



INVESTING IN NORTHERN AUSTRALIA

“MORE THAN OUTBACK – MORE OUTFRONT”

Paper prepared for the Committee for Economic Development of Australia seminar series – an outcome of the Northern Australia Forum

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INVESTING IN NORTHERN AUSTRALIA

INTRODUCTION

This paper has been prepared at the request of the Commonwealth, Northern Territory, Queensland and Western Australian Governments, to explore investment opportunities across Northern Australia. This is basically the top half of Australia plus the territories of Christmas Island and Cocos (Keeling) Islands, which have in common a tropical and sub-tropical climate, encompassing both wet, arid and semi-arid regions.

Opportunities are considered at a variety of levels, beginning with an overall review of Northern Australia, to individual regions, industries and current projects.

It is not claimed that all opportunities and projects are identified. As to opportunities, there are as many as innovation, imagination and business skills can make from combining resources and competitive advantages with a meaningful engagement of market opportunities. As to projects, some worthwhile projects may have been overlooked and commercial in confidence considerations prevent presentation of others. However, this is not intended to be an anthology of all projects in Northern Australia.

What is found throughout all levels of the paper is that the North of Australia holds very real and serious investment possibilities worthy of detailed examination.

1. WHY LOOK TO THE NORTH?

1.1 More Than Outback – More Outfront

Northern Australia was the last part of the continent to be permanently settled by Europeans and was considered a frontier well past the middle of the 20th century. It was hot, wet, wild, inhospitable and isolated. Apart from some miners, large cattle holdings, sugar cane growers and adventurous travellers and hunters, it was not really regarded as suitable for wide spread permanent settlement.

There is some suspicion on the part of the 6 percent of Australians who now live in the North that other Australians believe not much has changed, apart from a few tourists.

In fact Northern Australia has changed rapidly over the past 10 to 20 years. Its regional economies and industries include the most international in Australia, with sophisticated skills and infrastructure and an increasing integration with neighbouring Asian regional economies.

There are challenges faced in common with the rest of Australia and special challenges and constraints faced especially by the North. Equally there are conditions and attributes that are continuing to open up very viable Northern development and investment opportunities.

There is certainly a need to review a vision of Northern Australia as a poor cousin to the more developed regions of Australia:

- Northern Australia has accounted for over one third of Australia's export growth over the past 30 years.
- 6% of the Australian population in the north now accounts for around 30% of the nation's exports.
- The North is now southern Australia's largest market. The North imports goods and services worth some \$A20bn per year. As such it is a more important market for southern Australian goods and services than the nation's largest export market, Japan, which accounts for about \$16bn in exports. At the same time this \$16bn includes the North's exports to Japan. ¹
- Northern wild caught fisheries account for 33% of the value of the total Australian catch. ¹
- Northern aquaculture operations account for about 37% of the value of production for Australia. ¹
- Northern mineral production in 1998/99 was \$17.4bn, with the rest of Australia's production being \$20.5bn ¹

- “*The North West Shelf gas project, which exports more than \$2 billion a year of liquefied natural gas (LNG) and condensate, is directly and indirectly responsible for more than 60,000 jobs Australia-wide. The venture has also provided infrastructure development worth over \$340 million in and around Karratha.*”².
- Far North Queensland, Northern Territory and the Kimberley have gone through a rapid period of crop diversification, with value adding operations currently under development.
- The Ord River scheme now produces some \$61m in crops.
- Northern Australia produces some 10% of Australia’s agricultural production, but has 60% of Australia’s water run off. Its water supplies are not under the pressure being experienced in southern Australia. It has the majority of Australia’s unused capacity for water harvest, while still having the opportunity to apply conservation and environmental best practice³.
- Sophisticated skills and support services have developed for regional industries clustered around core competencies. These include best practice scientific and educational facilities, together with professional services.
- Defence deployment, policy and spending have seen an increased focus on Northern Australia.
- Cairns airport has 3,000,000 passenger movements each year, representing a ratio of movements to population of 27:1, compared to the Australian average of 5:1. (*Source Cairns Port Authority*)
- Tourism visitor expenditure is estimated to earn some \$A3.5 billion per year for Northern Australia. (*Source: Bureau of Tourism Research*).

What Changed?

Factors with major impact have included:

Growth in **world trade and investment**, especially in Asia has enabled the region to increase its exports of traditional mining and agricultural commodity products.

Transport and communications developments have reduced barriers associated with remoteness. For example the unit cost of sea freight fell by around 70% between the late 1980’s and the late 1990’s.

Technology generally has been developed to create a more comfortable and safe environment. This includes widespread use of air conditioning, construction methods to withstand cyclones, development and acceptance of lighter, cooler clothing, protection against insects and tropical diseases.

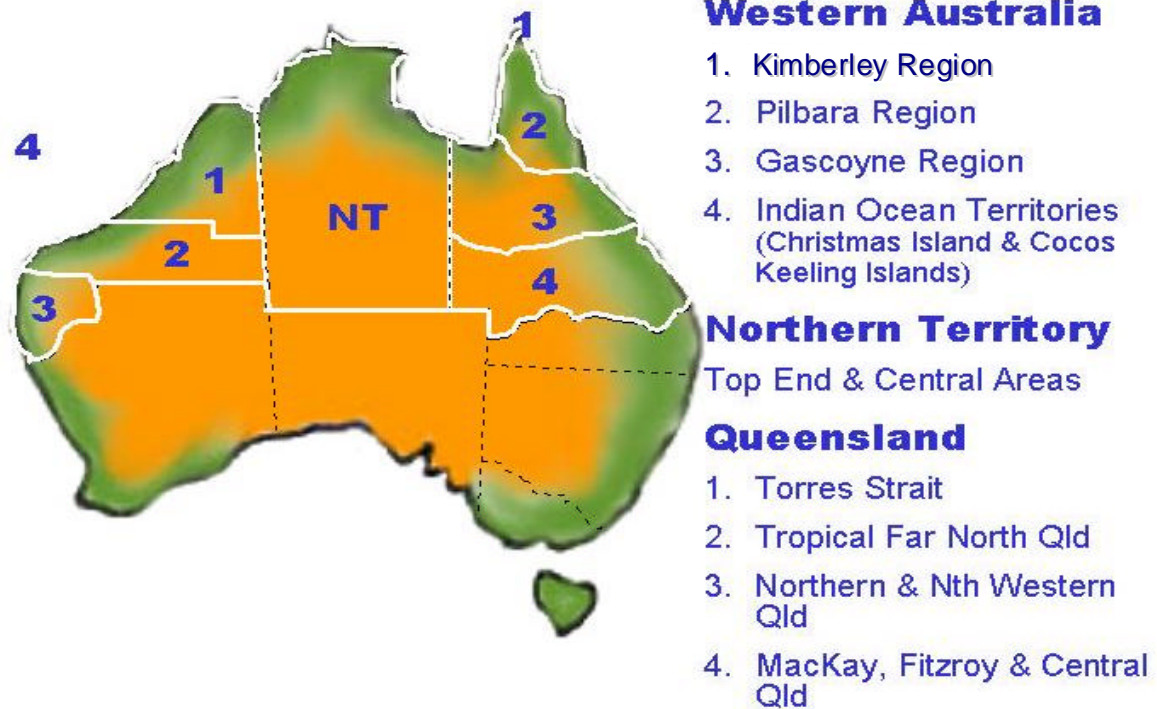
Mining Technology has improved exploration and extraction techniques, leading to the location and development of many more resources.

Infrastructure, particularly strategic infrastructure has improved and particularly strong growth has flowed from development of international airports in Cairns, Townsville, Darwin and Broome.

Cultural Shift has occurred in business focus and in the major population centres. There has been a long-standing multicultural base with roots in neighbouring countries. However, tourism and mining operations have created more interchanges and a subsequent cultural shift in both business and the wider community to a greater degree than in the rest of Australia.

2. REGIONAL CONTEXT

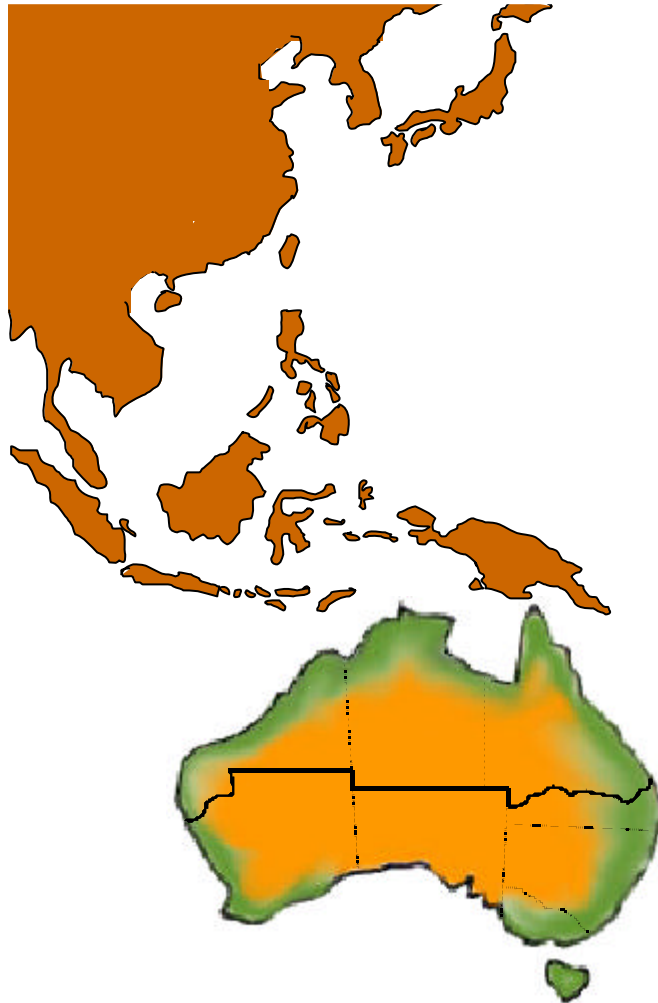
2.1 What Is Northern Australia?



“**Northern Australia**” for the purpose of this paper is as per the regions outlined above. It basically consists of all of Queensland north of the Tropic of Capricorn, including the Torres Strait, all the Northern Territory, the Kimberley, Pilbara and Gascoyne regions in Western Australia and the Indian Ocean Territories of Christmas Island and the Cocos (Keeling) Islands. The regions within this area are **not** homogenous, but possess diverse economic, social and environmental features, while at the same time, sharing a community of interests.

2.2 A Part of Asia

It is easy to forget how closely Australia and its Northern ports fit into Asia.



For instance direct flight time between Cairns and Tokyo (Narita) is 7hrs 15 minutes, while Darwin to Singapore is 4hrs 25 minutes, Darwin to Dili, East Timor is 90 minutes and Broome to Bali is 2hrs 10 minutes.

Distances Between Major Ports

<i>Ports</i>	Darwin	Cairns	Townsville
	Distance Kms	Distance Kms	Distance Kms
Melbourne	3131	2679	2069
Singapore	3338	5009	5224
Jakarta	2720	4411	4557
Tokyo	5447	5874	6125
Hong Kong	4250	5569	5703
Manila	3200	4771	4691
Port Moresby	1800	843	1085
Dili	720	2397	-
Guam	-	3379	-
Bangkok	4450		

The major institutions and population centres of Australia are in the south due to European preference for a climate manageable with the technology of the time and reminiscent of their home. In terms of Australia's present trading priorities and opportunities, they are largely in the wrong place.

2.3 Conceptual Change

Australia developed from separate colonies to States, to a federation of States, to a nation. Australian's thinking about their sense of place is aligned from these origins. The main flow of communication tends to be north/south, between regions, State capitals and Canberra.

There is now a strong and growing community of interests **across** Northern Australia that warrants a conceptual shift. The geographic region defined shares a tropical/sub tropical climate, an environment in good condition with rich possibilities, similar industries, the challenges of extended supply lines, developing infrastructure, a large Indigenous population, similar life-styles and its proximity with Asian neighbours, with whom Northern Australia has much in common and a wealth of knowledge and understanding.

There are also emerging alliances across the North and with Asian neighbours, between research institutes, governments and industry sectors. The emerging opportunity is for a tropical region with a strong technical support base, with special products, skills and understanding to be a conduit for Australia into 40% of the world's population.

There is also an emerging regional maturity. On occasion in the past, Northern Australia has suffered from project concepts that are unrealistic, based on wishes rather than realities. This has led to project failures and disenchantment on the part of investors. On the other hand the region has also suffered from project assessments based on the size of what the region has, rather than the size of the opportunity. This paper endeavours to temper enthusiasm with reality, but not allow pragmatism to crush vision.

3. *COMPETITIVE & COMPARATIVE POSITIONING*

3.1 Shapers and Drivers – In The Context of Globalisation and Market Trends

Traditional examinations of competitive and comparative positioning that focus on static advantages are no longer, of themselves, adequate. Static advantages include cheap and abundant land, access to a stable and low cost labour force, physical infrastructure, availability of physical resources and support infrastructure, etc.

While these factors are still important, it is now widely accepted that sustainable competitiveness is now more a matter of **how** static advantages are used and combined with other more dynamic factors. This will determine the competitive position and investment attractiveness of Northern Australia.

Developments that have produced growth to date will not alone be enough to sustain Northern Australia in the face of global trends. However they create a base on which to build further opportunities. In some cases advantages held by the North are shared with the rest of Australia and the differences are a matter of degree.

Consideration of Northern Australia's competitive and comparative positioning can only be meaningful if undertaken in the context of current and forecast market trends and influences. Of fundamental significance in this regard is the reality and pace of globalisation and its associated processes, together with the pace and extent of advances in technology. A combination of these driving forces can be expected to continue to enhance the North's competitive position and investment prospects, while at the same time presenting serious issues and challenges.

These driving forces are listed under 5 categories as follow, as key considerations in assessing the true comparative and competitive nature of Northern Australian investment.

Systems Integration

- Greater integration of production, trading and financial systems;
- Concentration of higher order financial and business services, stock exchanges and multi-media services into the CBD's of major cities;
- Centralisation of R&D, design and high tech jobs around global cities and regions;
- Development of networked businesses to cope with shorter product cycles, high cost of specialist operations and price competition. This logically leads to the concept of "learning regions", with key linkages between industry, higher education institutions and R&D to form clusters based on core competencies;
- Mega-mergers of global entities that concentrate power and restrict start up access;

Market Shifts

- Lowering of trade barriers, deregulation in transport and financial systems, together with advances in communications and information technology are all leading to more open markets and increased global trade. (World Bank figures indicate the volume of world trade has doubled over the last decade alone);
- Lower and lower commodity prices;
- The spread of a global culture, global products and brands and the emergence of a global middle class;
- A counter “tribalism” as cultures seek to preserve identity and differences, together with a rising global interest in different cultures.

Industry Shifts

- Dispersal of labour intensive manufacturing and assembly jobs to low wage countries;
- Rapid growth in service industries and the service component within traditional industries, with the majority of new jobs expected in these industries;
- A shift to knowledge based jobs, industries and economies;
- Rapid advances in biotechnology, creating new products and services but also creating public unease with ethical issues;

Social Trends

- Social disruption and community stress in regions that have lost competitiveness;
- Creation of asset rich, time poor societies under stress from the rate of change;
- Migration of talent to larger centres – a cumulative effect that sees young people leave country areas, to scientists and entertainers leaving Australia for global cities;
- Migration from large urban centres to “life style” regions, to retire, or establish businesses. These are often in tourism, but may also be to take up emerging regional opportunities, or as a result of opportunities to “telecommute” their employment or business activities. In OECD countries, home-based employment is growing at about 20% per annum.

Consequential Effects

- Ever faster rates of new product development, particularly in IT, transport and communication systems;
- Smaller governments with less ability to provide social security to aging populations or to fund major infrastructure and a tendency to contract services to the private sector;
- Recognition of a vested interest in eliminating poverty, not only for humanitarian reasons, but also to reduce world conflict and create bigger markets for goods as purchasing power improves;

- Faster spread of human and animal diseases, food safety concerns and increased health awareness, leading to more discerning consumers;
- Increased awareness of the interconnection between earth systems and growing concern for the environment.

The next section considers the North’s competitive and comparative positioning in recognition of these global forces, combined with natural assets and domestic factors.

3.2 Summary of Competitive Advantages

A summary list of key attributes of Northern Australia seen as providing positive competitive and comparative advantages to investors follows, with supporting details on those that benefit from elaboration:

Competitive Advantage
<p>Markets:</p> <ul style="list-style-type: none"> • Proximity to Asian markets. • Close cultural & business ties with Asia. • Same time zone to Asia (in common with all Australia). • Niche opportunities in global market segmentations, using tropical skills/products. • Critical mass of local domestic market (in some Northern centres).
<p>Product Marketing Features:</p> <ul style="list-style-type: none"> • Clean, green and tropical. • Extensive expertise and facility in tropical environment and climate aligned with 40% of world’s population. • Isolation from diseases and their rapid spread. • Counter seasonality.
<p>Support Infrastructure:</p> <ul style="list-style-type: none"> • International sea and airports. • Advances in IT and transport reducing disadvantages of remoteness.
<p>Industry and Physical Resources:</p> <ul style="list-style-type: none"> • Major minerals development projects. • Major oil & gas reserves.

- Substantial tourism industry based on “big nature” themes - faster growth than in southern Australia.
- Contains most of Australia’s harvestable water.
- Major tropical horticultural and aquaculture industries.
- Well-developed beef and livestock industry, including growing live trade.
- Extensive, cost competitive land reserves for agriculture, development & settlement.

Human Resources and Tradeable Services:

- Lower average wage costs, less turnover than urban Australia in certain regions.
- Large Indigenous population compared to southern Australia, with emerging, major commercial partnerships.
- Specialist tropical skills for R&D activities and development of tradeable services industries.
- Opportunities to attract “sunbelt” migrants and commuters (Including telecommuters).

3.3 Comparative and Competitive Advantages – Further Commentary

3.3.1 Geographical and Cultural Positioning

The geographic position of Northern Australia is a strategic advantage, due to its closeness to one quarter of the world's population. The map on page 9 illustrates the North's regional context and proximity to what is a close chain of Asian nations, basically on our doorstep. This geographical positioning provides obvious advantages in relation to:

- Freight costs.
- Freight lead-times and minimum stockpile requirements.
- After sales service and warranty support.
- Sales and marketing visit costs and time.
- Environmental and cultural familiarity.
- Gateway to inbound tourism to Australia.

The advantage of position however, runs deeper than simple geographic proximity. It is a matter of the affinity, expertise and level of integration this location produces.

The North of Australia has been a meeting and mixing point for the various races of the region for a long time – Melanesians, PNG tribes, Torres Strait Islanders, Indonesians, Malays and Aboriginal clans. More recently, from the 1870's on, there have been Chinese gold diggers, Japanese pearl divers, South Sea Islander cane cutters and Indian traders. To this can be added the current flow of international visitors, with Asian visitors to Cairns for instance making up some 34% of all international visitors.

There is also a growing population of ex patriot Australians who previously lived and worked in PNG and other neighbouring South East Asian countries, who wish to continue living in the tropics. There are also significant numbers of Northern Australian residents who either commute, or spend time in these countries as part of one of the numerous regional mining projects.

This has a profound effect. While Asian migration to the rest of Australia is also having an effect, there are important distinctions.

- Mixing between cultures and races has had a long and cumulative effect. There is also a high level of seamless integration in Northern Australia;
- The largest regional cities in the North have populations ranging from 100,000 to 150,000. Compared to a capital city of 1 to 3 million, the cultural impact on regional centres has been much greater;
- The North shares a tropical, sub tropical climate with its northern neighbours. This affects life styles and attitudes and there is much in common, including many crops and their associated issues;

- Southern capitals feel very remote to people living in the North and the life style is very different, though with a common base culture;
- Northern visitors from smaller nations in particular, feel more comfortable in visiting, or doing business in small tropical cities.

The North has direct and distinctive cultural and business links, expertise and knowledge on doing business in its region, as well as physical proximity to very large markets. Whereas southern business can certainly visit the region and build relationships, those in the North live in and share the Asian region in the fullest sense.

Trade missions to Asia have underlined the importance of relationships since the first in the 1960's. The persistent message has been that to do business in Asia, one must be prepared to visit often, develop long-term relationships and be reliable.

One of the opportunities for the North is to stand as it has always done, as a cross-roads between cultures, integrated with Asia through business, family, cultural and life-style ties and integrated with southern Australia through family, cultural heritage, as a port of entry into Asia and in providing business brokerage into Asia.

3.3.2 Business and Professional Skills

The gaps in senior professional skills available in the North continue to diminish at a rapid rate. The North can now boast professional competency, capacity, specialisation and choice in most areas of business investment. The massive investment in, and development of, the Northern regions over recent years has, of itself, required and caused establishment in this regard. Additionally, there are a number of other supplementary trends working counter to the global trend, which would otherwise concentrate high order skills in major urban centres.

There are increasing numbers of "sun belt refugees" settling in the North. They are bringing with them international and specialist business skills. Added to this is a flow of business migrants from troubled countries with tropical climates, who wish to settle in a tropical climate. These skills are blending with ex patriot skills with particular knowledge of the immediate Asian region.

The mining, oil and gas industries are also building regional skills, as a number of reports have observed.

*"Cairns has become an important service centre for Papua New Guinea (PNG) and the large mining service town of Freeport in West Irian Jaya, Indonesia. There has been significant growth in consulting services to the mining industry, and in para-professional and managerial education and training courses, although this is still a relatively small export business. Other service industries that have developed are computer software and medical services".*⁴

Development of Timor Sea oil and gas reserves is having a similar and perhaps larger effect on the Pilbara in Western Australia and Darwin.

*“...the Australian mining industry’s leading position has relied heavily on the application of knowledge –intensive skills ranging from surveying, geology and mining engineering to mineral extraction and processing. Sixty percent of the world’s mines now use software developed in Australian companies. Companies such as ECS International, Gekko Systems and Minecom demonstrate well the ingenuity and resourcefulness of our regional SME’s in the mining sector”.*²

Northern Australia is therefore attracting senior management and innovative skills. It can no longer be regarded only in terms of domestic business skills and has the opportunity to create its own concentration of high order skills, oriented to regional industries with an international focus.

3.3.3 Development Level

Northern Australia is at a less advanced stage of development than southern Australia. This produces opportunities especially as technical and infrastructure restraints are resolved, as has been argued by W S Cummings in more than one paper. He notes that Northern Australia:

*“..has similar underlying levels of basic resource endowment (in overall plant growth potential, marine resources, mineral and natural tourism resources) as southern Australia. (But) for various historical, geographical and economic reasons, it is at a different stage of development.”*¹

Another paper develops the concept of “tropical lag”. It correlates economic progress in North Western Europe with climate related technology, traces its spread around the temperate zone and the difficulties in transferring it to the tropics. It then traces the turnaround occurring in Northern Australia and tropical areas since these difficulties have been overcome.³

With technical barriers to Northern growth falling, it is reasonable to expect higher growth potential for Northern Australia than in developed regions, provided under-utilised resources are assembled in innovative combinations with other assets and opportunities.

3.3.4 Climatic Context

Apart from the 25% of the world’s population on our Northern doorstep, Dr Peter Ellyard observed at the North Australian Forum that, *“more than 40% of the Earth’s peoples live in the true tropics, tropical savannah, tropical arid and the sub tropics. This is a huge market of people who could be your future customers. They will want access to the know-how required to achieve first world prosperity in the tropics, and doing it without creating collateral damage to their tropical environment and without reducing the capacity of future generations to maintain and further grow this prosperity.”*⁵

The region has direct experience of tropical living and skills, the opportunity being to provide appropriate services, technology and skills to countries in tropical regions. There is competition, but a comparative advantage in Australia's favour is its lack of political involvement in most of these regions.

Tropical crops grown and food products produced across the region include those already popular in the tropics. Conventional wisdom has been that the North's competitive advantage is in being counter seasonal to northern producers. Reasonably substantial export industries have been built up in this way and it is a competitive advantage. There are a variety of constraints in this area, including comparatively high production costs, market access, chain management issues and transport difficulties exacerbated by the increasing hubbing effect in airport usage. There are nevertheless particular opportunities considered later and Darwin is seeking to address some of these through its development as a supply hub for Asia.

In terms of value added fresh tropical products, there is an opportunity to develop production alliances. Major supermarket chains do not want to take up shelf space with seasonal products. Since Northern Australia is counter seasonal with its northern neighbours, there may be opportunities to combine technologies such as MAP (Modified Atmosphere Packaging), with tropical produce across joint venture plants in different countries to supply "fresh" product 12 months per year. These are also likely to be high value lines in the EU, where exotic tropical products and food safety and presentation are highly valued.

3.3.5 Time Zone Context

Australia generally has a central position in the Asian time zone, together with a skilled workforce and relatively low costs compared to major Asian centres. The comparative advantage for Northern Australia is a cumulative one drawn from its cultural and geographic links, which point to opportunities for businesses such as call centres.

3.3.6 Tradeable Services

Northern Australia has demonstrated expertise in 'sustainable tropical resource management'. There are opportunities for the development of tradeable services industries now only in their infancy, due to climate and geographic positioning.

The Cairns international education sector alone brings an estimated \$30 million per annum to the Far North Queensland economy.²

Areas of expertise on which the North can and is building tradeable services are:

- Support skills
- Environmental services

- Tourism in a sensitive environment
- Tropical forestry
- Farming practices
- Fisheries management
- Resource management
- Mapping skills

Support Skills

The North's remoteness has developed very strong logistical, coordination and general support skills for all its industries. In particular, Darwin is demonstrating these skills as the logistics centre for the ongoing effort by Australia and the UN in East Timor.

<p>Business Competitors – Supply Partners</p> <p>An alliance between traditional competitors was the successful tenderer for stores support for the international military deployment in East Timor. Albatross Marine and Sealanes formed the Albatross/Sealanes joint venture to secure the contract, worth \$26 million to Darwin businesses. The new organisation was given 10 days to land rations for 3,500 people in Dili.</p> <p>The first shipment arrived on schedule, with supplies being provided for 10,000 personnel after three weeks of operation, rather than the 5,000 scheduled.</p>

Skills for the support of operations in remote areas have developed over a period of time, with extensive experience in supporting minerals, oil and gas exploration and mining operations.

