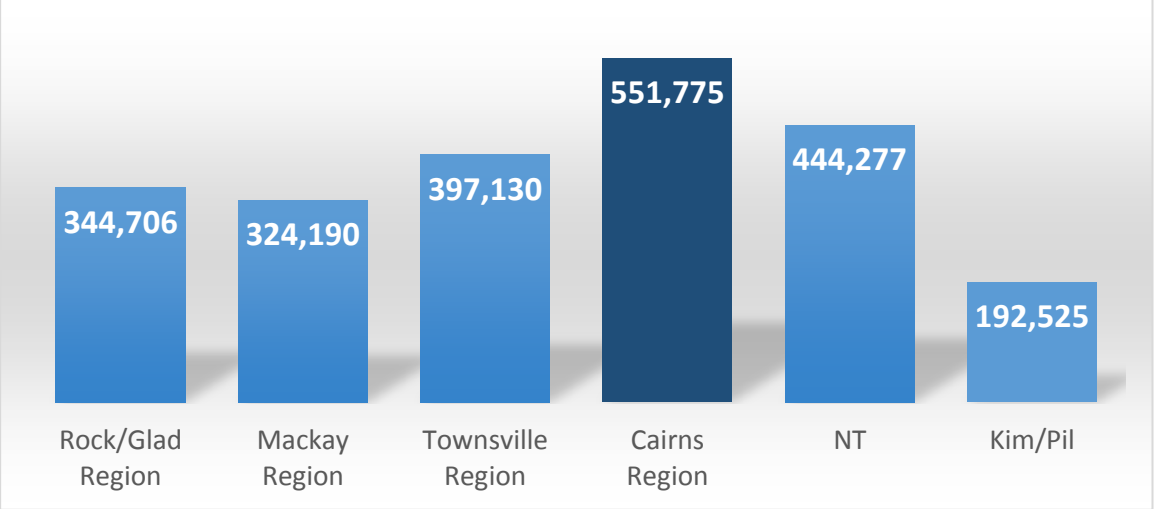
Chart #36: Projected Residential Population - 2050, Northern Australia (based on growth rate 1976-2011)



Source: Cummings Economics from ABS data.

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

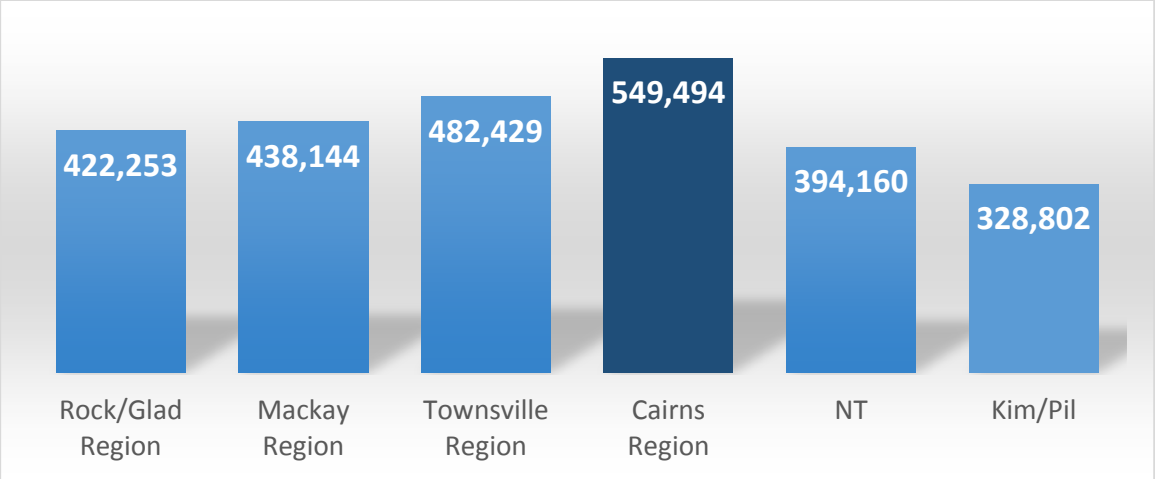
Chart #37: Projected Residential Population - 2050, Northern Australia (based on growth rate 1991-2011)