Environmental Services

The health of the world environment is assuming a higher and higher profile in both developed and developing countries.

“From Sheep’s Back to Cyberspace”² estimates the rapidly growing world market for environmental services is presently worth around \$A500 million per year. It observes:

“Fields in which Australia has internationally recognised expertise include:

- *Arid land and water management;*
- *Clean mining and mineral processing;*
- *Pollution monitoring and control;*
- *Waste management;*
- *Renewable energy; and*
- *Contaminated site remediation”*

Climate Protection Project

As part of the world wide Cities for Climate Protection Program, Gladstone, Calliope and Miriam Vale councils have agreed to reduce emissions from their council operation by 19% of 1997 levels by 2010. In addition, they have aimed to reduce non-industrial emissions from the community by 20% on 1997 levels by 2010.

Greenhouse Challenge – QNI Yabulu Refinery

QNI Yabulu Refinery, a major producer of nickel located in Townsville, has announced a commitment to reduction of greenhouse emissions by agreeing to join with James Cook University and participate in the Australian Greenhouse Challenge program.

The added dimension to these strengths in Northern Australia is the tropical environment in which those operations are carried out. This tends to create further specialisations appropriate for tropical climates.

Desert Knowledge Project

This, an example of one of the "Alice in 10" projects, analysed the unique knowledge and expertise of people in Central Australia and is examining how these can be packaged and marketed as exports to arid regions throughout the world. There is a proposal for a Desert Innovation Centre, which would develop these potential exports, promote Central Australia and attract people to the region.

Contact: Mr. Les Holland, NT Department of Industries and Business, Ph: (08) 8951 8574

A lack of mains supply power in remote areas produced a focus, which has seen the successful development of expertise in self-reliant remote area power systems. These capabilities are now taking advantage of significant opportunities for export of products and skills.

Tourism Operating Environment

Northern Australian tourism operates within a sensitive tropical environment, from World Heritage listed rainforest areas on the east, to outback in the west, which encompass a wide spectrum of tropical environments – desert, floodplains, woodland, savannah, wet coastal and elevated tropics, complex coastal fringes including mangroves and coral cays.

The expertise developed is marketable, with wide application around the tropical zone of the earth.

Komodo Island - Indonesia

The World Bank has requested a consortium of North Australian consultants with environmental and tourism expertise to carry out a study and make recommendations on the management of the Komodo National Park, in Indonesia. The island is the home of the Komodo Dragon. The objective is to develop a sustainable tourism strategy. This is a current project due for completion mid 2001.

Skyrail – Cairns

This company is providing expertise to Korea on best practice techniques and technology for the development of low impact visitor facilities in sensitive environments.

Tropical Forestry Skills

These skills have been extensively developed in Northern Australia, as forestry has been a long-term traditional industry. These skills are associated with specialist knowledge in wet tropics and tropical savannahs. These skills are presently under-utilised.

Forestry fire management encompasses a set of skills that have been highly developed in the Australian environment. These are directly applicable in neighbouring countries and require different knowledge sets to temperate country fire control. For instance Australian forestry experts consider that the disastrous fires in the Kalimantan province in Indonesia may have been contained with the earlier assistance of Australian expertise and technology.

Farming Practices

Farming in Northern Australia is carried out across the wide spectrum of tropical environments. Farming operations are learning how to operate as neighbours to World Heritage rainforests in the wet tropics. The Ord River Scheme in Western Australia, the Burdekin, and the Mareeba Dimbulah Irrigation Area on the Atherton Tableland, have collectively built up a bank of knowledge in irrigation and dry land farming.

There is consequently a depth of expertise in farming techniques for sensitive and fragile wet and dry tropical environments, across a broad range of crops. A major source of competition comes from Israeli.

Fisheries Management Systems

Fisheries management systems are creating a sustainable industry, with sophisticated practices applicable in all tropical zones. This includes certification of sustainable practices to ensure access to important markets such as the EU. For instance ISO14000 certification has been developed through UN and FAO processes. It is a protocol setting international standards for the environmental performance and assessment of fisheries operations applicable across all countries. It commits a fishery to constant improvement, with a review each year.

Ecofish, the fishing industry cluster based in Cairns is presently seeking to obtain this certification for the Northern East Coast trawl fishery. An alternative approach is presented under protocols to be administered by Environment Australia to certify that a particular fishery is sustainable. Without certificates of sustainability, access to wider and wider markets will be denied.

Australia is also a member of NACA, which is a network of 17 Asian countries and their aquaculture research centres and chairs the APEC fisheries working group. These networks are providing access to research and development projects in ASEAN countries with implications for flow on education programs.

The North has capacity in fisheries research and development through a chain of State Departments of Primary Industry facilities from west to east coasts. This includes aquaculture, with a variety of emerging commercial opportunities.

3.3.7 Water and Land Resources Availability

The World Resources Institute (WRI) reported that half of the world's wetlands were lost in the last century and that dams, diversions and canals fragment almost 60 percent of the world's largest rivers. Per capita water consumption increased by 50 percent between 1950 and 1990, and human use of available water resources is expected to increase from its current level of about 54 percent to more than 70 percent by 2025⁴. Although inland water ecosystems have improved in some areas of North America and Europe, their condition is continuing to deteriorate in much of the world.

Fresh, unpolluted water is becoming an increasingly scarce resource. With its pristine environment, 60% of Australia's water runoff and most of the harvestable water, the North is in a strong position with respect to agriculture and aquaculture.

3.3.8 Environment, Clean Green Products

The relatively pristine environment across Northern Australia is often quoted as a source of competitive advantage. Some of the opportunities flowing from this were listed in a recent Western Australian Government publication:

<p>Environmental industries: A recent report for the Western Australian Department of Training and Employment (DTE) has found numerous examples of existing and potential businesses in the environmental industries that could form a crucial and substantial part of a diversification strategy for the State's economy. Based on the sectoral model outlined by Australian futurist (and former head of the South Australian Department of Industry) Peter Ellyard, it looked at prospects in six 'environmental industry sectors'.</p> <ul style="list-style-type: none"> • <i>Earth repair industry:</i> that which restores and rehabilitates degraded, polluted or even totally obliterated ecosystems such as rainforests, coral reefs and rangelands and their soil, water and biotic components. • <i>Environmental survey industry:</i> assessing, monitoring and auditing of ecosystems. • <i>Resource renewal industry:</i> the reduction, reuse or recycling of what is traditionally known as 'waste'. • <i>Sustainable communities and cities industry:</i> integrating the work of the architectural, building, industrial design and planning professions in the design and construction of sustainable schools, shopping centres, transport systems, homes and commercial buildings. • <i>Clean/green food and sustainable agriculture industry:</i> the production and processing of food that is uncontaminated by toxic substances, pesticides and radioactive materials.

As to **building, construction and design**, Northern Australian firms have developed particular expertise in designs to suit tropical climates, covering aesthetics, life style and construction methods to withstand tropical storms.

Australia's high standards of food safety and technology and a "clean green" reputation in food production are an advantage with more and more discriminating consumers concerned with food safety and health, particularly in Europe. An associated, relatively untapped opportunity for Australia is in **organic production**, seen as satisfying both food safety and health considerations. The same Western Australian report makes reference to the size and growth of this market:

Organics
Demand for organic products has been expanding by 20 per cent per year for at least the past five years, with world trade estimated to be \$US 11 billion in 1997. Organic products are the fastest growing sector of the food industry in a number of major food markets. It is estimated that retail sales of organic food in Australia were worth around \$250 million last year, and growing rapidly. The European market worth an estimated \$US 4.6 billion in 1997, and Japan's worth \$US 1.2 to 1.5 billion are considered the trend-setting markets. The US market, worth \$US 3.5 to 4.5 billion, is seen as being reactive. Even so, a report by the Hartman Group in the United States conclude that the 'green' consumer is now mainstream, and can no longer be considered a marginal niche. Based on these patterns the global organic food market is predicted to be worth between \$US 58 and 100 billion by 2006. ⁶

There are opportunities for Northern Australia in "clean, green and/or organic" tropical produce. There may be an enhanced window of competitive opportunity when compared to other tropical crop producing nations with less well-developed infrastructure and systems.

3.3.9 Labour Costs & Turnover

Labour costs tend to be lower and staff turnover less in some sectors of regional Australia, compared to urban centres. This is not uniformly the case across Northern Australia. The Department of Foreign Affairs and Trade found support for this view in interviews with 300 regionally based firms conducted in 2000.² Forty percent of firms interviewed indicated these factors have been found to be a major advantage in regional Australia.

3.3.10 Big Nature Tourism

Northern Australia tourism has been built on its reputation for "big nature" the pristine environment, with the Great Barrier Reef, World Heritage Rainforest, Outback generally, Kakadu, Uluru, Bungle Bungles, the dolphins of Monkey Mia and whale sharks of Ningaloo Reef being flagship icons. Increasing world concerns with environmental issues and denser population levels are very likely to work for destinations with these attributes, as will trends towards faster and cheaper travel.

The low value of the Australian dollar is also increasing the attractiveness of Australia generally as a destination and regional areas will benefit from Australians choosing more domestic destinations compared to overseas holidays.

The globalisation of airlines and airport facilities will work against these advantages, making some destinations more difficult to access due to hubbing around major city ports. Overseas destinations with similar attributes but less aviation infrastructure may suffer a greater disadvantage.

3.3.11 Indigenous Cultures and Business Development

“Unique” is an overused word, but applies to Aboriginal culture and art. It has global exposure and is a differentiating feature for Australian product. Northern Australia is strong in these assets, which are further enhanced by an increasing trend towards Aboriginal communities seeking business skills, commercial projects and partnerships. These are not necessarily small projects.

ATSIC Commercial Development Corporation

The Commonwealth Parliament set up this corporation in 1990. It invests in a range of diverse industries, usually through joint venture arrangements with expert industry partners, with a view to enhancing Aboriginal and Torres Strait Islander self-sufficiency. It currently has a capital base of \$A64m, with investments in 20 different businesses throughout Australia. It targets investments in key industries with long-term prospects for employment for Indigenous people. As such it often becomes involved in professional projects in remote Northern areas and is contributing both to Indigenous development and to creating viable projects located in Northern Australia.

3.3.12 Rapid Disease Spread

A negative impact of globalisation processes is to accelerate the spread of human and animal diseases. This is likely to continue. The graphic evidence is the present foot and mouth outbreak in Europe. Australia’s relative isolation creates a powerful, yet fragile competitive advantage, as it is presently free of a number of diseases that are disrupting important world production systems.

Northern Australia has a certain additional advantage due to distances between industry production segments and their relative isolation from each other. This is balanced by its degree of integration with Australia’s Asian neighbours and now having a number of busy international air and seaports. Nevertheless some confidence can be drawn from the record to date.

Beef, pork, prawn aquaculture and red claw crayfish aquaculture hold current advantages due to disease isolation, with the case for a cocoa industry being strengthened for the same reason.

3.3.13 Sunbelt Settlers and Commuters

Current technology has made the tropics an attractive place to live, whether it be wet, dry or semi-arid, with attributes such as:

- Stunning beauty;
- Clean and uncrowded;
- Long periods of reliable, sunny weather;
- Relaxed life-style;
- Very short commuting times;
- Lower real estate costs;

International precedents abound, where warmer sunnier locations have been used to attract businesses, telecommuters, and retirees, who are not particularly restricted to location and are seeking better life styles.

3.3.14 Bountiful Niches

While globalisation is leading to integration into large global trading systems and lower trade barriers, the same process is producing a range of niche opportunities. Global markets are being differentiated into an array of segments according to needs, tastes and the search for something different. Smaller niche markets in world terms are nevertheless substantial in terms of many existing and emerging Australian industries and individual firms. In fact the difficulty is often in gearing up production to a sufficient scale to meet an international market opportunity. More often than not there is a substantial gap between domestic scale production and the smallest export markets. Niche opportunities are more manageable.

This process tends to work in favour of Northern Australia, where the historic limitations of local domestic market have caused business to keenly focus on niche, and new export, market opportunities. A large number of Northern small to medium enterprises (SME's) are gaining better access to knowledge, tools and foreign business partners and customers. These SME's tend to have expertise drawn from experience in dealing with difficult logistics and basic infrastructure. When this is coupled with innovative products and services developed for a tropical working environment, attractive global market often present themselves.

3.3.15 Transport & IT Trends

Trends in transport and communications are to faster, cheaper, greater frequency of service, and more efficient. This will tend to improve the relative position of remote areas that feature across the North, as a continuation of the effect that has been operating over the past thirty years.

4. KEY OPPORTUNITIES – TRADITIONAL INDUSTRY SECTORS

The well-established industries of Northern Australia include a wide variety of crops, commodities and products. The following highlights activity and growth areas, together with areas with investment potential as illustrations of the scope of opportunities in Northern Australia, without claiming to be an exhaustive list.

4.1 Tourism

4.1.1 Market Overview, Trends and Influences

The world travel and tourism industry employed around 200 million people or 8% of all jobs in 1999 and is expected to contribute 11.4% to world GDP by the end of 2005²⁰.

Australian tourism represents little more than 1% of the value of global tourism²⁰.

Global demographic shifts and changing employment patterns are determining the level of holiday taking. Although beach holidays remain the most popular, the increasing trend is toward active holidays, cultural attractions and alternative activities rather than passive holidays. Northern Australian destinations fit well with this changing profile.

General global trends in travel patterns and consumer behaviour are represented below⁷:

Moving from	Moving towards
Less frequent travel	More frequent travel
Plan well in advance	Holiday on short notice
Established destinations	New destinations
City tourism	Integration of city and regional tourism
Fixed schedule holidays	Flexible schedule holidays
Undifferentiated markets	Specialty markets (eco tourism)
Man made attractions	Nature based tourism
Party holidays	Self improvement holidays
Mass marketing	Niche marketing
Non branded destinations	High branded destinations

Australia's Travel and Tourism Industry attracted 4.9 million international visitors in 2000 up 10.9% on 1999. Visitor arrivals are forecast to grow at an average annual rate of 7.8% between 1999 and 2010, with Australia hosting 10.2 million visitors in 2010⁸.

Australian total inbound tourism visitor expenditure was \$9.37 billion in the year ending June 2000⁹.

Export earning for 2000/01 is estimated at \$15.41 billion, forecast to grow to \$20.97 billion in 2004/2005. The level of jobs created will reach 175,000 (2000/2001). For

every \$1 billion in tourism export earnings, more than 11,000 jobs are created in Australia⁹.

Main international target markets for Australia for the year ending June 2000 were:

Region	Average Length of Stay (days)	Average Expenditure per night in Australia (\$)	Average expenditure per person in Australia (\$)	TOTAL expenditure in Australia (\$m)
Europe	38	69	2,585	2.83
Nth America	27	88	2,359	1.15
Japan	13	114	1,424	0.94
Asia	30	94	2,822	3.14
NZ	15	79	1,168	0.82
World	26	83	2,167	9.37

Source: BTR International Visitors Survey (IVS)

The average annual growth forecasts for international visitors to Australia show positive signs for the future of tourism in the north.

Country	Average annual growth % 1999-2010
Asia	12.4%
Europe	6.8%
Japan	4.3%
North America	7.1%
New Zealand	2.1%
Rest of the World	7.8%

Source: Australian Tourism Commission

Domestic travellers are the greatest consumers of Australian tourism. In 1998 Australians undertook 73.8 million overnight domestic trips, resulting in 393.5 million nights away from home and spending \$32.8 billion on overnight trips. This estimated distribution of this sector for Western Australia, Northern Territory and Queensland is as follows⁸:

State/Territory	% of total Aust. domestic visitors	% of total Aust. Visitor nights
Western Australia	8%	10%
Northern Territory	1%	3%
Queensland	20%	24%
Total of Aust. %	29%	37%

Source: NT Government

Australia's tourism industry growth and future opportunities will be largely attributable to the continued promotion of Australia by its tourism industry bodies and the role of government within the industry.

Australia's tourism bodies are currently structured to providing leverage to state and regional tourism organisations, allowing each to maximise the value of tourism expenditure.

Existing post Olympic strategies in place by the Australia Tourism Commission for the 2000-01 financial year include ⁸:

- The launch of over 90 joint tactical advertising campaigns, worth more than \$45 million and involving more than 200 industry partners, promoting holiday deals to Australia;
- An aggressive \$6 million direct marketing campaign including the redevelopment of the ATC's web site, www.australia.com;
- Undertaking research on how the Olympic exposure has shifted Australia's image internationally;
- Continuing to build the lucrative the Meetings, Incentive, Convention and Exhibition (MICE) sector.

The Federal Government's present commitments to tourism include:

- The Tourism Satellite Account at a cost of nearly \$1 million to improve the measurement of economic activity generated by tourism.
- Negotiations with the WTO to reduce trade barriers and help all Australian exporters, with a new focus on how tourism benefits in that forum.
- Investment in Internet based business, currently conducting a series of workshops called "E-commerce for Exporting" throughout Australia administered by Austrade.
- The Export Market Development Grants scheme, administered by Austrade.

Consolidation within many travel and tourism sectors is resulting in polarisation as evidenced by the emergence of global joint operations at one end of the market and small niche operators servicing specific interest groups at the other.

Increasing liberalisation of the airline industry and a highly competitive environment is resulting in globalisation as airlines seek partnerships and code sharing agreements as the way forward.

Online travel is now the leading revenue generator and the market is expected to be worth \$25 billion by 2003. Travel agents will be forced to shift their present broker style business model to a more value added consumer approach in the future, with increasing opportunities for new technology and Internet based "virtual travel agents" providing self bookings and ticketing for travellers ²⁰.

Similarly new opportunities for tour operators will arise from concentration on value added services focussing less on cost due to growing competition, emerging distribution channels and global consolidation in the travel agents industry.

4.1.2 Northern Australian Perspective and Opportunities

It is estimated that approximately 35% of all international travellers to Australia visited northern Australia in 1999:

Region	Domestic Visitors	Int. Visitors	Total Visitors	Total Visitor Nights
Gascoyne	180,000	62,000	242,000	1,557,000
Pilbara	230,000	32,000	262,000	1,650,000
Kimberley	323,000	61,800	384,800	2,181,200
Top End	485,000	165,000	650,000	3,999,000
Other NT	379,000	130,000	509,000	3,384,000
Far NQ	1,236,000	755,805	1,991,805	8,447,000
Other NQ	1,085,800	694,200	1,780,000	8,487,622 (est)
Total	3,539,800	1,770,805	4,819,605	26,105,822

Northern Australian product also fits well with the increasing global need and desire to study and preserve the environment.

Travel North – Katherine

This company operates tours in and around the Northern Territory's Top End. The company employs around 150 people and serves 140,000 tourists annually. Approximately 25 percent are from overseas, generating \$A5 million in export revenue per year.²

Queensland tourism alone injects more than \$8 billion into the State economy (10 per cent of Gross State Product) and export earnings from the industry are second only to coal²⁴. The development of new tourism projects and future value adding opportunities are expected to continue to develop along the coastal areas to the Great Barrier Reef, in addition to the current trend towards outback and rainforest adventure projects.

Koombooloomba Dam

This dam is located on the Atherton Tablelands south of Cairns, adjacent to the area in which the "Survivor" television segment was filmed. There is a flying fox/cable car connection from the top of the rainforest-covered Range to the Tully River; a popular white water rafting destination and it is connected by road to the Southern Tablelands. The dam is large and the area around it features a diverse environment including elevated rainforest, different to the Daintree, but of equal scenic value. There are also scenic opportunities for views from the top of the rainforest escarpment across the coast and out over the Coral Sea.

There have been extensive studies completed on the development of the area as a tourism destination to assist in diverting some Cairns based tourism traffic south.

It is currently under-developed, at a similar stage to the Daintree some years ago. It has been suggested that with its natural assets, it presents an opportunity as a base for "soft" adventure tourism, building on the image already created by "Survivor" and before that, the eco-challenge.

There is extensive documentation available on this proposal and a prospectus has been released seeking expressions of interest in development of the area. (**Contact – Amanda Stubbs 07) 3257 0828**)

Currently the Northern Territory is experiencing rapid increases in room numbers but lacks eco-tourism and destination accommodation to the extent seen in Northern Queensland. Specific key development projects in the Northern Territory will focus upon:

- Upgrading national park facilities.
- New tourism development including Alice Springs Desert Park, NT Heritage Trail and Tourism Drive Programs.
- Ensuring year round road access to main tourism attractions.
- Themed wilderness lodges and safari camps in and adjacent to national parks.
- Tourism Standards, currently being developed for the Australian Tourism Export Council.
- Upgrading airports and seat capacity.
- Alice Springs to Darwin railway.
- Developing Darwin as a major cruise ship destination in addition to a port of call for defence ships.

Western Australian Development opportunities include building on existing interest in the Western Australia mining industry and further building on developing coastal tourism in the north of the State. Opportunities for resorts and accommodation construction exist to complement the increasingly serviced tourism facilities. Ningaloo Reef, with its opportunities to swim with whale sharks, Monkey Mia and its famous dolphins and Broome's Cable beach already have an international profile from which to build other product. Opportunities extend to retail and residential developments in many centres particularly:

- In the Kimberley, by building on the developments at Cable Beach.
- Opportunities at Gantheaume Point south of Cable Beach also exist.
- In the east Kimberley future opportunities for tourism investment exist at Lake Argyle.
- Additional accommodation opportunities at Kununurra.
- In the Gascoyne region, the Carnarvon North Water project offers a 600-hectare lot development area for tourism and residential development adjacent to the Shark Bay World Heritage Area.
- The \$A13 million Exmouth Boat harbour will be associated with up to 440 residential lots in a canal complex and tourist resort development. There are currently opportunities for investors interested in developing segments of the residential and tourism resort infrastructure elements of this project. (*See 4.9.1 General Infrastructure*).
- Small boat facilities at Exmouth and Shark Bay will require support from light engineering and boat building industries.

Increasing pressure on sensitive, popular areas, such as Uluru and the Daintree Rainforest is developing the need to spread the load by diverting traffic into other areas. This creates the need for more product and infrastructure and so new opportunities.

Special care needs to be taken to match this new product and infrastructure with regional markets as they evolve and investors should obtain advice from professionals in the region under consideration.

Savannah Guides
The Savannah Guides Organisation and the associated Savannah Way are unifying concepts for a style of tourism product across Northern Australia. The aim is to set and maintain a standard of interpretation for Tropical Savannah from Mareeba, near Cairns on the east coast, to Broome in the west and so create a chain of high quality, authentic experiences for visitors. The Savannah Guides Organisation sets standards and provides training for its members in interpretation. The organisation and the concept has already received high recognition when it won the British Airways "Tourism for Tomorrow" global award for a tourism organisation in 2000. This will provide added impetus to the concept. However, a great deal of product development is required, particularly in the west. There are opportunities for development of a range of products based on this concept.

Business tourism across the North is increasing. This is an area of tourism often overlooked, but which includes a variety of opportunities.

Conventions, incentives, meetings and exhibitions, represent big business and there is increasing activity in this area from both Australian domestic and international markets.

Significant inroads have also been made into international education markets. Increasing success is also being enjoyed by businesses marketing the high quality of Northern Australia's medical skills and facilities in conjunction with the location being an ideal place to recuperate in a relaxed tropical atmosphere.

4.2 Fisheries – Aquaculture

4.2.1 Market Overview, Trends and Influences

The value of world imports in fish products was \$US55,000 million in 1998, while the gross value of Australian fisheries for 1998/99 was \$A2,641 million. It is Australia's fifth largest industry. Northern Australia accounted for around one third of Australian production.

More than 77 percent of total world import value is concentrated in Japanese, US and EU imports.

Shrimp is the main fish trade commodity in value terms, accounting for some 20 percent of the total value of internationally traded fishery products. United States shrimp consumption was a record in 1999 at 400,000 tonnes, 330,000 tonnes of which were imported.

Spain is the main fresh and frozen shrimp importer among the EC countries, followed by France, the United Kingdom and Italy.

World production from capture fisheries is now steady, with only small increases each year. Most of the world's fishing areas have apparently reached their maximum potential, with the majority of stocks fully exploited. No substantial growth is expected from wild capture sources.

Aquaculture production now accounts for most growth in world fisheries production.

“The (world) production increase of 20 million tonnes over the last decade was mainly due to aquaculture, as capture fisheries production remained relatively stable...”

*Starting from an insignificant total production, inland and marine aquaculture production grew by about 5 percent per year between 1950 and 1969 and by about 8 percent per year during the 1970s and 1980s, and it has increased further to 10 percent per year since 1990.”*¹⁰

Australian aquaculture is small, but has been increasing at 15% per year and is receiving increasing attention and encouragement from Federal, State and Territory governments.

1997-98 production was in the order of 27,000t, with a value of \$A490 million. The national aquaculture production target aims for production valued at \$A2.5 billion by 2010. (Agriculture, Forestry and Fisheries Australia).

The potential for this growth is supported by Australia's low utilisation level, with production running at only 0.01kg per 1,000 ha of coastal land, compared to 1.3kg for New Zealand and 33.8kg for Japan.

Consumer trends support an optimistic outlook. Australian aquaculture production is focussed on high value species and live or fresh chilled product aimed at high value domestic and international markets.

Trends in these markets include a move to simple meals that are ready to eat and easy to cook and include an increasingly important position for fresh fish. Unlike many other food products, fish is still more favourably received on the market when it is fresh rather than processed. Improvements in packaging, reduced airfreight prices, and more efficient and reliable transport have created additional sales outlets for fresh fish. Food chains and department stores are also taking an increasing share of the fresh seafood sector.

“The United States and EU markets for fishery products are expected to expand in coming years as a result of consumer health consciousness and belief in the positive impact that fish consumption can have on health. Healthy food is a growing concern in developed countries, and calorie counts, dietary and nutritional plans and recipes on packed fish are a useful addition to value-added products.”

“Outside Japan, the consumption of sashimi and sushi is increasing in other Asian countries, the United States and Europe.”¹⁰

4.2.2 Northern Australian Perspective and Opportunities

Northern Australia is very well placed to develop a substantial aquaculture industry. In addition to the general ‘clean and green’ perceptions of Australia:

- In relation to fresh water species, it has the majority of Australia’s harvestable water;
- It has major irrigation schemes, with dams and channels with potential for caged fresh water species culture;
- There are a variety of areas with tidal flows that assist in flushing and oxygenation;
- While the Great Barrier Reef and sensitive coastal environments place some restrictions on sites, there are still extensive site options;
- Important and high value species are native to the region;
- It is isolated from diseases such as white spot disease in prawns and ‘crayfish plague’ that have disrupted production in other areas;
- It is isolated from the risk of contamination and disease from human and industrial effluent discharge, problems which have beset major Asian competitors;
- Western Australian, Northern Territory and Queensland governments have all carried out a assessment of possible sites, gaps in infrastructure and environmental considerations and are providing support and encouragement for development of the industry;
- Northern fisheries research centres are networked into international research projects with direct application to the North.

Historical constraints of limited infrastructure, poor links to marketing chains and incomplete research into hatchery and production systems (in the case of promising species not presently in commercial production) are increasingly being overcome. Additional work on the most cost effective feeding regimes is in progress.

The main species presently cultured commercially across Northern Australia are:

- Pearl oysters
- Black tiger prawns
- Kuruma prawns
- Barramundi
- Red claw
- Silver perch
- Eels

The first four account for the overwhelming proportion of production. Pearl oysters are well developed in Western Australia and Northern Territory and underdeveloped in Northern Queensland, where a lack of shell is a constraint.

Recent breakthroughs by the Australian Institute of Marine Science (AIMS), reported later, will provide significant impetus to the culture of black tiger prawns.

In the case of barramundi, production has to date been oriented to production of plate size fish in fresh water impoundments for the domestic market. Frozen barramundi fillet tends to be imported, as local producers have difficulty in being cost competitive.

Salt Water Caged Barramundi
Bathurst Island, 70 nautical miles north of Darwin is the site of a new sea cage aquaculture project for barramundi. The operation has been established by Pivot Aquaculture of Tasmania, who has entered into an agreement with the Tiwi Aboriginal people. A four-year agreement has also been struck with the Darwin Aquaculture Centre to supply 750,000 barramundi fingerlings per year. If the pilot project is successful, the project aims to ultimately produce 3,000 tonnes of fresh chilled barramundi fillet per year. This differentiates the project from other Australian operations that produce plate size fish in fresh water and from imported frozen fillet.
The project will cost some \$A20 million, including operating costs to bring it to its full two stage development. However, it should be generating cash flow within 18 months.
Fourteen 24 sq m galvanised steel cages will be rafted together in two lines and each will house an eight metre deep predator-proof net containing 300,000 to 400,000 fish.

Partially due to disease problems overseas, there is international interest in Australia for prawn farming and there are two proposals currently under consideration for farms each representing a \$A20 to \$A40 million investment.

Red claw is technically well developed, but production small, especially compared to Central America, where red claw (Australian species) production is reportedly in the vicinity of 10,000 tonnes per year, compared to Australian production in the order of 100 tonnes per annum. There are substantial high value niche markets in Europe for fresh water crayfish, but Australian production is at this stage too small and fragmented to enter this market. Increased competition could be expected from production sources on the American continent.

Both silver perch and eel farming operations are in their infancy.

Aquaculture for Lake Argyle
A pilot freshwater finfish farm, hatchery and cage-farming project has been established on Lake Argyle, in the Kimberley, Western Australia. Production is some 100,000 juveniles per year, which could produce up to 40-50 tonnes of fish per annum. Expressions of interest have now been called from commercial operators to develop a barramundi caged farming industry on Lake Argyle. ¹¹

A variety of species are under consideration and at various stages of development for commercial aquaculture. Many being considered may not be of sufficiently high value in international markets to be viable against strong competition.

Nevertheless, a number of high value species have excellent market potential and include barramundi, mud crabs, crayfish and giant clams. There are also opportunities for the culture of microorganisms and algae, with commercial value either as feed for cultured species, or as ingredients for health formulations (eg spirulina).

In the case of mud crabs, breeding and culture problems, including predation and damage from fighting, have been reportedly resolved, with a commercial industry expected to begin development in the next 2 years.

Northern Australia is presently participating in an APEC Grouper research and development network. The grouper family are generally prized and are of high value. They include coral trout, maori wrasse and barramundi.

Significant progress has been made with barramundi culture and the market outlook for this fish is particularly strong.

“(In 1996) A market analysis was carried out by Hong Kong based consultants, concentrating on the Hong Kong – southern China live marine finfish market. The total seafood market in Hong Kong is over 220 000 tonnes per annum and the market for high-quality live reef fish was estimated to be 1600-1700 tonnes per annum. Assuming that the Hong Kong and Chinese economies continue to expand at the current rate, both demand and price will expand in the immediate future. Compound growth rates in excess of 12% are forecast, indicating that the market is expected to double every six years.

The demand for the highest price species – coral trout, barramundi cod and Maori wrasse – was estimated at only about 814 tonnes. The average wholesale price (i.e. the price received by wholesalers from the restaurant trade) in 1995 for coral trout was AUD46/kg and for barramundi cod and Maori wrasse was AUD87/kg. Prices were forecast to be 60-100% higher by the year 2003. The estimated wholesale market value for the top three species was projected to be AUD198 million in the year 2000, growing to AUD398 million by 2003. In addition to the market for live reef fish, there are substantial markets for whole fish chilled products, although the extent of these markets was not investigated in this study.¹²

Existing supply sources are expected to be insufficient to satisfy projected demand.”

While the R&D costs to establish commercially viable aquaculture industries for new species are substantial, a number of successful industries have been built thus far.

“Costs of initial R&D for the establishment of commercially viable aquaculture industries were generally in the range AUD\$70 to 90 million, in cases where there was no or little existing technology base for these industries. In cases where there was an existing technology base, initial R&D costs were substantially less, generally in the range AUD2.5-26.5 million.

The value of these industries is roughly proportional to the level of R&D funding provided for their establishment. For example, the cost to establish the Atlantic salmon industry in Norway was estimated at AUD90 million over eight years and this industry is now valued at AUD900 million per annum. Similarly, the channel catfish industry in the US cost the equivalent of about AUD70 million for initial R&D and is currently valued at about AUD441 million per annum. ¹²

Trade in **live ornamental fish** is very small in Australia, but is worth mentioning. Global trade has been increasing since the 1980s. Presently, total wholesale trade is estimated at \$US900 million and total retail trade at about \$US3 billion (live animals for aquariums only). Asia supplies more than 50% of the world's total ornamental fish. Singapore is by far the leading exporter, followed by the United States, Hong Kong Special Administrative Region, Japan, Malaysia, Czech Republic, Israel, Philippines and Sri Lanka. The main importers are the United States, Japan and Europe, particularly Germany, France and the United Kingdom.

Northern Australia has tropical varieties that may be suitable.

Artesian Water for Ornamentals
The Gascoyne Inland Aquaculture Group (GIAG) in Western Australia is investigating the suitability of artesian aquaculture, either as a diversification option or for the development of new business enterprises. Over one third of the Gascoyne pastoral land has access to artesian water.
A survival and conditioning trial of the aquarium fish species; comets, black mollies and swordtails have been commenced. The fish were placed in flow-through artesian water tanks on four Gascoyne pastoral stations, with good results to date.

4.3 Horticulture

4.3.1 Developments in Irrigation

There are extensive areas of Northern Australia with suitable soils for horticulture. However apart from the coastal fringe on the east coast, much of this land requires irrigation, as it is areas of low rainfall. This represents an advantage for certain crops, as plant growth, flowering and harvesting can be better controlled through the regime of irrigation and fertilization adopted.

The largest irrigation areas are the Tinaroo Irrigation Scheme on the Atherton Tablelands and the more recent Lake Argyle, Ord River scheme, which now, with stage two coming online, extends into the Northern Territory from the first stage in Western Australia.

All irrigation areas have a wide diversity of crops too extensive for all to be discussed. Each presents varying degrees of both opportunity and issues for additional development.

Ord Scheme

This irrigation system has the capacity to irrigate in excess of 75,000 hectares. The first stage involved some 11,200 hectares. Stage two now coming on line adds some 64,000 hectares. Cotton is expected to play a major role in this development, with some \$A3 million being produced in 1999 from 957 hectares. Sugar is also expected to expand in Stage two of the scheme.

Specific possible new crops under development are considered below.

4.3.2 Emerging Opportunities

Cocoa ^{13 14 15}

A five-year project to evaluate the prospects of establishing a cocoa industry in Northern Australia commenced in 1998. It is a collaborative project between the Western Australian, Northern Territory and Queensland government departments of primary industry, supported by RIRDC (Rural Industry Research & Development Corporation) and Cadbury-Schweppes. A number of factors are driving this examination:

- As at 1998, world cocoa bean production was about 2,700,000 tonnes (and falling), with a value of A\$6,750 million;
- Consumption is consistently exceeding supply, with estimates being that world reserves of bean will be nil by 2003;
- Production is falling due to political instability, diseases (which do not exist in Australia), recent low prices, corruption and replacement by oil palm plantations in Malaysia;
- Market predictions are for increasing consumption of 1.5 to 2% in mature markets and 3% in emerging markets in Asia and Eastern Europe;
- Traditional growing areas are characterised by labour intensity, little short to medium prospects of mechanisation due to social issues, low yields, falling quality and management issues for larger scale plantings;
- There are serious concerns globally on the part of chocolate manufacturers about continuity of supply and falling quality.

World cocoa harvest and prices since January 2001 have reflected these influences. The harvest is falling far short of previous crop estimates and prices have risen sharply. The current price is around \$A2,090 per tonne. In the 1970's a high with a current equivalent of \$A8,106 per tonne was recorded.

Cocoa has never been produced under a scientifically backed regime of advanced cultivars, irrigation and fertilisation. The prospects are therefore strong that yields in excess of that required for profitability in Northern Australian conditions can be achieved. Similarly, work has not previously been done on mechanisation of harvesting, bean extraction and pruning. In the case of coffee, mechanical harvesting has reduced harvesting costs by an estimated factor of 13 times. There is also the opportunity to

reduce drying costs through the adoption of energy efficient solar-based systems in Northern Australia.

Research to date indicates good prospects for the development of a best practice, world competitive industry. This will rest firmly with the study achieving a Northern Australian production cost equivalent to or below a world low price scenario, which will protect against price falls such as have occurred in the past.

A number of additional factors give cause for optimism:

- Currently Australia imports approximately 40,000 tonnes of cocoa (dry bean equivalent) for its chocolate, beverage and confectionery requirements. To replace half of this with Australian production would represent a crop worth between A\$50 and A\$100 million, depending on world price trends;
- Cadbury-Schweppes is very supportive and have indicated they would be prepared to enter into contractual arrangements for supply and pay a 10% premium on world prices for high fat content “Ghana-like” flavours;
- Many chocolate products contain 50% sugar, indicating processing integration and crop diversification opportunities in sugar cane growing areas that are generally suitable for cocoa. (Currently under investigation by mills);
- Traditional cocoa producing countries have experienced long-term use of pesticides and poor soils containing heavy metals (eg. Cadmium). This is leading to concerns being raised amongst international environmental and toxicology bodies;
- Diseases affecting crops in major growing areas are not endemic in Australia;
- Australia has considerable in-house technical expertise in chocolate manufacture, which if combined with a ‘clean green’ image produces an opportunity for an export industry;
- Cadbury-Schweppes has particularly chosen Australia as a developed country with potential to produce quality product and has an eye to the developing markets in Asia and China in particular;
- In the longer term, the establishment of a domestic cocoa grinding facility may produce value adding opportunities;
- A KPMG report (1998), identified Australia as a superior location for confectionary manufacturing operations with advantages of skilled labour, low cost of raw materials, low cost of energy and direct access to Asian markets.

Coffee ^{16 17}

There is presently a small industry and an opportunity to re-establish a substantial coffee growing industry in Australia. Earlier this century, the local coffee industry effectively disappeared, as it could not compete with overseas production costs.

Machine harvesting has now been established and the prized Arabica coffee is suitable for growing in dry sub tropical areas, without frost, under irrigation. Under these circumstances berry ripening can be controlled and coordinated to make machine harvesting viable, high yields achieved and the Australian industry internationally cost competitive.

The world market for coffee is some 6 million tonnes of green bean, with the world coffee trade being worth some \$A24 billion per year.

Australian production was 250 tonnes in 1998/99, worth some A\$1.5 million. However, even in 1996, Australia imported 49,000t of green bean, worth around \$A225 million. The retail value of the Australian coffee industry is estimated at \$A483 million.

A 1% penetration into the world market would represent a new industry worth some \$A500 million.

However Australian coffee production is not presently large enough for reliable supply to major buyers or to develop significant exports.

World prices for coffee vary widely, due to climatic conditions in Brazil, where 25% of the world's coffee is grown. Australian coffee prices vary with world prices, but have generally been much higher. The range received for Northern Australian coffee has been between \$3 and \$8 kg.

Department of Primary Industries (QLD) calculations are that to make coffee production profitable in Northern Australia a yield of 2t of green bean/ha and a price of \$4 kg are required. However prices of up to double this are possible and production trials have achieved 5t of green bean/ha.

Northern Australia has some particular advantages for coffee production:

- Efficient, high yield, cost effective;
- Crop is free of major pests and diseases (eg coffee rust, which is prevalent in overseas crops);
- Its 'pesticide free' image is recognised overseas and gives Australian coffee a "clean green" reputation;
- Kona coffee from Hawaii has a similar cost structure to Australia and achieves an international price premium due to its clean green market image. It has successfully marketed roasted coffee into Japan at wholesale prices up to A\$40/kg (roasted) above average prices in this market of A\$16-20kg;

- Australian Arabica coffee tends to have a lower caffeine content;
- Mild, medium-acidity, 'stomach friendly' speciality coffees are being produced;
- It is possible to produce organic coffee in Australia, which has a higher production cost, but attracts premium prices.

There is some limitation on premium sites for this industry, but it could be compared to the wine industry in certain respects. Coffee involves subtle flavours and expert blending to produce a wide range of taste experiences. The Australian wine industry is a model that supports Australia's ability to build leading edge expertise in these areas.

Cashews

The Australian cashew industry is still in its infancy. It is a tropical evergreen tree from northeast Brazil. It ranks third in world production of edible tree nuts with current world production of about 700,000t nut-in-shell (NIS). It is particularly suited to sections of the top section of far Northern Australia, where there are large areas of suitable land and an adequate water supply.

- World trade in cashews exceeds US\$2 billion and there is steadily expanding world demand.
- Cashew imports into Australia amount to 5,000t of kernel, worth A\$26 to \$30 million.
- Australia presently produces only some 25t of kernel, through one major plantation in North Queensland and two plantations in the Northern Territory.

The key to industry expansion in Australia is seen to be large plantings of high yielding hybrids adapted to Australian conditions. There is currently a joint government research and grower-breeding program to achieve this, with evaluations currently underway.

It is considered that plantings of at least 500ha in single or cooperative plantations may be required to establish a brand name and minimise unit costs.

Presently all Australian cashews are sent to China for kernel extraction. This process is complicated and laborious and China provides the cheapest option, with the Chinese retaining by product such as caustic oil and returning the kernels to Australia.

Due to the time to bring trees to maturity, this must be regarded as a longer-term investment, but with good prospects according to current Australian producers.

4.4 Live Stock – Traditional Products

4.4.1 Market Overview, Trends and Influences

Global production of beef and veal is calculated at 53.5 million tonnes for 1996 and valued at around \$US165 billion. The value of Australian beef and veal exports totalled \$A3.1 billion in 99/00 representing 27% of the value of total livestock exports¹⁸.

Beef and Veal is Australia's largest livestock sector marginally larger than the wool sector, and represented 26% of all livestock exports in 99/00. In comparison lamb represented 3.4% and pork represented 1.4% of the total value of livestock exports¹⁸.

The total value of Australia's live exports for sheep and beef for 97/98 is shown below:

Livestock	Numbers	Slaughtered	Exported live	Value - Live exports
Sheep / lamb	114,468,000	31,808,000	4,876,000	\$181 M
Beef/veal	21,854,000	8,649,000	851,000	\$438 M

Australia's cattle stock is estimated at around 22.6 million head as follows:

	1997/98	1998/99
New South Wales	5,775,000	5,616,000
Victoria	2,389,000	2,121,000
Queensland	10,417,000	10,065,000
South Australia	1,072,000	999,000
Western Australia	1,871,000	1,821,000
Tasmania	525,000	504,000
Northern Territory	1,647,000	1,537,000
ACT	11,000	10,000
TOTAL Australia	23,706,000	22,672,000

Global trends indicate an increasing demand for live animals and bovine meat in Asian countries driving the growth in production of both product categories in Australia.

Estimated demand for beef in selected north and south East Asian countries to 2003 is shown below²⁰:

	1998 - tonnes	2003 - tonnes
Japan	55,300	726,000
South Korea	238,000	337,300
Hong Kong	91,300	114,500
Malaysia	86,000	132,800
Indonesia	62,000	98,000
Singapore	26,000	42,000
Thailand	23,000	61,000

4.4.2 Northern Australian Perspective and Opportunities

The Northern Australia cattle industry is largely geared towards live cattle exports, due to the increasing demand in South East Asia and the impact of higher tariffs on chilled meat than live exports. In 1999 216,400 head of cattle were exported to South East Asia and the Middle East from Darwin, representing an export value of \$A91.6 million ²⁰.

In 1998/99, approximately 151,000 head of cattle originating from Queensland were exported compared to an estimated 195,000 head in 1997/98. Main markets included the Philippines, Indonesia, Malaysia and Egypt.

Integration with Asia

It is not merely a case of relocating the point of slaughter: these stock are primarily going into feedlots. This is the first time that the Australian meat industry has been integrated into the production and consumption system of Asia.

Pastoralism is one of Northern Australia's oldest industries. There is an increasing trend for the north's pastoral industries to undergo some restructuring through property amalgamation and diversification into tourism, horticulture and aquaculture, or through the transfer of leases to other economic activities.

The Northern Australia cattle production system is progressively evolving and includes the adoption of sustainable production and landcare, effective property and rangeland management planning techniques and improved herd management techniques.

A reduction in herd numbers in the north over previous years has been offset with effective disease eradication programmes implemented throughout the northern region. This has also enabled further development of other livestock industries.

A growing industry in northern Australia is the domestication of Swamp Buffalo in the Northern Territory. In 1996/97 there were approximately 20 properties in the top end holding 9,440 domesticated Swamp buffalo for slaughter and live export sales to Brunei. The latest development in this industry includes the importing of Rivervine buffalo from the United States for cross breeding purposes to improve the current Australia breed ²⁰.

It is estimated there is approximately 20,000 head of wild buffalo in southern Arnhem Land, and 60,000 camels in Central Australia. The emerging camel industry is based on the capture and utilisation of feral camels, with an increasing trend to establish breeder herds on existing pastoral land as a value added business.

Other intensive animal industries in the Northern Territory include:

- Poultry and eggs,
- Meat,
- Pig meat,
- Fresh milk,

- Crocodile farming,
- As well as exports interstate and overseas of buffalo, horses camel and deer, estimated to be worth \$17 million in 1998/99 for the Northern Territory.

Northern Western Australia has a significant cattle population of approximately 725,000 in 1996/97 in addition to a sheep population of 960,000 ²².

An emerging industry since 1996 has been the live export of goats to Malaysia, with future export potential realistic for south East Asia and the Middle East.

Opportunities available to livestock producers in northern Australia include the potential to improve livestock and compete in new markets, including higher value product areas.

The integration of pastoral operations with growing irrigated pasture production and developments for the production of higher quality beef is also an existing industry opportunity.

Recent agreement by Chinese officials to a protocol that allows cattle from northern Bluetongue free areas to be exported live to China is a boost for the northern cattle industry. It is hoped this will pave the way for large numbers to be exported. The Chinese market is considered as having considerable potential for growth.

4.5 Livestock - Feral Pig

4.5.1 Market Overview, Trends and Influences

Current international trade in fresh and frozen wild boar meat is at least 10,000 tonnes per annum, valued at up to \$55m. Over the 1990's, Australian exports have grown from a low base to now represent about 25% of this market with production standing at around 2,460 tonnes per annum. Between 1996 and 1998 over 150,000 pigs were processed and exported each year with an estimated value of \$15 million each year.

Consumption and imports of wild boar meat are highest in countries in the European Community (EC). The trade is volatile, with imports to particular countries varying from less than 5,000 tonnes, to almost 10,000 tonnes over the past decade. Several factors influence demand and prices, including supply levels from Eastern Europe and the severity and length of the winter. It seems that consumption of wild boar increases when the northern winter is long and cold.

Two types of wild boar meat are traded on the world market, game meat and meat of farmed wild-type pigs. The most important type is game meat, which is from wild boar shot while living in a wild state. Game pig meat has a strong and distinct flavour and fetches higher prices than domestic pork in EU countries in particular.

Germany is the world's largest importer of wild boar meat, followed by France, Italy and Belgium/Luxembourg. Several countries outside the European Community, such as Japan and Sweden, also import wild boar meat.

Before Australia's entry in 1980, Eastern European countries dominated supply. Poland and Hungary continue to supply a large amount of wild boar meat imported by EU countries, but Australia now rivals Poland as the world's largest exporter of wild boar meat.

The expansion of Australian exports during the 1990s increased the volume of wild boar meat available on the world market, **but has not displaced production by existing suppliers**. Australian exports appear to be meeting steadily increasing market demand in the face of decreasing production from traditional sources due to various pressures on stock. Meat buyers in Europe expect this trend to continue. This represents an opportunity to further expand the Australian industry. Sustained market growth has been particularly in France and Italy.

There are additional markets available in Pacific Rim nations including Papua New Guinea, which consume reasonable volumes of wild boar. This market is underdeveloped and current importation laws into these markets require processing facilities to be FDA, (USA Food and Drug Administration) approved. This is not seen as a constraint as this approval can be obtained in tandem with EU accreditation.

4.5.2 Northern Australian Perspective and Opportunities

Northern Australia has large stocks of feral pigs, traditionally viewed as an agricultural pest due to damage to crops and predation on lambs and calves. An estimate of \$80 million per year in damage was made in 1982.

In Cape York alone, it is estimated by Department of Natural Resources land surveys (and confirmed by Natural Heritage Trust estimates) that between 5 and 7 million pigs currently inhabit the region, plus some 20,000 feral or wild horses, (which also have a commercial value in the EU). By comparison, this area currently carries about 140,000 cattle, with an annual turn-off of 13,500-17,000 head.

The National Heritage Trust on Cape York is now to carry out a feasibility study for the establishment of an export abattoir for feral pig and horse. They presently have the support of 10 local governments covering North Queensland from Cape York, across Queensland to the Northern Territory border. A pre-feasibility study already completed concluded that the project had strong prospects.

4.6 Livestock - Camels

4.6.1 Market Overview, Trends and Influences

There are about 19 million camels in the world. Somalia is the largest producer of camel meat, processing around 200,000 tonnes per year.

Growing demand for red meat in Asia, North Africa and the Middle East provides opportunities for the export of live camels and camel meat. Currently, Strathmeats in

South Australia is the only abattoir producing camel meat for the Australian domestic market.

4.6.2 Northern Australian Perspective and Opportunities

In December 2000 the first shipment of live camels for South East Asia left the port of Darwin. In late March 2001 the second shipment of Northern Territory camels left for Brunei.

Although the industry in Australia is still in its infancy there is scope to develop with an estimated wild herd size of between 100,000 to 120,000 head covering the Northern Territory, Western Australia and South Australia.

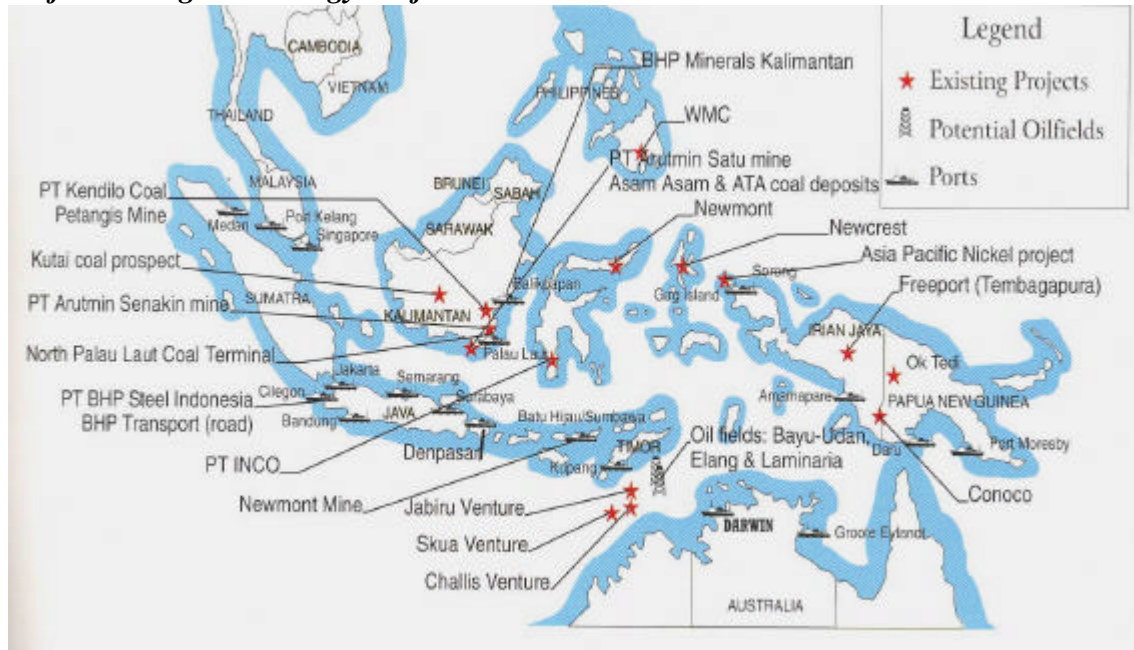
The lack of suitable export abattoirs willing to process camels is the current single major constraint to industry development.