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

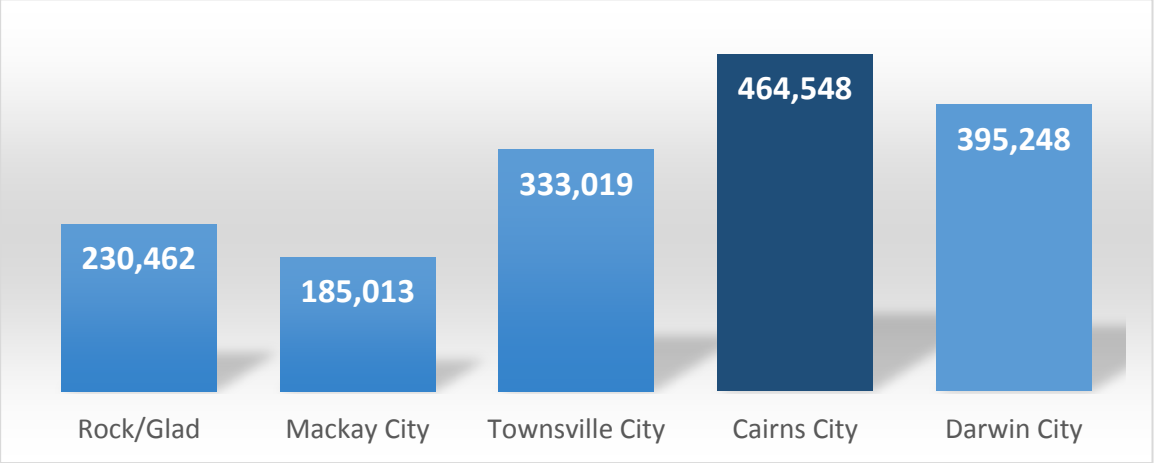
Mackay Region..... 320 – 440,000

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

City populations

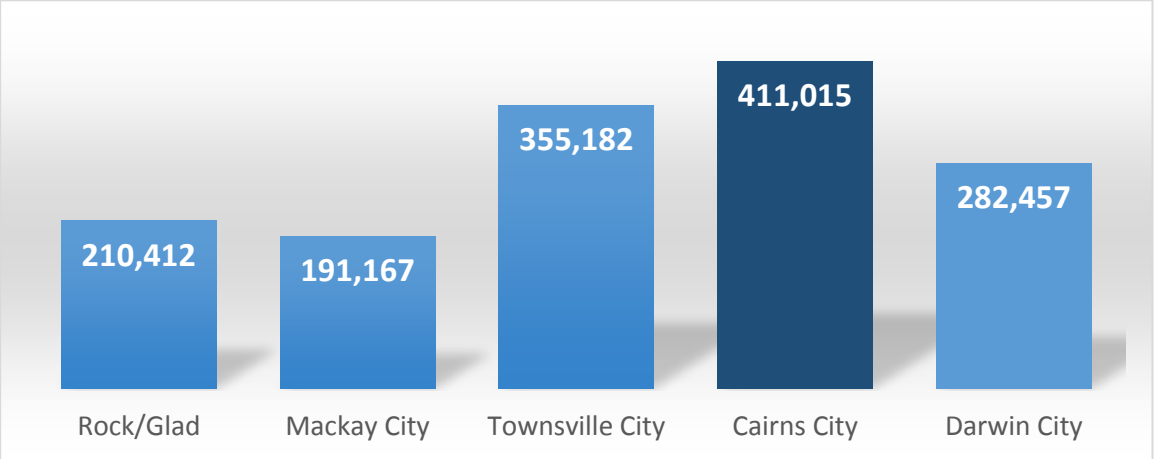
The following charts show projected city populations by 2050 based on past 35 years', 20 years' and 10 years' growth rates.