Talks are under way with an export abattoir at Peterborough in South Australia and trials for a halal kill are set down for early April 2001. If successful, and other abattoirs follow suit Australia's camel meat industry could well be up and running ¹⁹.

4.7 Mining Oil and Gas

4.7.1 Industry Overview, Trends and Influences

Major Mining and Energy Projects Close to Northern Australia



With deregulation of Australia's Energy market, the performance of Northern Australia mining, oil and gas industries is expected to continue to increase. Total value of Australia's energy and mineral exports in 1999 totalled \$A44 billion, up from \$A41 billion in 1997²⁰.

National mineral exploration was subdued in 1999-00, with a reduction in mining exploration from \$2 billion in 1997 to \$1.3 billion in 1999. Australia's decline as a destination for exploration activity was attributed to lower world commodity prices, native title uncertainties, greater worldwide competition for exploration funds and significant changes in the productivity of exploration and mining operations²⁰.

Northern Australian states lead the rest of Australia in their commitment toward the production of mineral and energy commodities, representing substantial contributions to Gross State Product (GSP):

Mining Oil & Gas	% of GSP
Western Australia	20.1
Northern Territory	13.8
Queensland	5.2
South Australia	2.3

Victoria	2.1
Tasmania	2.0
New South Wales	1.7
ACT	0.0
Australia Total	4.2

Source: NT Government

The gross value of mine production in Australia was \$A39.5 billion in 1998²¹.

The value of northern Australia's mineral production is significant in world terms. Western Australia alone produced 36% of the world's total diamond production, 18% of the world alumina and 15% of the world iron ore production in 1998/99²².

It is estimated northern Australia represents approximately 50% of the total Australian production of energy and mineral resources:

Region	Value of production - 97/98	Percentage of state total
Gascoyne	\$70.8 million (99/00)	0.3%
Pilbara	\$11,717 million (99/00)	55.1%
Kimberley	\$891 million (99/00)	4.2%
Northern Territory	\$1,545 million	100%
Far North QLD	\$388 million	7.5%
North & NW QLD	\$1,934 million	25.8%
Central QLD	\$4,990 million	59%
Total	\$21,536 million	

Source: Office of Economic Research & Development QLD, Department of Commerce & Trade WA, NT Government.

4.7.2 Minerals – Reserves and Established Industry

Current mineral reserves in Northern Australia include:

Region	Commodity	Reserve
Gascoyne	Salt	Lake Mcleod, Useless Loop, Shark Bay
	Gypsum	Lake Mcleod
Pilbara	Iron Ore	(95% of the states total production 97/98)
	Gold	Telfer - East Pilbara
	Salt	Dampier, Port Hedland, Onslow (73.5% of states total) - second largest salt field in the world
	Copper	Nifty, Telfer & Radio Hill (66.4 % of states total 97/98)
	Manganese	(100% of states total 97/98)
Kimberley	Diamonds	Lake Argyle (85% of the region's mining sector production)

	Zinc	Cadjebut
	Iron Ore	Cockatoo Island (3% of regions mining sector production)
	Lead	Cadjebut
	Aggregate, Sand, Silver, Rock, Granite, Gravel	
Northern Territory	Bauxite	Gove (3 rd largest deposit in Australia)
	Gold	Pine Creek, Tanami Desert
	Manganese	Groote Eylandt (3 rd largest deposit in the world)
	Zinc	McArthur River (one of the largest known ore bodies in the world)
	Magnesite	Batchelor
	Cobalt & Nickel	Batchelor
	Diamonds	Borroloola
Far North QLD	Bauxite, Silica, Limestone, Gold, Dolomite	
North-NW QLD	Coal, Gold, Copper/Lead/Zinc Concentrate Limestone, Gypsum	
Central QLD	Opal, Zircon, Gypsum, Coal, Gold, Magnesite, Limestone, Salt	

Source: Office of Economic Research & Development QLD, Department of Commerce & Trade WA, NT Government.

Worldwide base metals consumption is forecast to grow and mineral prices are expected to strengthen throughout 2000-2002 followed by an easing over the period 2004-2005²⁰.

The value of mineral production in the Northern Territory in 99-00 was \$1.42 billion, an increase of 19% from the previous year primarily due to increased gold production and improvements in general commodity prices most notably alumina. The value of mineral production is forecast to increase to 1.6 billion by 2002-03 due to magnesite projects located near Batchelor²⁰.

Metallic and non-metallic mineral production by world class mine sites at Gove, Groote Eylandt and McArthur River accounted for 65% of the Northern Territory's value of mineral production²⁰.

The Pilbara has a competitive advantage in the export market for high quality iron ore and is expected to retain its market share (43% of Australian seaborne trade) over the period to 2015²³.

Austeel DRI/HBI Plant

Austeel has announced plans for the development of vast magnetite iron ore deposit at Fortescue, about 80km south west of Karratha in Western Australia as part of its \$A5 billion integrated iron and steel project, linking with proposed steel milling operations at Newcastle.

The mine will have a planned annual output of 22 million tonnes per annum and a project life of at least 30 years. The ore will be processed onsite by concentration, pelletising and direct reduction to produce 4.62 megatonnes per annum of DRI/HBI. The end product will be transferred 2km by conveyor to a new port to be built at Cape Preston, south of Dampier. Construction of a causeway/bridge linked to a trestle berthing facility is also proposed for Cape Preston to allow the HBI to be loaded on to ships for transport to Newcastle.

The consortium for the integrated project includes the world's third largest steel producer, Corus; the Industrial Bank of Japan; industrial turnkey specialist Danieli & C. SpA; international process technology firm Lurgi AG of Germany; Macsteel International; mining contractor Thiess Contractors; shipping group Andhika Shipmanagement Pte Ltd; and Western Australian engineering firm Clough Engineering.

Queensland is the largest single coal-exporting province in the world, shipping 94 million tonnes in 1995-96. In metallic mineral production, the expected export revenue from the Mount Isa-Carpentaria Mineral Province alone over the next 20 years is \$30 billion²⁴.

4.7.3 Oil and Gas - Reserves and Established Industry

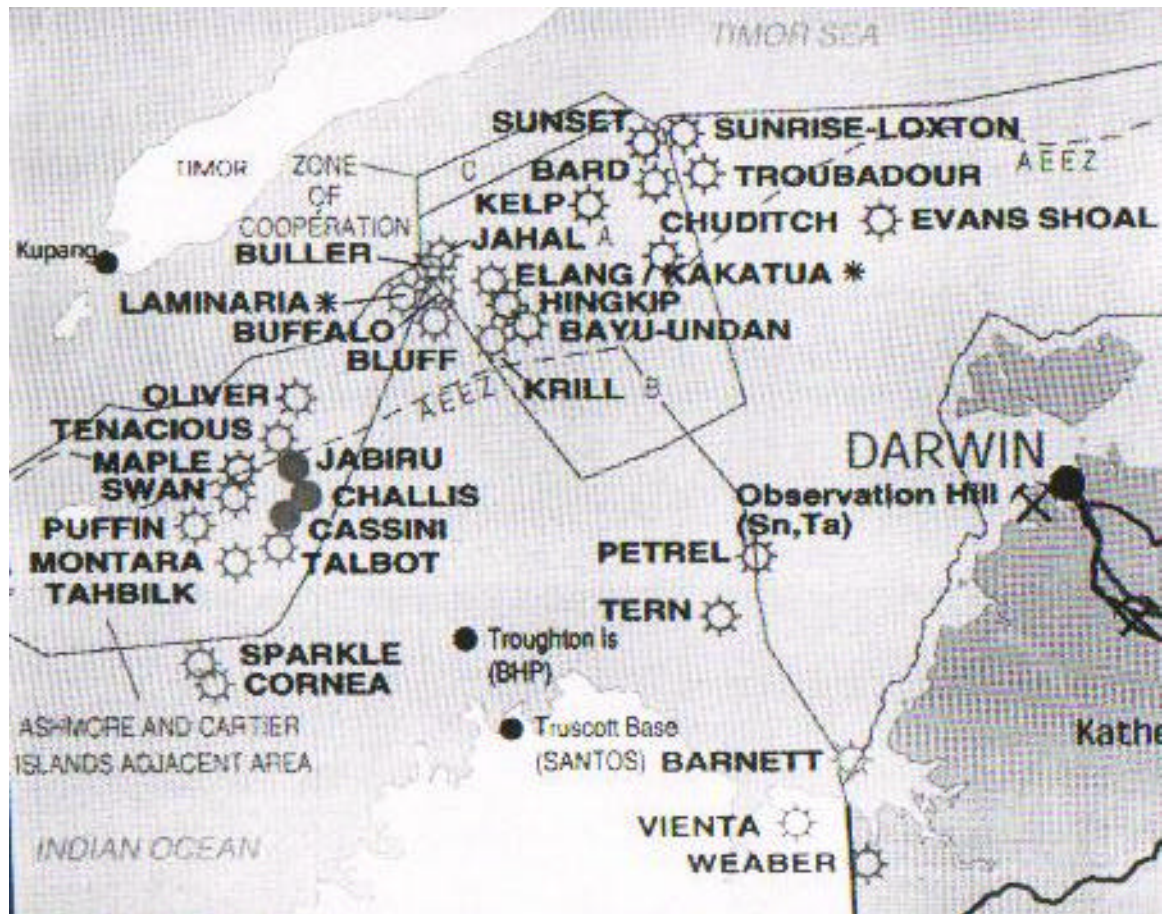
Current energy reserves in northern Australia include:

Region	Commodity	Reserve
Gascoyne	Crude Oil	Near Exmouth
Pilbara	Crude Oil	(99% of states production 97/98)
	Petroleum Condensate	(99% of states production 97/98)
	LNG	(100% of states production 97/98)
	LPG	North West Gas Shelf - North Rankin, Goodwin, Wanea/Cossak fields.
	NG	(90% of states production 97/98)
Kimberley	Crude oil	Canning Basin
Northern Territory	Uranium	Ranger, Jabiluka, Koongarra
	Natural Gas	Onshore - Palm Valley, Mereenie
		Offshore - Greater Sunrise, Evans Shoal, Petrel, Bayu-Undan
	Oil	Onshore - Mereenie Offshore - Jabiru, Challis, Laminaria/Corallina, Elang/Kakatua
	Condensate	Bayu-Undan and Greater Sunrise
Central QLD	Natural Gas	

Source: Office of Economic Research & Development QLD, Department of Commerce & Trade WA, NT Government.

Further developments are occurring in the oil and gas industry in the Pilbara region, which is Australia's leading petroleum producer, with potential projects also being considered in the Timor Gap area and Bonaparte Basin in the Kimberley region. Exploration drilling for petroleum, oil and natural gas continues both onshore and offshore in the vicinity of Exmouth in the Gascoyne region²².

Offshore Oil and Gas Fields



The value of energy production in the NT was \$355.4 million in 98/99. This value more than quadrupled in 99-00 as oil prices remain high and production from the Larinaria Corallina field in the Timor Sea commences²⁰.

Native Title has had a marked effect on greenfield oil and gas exploration, which has previously been weak in the Northern Territory. The earmarked \$A16 million NT Exploration Initiative is focussing on unlocking the Territory's onshore oil and gas potential.

ABARE Forecasts
ABARE forecasts suggest that average prices for Australian minerals and energy should rise in 2001, mainly as a result of higher world energy prices and the effects on revenues of a lower Australian dollar.
Total earnings from Australian minerals and energy exports are forecast to rise 21.3 percent to a record \$A53.9 billion in 2000/1.
The volume of Australian mine production is forecast to rise moderately in 2000/1, with output of some minerals like refined copper and zinc expected to expand significantly.
Australian Production – 2000 output and 2001 forecasts (See over)

Commodity	Production 2000	Production 2001	Value 2000	Value 2001	Change percent
Iron ore	156.4Mt	168.4Mt	\$3817m	\$4451m	16.6
Nickel	142Mt	199Mt	\$1862m	\$2332m	25.2
Gold	296Mt	293Mt	\$4803m	\$5233m	8.9
Alumina	1497Mt	1586Mt	\$3471m	\$3977m	14.6
LNG	7.92Mt	8.02Mt	\$1949m	\$2450m	25.7
Copper	787Mt	810Mt	\$1617m	\$2090m	29.3
Zinc	1265Mt	1456Mt	\$1233m	\$1814m	47.1

(Source ABARE)

4.7.4 Mining and Energy Opportunities

The mining industry and governments in Northern Australia have recognised the importance of adding value to mineral production, providing incentives for the expansion of smelters, refineries and other value added downstream processing in order to sustain existing mineral development in the north.

GTL Plants Proposed
The US company Syntroleum plans to establish a \$A600 million gas to liquids (GTL) plant on the Burrup Peninsula, near Karratha in Western Australia. Syntroleum has engaged the European company, Tessag INA to manage engineering, procurement and construction. It has also recently signed a framework agreement with the Western Australian Industrial Supplies Office to generate strong opportunities for Australian suppliers from the project.
Construction is due to commence in mid 2001. It will generate 1,000 construction jobs, with 70 full time staff once operational and is planned to produce 10,000 barrels of liquid fuel per day.
More recently Shell has announced it is considering Northern Australia as the site for a \$US2 billion gas-to-liquids plant. The plant under consideration for Australia would be capable of producing up to 75,000 barrels of liquid fuel a day.
GTL is emerging as a low-pollution alternative to traditional petroleum-based liquid fuels derived from crude oil. GTL derived synthetic fuels such as diesel contain virtually no sulphur, no heavy metals, fewer aromatics, very low particulate matter and a high cetane index (diesel – 90). Products from the GTL process can also provide blending stock for crude oil refineries seeking to produce low sulphur fuels. In addition they provide greater fuel economy when combusted.
The potential annual market value for GTL products worldwide is estimated to be around \$US175 - 210 billion.

It is estimated there are approximately 40 mining projects worth some \$A14 billion committed or under study in northern Australia indicating the confidence of the industry for continued growth throughout the region²⁵.

Existing mines, in addition to the establishment of new mines and future import replacement opportunities create the potential for continued development of internationally competitive local industries for the design, construction and maintenance of mining equipment and services for domestic and overseas markets.

MITEZ

This is the acronym for the "Mount Isa Townsville Economic Zone". It is a combination of local government authority areas that links the East Coast deep-water port and minerals processing centre of Townsville with the North West Minerals Province centred around Mt Isa in the west. The province holds a significant proportion of the worlds known reserves of base metals and produces copper, lead, zinc, silver and gold. Capital expenditure already committed to develop these mineral resources is approximately \$A1.927 billion.

Townsville/Thuringowa is now the centre for major refining plants for these base metals and capacity is being built for competitive metals processing operations to also be based in the region. This leads to opportunities for other similar industries and the development of downstream industries, with a clustering effect based on the core competencies associated with metals and minerals processing. The opportunities are for clusters to be related through supply chain operations, or through sharing experience, technology, skills, collaborative market development and collaborative tendering.

There are significant import replacement markets for downstream semi-fabricated and fabricated products in the base metals, including foundry operations and castings using nickel, zinc and copper.

Increased opportunities will become available to provide mining equipment and support across a broad spectrum of products and services and technologies, including:

- Geoscience
- Contract mining
- Resource identification
- Mine development
- Minerals handling
- Environmental engineering and infrastructure development
- Environmental management and rehabilitation
- Mining software
- Gold processing technologies

There is current potential in the Pilbara region for the establishment of a world scale integrated petrochemical complex to take advantage of the region's abundance of raw materials inputs such as natural gas and salt. Current investment opportunities include plants for synthetic hydrocarbons, ammonia and urea.

The Kimberley has good prospects for the development of its nickel resources, with the availability of hydro-electric power, excellent ground conditions and low transport costs that offset any higher costs of project development in a remote location.

The short term forecast in the Northern Territory is characterised by an increasing value of metallic and non-metallic minerals production, new mine commissionings and Brownfields exploration activity.

Northern Queensland offers many diverse opportunities for the processing of industrial minerals in raw, processed and manufactured form. Export opportunities range from minerals including:

- Bulk commodity Kaolin for the growing Asian paper industry.
- Small lot packaged minerals such as calcined bentonite clay for household pet litter.
- Perlite and other minerals for bagged horticulture mixes.
- Ceramic items prepared from processed clay materials.
- Titanium minerals for synthetic rutile and pigments.
- Magnesite in calcinised dead burned and electrofused states.
- Zircon for refractories and ceramics

Methanol Proposals

Two companies are looking at proposals to establish methanol-processing plants near Darwin, Northern Territory, to be fed by gas piped from the Timor Sea gas reserves. Methanol is a chemical building block used to manufacture formaldehyde (a base for plastics), MTBE (a fuel additive to improve vehicle performance and reduce harmful emissions), acetic acid and a range of other chemical products. These include panel board and automotive parts.

The first proposal announced was from the international Canadian company, Methanex, whose proposal would create the world's largest methanol processing plant, involving an overall investment of \$A5 billion. The second announcement has been from the UK based GTL Resources for a smaller plant.

Both proposals are at an early stage, with the resolution of East Timorese rights to the reserves, environmental issues and revenue allocation being issues needing to be resolved.

4.8 Forestry

4.8.1 Industry Overview, Trends and Influences

There is approximately 4 billion hectares of native forest in the world, of which about 25 percent is tropical forest or rainforest. It is estimated one billion hectares of forest has been cleared for agriculture and other uses, rainforest being least affected largely due to inaccessibility.

Australia has 155 million hectares of native forests, categorised into closed, open and woodland forests by the size of their crown cover.

Forest Type	Crown Cover ('000s Ha)			Total
	Closed	Open	Woodland	
Eucalypt	nil	32,703	91,759	124,463
Acacia	nil	1,695	10,603	12,298
Rainforest	3,583	nil	nil	3,583
Mangrove	1,045	nil	nil	1,045
Other	nil	4,776	9,670	14,445
Total	4,628	39,174	112,032	155,834

Source: Bureau of Rural Sciences

Australia's native forests are distributed around the northern, eastern, south-eastern and south-western coasts of the mainland and in various regions of Tasmania.

About 80% of Australia's forests are eucalypt forests, which are unique to Australia and occur in a wide range of environments.

The total area of closed and open forest has been reduced from about 69 million hectares to 43.5 million hectares since European settlement, while the area of woodland has been reduced from about 157 million hectares to 112 million hectares²⁶.

The area of forest in each State and Territory and the broad tenure categories of the forest estate is shown in the following table²⁶:

State or Territory	Crown Cover ('000s Ha)			Total
	Closed	Open	Woodland	
ACT	Nil	102	17	119
NSW	217	8,364	12,206	20,787
NT	693	7,020	27,671	35,385
Queensland	2,964	9,989	36,102	49,055
South Aust.	20	2,309	3,170	5,499
Tasmania	545	2,359	nil	2,904
Victoria	8	6,029	1,248	7,285
Western Aust.	180	3,003	31,617	34,800
Total	4,627	39,175	112,033	155,835

Source: Bureau of Rural Sciences

As well as native forests, Australia has an estimated 1.3 million hectares of plantation (National Forest Inventory March 2000). This area of softwood (coniferous) and hardwood (broadleaved) plantations in each state and territory is shown in the following table²⁶.

State or Territory	Plantation Type (Ha)		Total
	Softwood	Hardwood	
ACT	15,269	194	15,463
NSW	246,934	44,451	291,385
NT	5,235	949	6,184
Queensland	185,555	11,182	196,737
South Australia	106,153	12,230	118,383
Tasmania	75,412	101,844	177,256
Victoria	219,197	65,378	284,575
Western Australia	94,500	152,800	247,300
Total	948,255	389,028	1,337,283

Source: National Plantation Inventory March 2000

The supply of timber from Australia's plantations is expected to double over the next decade, making Australia one of four or five countries in the Pacific Rim region that has the potential to increase sustained harvest levels in the future. Emerging shortfalls in the world supply of timber are expected to provide Australian producers with attractive import replacement and export opportunities.

Australia is in a long-term competitive industry position due to:

- Its climate, terrain and forests means that harvesting and regeneration of forests have a lower environmental impact in Australia than in many other countries.
- A limit on harvesting to sustainable levels in most Australian States.
- Australian practices that are setting international benchmarks in excellence.

Australia imports about one-third of its forest products - \$3.0 billion worth in 1994/95. The forest industries are working to reduce this figure by adding value to wood and making high quality pulp and paper in Australia²⁷.

Australia's imports of rainforest timber decreased from 132,400 m³ in 1991-92 to 86,500m³ in 1997-98, reflecting the decreasing availability of timber exports from countries such as Malaysia and Indonesia²⁷.

The forest products industries in Australia are sawmilling, veneers and panelboards, pulp and paper, and woodchips. The forest products group is Australia's second largest manufacturing industry with a turnover of around \$A11 billion in 1995 - 96²⁶.

There were 1102 sawmills in Australia (852 hardwood and 250 softwood) in 1997-98)²⁷.

Consumption of sawn timber in Australia generally varies from about 4 million to 4.5 million cubic metres per annum and is closely linked to the level of building activity. An

increase of 14.5% in total dwelling commencements in 1999-2000 drove consumption of sawn timber to almost 4.8 million cubic metres ²⁶.

Source	Financial Year				
	1995-96	1996-97	1997-98	1998-99	1999-00
Plantations ('000s m ³)	1941.9	1954.6	2220.6	2331	2562
Native Forests ('000s m ³)	1502.8	1430.0	1436.4	1274	1351
Sub-total ('000s m ³)	3444.7	3384.6	3657.0	3605	3913
Imports ('000s m ³)	741.9	756.3	783.8	775	971
Exports ('000s m ³)	53.8	60.1	38.2	51	92
Apparent Consumption ('000s m ³)	4132.8	4089.7	4402.6	4329	4792

Source: ABARE 2000, *Australian Forest Products Statistics*, Canberra, June quarter and previous issues.

The major changes in Australia's timber supply over the past five years include:

- Domestic production of plantation softwood has increased by over 30%;
- Imports increased sharply in 1999-2000 in response to increased house building activity. New Zealand radiata pine now accounts for about 50% of the volume of imports;
- Sawn timber production from native forests has declined from about 1.6 million m³ to 1.35 million m³ per year due to reductions in supply;
- Exports after declining in 1997 – 1998 due to economic uncertainty in Asia recovered strongly in 1999-2000.

However, strong domestic demand for sawn timber and paper and paperboard contributed to the annual trade deficit for forest products increasing by 13% to \$2.2 billion in 1999-2000.

Australia's Resource Assessment Commission (1992) concluded that security of investment for the industry is essential for a competitive wood and wood products industry. The National Forest Policy Statement is seeking to improve resource security²⁶.

"To turn our trade deficit in forest products into a trade surplus in forest products Australia needs to: expand the pulp and paper industry take full advantage of sustainable native forest and expanding plantation resources; reposition our native hardwood sawn timber production into high value added markets; and take advantage of emerging export and import replacement opportunities."

There is an action plan being put in place to develop this industry. The Commonwealth has established 18 Regional Plantation Committees, covering all of Australia. They encompass all stages of the value chain in forestry and are all establishing regional plans for the development of the industry in their region.

Opportunities to link plantation forestry production to carbon credits, bio-energy and other possible by products are being investigated.

4.8.2 Northern Australian Perspective and Opportunities

While forest harvesting has been a traditional industry for Northern Australia and there is a good forestry skills base, tropical plantation forestry is underdeveloped and there is little published material. As to plantings, there are isolated plantings in patches across the North, with advocates of a variety of species for plantation forestry.

Clearly however, Northern Australia resource stocks, land availability, market accessibility, expertise availability, and climate provide significant opportunities for competitive industry development in the relative short term.

Further substantive detail in respect to these opportunities will be published shortly. The RIRDC (Rural Industries Research and Development Corporation) recently let a research project to provide input for the future development of this potentially very large industry. The project title is "Research and Development Priorities or Farm Forestry in North Australia" and is being carried out by Greenfield Resource Options Pty Ltd. The project scope is wider than the title implies. The report, due to be completed in early May 2001, will report on the potential of the industry, including suitable species and will be broader than farm forestry.

4.9 General Infrastructure

Insufficient hard infrastructure has been a constraint to Northern Australian growth for a long time. While the level of infrastructure is still below what would be desirable, the gaps are being filled, with very many projects planned or underway. These are listed under each region later. A number of the larger and or more strategic of the projects are summarised below, as indicators of the scope of activity occurring at many levels across the North, despite the present soft economy.

4.9.1 Exmouth Harbour and Residential Development

Natural tourism assets in the north of Western Australia are substantial, yet underdeveloped. North West Cape, situated in the Gascoyne region is an example. Ningaloo Marine Park is located on the western side of the Cape and encompasses the largest fringing coral reef in Australia. It forms a discontinuous barrier to the coast some 270km long and encloses a lagoon varying in width from 200 metres to over six kilometres. Ningaloo is famous for its diving and visiting whale sharks.

The Cape National Park features strong scenic values, including limestone canyons, coastal dunes and karst formations (that may be candidates for World Heritage listing), together with rich, diverse arid region flora and fauna.

Exmouth is the only township on the North West Cape and has been experiencing steadily increasing visitor numbers and pressure on its infrastructure. A \$A180 million

project to upgrade and extend the boat harbour and develop an associated canal/marina village with up to 400 lots to be made available is currently underway.

The development is divided into four super-lots, A, B, C and D, to provide:

- A Residential lots
- B Multi-purpose lots
- C Resort facilities
- D Marine industry facilities for vessel maintenance and fish processing

One investor has expressed interest in re-locating its facilities to super-lot D. Tenders for canal construction are presently being called by Landcorp.

4.9.2 AustralAsia Railway

This project is to link southern Australia, through Adelaide to the port of Darwin by rail, with work scheduled for completion in 2003. The aim is to establish a new trade route with Darwin as a major supply, service and distribution hub, integrating Australia and South East Asia. The Northern Territory Chief Minister announced final documentation for financial closure on the project on 20 April 2001.