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



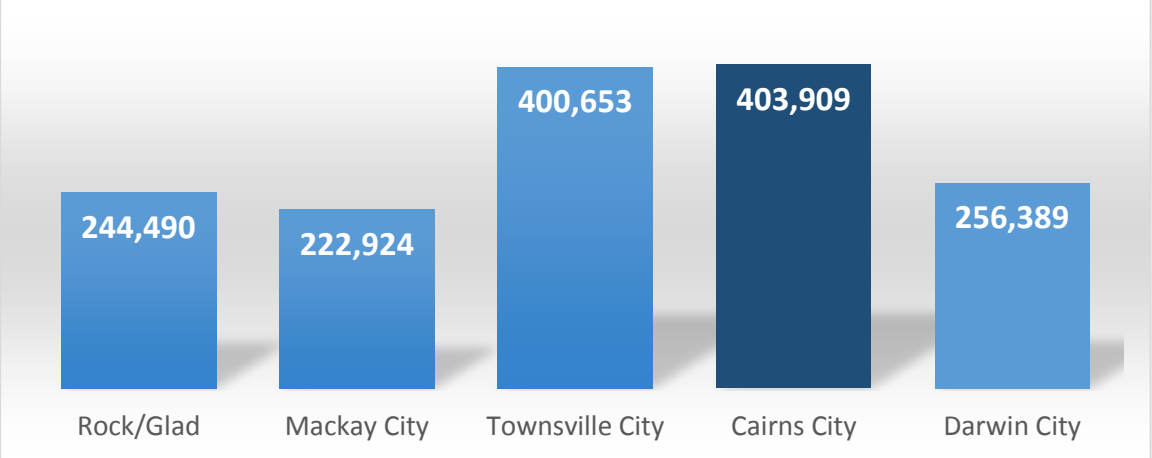
Source: Cummings Economics from ABS data.

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)