The project involves:

- Construction of a 1,410 km standard gauge railway link between Alice Springs and Darwin, at an estimated cost of A\$1.2 billion, to complete the link from Adelaide;
- Transfer of the existing 839 km Tarcoola to Alice Springs line to the successful consortium. (Which is to operate under a 50 year BOOT arrangement);
- Integration of the line with the East Arm extensions in the Port of Darwin.

The consortium building the railway is Asia Pacific Transport Consortium, comprising:

- Brown & Root
- Barclay Mowlem
- John Holland
- MacMahon Holdings
- Australian Railroad Group (formerly Genesee & Wyoming) – train operators
- PGA Logistics (with P&O as stevedores)

Both public and private sector research has been carried out into the economic viability of the line. The Wran report initially found cost benefit ratios to be 1 is to 1.078 (at 8% discount rate) and 1 is to 1.09 (at 6% real discount rate), in 1994 and revised these figures to 1 is to 1.27 in 1995.

In 1999, Booz-Allen and Hamilton found the cost-benefit ratio to be 1 is to 1.88. These ratios include national and regional economic benefits.

Contributions from the parties to project budget costs are:

Commonwealth Government	\$A191.5million
Northern Territory Government	\$A191.5million
South Australian Government	\$A176.5million
Consortium partners	\$A750.0million

The above includes standby funding being provided jointly by the Federal and State government participants.

A June 1999 Access Economics independent assessment of the economic impact of the railway concluded that during the three-year construction phase:

- National GDP will increase by A\$660m
- South Australian Gross State Product (GSP) will increase by A\$360m
- Northern Territory GSP will increase by A\$200m
- National employment will increase by at least 7,100 jobs

During the operational phase from 2003/4 to 2004/5

- National GDP will increase by A\$4.5 billion
- South Australian GSP will increase by about A\$3 billion
- Northern Territory GSP will increase by about A\$3 billion

The commercial viability of the operation will rest on:

- Returns to the Consortium from taking over the operation of the existing Tarcoola to Alice Springs line;
- Returns from attracting freight. The consortium's operating arm, FreightLink, will provide an integrated door-to-door, one invoice system, with computerised 'mobile warehousing'. The Consortium expects to win over much of the 'contestable freight' (freight that could go by either rail or road) on the basis of cheaper, reliable and faster service. Freight Link and the Governments will also be working to attract new trade, partly with the generation of new enterprises along the railway and with a shift in trading patterns from Asia;
- Returns from operating the intermodal container terminal at Darwin's East Arm Port;
- Returns from access fees from other operators.

Work is scheduled to commence in May 2001. Companies seeking contracts associated with the project need to register with the Northern Territory or South Australian offices of the Industrial Supplies Office. Construction opportunities identified to date include:

- Quarry products
- Camp catering and supplies
- Airstrip construction

- Establishment of borrow pits
- Road overpasses
- Culverts
- Bridges
- Track clearance
- Freight services
- Selected earthworks
- Plant hire/leasing
- Employment services & training
- Accommodation & tourism packages

Once complete, it is intended that there will be a daily train and weekly shipping service from East Arm Port. The train will travel at 90kms per hour with capacity for speeds of up to 130km per hour and carry 250 containers.

For **further information or registration of interest**, contact the Northern Territory Industrial Supplies Office (phone: 08 8941 1130); Jane Munday, Northern Territory Department of Industries and Business (phone: 08 8924 7156), email jane.munday@nt.gov.au.

4.9.3 East Arm Port – Darwin

This project is linked to the AustralAsia rail project and is in two stages. The first stage is complete, at a cost of \$97 million. This included 490 metres of land-backed wharf to cater for live cattle trade, rig tenders, bulk imports and general cargo.

Ships will be able to use Stage 1 of the port in all tidal conditions. The approach channel has been dredged to a depth of 12 metres at the lowest tide. The general-purpose wharf provides one berth dredged to 13 metres and a second dredged to 14 metres.

Stage 2 is estimated to cost a further \$100 million and is divided into two phases. Its completion is to coincide with the opening of the railway project:

Key elements of Stage 2A comprise:

- Provision of a dedicated bulk liquids berth off South Shell Island;
- Extension of the Stage 1 general purpose wharf by 110m to provide a total of 600m;
- Construction of a railway access embankment; and
- Construction of a 220m container wharf and intermodal terminal.

Stage 2B allows for future growth through the:

- Extension of the container intermodal wharf to 300m and the storage area behind it;
- Reclamation of a further two hectares behind the general purpose wharf; and
- Provision of bulk solids exports facilities.

The second stage also includes a sophisticated high-capacity container handling facility, which will ultimately have the capacity to handle 500,000 containers per year.

There is 1,700 hectares of Greenfield land adjacent to East Arm, encompassing Darwin's Trade Development Zone, as well as large tracts of industrially zoned land for developers seeking to establish export –based industries. Sites are suitable for shipping, distribution, cold chain storage and freight forwarding industries.

4.9.4 Cityport – Cairns

This redevelopment project is to reinvigorate the Cairns city waterfront and support the role of the adjacent central business district. It is more than a project for Cairns, as the project represents a strategic re-positioning of the Cairns port in line with the regional emphasis on tourism.

The development has the following components:

- Community access and enhanced pedestrian access to the waterfront;
- Modern terminal facilities for locally based and international cruise liners;
- Increased and upgraded berths for the reef fleet and expanded marina facilities for pleasure craft;
- A reef fleet terminal, accommodation and ancillary facilities with limited retail;
- A focus on landscaping, views and pedestrian promenades;
- Precincts for private development of a mix of hotels, serviced apartments, residential apartments, restaurants, cafes and limited retail.

Project expenditures are estimated as:

- | | |
|--|-----------------------|
| • Planning and approvals | \$2 million + |
| • Capital relating to port infrastructure | \$50 - \$80 million |
| • Estimated expenditures by private developers | \$300 - \$500 million |

The bulk of reclamation works have now been completed

The Port Authority will also be developing the private development sites, which will be let by tender and long-term lease arrangements made. It is expected that strata title options will also be available. It is expected that the first site will be released for tender within 12 months.

4.9.5 Aldoga Aluminium Smelter – Gladstone

Alcoa is to provide the technology and management for this A\$300 billion project, which was announced on January 31. Applications have been lodged for formal approvals and studies to be carried out this year. The plant will be located in the State Development area in Gladstone port's northern precinct. Construction is expected to commence in the first quarter of 2002 and take about two years. The plant will import alumina and petroleum coke and produce 500,000 metric tonnes per year of aluminium. The construction workforce will involve 900 direct jobs.

4.9.6 Tata Ferro-chrome – Gladstone

The Tata group is India's largest private company with interests including iron and steel, vehicle production, coals and minerals, mining and tourism. The Gladstone plant is intended to produce ferro-chrome, with 120,000 tonnes per year to be produced in the first stage, with the capacity to double production. This is a strategic component for the manufacture of stainless steel and other high corrosion resistant steels. This \$A200 million project is presently under evaluation. It is to be completed in two stages, with the first stage to be constructed over 18 months commencing in 2002. The construction workforce will be 200-250. The plant is to be located in the State Development area in the port's northern precinct, with port facilities and infrastructure estimated to cost \$A65 million to provide.

4.9.7 Austral Calcining Project – Gladstone

Austral Calcining Corporation Pty Ltd is a subsidiary of a Dubai trading group. This carbon calcining plant will produce up to 542,000 tonnes per year of calcined petroleum coke for anodes used by Australian, New Zealand and Indonesian aluminium smelters. It will be developed in two stages, valued at a total of \$A250 million. The project is currently under evaluation, with an EIS in 2001. If approved, construction will begin in 2002 and production in 2003. The project will facilitate a \$75 million port development for a bulk materials berth and associated corridor infrastructure at Fisherman's Landing.

4.9.8 General Hospital Relocation – Townsville

A new \$A172 million Townsville General Hospital is being constructed in the vicinity of James Cook University. This is the largest hospital redevelopment outside a major capital city in recent years. With this development, a JCU medical school has commenced operations, with the first students being taken in 2000.

4.9.9 Base Load Power – Townsville

A key project for further minerals processing and flow on industry development from the North West Minerals province in North Queensland is the construction of a base load power station in Townsville. The Queensland Government objective is to have the station in place by 2005 and has requested Stanwell and the Qld Power Trading

Corporation (QPTC) to develop proposals. Interested parties are being encouraged to explore possible joint ventures with these corporations.

The project has an estimated value of \$A750 million and generating capacity of 750 MW. The supply of gas to fire the power station is crucial to the project, with an initial anticipation that this would come from the Chevron pipeline from PNG. However the option of extending a line from the Timor Sea, through Mt Isa and to Townsville is now under active consideration. Other options to fire the station are also being considered.

Two particularly significant projects under consideration that will require base load power are the QNI Yabulu Nickel Refinery expansion (\$A300 million) and the Sun Metals Stage 2 zinc refinery project (\$500 million).

4.9.10 Satellite Launch Facility – Christmas Island

A satellite launching facility has been proposed for Christmas Island to take advantage of its geographic location near the equator and substantial ocean areas under the flight paths. An environmental impact statement has been prepared as part of the process of obtaining approval for the development which has been given conditional approval. Feasibility of the project is under assessment.

If the development comes to fruition this will have a major impact on the Island's economy. Capital injection could be as much as \$US500m with employment of around 300 people. Many of these will hold specialist skills and will move to the Island. However, there will be significant opportunities for local businesses.

4.9.11 Whitsundays Tourism Infrastructure

The Whitsundays area is experiencing a surge of investment in tourism infrastructure. Developments completed within the last 18 months or due for completion in 2001 total \$A310,920,000. Projects earmarked to start in 2001 amount to \$A106,600,000, while developments at an advanced planning stage represent \$A555,500,000.

Major works recently completed include:

- Hamilton Island upgrade \$A40 million
- Coral Sea Resort extension \$A9.5 million
- Airlie Beach Hotel extension \$A10 million
- Waters Edge Resort \$A14 million
- Whitsunday Village expansion \$A6 million
- Airlie Beach Lagoon \$A8 million

Projects under construction include:

- Daydream Island Resort upgrade \$A32 million
- Hayman Island renovation \$A12 million
- South Molle Island renovation \$A5 million

Projects due to start include:

- Horizons Airlie Beach Units & shops \$A80 million
- Port of Airlie marina \$A57 million

5. KEY OPPORTUNITIES –EMERGING INDUSTRY SECTORS

The following highlights the scope of opportunities in emerging Northern Australian industry sectors. It is not intended to be an exhaustive list.

5.1 Food Processing ²⁸

Food processing is extremely competitive; with globalisation leading to domination by large multinational manufacturers with highly developed global brands. In these circumstances, Australian firms are finding it difficult to sustain competitive advantages. Trade Centre statistics record Australia's processed food exports as having grown just 1.8% in the period 1994 to 1998, compared with 21% for the United States, 9.9% for Germany and 9.2% for France. Australia is also coming off a very low base. In the same period, ABS figures show Australia's unprocessed food exports grew by 40% off a significant base. A recent report sets out some of the challenges facing the Australian food processing industry as a result

Northern Australia has an even smaller base of food processing than the rest of Australia and a number of difficulties associated with large scale food processing, (apart from the processing of sugar). These additional restraints have been primarily associated with transport logistics, sufficient volumes to sustain a substantial operation and raw materials costs. Some of these constraints are easing and some competitive advantages emerging that give cause for another look. Constraints due to food safety concerns in processing in a tropical environment have long been resolved.

Golden Circle is presently investigating the viability of establishing a major new facility on the Atherton Tablelands in Far North Queensland. The plant will be focussed on production of sweet corn. This is based on the ability of the North to produce sweet corn 52 weeks per year. A long, reliable supply season reduces factory overheads and inventory costs and is a hedge against crop failures. This can be compared to a plant in say Tasmania, with a processing window of 6 to 8 weeks only.

In most complex food processing operations farmed raw material accounts for more than 50% of factory gate costs and is crucial to total operations. Components of raw material are price, quality, length of the supply season and reliability.

Therefore apart from the supply season, the development of machine harvesting has been important and a 6-row machine that harvests more than 60 tonne/cobs/hour at a cost of less than \$5/tonne has been developed.

Should the Golden Circle plant proceed, it will also open up opportunities for tropical fruit processing and eliminate current logistical restraints associated with transporting the full weight of low value perishable commodities long distances. It will be a major plant, representing world's best practice. A decision is expected mid-2001.

There have also been recent developments of other harvesting technology that contribute to making crops suitable for Northern Australia world competitive as processing inputs.

Chilli and Capsicum

The world's first chilli harvester has been developed, which reduces chilli raw material costs by 50% and a machine to harvest capsicum is under development. It is anticipated this second machine will allow for an expansion of the current industry by a factor of 50.

The Dairy Farmers Organisation is in the process of expanding its processing operations at Malanda, on the Atherton Tablelands. This is with the investment of \$A7 million in the construction of a facility to manufacture mozzarella. A proposal to develop a plant for the extraction of proteins from the waste product - whey is also under investigation, with a budgeted cost of some \$A14 million.

Mango growers in the Burdekin and Atherton Tablelands have created a small operation to process second grade mangoes. (Tableland Export Coop Ltd). This has been based on R&D commissioned to create a sliced mango product using MAP (Modified Atmosphere Technology). This produced a "fresh" mango slice with an extended shelf life (up to 6 weeks in a commercial environment). It has the advantage of being no mess, ready to use, discards 60% by weight of a whole fruit, with a high value to weight ratio and easier access to markets as a processed product. The operation began last mango season and initially targeted the food service industry. It has a restricted budget and indicators are that rapid expansion would be justifiable. The distributor has advised that market enquiries already far exceed the capacity of the plant to produce.

The same group hopes to produce a fresh avocado product using the same technology. Trials have been completed with positive results using second grade fruit. Such a product would provide consumers with an avocado product that is ripe, ready to eat and unblemished. Trials have also commenced on a similar pawpaw product.

Initial discussions have been held with growers in the Northern Territory, with the prospect of expanding and extending these operations across Northern Australia.

Logistics Under Study

The Transport Logistics Working group (TLWG) of the Supermarket to Asia Council, comprising Ministers and key industry players, is developing an action plan for the agri-food industry to make the transport handling chain more effective, thereby improving the performance of the fresh and processed food sector in export markets.

5.2 NIR Technology

Central Queensland University has developed technology for fruit sorting equipment that recognises juiciness and sweetness. It is a non-invasive inspection process using Near Infrared Technology (NIR). The University has initially concentrated on using melons and is to move to mangoes in 2001. The work is being carried out in partnership with The Harvest Company. There are wide implications for the horticulture industry. Consumers will be able to choose fruit "guaranteed ripe and sweet" and farmers will be able to achieve a premium for top quality

product, whereas previously there was little reward for the best tasting fruit, as sorting was done primarily on colour.

The implications for production may affect crop distributions, as warmer, northern fruit crops in locations away from long periods of high cloud cover are likely to produce sweeter fruit. The technology will also lead to the need for better agronomic practices to maximise the amount of first grade product produced to specification. (*Contact: Central Queensland University Dr Kerry Walsh 07 4930 9707*).

5.3 Surebeam

Surebeam is the name given to technology that is capable of disinfecting fruit by “electronic pasteurisation” to gain access to new and high value international markets for Australian producers.

Fruit flies and other pests of quarantine concern are endemic in Northern Australia and restrict Northern Australia’s access to certain markets. At the same time, the use of chemicals and fumigants are being restricted.

There are attractive Pacific Rim markets in the US, New Zealand and North Asia for exotic tropical fruit, which are expanding with a global growth in tropicals. Currently Northern Australia’s tropical fruit industries have little or no access to these markets. The competitive opportunity for the export of a range of tropical fruits into the US and New Zealand markets alone has been estimated at 15,320 tonnes worth some \$A89.7 million per annum. These are new markets as there is currently no access for these fruits.

Northern Australian fruit is counter seasonal in these markets where local fruit is produced and can in some markets introduce superior new varieties and superior food safety standards.

The technology developed by SureBeam Corp (a division of Titan Corp) uses a linear accelerator to create finely focused electron beams that provides a phytosanitary treatment to eliminate insects in fruit and vegetables. A plant is operational in Hawaii and US authorities (USFDA), already accept the protocol, while an application is to be lodged with NZ authorities (ANZFA) shortly, with anticipated approval by 4th quarter 2001.

It is proposed to establish a Surebeam plant in Northern Australia. A company entitled FfDS has been established for this purpose. Its business plan proposes that it will create its own pathway into US and NZ markets for high value exotic fruits from Australia. It will thus provide a service by linking technology, handling and ripening facilities and demand chain management facilities.

It will be the first in the market, with barriers to entry by others in the form of cost, intellectual property and regulatory matters. An international corporation and their brand marketing activities will support it, value add with integrated demand chain relationships and be cost competitive with alternative treatments where they exist. (*Contact: Surebeam Australia, Mr Michael Daysh 07 4035 5654*)

Investment funding is currently being sought and SureBeam Corp itself will take an equity position. FfDS anticipates establishment of the facility in 2001, with operations to commence in 2002. Annual capacity of 10,000 tonnes will be achieved by 2004. An EBIT (Estimate Before Interest and Tax) of \$A6.123m is forecast for 2002, rising to \$A8.965m by 2006.

5.4 Education and Research

5.4.1 Marine Biodiversity

Australian Institute of Marine Science (AIMS), is one of three National science agencies in Australia and has an annual budget of \$A30 million. It has operations based in both Townsville in North Queensland. The Institute is also establishing a facility in Darwin, Northern Territory. Its principal operation is in Townsville, which has become the global centre for skills focussed on tropical coastal research, management, teaching and conservation. In addition to AIMS, Townsville also has Great Barrier Reef Marine Park Authority (GBRMPA), James Cook University, CRC Reef Research and the Museum of Tropical Queensland operations. The CRC has recently announced that a United Nations coordinating centre for international marine projects, IMPAC, will also be established in Townsville.

The recently launched Great Barrier Reef Research Foundation has raised \$A20 million in its first year to support the type of research done by AIMS.

AIMS is presently running five research projects:

- Sustaining Marine Living Resources;
- Exploring and Conserving Marine Biodiversity;
- Deriving Benefits from Marine Biodiversity;
- Predicting Climate Impacts Upon Marine Ecosystems;
- Measuring Human Impacts In Coastal Marine Ecosystems.

While AIMS has a strong public good research function, it has also adopted the approach of seeking to fund additional research programs through exploitation of research findings with commercial value. Notable successes to date have been the licensing of production for coral sunscreens and WetPC technology to industry. The Institute's strategy is to transfer new technology into commercial partnerships.

While the Australian marine environment is famed for its mega-diversity, to date only a fraction of this diversity has been explored. There is potential to find novel bioactive chemicals that can be developed as pharmaceuticals, healthcare products, agrochemicals for crop protection and novel bioremediation agents for environmental protection. This search is complemented by examining how marine organisms adapt to harmful and aggressive environments by producing biotoxins and venoms, antifoulants, signalling agents and other molecular defences. Understanding these has wide potential for the rational discovery of new and useful marine products.

AIMS has a comprehensive and fully curated collection of marine biodiversity assembled over the past decade on which to base its research. This large collection of macro and microorganisms has been captured in an advanced bioinformatics database that allows the search for bioactive molecules to be focussed intelligently.

The same techniques used to discover these new marine natural products can also be applied to marine toxins that contaminate seafood. Consequently the Institute is furthering research to develop inexpensive but sensitive diagnostic kits for this purpose.

“Smart aquaculture” is another area of activity being undertaken. The Institute and its partners have domesticated the black tiger prawn, which has a global market of \$US6 billion. This domestication provides opportunities for access to improved brood stock to increase the viability of Northern Australian aquaculture.

Further new possibilities for investments are arising from a pilot study, which shows that aquaculture of sponges and similar invertebrates can supply world markets with both high quality bath sponges and valuable fine chemicals. For instance one such chemical is worth \$US 10,000 per milligram.

In short, the Institute is seeking out commercial investments through its bio-prospecting, smart aquaculture and underwater technology developments. (*Contact: AIMS, Mr Peter Isdale 07 4753 4480*)

5.4.2 Rainforest Biodiversity

A feasibility study is underway to assess the viability of the creation of a “Rainforest Centre of Excellence”, probably to be based on a similar model to AIMS. The concept is to draw together elements of the Wet Tropics Management Authority, James Cook University and the present CRC for tropical rainforests under one structure. The structure would aim to become an internationally recognised model and resource for research and education in all aspects of rainforests and be oriented to commercialisation of research outcomes.

In common with the Great Barrier Reef, Northern Australia’s rainforests have great diversity yet have not been fully explored for substances with commercial applications.

Countries in the Asia/Pacific are looking for expertise in both rainforests and tropical reefs and this represents a market. The proposed centre also has an ambition to combine western scientific knowledge and techniques with Indigenous knowledge and techniques in such a way that each draws support and enhances the other. This approach has application in other countries with rainforest and Indigenous people.

The initial feasibility study for this concept will be complete in mid 2001.

5.4.3 Aviation Training

Pilbara Region in Western Australia has identified a number of competitive advantages for major airlines seeking a location to provide their trainee pilots with experience:

- Its geographic location in relation to South East Asia, Asia and the Middle East, coupled with a strategic location along major international air routes;
- Located in the same time zone as Asia;
- Less than 2 hours flying time from the busy international hub of Denpasar, with existing direct regional services into South East Asia;
- Semi-arid climate ensures minimal disruption to air operations due to adverse weather, (days Port Hedland airport closed due to adverse weather in 1998 were zero);
- Average rainfall is under 500mm with over 200 days of cloudless skies;
- The region has a diverse cultural base with nearly 30% of residents born overseas, who blend together very harmoniously. There are no less than 15 different religions represented in the community;
- Australia generally has a stable and peaceful political environment, with advanced and skilled aviation support industries;
- The Pilbara is a small part of Western Australia's sparsely settled Northern area, yet covers 500,000 square kilometres. It offers airlines virtually unlimited, yet controlled airspace over landmass with an absence of high mountain ranges;
- Due to north Western Australia's huge developments in oil, gas and mining, the region has a number of airports with a good level of infrastructure, providing the opportunity for advanced jet training transiting between destinations in reasonably close proximity;
- Despite the level of infrastructure available, there are no busy air routes to disrupt;
- The network of 4 regional airports in the Pilbara are operating well below capacity and can cater for aircraft up to and including B737's and A320's;
- Each airport has substantial expansion capabilities if required and are located well away from residential areas, ensuring no curfew and minimal chance of problems due to noise;
- Despite the small population, population centres are well serviced by health, shopping and public leisure and recreational facilities;
- There are two tertiary institutions. Neither presently provide aviation based courses but are affiliated with Western Australian Universities that provide Bachelor of Science Degrees in Aviation.

Main Airport – Port Hedland	
Main Runway	- 2,500m length, 45m wide - Bituminous concrete surface
Secondary Runway	- 1,000m length, 18m wide - Bituminous concrete surface
Main Apron	- 5 parking bay fro jet aircraft including B767's and A300
Visual Aids	- T-VAS on main runway - 3 Stage runway lighting - Rotating aerodrome beacon
Navigation Aids	- Full air traffic control services (Tuesday to Friday) - Non-directional beacon - VHF Omni directional radio range - Distance measuring equipment

5.5 Defence

Defence deployment and spending in Northern Australia has been steadily increasing in recent years. As more defence infrastructure is located in the region, flow on effects and supporting activities are becoming more important to the North's economy.

For instance in the case of the Northern Territory, in 1998-99 Defence produced 12 percent of Gross State Product, making it the second most significant industry in the Territory economy. Over a four year period Defence expenditure rose 87 percent - from an estimated \$A407 million in 1995-6 to an estimated \$A762 in 1999-00.

Defence elements now located in Northern Australia are:

Western Australia:

- RAAF Curtin (strategic bare base)
- Harold E Holt Naval Communications Station, Exmouth
- RAAF Learmonth (strategic bare base)

Northern Territory:

- NORFORCE – Darwin Naval Base, patrol boats, HMAS Coonawarra, 1 Brigade, RAAF, Darwin

Queensland:

- RAAF Scherger (strategic bare base)
- Cairns – Patrol boats, Survey ships, HMAS Cairns, 51 Far North Queensland Regiment
- Townsville – 3 Brigade, RAAF Townsville

In addition to the above, there are a variety of installations , training facilities and bases manned on an irregular basis as need demands.

Defence White Paper – Townsville Benefits

Townsville in North Queensland is already the base for major defence infrastructure. Recommendations made in the current Government White Paper on defence spending will produce further direct and flow on effects for the Townsville regional economy, to include:

- A new world-class army combat training and evaluation centre to be established;
- A \$A210 million Stage 3 redevelopment of the Lavarack Barracks (Stage 1 complete, Stage 2 underway);
- A \$A35 million Stage 2 redevelopment of the RAAF Townsville Base;
- The AIR 87 project, to provide additional armed reconnaissance helicopters, will have one squadron based in Townsville;
- Acquisition of watercraft and marinised troop lift helicopters will generally increase defence infrastructure and spending in the region.

The current Patrol Boat Replacement Project is of particular interest to Northern Australia. The project encompasses a requirement for up to 15 vessels of commercial design that comply with relevant classification society rules and appropriate statutory regulations. The eventual number of vessels will be determined on the basis of costs, operational programming, ship availability and agreed maintenance considerations.

The project proposes that a support package will be provided to comprise a full range of services, covering maintenance engineering services, configuration management, supply support, operational and maintenance training in an integrated manner to insure the operational availability of the boats. Maintenance for the vessels is to be made available through the ports of both Cairns and Darwin during their service life.

5.6 Manufacturing

Northern Australia has traditionally not had a substantial manufacturing industry with the exception of food processing in the form of mills producing sugar from cane. With the development of mining, minerals processing and the oil and gas industries, maintenance and manufacturing operations supporting the large associated items of infrastructure have been developing.

For instance, the Mt Isa Townsville Economic Zone (MITEZ), now hosts some 550 firms engaged in manufacturing.

Manufacturing in the Pilbara, Gascoyne and Kimberley regions account for a small proportion of each region's economic activity, mainly supporting the tourism, agriculture, fishing and mining industries.