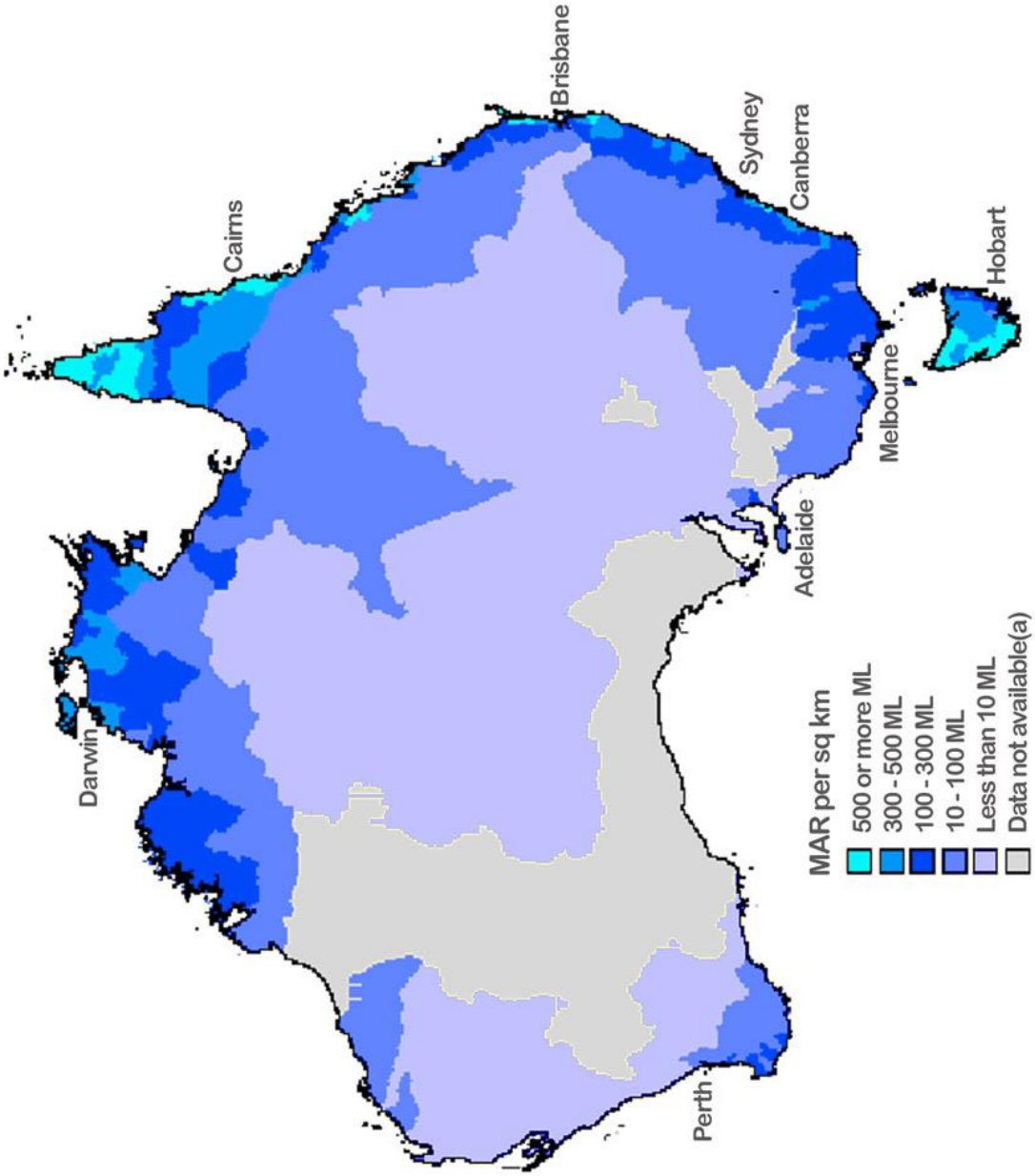
Mackay – Mackay SA4 (equivalent pre 2011 Mackay SD)

Rockhampton – Fitzroy SA4 (equivalent pre 2011 Fitzroy SD)

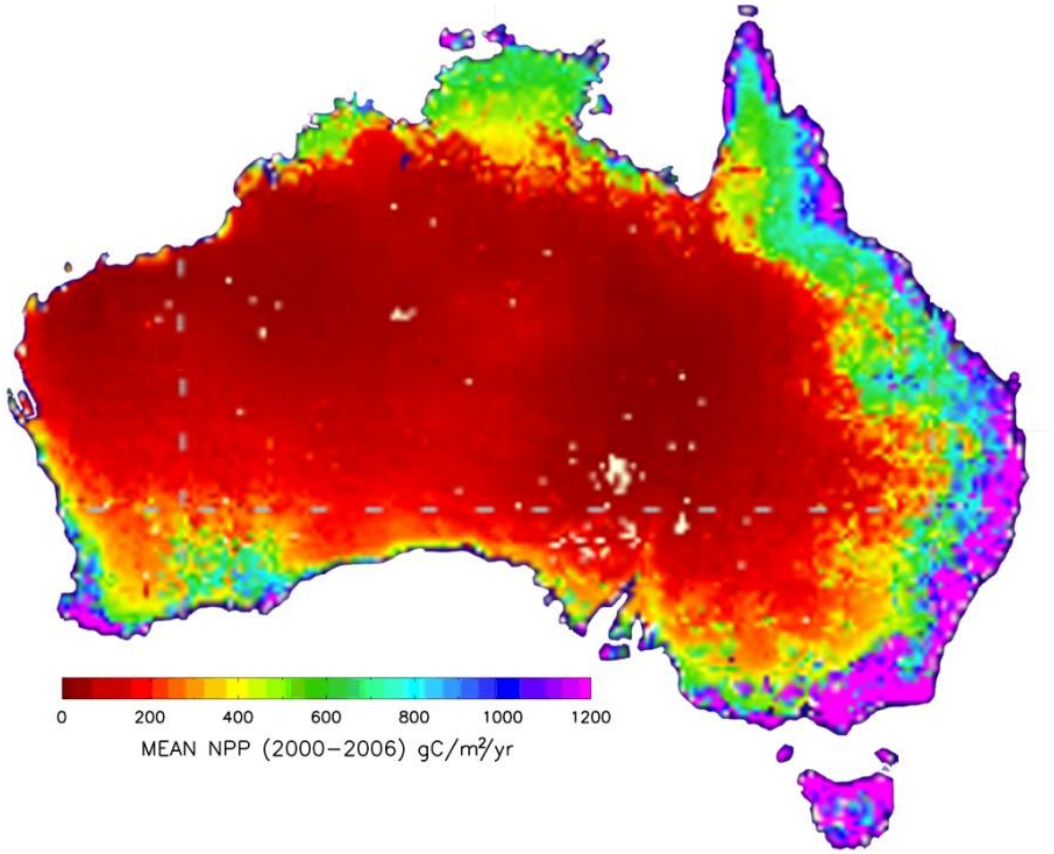
Darwin – Darwin SA4 plus Northern Territory Outback – Katherine, East Arnhem and West Arnhem (including Tiwi Islands) SA2s.

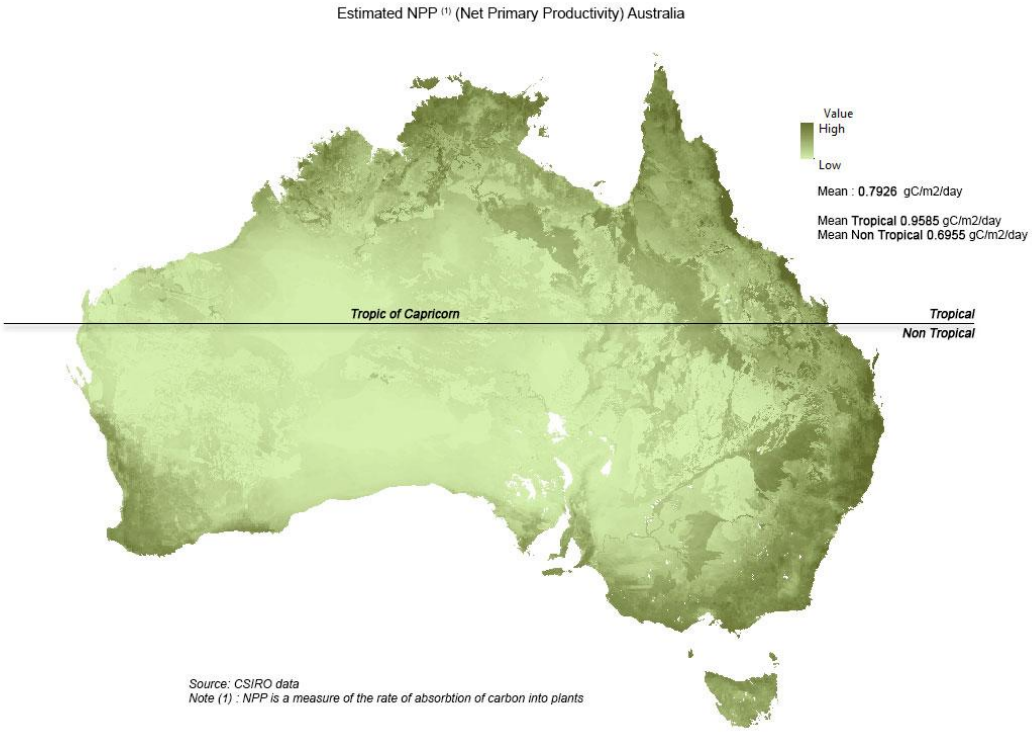
APPENDIX 2

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