There were 142 manufacturing establishments within the three regions in 1997, an increase from 92 in 1993. The Pilbara region had the highest employment in manufacturing in 1997 and the largest growth in number of establishments from 1993. While the Kimberley also experienced reasonable growth, the Gascoyne remained fairly static over the same period.

As could be expected, the largest growth areas in manufacturing sector across Northern Australia are in the processing of metal products, non-metallic minerals and machinery and equipment. However efforts are being made to diversify this base with various initiatives across the North.

The Northern Territory established a Trade Development Zone (TDZ) in 1985 as a purpose built industrial estate established to support and promote export oriented manufacturing businesses. It is located 4kms from the East Arm Port facility. Tenants are offered payroll tax exemption plus a range of customs and duty benefits aimed at facilitating trade between Australia and Asia. There are presently 43 tenants, producing precision-engineered components; chemicals for mining; industrial lubricants; power systems for remote areas; cardboard manufacturing and food and beverage products.

There are firms across the North finding niches for manufactured products, based on combinations of the competitive and comparative advantages held by the region, combined with traditional skills and industries. Some examples follow.

<p>Hodge Industries in Mackay, North Queensland has been exporting since the 1970's. It manufactures a wide range of cane growing equipment and exports to the Philippines, South East Asia and more recently to Africa and the American continent.</p>
<p>North Australian Radio & Electronic Services in Darwin, specialises in radio & remote area telecommunications in Northern Australia and South-East Asia. The firm designs, installs, manufactures, repairs and provides back-up support for a large range of telecommunications systems to overseas customers. North Australia's exports include company-manufactured satellite antenna domes, communication antennas and systems.</p>
<p>Industrial Technical Services in Gladstone provides specialist plant condition monitoring services, including vibration analysis, infrared thermography, oil analysis, laser alignment and machine balancing, to industrial clients. ITS currently supports to Indonesia and is considering moving into the Chinese and PNG markets.</p>
<p>NQEA Australia in Cairns, Queensland, is active in a range of heavy industries including ship building and repairs. The firm has built more than 200 vessels, including 60 for the Department of Defence and 60 high-speed catamarans. About 20 per cent of its vessels are shipped around the world.</p>
<p>Tasman-Warajay of Gladstone, Central Queensland designs and manufactures bulk materials handling systems and technology. The firm currently generates about 20 per cent of its income from exports, particularly to North America. Company representatives expect that export revenue in the future will be increasingly generated by the sale of its intellectual property rather than physical systems.</p>
<p>Powercorp, located in Darwin, designs and builds advanced control systems for power station applications. A variety of conventional and non-conventional energy sources such as diesel generators, wind energy converters, flywheel systems and battery banks can be integrated into the control systems. The company exports its technology to Malaysia, Japan and Germany, as well as supplying international scientific bases in Antarctica. A joint venture with ENERCON GmbH, the largest wind turbine manufacturer in Germany, gives Powercorp access to that company's technology. This relationship also assists Powercorp in the development of new business in overseas markets.</p>
<p>Wulguru Constructions, based in Townsville and Rockhampton, designs and builds meatworks and has projects in Indonesia and Japan.</p>

5.7 Crocodile Farming

Crocodile farming is a small industry in Australia with only some 13 commercially operated farms in Australia. International trade in crocodilian products in 1998 was worth over \$A300 million worldwide with Australia's contribution worth only one percent (\$A3m). There is competition from countries including Papua New Guinea, Africa, Asia, North America and South America. However Australian crocodile hides are acknowledged as of better quality than other species.

There are three tanneries which process crocodile skins in Australia, four abattoirs accredited for processing meat and numerous leather goods manufacturers. There is also a small industry based on the use of crocodile parts for souvenirs.

Farming crocodiles is capital intensive with the industry geared towards long term business gains and structured towards export market for unprocessed skins. Australian saltwater skin exports are between 10,000 to 12,000 per year. There is a constraint on achieving the best quality in tanned skins in Australia due to restrictions on the use of some tanning agents. However, it is understood that CSIRO in Victoria is currently conducting research into resolving this. If world-class leather could be produced in Australia, this would have a very big impact on the potential on not only the crocodile industry, but also all other leather sources in Australia.

At harvest typically after two years, the yield is an average of 6kgs of meat at some \$A18 per kg plus the skin averaging \$A360, making a total of \$A500 per crocodile. The cost of feed to harvest is some \$A120 per animal and hatchlings range from \$A27 to \$A50 each if breeding is not done in-house.

5.8 Floriculture

Floriculture is a major international industry, with global trade valued in excess of \$A34 billion annually and the industry is forever looking for something new. Australia has some 25,000 species of native plants and the uniqueness of many has attracted international interest. Worldwide production of Australian native flowers is worth around \$A400 million annually. However only 10% is currently sourced from Australia.

Southern Australia is beginning to build critical mass and is meeting some success in exports.

In Northern Australia, the industry is underdeveloped. There is relatively little export and growers tend to supply their local market and or southern Australian markets. Their traditional competitive advantage is the ability to supply southern markets during winter. However since the Australian market is relatively small, any substantial scale of production will oversupply the market.

A consequence of the present scale of production is that by and large there is not sufficient volume to reliably fill export orders and little experience in meeting standards required to enter these markets.

Australia has the advantage of being counter-seasonal to large Northern Hemisphere markets, has good supplies of land and water and the North has a tropical climate with the ability to culture popular exotic and native plants, often without the expensive infrastructure required in Northern Hemisphere growing conditions. In addition, some of our potential competitors have been experiencing increasing problems with diseases not present in Australia. Where transport costs restrict some exports from Australia, flowers present less of a problem due to their lightweight. However there is strong competition and the international industry has become very sophisticated, with Holland recognised as a world leader in varieties, marketing and in growing out of season in extensive hot houses.

There is currently a RIRDC (Rural Industries Research & Development Corporation) project underway studying rainforest varieties that may have application as foliage for floriculture. There has also been some international interest in investing in substantial export oriented production, but as yet the level of investment required to develop a substantial industry in Northern Australia remains outstanding.

5.9 Bush Foods

Australia has a wide range of native “bush foods” that represent an underdeveloped opportunity. Current production is worth only \$A12 - \$A15 million retail value (excluding macadamia nuts), with some \$A4.8 million farm gate value.

Varieties with identified potential include:

Desert lime	Lemon Myrtle
Lilly Pilly	Native lime
Native mint	Riberries
Davidson Plums	Smelly cheese fruit
Burdekin plum	Finger lime
Lemon aspen	Magenta cherry
Atherton raspberry	Herbert River cherry

The industry has a domestic focus, with a current lack of volume being the major constraint to export market access. For instance desert limes to Europe would require 20 to 30 tonnes to undertake a market trial.

There is an opportunity of high export market prices and leading chefs are creating interest. Challenges are:

- Development costs to create an export industry;
- An extensive marketing and promotion program is required;
- Product needs to be linked to meats, fish and other ingredients for recipes;
- Production levels to guarantee supply and quality need to be achieved.

5.10 Indigenous Business Opportunities

More and more Indigenous communities are moving towards reconciling culture and life style with business and commercial projects. There are many project concepts now being explored either by communities alone or in joint venture partnership negotiations.

The Northern Territory already has well-developed Indigenous art and cultural product, but estimate that even so, the vast majority of visitors still do not access these products for a variety of reasons, primarily related to product access and distribution. This leads to a sense of dissatisfaction on the part of visitors.

There would seem to be unsatisfied demand for Aboriginal culture and art products, at least in the Northern Territory, where a Government publication notes:

“...Of the many activities visitors are interested in while they are in the Territory, the single most frequently cited activity of interest is Aboriginal art and culture (47% of all interstate visitors and 73% of all international visitors).

Currently, an estimated \$50 million is spent by interstate and international visitors on art and cultural experiences....” ²⁹

The competitive strength of Aboriginal art and culture is demonstrated by the success of the Tjapukai Aboriginal Cultural Park in Far North Queensland, which is a long-standing example of a joint venture between an entrepreneur and local Aboriginal cultural group.

There are also emerging opportunities for projects involving Indigenous people beyond art and culture. There are still native title issues to be resolved, but success stories are emerging here too. One of the difficulties has been the lack of a business culture within these communities. There are now systems being developed and taken up by Indigenous people to enable business and Aboriginal cultures to mesh creatively. One is an ATSIC initiative, referred to as the National Business Facilitators Network. Under this system, professional business advisors, accredited by ATSIC, are appointed as mentors to projects, to carry through from project inception to independence with support and guidance.

There is more support for joint venture arrangements between Aboriginal corporations and partners with expertise and or finance. These are not necessarily small projects, as some of these corporations have substantial assets. For instance Aboriginal people own 84% of the Northern Territory coastline and there is potential for ventures in tourism and aquaculture presently being negotiated.

In Queensland the State Government is supporting a “partnerships” program, which envisages major joint venture projects.

Northern Australia and particularly the Northern Territory, (28.5% of the NT population), has the highest concentration of Indigenous people in Australia, with many living in clan groups on

their own land. Day to day interactions between black and white cultures are more the norm, rather than the exception that is the case in most of urban and metropolitan Australia. There is a good level of skill in cross-cultural understanding concentrated in the North, which is an asset in negotiating projects that will be viable investments for all parties.

At the end of 1995 and into 1996, the **Koutha Aboriginal Development Corporation** and Ernest Henry Mine sat down to discuss employment and training opportunities for local Aboriginal people in the Cloncurry/Mt Isa area.

Ernest Henry Mine showed a great commitment to the Aboriginal community when they insisted that their concentrate haulage contract be run as a joint venture involving the Aboriginal community. Known as Queensland Bulk Haulage (QBH), the joint venture between the Koutha Aboriginal Development Corporation, Mclver Transport and the Aboriginal and Torres Strait Islander Commercial Development Corporation commenced operations in 1997. QBH hauls some 1,000 tonnes per day to Mt Isa for processing.

Today, QBH is helping to provide a solid foundation for the region's Aboriginal people. Apart from securing employment, Koutha has an agreement with Mclver to train Aboriginal people in QBH. The QBH contract gives Koutha an income stream, which provides the opportunity to find more commercial and employment opportunities for Aboriginal people. Further to providing employment and training opportunities, the QBH joint venture also contributes towards the sustainable development of the region's economic base.

Contact: Mrs. Elaine McKeon AO, Koutha Aboriginal Development Corporation,
Ph: (07) 4742 2550

One of Australia's largest and most successful Aboriginal companies is **Yirrkala Business Enterprises (YBE)**.

YBE has contracts to load and haul bauxite from Nabalco's Rocky Bay deposit, south of Gove, and rehabilitate mined areas of the Nabalco lease, and expects to achieve a turn over in excess of \$10 million in 1999. Now in its 31st year of providing a range of business and contracting services in northeast Arnhem Land and other regional centres, YBE has grown from a missionary run business to a major employer in the region.

YBE is fully owned and operated by 24 local Yolngu clans of northeast Arnhem Land.

It began as a small brick-making project at the Yirrkala Methodist Mission in 1968 to provide building materials for the developing township of Gove and the Nabalco alumina plant. By 1972, brick production had reached two million and the company diversified into areas such as waste management and environmental rehabilitation services.

Today, YBE's core business activities include ore haulage for Nabalco, road works for the Northern Territory Government, engineering maintenance, horticulture, landscaping, earthmoving, environmental rehabilitation and waste management services. The company also buys, sells and markets high quality Aboriginal art and craft throughout Australia and overseas.

The **Jawoyn people** of the Katherine region have achieved much for Aboriginal and non-Aboriginal Territorians of the area, as well as for the Territory as a whole.

Without the "moving ahead" attitude of Jawoyn Association, the \$1.5 billion Mount Todd gold mine in the area could not have gone ahead. The Mount Todd Agreement was signed in 1993 by the Jawoyn people, the Northern Territory and Commonwealth governments and Zapopan NL. It was the first mining agreement signed following the Mabo decision that led ultimately to the *Native Title Act*.

Later that year, Jawoyn people were awarded a contract with Zapopan/Mount Todd to carry out mine excavation work. In 1996, Aboriginal employment in at Mount Todd had reached 32% and the Jawoyn people had signed an \$160 million eight-year deal for Stage Two of Mount Todd with the 25% Jawoyn-owned Mirrwork Joint Venture as contractor to excavate the ore body. This year, the Mount Todd gold mine was renamed Yimuyn Manjerr, the Jawoyn name for a site near the mine.

The Jawoyn were the first Aboriginal organisation in Australia to join a peak mining industry body, the Northern Territory Minerals Council.

Carpentaria Shipping Services provides specialised bulk sea transport for the zinc-lead concentrate produced by the McArthur River mine. A specialised bulk carrier transports concentrate from the port facility to ocean-going vessels 30kms offshore. The mine is located 900kms southeast of Darwin. Carpentaria Shipping Services is a joint venture between a subsidiary company of the ATSIC Commercial Development Corporation and MAWA Riinbi Pty Limited (representing the four main Indigenous language groups in the region) and P&O Maritime Services. MAWA Riinbi's equity in the project is currently 31.69%.

King's Canyon Resort in Central Australia is surrounded by the McDonnell Ranges. It is a joint venture between the ATSIC Commercial Development Commission, Voyages Hotels and Resorts, Centrecorp Aboriginal Investment Corporation Ltd, Ngurratjuta/Pmara Association, plus a local person with 1% equity. In 1999 a A\$4.8m expansion was undertaken and there have been substantial increases in trading over recent years.

6. KEY NEW PRODUCT OPPORTUNITES

Research for this paper revealed a number of new products under development, including a revolutionary small scale power generation system using magnetic fields; a proposal to create paper from banana fibre; a business to duplicate “Earth Watch” for the Southern Hemisphere and a rock dust product that will make significant contributions to eliminating algal blooms and greenhouse gas emissions. These and others are not included either because the proposals are as yet immature, or due to commercial in confidence considerations. The following are therefore only examples of innovation developing in Northern Australia.

6.1 Rotocult Cultivator

A North Queensland engineering firm, Wilkinson’s Blacksmiths and Engineering has developed an agricultural cultivator that will simultaneously do the work of a plough, discs, harrows, rotary hoe and cultivator.

Trials of the “Rotocult” have demonstrated a variety of benefits:

- Reduces time taken in ground preparation to something like one tenth compared to conventional methods;
- Consequently saves in capital costs and maintenance on tractors and alternative equipment;
- Saves up to 90 percent on fuel and thereby also reduces hydrocarbon emissions;
- Cultivates to a depth of 450mm compared to 150-250mm with present equipment.

The machine uses two 6-blade cutters, computer positioned on base plates. Three inner and 3 outer blades are positioned to allow a 100mm diameter difference. The angle of attack and blade positioning allows the 3 outer blades to cut the front half of the cultivation and the 3 inner blades to cut the back half of the cultivation, thereby reducing the individual blade effort by 50 percent and achieving a 2000 linear feet per minute cutting action. The result is a one-pass incorporation and mulching of surface and sub-surface vegetation to a maximum depth of 450mm leaving prepared ground with a fine tilth ready for planting.

The machine also appears to produce environmental benefits apart from fuel emissions. There is less risk of soil erosion, minimum soil disturbance and the virtual elimination of dust pollution resulting from the horizontal slicing action of the blades. While the machine improves the depth of cultivation and soil quality, a hard pan is not formed under the worked till.

Last year the cultivator received an Excellence Award at Australian National Field Days in Orange, New South Wales.

Nine machines have been sold to date, but the company has its sights set on developing an export market. An initial market scan across the most obvious and promising markets indicates scope for sales of 77,000 machines, excluding broad acre farming applications. It is estimated that potential market size for a broad acre version of the machine is up to ten times the size of

the smaller, existing machine. The company has recently completed an Investment Memorandum and is seeking investors. (*Contact: Wilkinsons Blacksmiths, Mr John Wilkinson 07 4091 1833*).

6.2 Call and Net Centres

A chain of net centres worth A\$78m are to be established under an agreement between a business services company based in Mackay, Queensland and IBM Australia. The company, b2m, has advised that the 13 centres will collectively employ some 300 people.

The centres are to combine call centre capabilities with internet capabilities, e-business and data centre services, with the target market being SMEs and government.

The **Universal Communications Group's Cairns** call centre provides support for its satellite communications services in Australia and New Zealand. The firm, which employs 250 staff Australia wide, is now expanding its operations in regional Australia. Some multinational companies have established other call centres to take advantage of the availability of bilingual operators.

In 2000, over 160,000 people were employed in 4,250 call centres across Australia. Many of these businesses have been established in regional centres where costs are substantially lower than Asia.

The development of technology that allows call centres to serve multiple markets also opens opportunities to export professional services from the design, architecture, engineering, legal and accounting sectors. Many Australian firms in the automotive, IT and customer service sectors participate in 'follow the sun' product development cycles, which typically alternate between three locations around the globe every eight hours. While the vast majority of call centres service domestic needs, Australia's position in a similar time zone to Asia augurs well for the continued growth of export-oriented call centres.

7. REGIONAL SPECIFIC INDUSTRY PROFILES AND OPPORTUNITIES

7.1 Gascoyne Region (Western Australia)

7.1.1 Regional Overview

- Population in the region is estimated to be 10,800 (2001).
- The Gascoyne region occupies 5% of the total land size of Western Australia.
- Major centres include Carnarvon, Exmouth, Coral Bay, Denham and Gascoyne Junction.
- The region is predominantly rural in nature, but more diverse than the Kimberley and Pilbara regions. The size of the regions industry sectors determined by their average value of production / turnover (1997/98 to 1999/00) includes:
 - Retail trade (13.9%)
 - Fishing (13.6%)
 - Tourism (16.5%)
 - Mining (13.7%)
 - Manufacturing (12.1%)
 - Horticulture (6.1%)
 - Livestock & Wool (5.5%)
 - Construction (18.8%)
- Growth sectors include tourism, horticulture, aquaculture and mining.
- The most important service industries in the region are those related to tourism, involving trade, accommodation, and personal services.
- The best-provided services in the region in 1996 included accommodation and public administration. However, construction, trade, transport/communications, finance and business services, education, health and personal services were under the state's average level of service provision index. Notable improvements in service delivery in 2000 include accommodation and personal services.
- The top five industries by employment numbers in November 2000 included:
 - Agriculture, forestry, and fishing
 - Retail trade
 - Health and community services
 - Accommodation cafe's and restaurants
 - Education

7.1.2 Infrastructure

- Potential land infrastructure includes:
 - Residential and tourism developments proposed for Exmouth and Shark Bay.
 - Light industrial developments planned for Exmouth and Carnarvon.
 - Agricultural developments at Rocky Pool.
- All weather airports are located at Carnarvon, Shark Bay and Learmonth. Learmonth is also an international terminal.

- Privately owned deep-water jetties are located at Cape Cuvier, Point Murat and Useless Loop.
- The North West Coastal Highway links centres to Geraldton and Perth in the south and Port Hedland in the north.
- Carnarvon has spur access to the Dampier - Bunbury natural gas pipeline. Diesel power is generated by Western Power at Denham, Exmouth and Gascoyne Junction.
- All regional centres have access to the national telecommunications network. A digital mobile network is also available in Carnarvon and Exmouth. A telecentre is linked via satellite and the Internet in Exmouth.
- All population centres have their own water supplies from nearby bore fields. A desalination plant is located in Denham.

Infrastructure & Projects Proposed & under Study
<ul style="list-style-type: none"> <input type="checkbox"/> \$40 million Dampier / Bunbury Gas Pipeline corridor widening. <input type="checkbox"/> \$311 million Main Roads WA - \$38 million Kalbarri to Shark Bay road; \$20 million Carnarvon to Mullewa road; \$12 million Coral Bay to Yardie Creek. \$20 million sealed road to Gascoyne Junction; \$170 million sealed road to Meekatharra; \$27 million widening Minilya to Exmouth road; \$24 million widening of North West Coastal Highway. <input type="checkbox"/> \$7.9 million Gascoyne River bridge; \$5.48 million Lyndon River bridge. <input type="checkbox"/> \$9 million <i>Carnarvon Fascine Development</i> providing 700 residential waterfront lots over a 10 -20-year period. <input type="checkbox"/> \$8 million <i>Carnarvon Natural Gas Engines</i>. <input type="checkbox"/> Strategic identification of a future site for the Carnarvon Airport and improvements to regional airstrips at Coral Bay, Burringurrah, Gascoyne Junction, Mt Augustus and Shark Bay to comply with Royal Flying Doctor standards. <input type="checkbox"/> An assessment of the need for general port facilities near Exmouth and a review of fishing industry requirements for additional or modified facilities within the Carnarvon Small Boat Harbour. <input type="checkbox"/> Development of a range of communications technologies, especially two-way communication and telecommunications access in remote areas to the Internet and for data transfer. Planned is the \$1 billion SKA Array Radio Telescope facility in the Upper Gascoyne (2015 expected completion)

7.1.3 Agriculture

- Agriculture is concentrated in the Carnarvon region where pastoralism is supported by horticulture along the Gascoyne River. The trend for agricultural production has remained relatively steady at a value of about \$50 million per annum from 1986 to 1998/99.
- The value of cattle and sheep disposals in 1998/99 was \$8.6 million, while the value of wool production was \$13.7 million over the same period.
- Major horticulture includes orchard fruit, tropical fruit and vegetables that have fluctuated in production levels over the period 1986 to 1998/99 and has remained at about \$30 million per annum from 1994 to 1998/99.

- Mango production in Carnarvon has increased due to export links to Southeast Asia and is likely to provide opportunities for other fruit exports.
- Grapes, stone fruits, tomatoes and potatoes are emerging industries in the region.
- Packaging technology in the region that is currently used by *Gascoyne Gold* grower network is state of the art and has the potential to be applied to other grower networks.
- Fishing is about the same size of agriculture and growing exports to Japan and the US provides opportunities for fish processing operations in the region.
- Opportunities exist for aquaculture including pearls, yellow fin tuna, estuary cod and barramundi. Inland aquaculture opportunities are related to the warm water source of the artesian bores in the Gascoyne rangelands.
- Horticulture and floriculture are beginning to advance in pastoral areas as a means of diversification.

Infrastructure & Projects Proposed	
<input type="checkbox"/>	\$7 million irrigated agriculture and broad-acre irrigated horticulture at Rocky Pool.
<input type="checkbox"/>	\$8 million, Cape Seafarms Pty Ltd, Heron Point Prawn Farm.
<input type="checkbox"/>	Shark Bay Aquaculture Precinct.

7.1.4 Mining

- The mining industry contributed \$70.8 million to the region's economy in 1999/00 and is small compared to the contributions of the Kimberley and Pilbara mining sectors.
- The two main mineral commodities in the region are salt and gypsum, both of which are expected to increase.
- Other mineral prospects in the region include sands for construction, limestone and tantalum. Tantalum is a refractory metal for the production of electronic components in computers and communication systems.

Infrastructure & Projects Proposed	
<input type="checkbox"/>	\$40 million Swan Portland / Whitecrest, Limestone Mining / Quicklime Processing, Exmouth.

7.1.5 Tourism

- Tourism has the second highest industry contribution to Gross Regional Product in the Gascoyne, estimated at \$72 million in 1998/99.
- 220,000 domestic visitors to the region were recorded in 1999, an increase of 7.2% from 1998.

- The greatest increasing market to the Gascoyne is the international market. 58,000 international visitors to the region were recorded in 1999, an increase of 16% from 1998. This is compared to a domestic visitor growth rate of 3%.
- Recent completion of facilities at Learmonth international airport makes it an attractive entry point for domestic and international visitors.
- Western Australia's only world heritage listed area is located at Shark Bay, providing the region with a great international tourism drawcard.
- The region is promoted as "Australia's Outback Coast - where the outback meets the reef".
- Opportunities exist for nature-based attractions involving the regions open spaces, marine life, recreational fishing, boating and surfing. The region has 20 built attractions, 35 natural and historic attractions and 74 indoor, outdoor and event activities.
- There are 103 accommodation houses in the region, however no four or five star accommodation exists, which provides an opportunity to tap into the high yield overseas visitor market.

Infrastructure & Projects Proposed
<ul style="list-style-type: none"> <input type="checkbox"/> \$180 million <i>Coral Coast Marina Development</i>, Mauds landing, Exmouth. <input type="checkbox"/> \$38 million <i>Monkey Mia Dolphin Resort</i> extensions, Shark Bay <input type="checkbox"/> \$7.5 million <i>Shark Bay World Heritage Interpretive Centre</i>. <input type="checkbox"/> \$8 million <i>Denham Maritime Facilities Improvements</i>, Shark Bay. <input type="checkbox"/> \$4.7 million <i>Carnarvon Aboriginal Heritage & Cultural Centre</i>. <input type="checkbox"/> \$14 million <i>Exmouth Reef Resort</i>. <input type="checkbox"/> \$4.3 million <i>Osprey Holiday Village</i>. <input type="checkbox"/> \$13 million <i>Exmouth Boat Harbour</i> residential and tourist development. <input type="checkbox"/> \$4.3 million <i>Ningaloo Caravan Holiday Resort Extensions</i>, Exmouth. <input type="checkbox"/> \$3.2 million <i>Kingsway Resort</i>, Exmouth. <input type="checkbox"/> \$3.6 million <i>Peron Homestead Tourism Precinct</i>, Shark Bay. <input type="checkbox"/> Carnarvon Northwater Project.

7.2 Pilbara Region (Western Australia)

7.2.1 Regional Overview

- The population in the Pilbara region is 42,000 (1999), 12% of which are Indigenous Australians.
- The region has a highly specialised industry structure based on mining and dominated by mineral, oil and gas projects.
- The size of the regions industry sector's determined by the average value of production / turnover (1997/98 - 1999/00) is as follows:
 - Iron Ore (36%)
 - Oil and Condensate (30%)
 - LPG, LNG & natural Gas (23%)
 - Tourism, manufacturing, wool & livestock, construction, minerals (5.4%)
 - Retail Trade (2.7%)
 - Gold (1.6%)
 - Salt (1.3%)
- The regions average level of service delivery index was below the states average in 1996. The best provided services included accommodation, construction and transport, which were above average. In 2000, further improvements in the level of service delivery occurred in accommodation, transport and personal services.
- Strategic government focus within the Pilbara is aimed at diversifying the regional economy. Growth sectors in the region include mineral processing and tourism.
- The top five industries by employment numbers in November 2000 included:
 - Mining
 - Personal services
 - Retail trade
 - Transport and storage
 - Construction

7.2.2 Infrastructure

- Special heavy industrial estates are planned in Port Hedland and Karratha / Burrup.
- Airports are located at Port Hedland, Karratha, Newman, and Paraburdoo. Port Hedland has an international terminal.
- Major tonnage ports are located at Port Hedland and Dampier. Other deep-water ports are located at Port Walcott and Barrow Island.
- The Great Northern Highway and North West Coastal Highway link all major centres to Broome and Darwin in the north and Carnarvon in the south.
- Electricity supply to Pilbara communities is via an interconnected grid combining the resources of Western Power and mining company power stations. Mining company power stations are supplied natural gas from the North West Shelf Project and the Alintagas operated Dampier to South West Pipeline.
- All main centres are connected to the national telecommunications network. A limited mobile phone network is also available.

- Regional centres are supplied water from a combination of ground and surface water resources.

Infrastructure & Projects Proposed
<ul style="list-style-type: none"> <input type="checkbox"/> Expansion of the coverage of the mobile phone network. <input type="checkbox"/> Investigation of the economic use of low orbit satellite phone systems. <input type="checkbox"/> Implementing the Federally funded project to provide local call access to the Internet for small townships and Aboriginal communities. <input type="checkbox"/> The development of telecentres in the smaller centres of the Pilbara (eg. Onslow). <input type="checkbox"/> International Aviation Pilot Training - the Pilbara is well served by a number of airports and is the base for a wide range of air services.

7.2.3 Agriculture & Fishing

- Agriculture plays a minor role in the region with low rainfall and limited irrigation limiting crop production. Grazing is therefore the main activity.
- In 1998/99, the Pilbara had a population of 183,000 sheep and 209,000 cattle. Disposal of sheep accounted for \$1.5 million while the disposal of cattle was worth \$23 million.
- The Pilbara's wool production generated \$3.8 million in 1998/99.
- Improvements in the pastoral industry have included better farm management and effective disease eradication programmes increasing the potential for the export of live cattle.
- The total catch of fish in the Pilbara region was estimated to be 3,356 tonnes, including 2,720 tonnes of fin fish, 520 tonnes of prawn and 63 tonnes of mollusc. In 1999/00 fishing production was worth \$18.6 million.
- Established fishing operations are located at Onslow, Dampier, Point Samson and Port Hedland. Pearling and aquaculture is spread throughout the region and is expected to increase.
- Further opportunities exist in live cattle exports and mariculture, including pearling and a potential range of fish farming ventures.

7.2.4 Mining

- The regions mining industry has grown rapidly since the early 1990s, which now accounts for more than 50%, by value, of Western Australia's annual mineral and petroleum production.
- Iron Ore production in 1999/00 was valued at \$3.7 billion, while oil and gas production was valued at \$7.6 billion annually.
- The region has further opportunities for specialised services associated with the processing of iron ore, as well as oil and gas, and salt production.

Infrastructure & Projects Committed or under Study
<ul style="list-style-type: none"> ❑ \$12 billion Woodside Energy Ltd, North West Shelf Project, Burrup Peninsula. ❑ \$2.66 billion <i>BHP Hot Briquetted Iron (HBI) Plant</i>, Port Hedland. ❑ \$100 million <i>Onslow Salt</i> facility, Onslow. ❑ \$80 million, Straits Resources, <i>Nifty Copper</i> expansion. ❑ \$250 million BHP <i>Iron Ore Mines</i>, Shire of Ashburton and East Pilbara. ❑ \$120 million Rio Tinto <i>Uranium Mine</i>, East Pilbara ❑ \$8 billion Chevron <i>Offshore Oil & Gas</i>. ❑ \$150 million Renewable Energy Corporation Ltd, <i>Ferrovandium Mine</i>, Shire of Roebourne. ❑ \$300 million Hamersley Iron, <i>Iron Ore Deposits</i>, Shire of Roebourne. ❑ \$450 million <i>Hope Downs Iron Ore</i>. ❑ \$1.35 billion Robe River Mining Co, <i>West Angelas and Cape Lambert Iron Ore Projects</i>. ❑ \$200 million Straits Resources Lt, <i>Copper</i>, Maroochydore East Pilbara.

Manufacturing and Minerals Processing Projects Committed or under Study
<ul style="list-style-type: none"> ❑ \$94 million HiTec Energy NL, <i>Manganese Process Plant</i>, Port Hedland. ❑ \$1.8 billion Mineralogy, <i>Direct Reduced Iron and Steel Projects (Magnetite)</i>, Ashburton and Roebourne Shires. ❑ \$3 billion Austeel (Mineralogy), <i>Steel</i>, Roebourne Shire. ❑ \$850 million Plenty River Corporation, <i>Burrup Ammonia Urea Project</i>, Roebourne Shire. ❑ \$200 million SMX Company, <i>Ammonium Nitrate Plant</i>, Roebourne Shire. ❑ \$600 million Syntroleum Corporation, <i>Sweetwater Gas-to-Liquids Project</i>, Burrup Peninsular. ❑ \$100 million Tanganyika Gold, <i>Vanadium Pentoxide Mine and Processing Plant</i>, Balla Balla near Whim Creek. ❑ \$600 million Woodside Energy Lt, <i>Liquids Expansion Project</i>, Roebourne Shire.

7.2.5 Tourism

- 270,000 visitors to the region were recorded in 1999, spending \$145 million.
- The business market accounted for 31% of all domestic visitors in 1999.
- Further opportunities in nature-based tourism will evolve with the further expansion of the Karijini National Park and the Dampier Archipelago.
- Cultural and heritage tourism provides additional investment potential for associated commercial accommodation facilities and venues.

Infrastructure & Projects Proposed
<ul style="list-style-type: none"> ❑ \$3.5 million Karijini National Park Visitor Centre. ❑ Further developments under study for Millstream and Rudall River National Parks and the Dampier Archipelago. ❑ Aboriginal Culture Exchange under study.

7.3 Kimberley Region (Western Australia)

7.3.1 Regional Overview

- The population in the Kimberley region is 30,539 (2000), with 5% growth per annum projected.
- Major centres in the region include Broome, Derby, Wyndham and Kununurra.
- The region is dominated by natural resources with other industries derived from this resource base.
- The size of the regions industry sector's determined by the average value of production / turnover (1997/98 - 1999/00) is as follows:
 - ❑ Minerals and petroleum (49%)
 - ❑ Retail trade (14%)
 - ❑ Pearling (10%)
 - ❑ Tourism (18%)
 - ❑ Construction (4%)
 - ❑ Manufacturing (2%)
 - ❑ Pastoral (3%)
 - ❑ Horticulture (2%)
- Service businesses in the Kimberley increased by 20% from 1995 to 1997.
- Growth sectors in the region include tourism, irrigated horticulture and aquaculture.
- Services provided in the Kimberley in 1996 that were above the states average level of service provision index included accommodation, transport, public administration, education health and personal services. Service delivery improvements in 2000 included accommodation, public administration and personal services.
- The top five industries by employment numbers in November 2000 included:
 - ❑ Health and community services
 - ❑ Retail trade
 - ❑ Education
 - ❑ Personal services
 - ❑ Accommodation café's and restaurants

7.3.2 Infrastructure

- Further land developments are proposed for the Ord River Irrigation Area (ORIA). Opportunities to develop similar resources in the West Kimberley's are also being assessed.
- Regional airports are located at Broome, Derby, and Kununurra with regular flights from Perth and Darwin.
- Port facilities are located in Broome, Derby and Wyndham. Broome and Wyndham have regular services linked to Fremantle and Darwin.
- The Great Northern Road links the Kimberley to Darwin and Perth.

- Western Power supplies energy to all town centres. A hydroelectric power scheme has been established on the Argyle Dam servicing Kununurra, Wyndham and Argyle Diamond Mine.
- All town centres have access to the national telecommunications network. Telecentres are located in Wyndham, Halls Creek, Kununurra, Derby and Broome. Mobile phone networks are available in each major centre.
- Water is supplied to towns by nearby bore fields and river systems. The Ord River Dam supplies water to the ORIA.

Infrastructure & Projects Proposed
<ul style="list-style-type: none"> <input type="checkbox"/> Upgrading of roads in the region that serve the pastoral industry, the tourist industry, and Aboriginal communities. <input type="checkbox"/> Upgrading of road links between the Kimberley and the remainder of northern Australia, including the Tanami Road to Alice Springs and the Parry's Creek and Weaber Plains roads linking the Northern Territory east of Keep River to the Ord River Irrigation Area and Wyndham. <input type="checkbox"/> Upgrading of education infrastructure and improving access throughout the region. <input type="checkbox"/> Development of a range of communications technologies, especially two-way communication and data transfer in remote areas. <input type="checkbox"/> Expansion of existing community infrastructure as a result of major agriculture and aquaculture developments. <input type="checkbox"/> Construction of access roads in the ORIA and investment in local roads consistent with growth associated with Ord Stage 2. <input type="checkbox"/> Maintenance and upgrading of port facilities to meet projected demand. <input type="checkbox"/> Upgrading of infrastructure in remote Aboriginal communities. <input type="checkbox"/> Lake Argyle small boat access and foreshore development. <input type="checkbox"/> Additional community resource centres in Wyndham and Fitzroy Crossing. <input type="checkbox"/> Other projects which either depend on or would be significantly enhanced by Federal support: <ul style="list-style-type: none"> - Telecommunications upgrade for remote communities and settlements. - Upgrades and enhancement of postal services with related aerial connections. - An enhanced defence presence in the West Kimberley. - A review of offshore fishing resources. - Broome small boat harbour assessment.

7.3.3 Agriculture & Aquaculture

- Agriculture production is concentrated in the Wyndham-East Kimberley's where the Ord River development utilises 14,000 hectares of land for the production of a diverse range of over 60 crops.
- Ord River agricultural production was worth \$61 million in 1998/99. The most significant crops included:
 - sugar cane (\$16.3 million)
 - melons (\$19.7 million)
 - pumkins (\$3.4 million)
 - beef/dairying (\$1.6 million)
 - miscellaneous field crops (\$2.2 million)
 - hybrid seeds (\$1.8 million)

- ❑ bananas (\$5.5 million)
 - ❑ miscellaneous horticulture (\$3.5 million)
- ❑ cotton (\$3.3 million)
 - ❑ mangoes (\$3.1 million)
- Smaller agriculture holdings exist near Broome and Derby. In 1998/99 there were 191 agriculture holdings covering 24.6 million hectares within the Kimberley.
- The ORIA has significant potential for further development and expansion of alternative agricultural products with Stage Two expecting to utilise an additional 64,000 hectares of land.
- A feasibility study is currently being conducted to investigate the viability of crops such as cotton, sugar, leucaena, hemp, a range of horticultural products, exotic hardwoods, freshwater aquaculture and viticulture.
- The Kimberley region is well placed to develop a significant aquaculture industry with potential investments in native aquarium fish, barramundi, pearl oysters and red claw.
- Pastoral beef cattle are exported from the region. The cattle population in 1999 was 507,500 head (25.6% of Western Australia's herd). Cattle turn off was worth \$42.7 million in 1996/97.

Infrastructure & Projects Proposed
<ul style="list-style-type: none"> ❑ Ord River Irrigation Scheme Stage 2, involving the construction of a second main irrigation channel for the Ord River Irrigation Area (ORIA). ❑ West Kimberley agricultural and horticultural developments, involving up to 175,000 hectares of irrigated land. ❑ Aquaculture and Pearling at Lake Argyle, Wyndham and Derby and in a number of Aboriginal communities.

7.3.4 Mining

- Major mining operations in the region include the extraction and processing of diamonds, zinc, lead, iron ore, crude oil and gold.
- Argyle Diamond mine near Kununurra is the largest producer of diamonds, by volume, in the world.
- Current mining developments include off-shore oil and gas exploration.

7.3.5 Tourism

- Tourism is an important growth industry for the region. The region had 512,000 visitors to the region in 1999 spending \$230 million.
- With the regions cultural and physical features, opportunities are available for the establishment of niche market eco-tourism and cultural and adventure attractions.

Infrastructure & Projects Proposed:

- \$7 million Lily Creek International Motel, Kununurra.
- \$16 million 118 unit accommodation, Broome.
- \$30 million Broome Airport relocation and air services.
- \$20 million Cable Beach Sanctuary, Broome.
- \$5 million Monsoon Resort, Broome.
- \$2.6 million Broome Seashells Resort, Broome.
- \$20 million Murray Road Serviced Apartments, Broome.
- \$3 million Bali Hali Villas, Broome (Stage One).
- \$2 million Bali Hali Villas, Broome (Stage Two).

7.4 Northern Territory

7.4.1 Regional Overview

- The Northern Territory (NT) occupies one sixth of Australia's landmass but accounts for only 1% of the national population (192,882 people in 1999).
- The Top End of the NT represents 75% the total population, 60% of which reside in Darwin. NT in total had the highest population growth rate of any State/Territory in Australia between 1993-1998.
- The NT has a high proportion of Indigenous people, approximately 25% of the population.
- The centres of Darwin followed by Alice Springs have the most diverse industry mix in the Territory.
- The top five industries by employment numbers in the NT in 2000 included:
 - Public admin and defence.
 - Wholesale and retail.
 - Health & community services.
 - Education.
 - Construction.
- Darwin has a high concentration in service industries along with some manufacturing.
- The strongest growth industries by composition of employment for Darwin between 1991 and 96 included construction, trade, finance, business services, public administration and personal services.
- The most significant industries in the balance of the Top End are primary industries, including agricultural production and mining.
- Major growth industries in the balance of the Top End from 1991 to 1996 have been in supporting industries to the local business in the region, including public administration and health.
- Expenditure on defence is estimated at \$762 million (1999/2000) making it the NT's second largest industry after mining.
- The industry composition of southern NT indicates important pastoral and mining activities along with some manufacturing to meet local needs.
- The NT as a whole has a medium level of industry specialisation comparable to regions in Central Queensland.
- The NT Government's focus on regional development includes:
 - Enhancing transport and logistics operations to ensure the Top End is a major port for both the NT and rest of Northern Australia.
 - Providing support services for on-shore and off shore resource development projects.
 - Value adding to natural resources, especially energy related activities.
 - Providing opportunities from major infrastructure projects.

- Providing opportunities from the growing tourism industry.
- Growing agricultural production based on niche markets
- Development skills and increasing education and training activities.

7.4.2 Infrastructure

- Darwin's Port facilities presently include three bulk cargo berths and an additional berth used by smaller vessels. Mining companies privately manage other major ports at Milner Bay and Gove in the NT.
- The NT is linked to the rest of Australia by the Stuart, Barkly and Victoria Highways.
- Darwin International Airport hosts 20 regular passenger services per week for six international airlines. Other regional and intra territory airports are located at Gove, Darwin, Alice Springs and Ayres Rock.
- Darwin has a significant defence force presence estimated at approximately 10,500 personnel.
- The Northern Territory has a weekly passenger train service from Adelaide to Alice Springs.

Infrastructure & Projects Proposed
□ \$1.23 billion Asia Pacific Transport Consortium plus Commonwealth, NT and SA Governments - <i>AustralAsia Rail Project</i> , from Alice Springs to Darwin.
□ \$100 million, NT Government, Stage 2, <i>Darwin Port at East Arm</i> , East Arm, Darwin.
□ \$785 million from 1995-2003 <i>Commonwealth of Australia Defence Facilities</i> , including Robertson Barracks and Naval Base extensions.
□ Landholders and NT government, <i>Katherine-Daly Basin Development</i> , Daly River Basin.
□ Feasibility Study, <i>Proposed Marine Maintenance Facilities</i> , East Arm Port.
□ \$7.2 million NT Government, <i>Medical Centre</i> , Palmerston town.
□ \$9.6 million Commonwealth Funding, <i>National Highways-rehabilitation and widening</i> for the Stuart, Barkly, Victoria and Arnhem Highways.
□ \$6 million NT Government, redevelopment of <i>Accident and Emergency Services</i> , Royal Darwin Hospital.
□ \$7 million, Uniting Church in Australia, <i>Shopping Complex</i> , Darwin City.
□ \$5 million NT Government, <i>Tourism and Hospitality Facility</i> to Sadadeen Campus, Alice Springs.
□ \$20 million Angel Estate Pty Ltd, <i>Proposed 18 storey Hotel</i> , Darwin city.
□ \$15 million Auleth Pty Ltd, <i>Proposed Wood Street Flats</i> , Darwin city.
□ \$12 million Myilly Point Pty Ltd, <i>Myilly Point Units</i> , Larrakeyah.
□ \$149 million Trafalgar Corp., <i>Former Oil Tank Farm residential development</i> , Darwin.
□ \$80 million Moran Health Care Group Pty Ltd, <i>251 unit residential aged care facility</i> , Myilly Point, Darwin.

7.4.3 Agriculture & Fishing

- The NT's largest agricultural industry is the live cattle and meat industry concentrated in the lower Top End and Barkly regions.
- The fishing industry is estimated to be worth \$126 million and the agricultural industry worth \$322 million (1998).
- Darwin is the main export port for live cattle from Australia servicing Asian and Middle East markets.
- There is the potential for growth in fruit and vegetable production in the lower Top End, which is currently supplied for the local market in addition to markets in southern Australia.
- Agricultural growth is expected from the Ord River Irrigation Scheme- Stage Two development and mixed farming in the Katherine-Daly region.
- Establishing horticulture markets expected to grow include mangoes, bananas, table grapes, nurseries and cut flowers.
- Addition developments expected include aquaculture, pearling and fisheries.
- The NT government supports the development of the regions sugar and cotton industries and the opening up of more land suitable for agricultural purposes.

Infrastructure & Projects Proposed
<ul style="list-style-type: none">❑ \$460 million, Wesfarmers / Marubeni, <i>Ord River Irrigation Area Stage 2</i>, Ord River, WA and Keep River Plain NT.❑ \$8 million Pivot Fertilisers, <i>Seacage Barramundi Project</i>, off Bathurst Island.❑ \$100 million, <i>proposed cotton industry</i>, Katherine, Eusey, Victoria River districts.

7.4.4 Mining

- The estimated size of mineral and energy production in 1998/99 was \$1.545 billion or 13.8% of Gross State Product. Production is expected to increase to \$1.652 billion in 2002/03 due to production from Merlin, Browns Prospect and Batchelor magnesite projects.
- The NT Exploration Initiative has committed funding of \$16 million over five years (from 1999/00) for high technology mineral survey exploration.
- Significant energy resources are currently available and planned for production.
- Demand is present for the processing of mineral resources.
- The opportunity exists for local service and supply industries to expand their capacity to support energy and mineral development projects.

Infrastructure & Projects Proposed
<ul style="list-style-type: none"> <input type="checkbox"/> \$16million NT Government, <i>Mining Exploration Initiative</i>, Northern Territory. <input type="checkbox"/> \$2.2 billion Phillips Petroleum and others, <i>Bayu-Undan oil and gas production</i>, Timor Sea. <input type="checkbox"/> \$2.5 billion Woodside Petroleum and others, <i>North Australian Gas Venture</i>, Timor Sea. <input type="checkbox"/> \$570 million Mt Grace Resources, <i>Magnesium Project (mining and processing)</i>, Batchelor area.

7.4.5 Tourism

- The NT had 1.28 million visitors in 1998/99, two thirds of which were domestic visitors. Tourism expenditure was estimated at \$768 million over the period with spending largely concentrated in Darwin (49% of total tourism spending).
- Tourism expenditure has increased from approximately \$490 million in 1990/91.
- The number of international visitors is increasing, which accounted for one third of visitor expenditure in 1998/99.
- Cruise ships and defence ships make a significant contribution to the NTs tourism spending.
- The Northern Territory Tourism Commission growth expectation include:
 - Increases in international visitor nights of 5.1% until 2001/02.
 - Increases in interstate visitor nights of 0.8% until 2001/02.
- With growth in visitor numbers, further opportunities are expected in the development of eco-tourism resorts and nature based tourism attractions.

Infrastructure & Projects Proposed
<ul style="list-style-type: none"> <input type="checkbox"/> <i>Pioneers Path</i> - linking Alice Springs, Uluru / Ayers Rock, Kings Canyon and West Macdonnell Ranges. <input type="checkbox"/> Year round access to Jim Jim Falls. <input type="checkbox"/> Implementation of stage two for <i>Explorer Highway</i> - Pt Augusta to Darwin. <input type="checkbox"/> <i>Natures Way</i> - Darwin to Kakadu. <input type="checkbox"/> <i>Savannah Way</i> - Cairns, Borroloola and Broome. <input type="checkbox"/> Sealing of the <i>Litchfield Park loop Road</i> connecting Batchelor, Litchfield Park and Berry Springs. <input type="checkbox"/> Convention centres in Darwin and Alice Springs. <input type="checkbox"/> Themed wilderness lodges and safari camps in and adjacent to national parks. <input type="checkbox"/> \$8 million Nabalco Pty Ltd, <i>Gateway Resort</i>, Palmerston town.

7.4.6 Manufacturing & Trade

- The NT is a significant importer of most manufactured products from the rest of Australia, and overseas, therefore local manufacturing is expected to continue to play a small role and only be concentrated on manufactures of primary production.
- Major imports include machinery, transport equipment and mineral fuels.

- There are 43 businesses operating in the Trade Development Zone at east Arm providing: precision engineered components; chemicals for mining; industrial lubricants; power systems for remote areas; cardboard manufacturing and food and beverage products.
- A growing construction industry will provide opportunities for manufacturers of fabricated construction materials.

Infrastructure & Projects Proposed
<ul style="list-style-type: none"> <input type="checkbox"/> Methanex Corp, proposed gas development - <i>synthesis gas</i>, Darwin. <input type="checkbox"/> \$300 million Compass Resources N.L., <i>Brown's Polymetallic</i>, Batchelor area. <input type="checkbox"/> \$9 million Nabalco Pty Ltd, <i>Alumina Silo</i>, Gove Peninsula.

7.4.7 Transport and Communications

- The NTs transport and communications industry as a percentage of GSP was 8.7% in 1996/97 compared to 9.6% for Queensland and 8.2% for Australia as a whole. This industry in the NT was the fastest growing of any State/Territory from 1990 to 1997.
- The NT Government has identified Darwin as a multi-modal transport and logistics hub and given it high priority. There is high government and private sector involvement in strategies towards integrating transport linkages in the NT.
- Recent seaport developments include:
 - Stage I East Arm* - associated wharf facilities enhancing export services.
 - Stage II East Arm* - integration of Alice Springs - Darwin railway and fuel storage terminal.
 - Cruise Ship Terminal* at Stokes Wharf in 1999.
- Further developments are planned for Darwin and Alice Springs airports, including the establishment of commercial property.
- The industry led NT Airfreight Working Group includes members from producers, exporters, airlines, airport owners and relevant government agencies. Its aim is to enhance airfreight capability.

7.5 Far North Queensland

7.5.1 Regional Overview

- The regions estimated population was 219,277 in 1998, of which 88.7% is concentrated in the Cairns sub-region and the remaining 11.3% in the Cape sub-region.
- The turnover of the top five industry sectors in the region in 2000 were as follows:
 - Tourism (\$1,400 million)
 - Agriculture (\$950 million)
 - Mining (\$550 million)
 - Manufacturing (\$500 million)
 - Fishing (\$300 million)
- Manufacturing consists of food processing (sugar milling) and engineering industries in support of the sugar, mining, fishing, naval and tourism industries.
- Major exports from the region include sugar, tourism, manufacturing and mining.
- In November 2000, those services in the Far North that were above the states average level of service provision index included retail trade, accommodation (cafés & restaurants), transport and storage, public administration personal services and cultural and recreational services.
- Those services that are under the state average level of service provision included construction, communications, finance, insurance, property and business services.
- Development trends for the Far North region include:
 - A greater need to encourage import replacement industries and enhance value added export performance.
 - A greater opportunity to improve the adoption of new information technologies.
 - Improvement in the capability of the region to attract investment.
 - Ensuring labour force skills meet future industry needs.
 - Encouraging Indigenous enterprise development.

7.5.2 Infrastructure

- Land and soils in the region are highly suited to a range of agricultural industries. Industrial land sites are also established in Cairns and Mareeba.
- The Far North has sound transport infrastructure including a network of light rail cane tracks throughout the coastal plains servicing the regions sugar mills.
- The region has a well-established ports network including commercial ports at Cairns, Lucinda, Mourilyan and Weipa. Major seaport facilities are located at Cairns and Mourilyan.
- The region has well established public and private education institutions, including James Cook University campus in Cairns and eight campuses of TAFE.
- An international airport is located in Cairns and many other smaller airports are found around the region.

- The region has two hydroelectric power stations located at Tully and Barron Gorge.

Infrastructure under Construction or Committed
<ul style="list-style-type: none"> <input type="checkbox"/> \$42 million <i>Tablelands Sugar Mill.</i> <input type="checkbox"/> \$32 million <i>Dairy Farmers Expansion</i> at Malanda (also Booval and Toowoomba). <input type="checkbox"/> \$105 million <i>Cairns Base Hospital</i> redevelopment. <input type="checkbox"/> \$19.3 million <i>Atherton Tablelands Water Infrastructure Project.</i> <input type="checkbox"/> \$100 million <i>Nullinga Dam Irrigation Scheme.</i> <input type="checkbox"/> \$70 million <i>Cooktown Development Road</i> sealing. <input type="checkbox"/> \$39 million <i>Peninsula Development Road</i> upgrades. <input type="checkbox"/> \$60 million <i>Torres Strait Major Infrastructure Program.</i>
Infrastructure and Projects under Study
<ul style="list-style-type: none"> <input type="checkbox"/> \$60 million <i>Cairns International University.</i> <input type="checkbox"/> \$8 million <i>Cairns Sound Studio.</i> <input type="checkbox"/> \$5 million <i>Cane Spirit Distillery.</i> <input type="checkbox"/> \$70 million <i>Challumbin-Woree Transmission Line</i> upgrades. <input type="checkbox"/> \$2 billion <i>Chevron Gas Project.</i> <input type="checkbox"/> \$4 million <i>Film Studio.</i> <input type="checkbox"/> \$10 - 30 million <i>Industrial Ethanol Production.</i> <input type="checkbox"/> \$300 - \$1billion <i>Kuranda Range Transport</i> upgrade. <input type="checkbox"/> \$54 million <i>Mt Garnet Zinc Mine.</i> <input type="checkbox"/> \$50 million <i>Port Douglas Lawn Bowls Resort.</i> <input type="checkbox"/> \$35 million <i>Regional Waste Management Facility.</i>

7.5.3 Agriculture

- The value of agricultural production in the region was \$620 million in 1997/98 comprising:

<input type="checkbox"/> Vegetables (\$21 million)	<input type="checkbox"/> Beef cattle (\$51 million)
<input type="checkbox"/> Mangoes (\$22 million)	<input type="checkbox"/> Bananas (\$152 million)
<input type="checkbox"/> Tobacco (\$25 million)	<input type="checkbox"/> Sugar cane (\$237 million)
<input type="checkbox"/> Dairy cattle (\$48 million)	<input type="checkbox"/> Other (\$64 million)
- Crop production is very diversified and includes sugar cane, bananas, fruit (mangoes, avocados, lychees and other tropical fruits), tobacco, vegetables, nuts, tea tree and field crops such as maize and peanuts, pasture crops and cut flowers.
- Production of tobacco, rice and navy beans are decreasing. Orchard crops, sugar cane bananas, tea tree is increasing.

7.5.4 Mining

- The Far North region has extensive mineral deposits including bauxite, copper, zinc, gold, tin, silver and gemstones.

- Mineral production decreased between 1994 and 1998, with at least one mine ceasing production within the period.
- The Cairns area is increasingly becoming a logistics support base for mining operations in North Queensland, Papua New Guinea and Irian Jaya.

Infrastructure & Projects Committed or Proposed
<input type="checkbox"/> \$60 million Australian Kaolin - <i>Skardon River Kaolin Deposit</i> near Weipa. <input type="checkbox"/> \$20 million <i>Ravenshoe Wind Power Generation</i> . <input type="checkbox"/> \$20 million <i>Cape Flattery Silica Mine (Stage Three)</i> located in Cook Shire.

7.5.5 Tourism

- The largest industry in the region is tourism, with the Cairns sub region being the third largest holiday region in Australia for international visitors.
- Cairns is the hub of the tourism sector, with the sixth busiest international airport in Australia and more accommodation houses than Perth, Adelaide and Brisbane.
- Visitor numbers have increased from 400,000 in 1992 to 700,000 in 1998, doubling visitor expenditure from approximately \$600 million to \$1.2 billion over the same period.
- The region has over 50 national parks and reserves, including the Great Barrier Reef and World Heritage Rainforest.

Infrastructure & Projects Complete or Under Construction
<input type="checkbox"/> \$35 million <i>Great South Pacific Express</i> , between Brisbane and Cairns. <input type="checkbox"/> \$30 million <i>Foster Road Shopping Centre</i> . <input type="checkbox"/> \$30 million <i>Cairns Convention Centre (Stage Two)</i> . <input type="checkbox"/> \$120 million <i>Port Douglas Golf Links Development</i> . <input type="checkbox"/> \$350 million <i>Earl Hill Development</i> located at Earl Hill, Cairns. <input type="checkbox"/> \$100 million <i>Cairns CityPort</i> located at Trinity Inlet. <input type="checkbox"/> \$27 million <i>Cairns Esplanade Redevelopment</i> . <input type="checkbox"/> \$100 million <i>Port Hinchinbrook</i> located at Oyster Point, south of Cardwell.

Infrastructure & Projects Committed or Under Study:
<input type="checkbox"/> \$44 million Ella bay <i>Ecotourist Resort</i> Located in Johnstone Shire. <input type="checkbox"/> \$10 million <i>Licuala Nature Resort</i> located at Cape Tribulation, Douglas Shire. <input type="checkbox"/> \$759 million <i>Rainbow Harbour Tourist Resort</i> located in Cairns. <input type="checkbox"/> \$5 million <i>Shopping Centre</i> Port Douglas. <input type="checkbox"/> \$35 million <i>Port Douglas Links Resort</i> . <input type="checkbox"/> \$6 million <i>Mareeba Wetlands Project</i> . <input type="checkbox"/> \$10 million <i>Cairns CBD Revitalisation Project</i> .

7.6 Northern and North West Queensland

7.6.1 Regional Overview

- The Northern and North Western region has a total population of 226,541 (1998), 85% of which is located in the Northern region.
- Major urban centres in the region include Townsville, Charters Towers and Mt Isa.
- The largest industry sectors in the region by highest value of Gross State Product in 1996/97 include:
 - ❑ Mining (14.8%)
 - ❑ Manufacturing (14.8%)
 - ❑ Wholesale & Retail (11%)
 - ❑ Agriculture/forestry/fishing (8.2%)
 - ❑ Transport/storage/comm. (8.1%)
 - ❑ Ownership of dwellings (7.2%)
 - ❑ Govt admin & defence (5.8%)
 - ❑ Construction (5.5%)
- The fastest growing sectors in the region from 1996 to 1998 included cultural and recreational services, manufacturing, accommodation, cafes and restaurants, construction and agriculture, forestry and fishing.

7.6.2 Infrastructure

- The region has an abundant supply of raw land stock suitable for industrial and agricultural developments. Designated industrial parks are committed near Townsville and planned for Mt Isa.
- Major highways in the region include the Bruce and Flinders Highways.
- A north to south rail link extends from Cairns to Brisbane.
- The region has established trading ports in Townsville, Karumba and Lucinda and six main regional airports located at Townsville, Ayr, Charters Towers, Hughenden, Ingham and Mt Isa.
- Several surface water supplies including the Burdekin Falls Dam, Ross River Dam, Mount Spec Dam, Lake Moondarra, Julius Dam and Chinaman Creek Dam service the region.
- There is a major defence force base and facilities located in Townsville.
- Power has traditionally been supplied to the region from coal-fired power. The 443 megawatts Yabulu and AES Mt Stuart peak load stations are expected to supply Townsville's increasing energy needs, in addition to the 766 megawatts gas fired, base load station proposed for Thuringowa. Mica Creek gas base power station has been upgraded due to developments in the northwest minerals province.

Infrastructure and Projects Completed or Committed

- \$100 million AES 288 megawatts *Mt Stuart Power Station*.
- \$71 million 159 megawatts *Yabulu Power Station* near Townsville.
- \$120 million *Mica Creek Power Station*, for gas conversion, Mt Isa.
- \$12.1 million upgrade to *Karumba Port* for exports of zinc and lead concentrate from Pasminco's Century mine.
- \$80 million *Townsville Port* expansion.
- \$75 million BHP *Cannington Outer Berth*, Townsville Port (1998).
- \$112 million *QNI Loader*, Townsville Port.
- \$17.2 million Australian Airports Ltd, *Airports Upgrades* - Mt Isa (\$15million) and Cloncurry (\$2.2million).
- \$128 million electricity transmission lines - Mica Creek to Ernest Henry, Cloncurry, Century and Gunpowder 1999. (\$50 million Ernest Henry, \$78 million Century).
- \$20 million Townsville Community Medical Research & Teaching Hospital, Townsville.
- \$179 million Australian Defence Industries: Military Operations in Urban Terrain Project (\$4 million); Ten Terminal Regiment Capital Works (\$29 million); Five Aviation Regiment Lavarack Barracks (\$124 million); Redevelopment Field Training Area (\$22 million).
- \$26 million *Mater Hospital* expansion.
- \$21 million major road works.

Infrastructure and Projects under Study

- \$300 million (stage one) Stanwell Dynergy 750 MW *Base Load Power Project* located in Thuringowa City.
- \$110 million 150 MW QNI *Cogeneration Power Plant*, Townsville.
- \$7 million *Freight Interchange Mt Isa and Cloncurry*, Cloncurry completed 1998 (\$4 million), preliminary study Mt Isa (\$3million).
- \$200 million Queensland Rail, *Rail Upgrade Mt Isa to Townsville* (Includes Mt Isa to Phosphate Hill).
- \$50 million Queensland Government, *North West Queensland Water Pipeline*, Connecting Lake Julius to Ernest Henry, Dugal River and Cloncurry.
- \$10 -20 million *Driver Training Complex*, Townsville.
- \$250 million *CBD Redevelopment*.
- \$170 million new *Townsville Hospital*.
- \$80 million *Townsville Port access corridor*.
- \$50 million *Townsville Port Warehouse*.
- \$306 million AGL Mt Isa Gas Pipeline - major customers: MIM, WCM Fertilisers, Pasminco, EH and Mica Creek Power Station, (\$186 million pipeline, \$120 million corridor).
- \$100 million Local Government Area infrastructure expenditure - water supply and treatment facilities, local roads, sewage plants, airstrips, housing provision and infrastructure etc - average about \$4 million per Local Government Area; some significantly higher.

7.6.3 Agriculture, Aquaculture & Forestry

- The climate and soils in the northern region are highly suited to pastoral agriculture, sugar, horticulture and aquaculture.
- There is high agricultural diversity in the region. The Northern region has a large sugar and vegetable production in the Herbert and Burdekin.
- There is the opportunity to expand agricultural production including irrigated crops in greenfield areas, greater value adding to agricultural produce, and a possible sugar value adding facility in the Burdekin.
- Opportunities exist to expand trade from Townsville airport, including increasing horticulture and food production.
- Aquaculture is an emerging industry in the region and has further scope for development (including red claw).
- Possible expansions of existing agricultural activities in the northwest, include cattle and wool production.
- The opportunity exists to expand forestry operations, particularly in the Hinchinbrook Shire.

Infrastructure & Projects Proposed	
<input type="checkbox"/>	\$65 million <i>Flinders River Dam</i> , Richmond (600,000 ML capacity).
<input type="checkbox"/>	\$55 million <i>Flinders Irrigation Project</i> (12,000 ha).
<input type="checkbox"/>	Live animal exports through Karumba, Townsville and Darwin - Port access to improve throughput.
<input type="checkbox"/>	<i>Julia Creek Game Meat Abattoir</i> , to service McKinlay Shire (\$ to be determined).
<input type="checkbox"/>	<i>Hughenden Worm Farm</i> for horticultural use (\$ to be determined).
<input type="checkbox"/>	<i>Matilda Merinos</i> , wool production, Richmond (\$ to be determined).
<input type="checkbox"/>	<i>Hughenden Neem Tree</i> (\$ to be determined).

7.6.4 Mining, Manufacturing & Minerals Processing

- The region has an expanding mineral processing sector and an established light metals manufacturing sector, which is growing from the transport of minerals from the Western Mining Province (WMP) to the Townsville Port.
- The WMP has an extensive base metal reserve, including 28% of the world known zinc reserve and 28% of the world known lead reserves. Smaller deposits are also located near Charters Towers.
- There is further scope for the development of minerals-related industries such as mining logistics services and research facilities.

Infrastructure & Projects Proposed: Manufacturing and Minerals Processing

- ❑ \$530 million (stage one) Sun Metals Corporation, *Zinc Refinery* located 15 kilometres south of Townsville.
- ❑ \$80 million QNI, *Yabulu Nickel Refinery Upgrade* located in Thuringowa City.
- ❑ \$700 million WMC Ltd, WMC Fertilisers, *High Analysis Fertiliser Plant Rail Project* located in Mt Isa City and Cloncurry Shire (Phosphate Hill).
- ❑ \$22 million *Xanthate Museum*, Mt Isa.
- ❑ \$10 million Mt Isa *Copper Sulphate Plant*.

Infrastructure & Projects Committed or Under Study

- ❑ \$120 million, Queensland Minex NL, *QSMELT Copper Smelter* project, located near WMC Fertilisers Phosphate Hill plant.
- ❑ \$76 million *Undilla Lime and Cement* project located 150km northwest of Mt Isa.
- ❑ \$500 million *Sun Metals* (stage two - 2005/10)

Infrastructure & Projects Proposed: Mining

- ❑ \$586 million Mt Sia Mines Ltd, *Enterprise Mine* and Copper Smelter located in Mt Isa City.
- ❑ \$270 million Mt Isa Mines Ltd, *George Fisher Zinc*, Lead and Silver Mine project located 22 kilometres north of Mt Isa City.
- ❑ \$900 million Pasminco *Century Zinc* with Lead and Silver Projects located in Bourke Shire 300km North of Mt Isa.
- ❑ \$440 million BHP Minerals, *Cannington*: Lead and silver, 1135km SE of Cloncurry.
- ❑ \$320 million MIM Holdings (and Savage Resources), *Ernest Henry*. Copper and gold, 38km NE of Cloncurry.
- ❑ \$15 million Murchison United NL, *Mt Cuthbert*: Copper, Projects N of Cloncurry and E of Mt Isa.
- ❑ \$125 million Aberfoyle Ltd, *Gunpowder*: Copper, Gunpowder.
- ❑ \$100 million Australian Resources Ltd, *Selwyn*: Copper and Gold, south of Cloncurry.
- ❑ \$156 million Placer Pacific Ltd, *Osborne*: Silver and Copper, south of Cloncurry.
- ❑ \$13.5 million Amalgamated Resources NL, *Eloise*: Copper, south of Cloncurry.

Infrastructure & Projects Committed or Under Study

- ❑ \$60 million, Plutonic Resources NL, *Balcooma* Base Metals Deposit located in Dalrymple and Etheridge shires.
- ❑ \$345 million Pasminco Ltd, *Dugald River* Base Metals Deposit located 87 kilometres northeast on Mt Isa.
- ❑ \$30 million Buka Minerals Ltd, *Lady Annie* Leachable Copper Project located 140 kilometres north west of Mt Isa.
- ❑ \$110 million Buka Minerals Ltd, *Lady Loretta* Base Metals Project located 140 kilometres north west of Mt Isa.
- ❑ \$27 million Mineral Commodities NL, *Trekelano* Copper-Gold Mining project located 110 kilometres south east of Mt Isa.
- ❑ \$20 million Majestic Resources NL, *White Range* Copper, Cobalt and Gold Project located 30 kilometres south on Cloncurry.
- ❑ \$120 million RGC Ltd, *Thalaga* Mixed Base Metals: Lead, Zinc, and Copper.
- ❑ \$2 billion Chevron Natural Gas Timor Sea gas pipeline, Ballera to Mt Isa (completed \$300 million).
- ❑ Coal Seam methane, West Galilee Basin.

7.6.5 Tourism

- Tourism assets in the northwest include the Lawn Hill National Park and Riversleigh fossils, while the northern area has the Great Barrier Reef, wetlands and outback.
- Opportunities exist to develop new and existing tourism attractions based on the increasing number of visitors to the region.

Infrastructure & Projects Complete or Committed
<ul style="list-style-type: none"> <input type="checkbox"/> \$30 million <i>Strand Redevelopment</i>. <input type="checkbox"/> \$260 million <i>Lakes Development, Metro Quays CBD Apartments and Ridgemont and Executive Motel</i> upgrade. <input type="checkbox"/> \$20 million <i>Palmer Street Redevelopment</i>. <input type="checkbox"/> \$20 million <i>Cannon Park Entertainment Precinct</i>. <input type="checkbox"/> \$57 million <i>Townsville City Entrances</i>. <input type="checkbox"/> \$27 million <i>Museum of Tropical Queensland</i> located in Townsville. <input type="checkbox"/> \$600 million <i>Whitsunday Springs Tourist Resort</i> located at Abbot Point, 15 kilometres north of Bowen. <input type="checkbox"/> \$4 million <i>Riversleigh Interpretive Centre</i>. <input type="checkbox"/> \$5 million <i>Underground Mining World</i>, Riversleigh. <input type="checkbox"/> \$2.5 million <i>Richmond Fossil Museum</i>, new facility for world best fossils. <input type="checkbox"/> \$17.4 million Local Government Area expenditure for the development and enhancement of tourism attractions including Blackall, Barcaldine, Longreach and Winton respectively (completed projects include Woolscour; Workers' Heritage Centre; Stockmen's Hall of Fame; Qantas Museum & Matilda Centre).
Infrastructure & Projects Proposed or Under Study
<ul style="list-style-type: none"> <input type="checkbox"/> \$12 million (stage one) <i>Panorama Cableway Project</i> on Castle Hill, Townsville. <input type="checkbox"/> \$55 million <i>Nelly Bay Resort</i> located on Magnetic Island. <input type="checkbox"/> \$22 million <i>Tilt Train and Rail Station</i>. <input type="checkbox"/> \$27 million <i>Ocean Terminal</i> at Townsville Port. <input type="checkbox"/> \$15 million <i>Ross River Bikeway</i>. <input type="checkbox"/> \$80 -100 million <i>200 Bed Hotel</i>, Townsville.

7.7 Mackay, Fitzroy & Central Queensland

7.7.1 Regional Overview

- The estimated population of the region is 337,051 (1998).
- Major population centres include Gladstone, Rockhampton and Mackay.
- The region has a rich natural resource base that supports substantial agricultural production, mining & tourism.
- Food processing and minerals processing is located in the region's interior.
- The region has a strategic focus on Elaborately Transformed Manufacturing (ETMs) from abundant energy resource in the region.
- The Mackay region has a very diversified economy, with main industry sectors, including agriculture, coal, tourism and other services.
- Service delivery industries that were above the Queensland average service provision index in 1996 included transport, accommodation, construction and education. Notable improvements in 2000 included retail trade, personal services and communication services.
- Main imports into the region include bauxite, oil and petroleum (Gladstone, Mackay) and chemicals (Gladstone).
- Exports in order of importance and size from the region include coal, minerals, sugar and related products, livestock and livestock products and cereals.
- Further opportunities exist to develop ETMs and flow on industries including transport, warehousing, marketing, and logistical functions.
- Current development trends within the region include:
 - Increasing the number of skilled professionals in the Central region.
 - Developing SME's alongside major industry and resource projects in agriculture, mining, energy and manufacturing.
 - Diversification of coastal regions into tourism (like the Whitsunday's).
 - Diversification of Gladstone into light and medium industry and further minerals processing.
 - The Fitzroy region emerging as a major energy provider.
 - Rockhampton initiating its Smart City Program.

7.7.2 Infrastructure

- Large stocks of land have been set aside by the Government in the Gladstone State Development Area. A major industrial precinct also exists near Rockhampton.
- The region has commercial ports located at Gladstone, Abbot Point, Mackay and Hay Point.
- Power is supplied to the region by four major coal base power including Gladstone, Callide, Collinsville and Stanwell power stations.

- Major airports are located at Gladstone, Rockhampton, Emerald and Mackay and Hamilton Island, with many smaller airports scattered throughout the region.
- A major dam and established pump pipe and reservoir infrastructure is located at Gladstone supplying treated water to industry and the community.
- Large available water resources are also located further north in the Fitzroy River Basin, Channel Country and artesian basins within the Central region.
- The region also has a well-established general and mining related rail network.
- A natural gas pipeline connects Rockhampton and Gladstone.

Infrastructure & Projects Proposed
<ul style="list-style-type: none"> ❑ \$35 million <i>Ammonia Import Terminal</i> in the Yarwun area, near Gladstone. ❑ \$30 million <i>Bundaberg - Maryborough - Hervey Bay Gas Pipeline</i>. ❑ \$40 million Oil Co of Australia, <i>Peat Coal Seam Methane Gas Project</i>. ❑ \$185 million <i>Stage 3 Dalrymple Bay Coal Export Terminal</i>, completed in September 1998, lifting the port's capacity from 28.8 million tonnes to 32 million tonnes of coal per year. ❑ \$54 million <i>Mackay Port Development Project</i> located in Mackay City. ❑ <i>Bowen Collinsville Enterprise</i> at Abbot Point which includes: The completion of the Newlands to Goonyella Rail Link to link Abbot Point to the Bowen coal fields; Duplication of the Abbot Point coal loader to service increased coal production; Development of a cargo wharf at Abbot Point and; Construction of a tug wharf to berth existing tug boat from Bowen.
Infrastructure & Projects under Study
<ul style="list-style-type: none"> ❑ \$200 million <i>Gladstone Water Supply Augmentation</i> is a located in Gladstone City and Calliope Shire. ❑ <i>Gladstone Port Authority Projects</i>, including \$75 million Fisherman's landing; \$22 million container terminal, \$68 million coal capacity increase. ❑ \$120 million <i>Dawson River – Nathan Dam</i> located in Central Queensland. ❑ \$300 million <i>NRG Operating Services Power Station</i>, Fly Ash Removal (\$15 million) & Ash Handling (\$3 million) in Gladstone City. ❑ \$1 billion <i>Sudaw Railway Line</i> from Surat/Dawson Valley. ❑ \$560 million <i>Projects International Australia</i>, Gladstone Space Launch Facility on Hummock Hill Island, south of Gladstone.

7.7.3 Agriculture

- Climate and soil in the Fitzroy region are suitable for the production of a wide range of crops and livestock with further potential for value adding.
- The Central region particularly concentrates on beef sheep and grain production in addition to cotton and horticulture. Cattle account for two thirds of agricultural production. Sheep and wool production is declining in the area.
- The building industry is closely tied to mining developments and the buoyant beef industry in the Central region, although has been declining in the last few years.
- The Mackay region is a specialised sugar producer. It produces two thirds of Queensland's total production and is a world leader in sugar producing technology.

- The Mackay region has an emerging aquaculture industry.
- Opportunities for agricultural diversification include:
 - ❑ Boer Goat-Feral Goat crosses for meat production.
 - ❑ Waygu Cattle for export to Japan.
 - ❑ Irrigated native tree foliage and flowers for the florist market.
 - ❑ Red Claw for production.
 - ❑ Neem Tree trials.
 - ❑ Outback timbers for furniture and crafts.
 - ❑ Tree lots such as Sandlewood, Mitchell Grass seed harvesting and dried wildflower for the florist market.
- Pastoral industry opportunities will arise from the ongoing effective management and production for niche markets, ie, live animal export, organic beef, green and lean, special breeds and enterprise diversification.

7.7.4 Mining

- The Central and Fitzroy regions have coal reserves and coalbed methane gas in the Bowen and Callide basins, large commercial oil shale deposits north of Gladstone, in addition to extensive mineral deposits of magnesite, gold, nickel, salt and mineral sands, gemstones and extractive resources including limestone, gypsum, sandstone and granite.
- The Mackay region has a large number of operating coal mines and underdeveloped coal deposits. It also has world class coal transport (rail and port) facilities.
- The Gladstone region has many established processing industries including an alumina refinery, aluminium smelter, cement works and chemical industries.

Infrastructure & Projects Proposed: Mining
❑ \$213 Alliance Colliery expansion to the <i>Oaky North Coal Mine</i> in 1999, supplying 7.5 million tonnes of coal over 5.5 years.
❑ \$250 million (stage one) <i>Stuart Oil Shale Project</i> located in Gladstone City and Calliope Shire.
❑ \$57 million <i>Burton Coal Mine Expansion</i> project was completed in December 1998, doubling the mine's capacity from two to four million tonnes of coal per year.
❑ \$50 million <i>Coppaballa open cut Coal Mine</i> , located 140 kilometres west of Mackay, which has an indicated resource of 200 million tonnes of coal. (75 jobs)
❑ \$500 million <i>Moranbah Coal Mine</i> opened in June 1999, increasing capacity to 4.2 million tonnes of coal per year.
❑ \$153 million <i>Newlands – Collinsville – Abbot Point Coal Expansion</i> project, increased annual production from 4.5 million tonnes of steaming coal per year to 7 million tonnes.
❑ \$400 million <i>Clermont Coal Deposit</i> located in Belyando Shire
❑ \$30 million <i>Poitrel Coal</i> project located in Nebo Shire 170 kilometres west of Mackay
❑ A feasibility study has been completed for the <i>Wards Well Coal Mine</i> , located in the Bowen Basin
❑ The <i>Goonyella Underground Coal Mine</i> located in the Bowen Basin
❑ \$400 million <i>Hail Creek</i> located in the Bowen Basin 85 kilometres west of Mackay
❑ The <i>South Walker Creek Coal Mine</i> is an open-cut thermal coal mine producing two million tonnes per year.

Infrastructure & Projects Committed or Under Study
<ul style="list-style-type: none"> ❑ \$400 million <i>Stuart Oil Shale Project</i> (stage two) located in Gladstone City and Calliope Shire. ❑ \$300 million <i>Togara North Coal</i> project located in Bauhinia Shire. ❑ \$40 million <i>Monto Minerals Goondieum LImenite Project</i>. ❑ \$739 million <i>Marlborough Nickel Project</i> located 70 kilometres northwest of Rockhampton.

Infrastructure & Projects Proposed: Manufacturing and Minerals Processing
<ul style="list-style-type: none"> ❑ \$240 million Queensland Nitrates Pty Ltd, <i>Ammonium Nitrate Plant</i> located at Moura. ❑ International Light Metals Ltd, <i>Forging and Thixotropic Facility</i>, Boyne Island (\$3.5 million stage 1 & \$35 million stage 2).

Infrastructure & Projects Committed or Under Study
<ul style="list-style-type: none"> ❑ \$1.4 billion <i>Comalco Alumina Refinery</i> in the Yarwun area, near Gladstone. ❑ \$3 billion <i>Aldoga Aluminium Smelter</i>, Gladstone. ❑ \$2.8 billion <i>Yieh Loong Enterprises</i>, Gladstone Steel Works located 15 kilometres west of Gladstone. ❑ \$200 million <i>Tata Ferro-Chrome Project</i>, Gladstone. ❑ <i>Queensland Alumina Ltd</i> production expansion. ❑ \$120 million <i>Synthetic Rutile Plant</i>. ❑ Tior Dupont, <i>Sodium Cyanide</i> expansion. ❑ \$800 million <i>Magnesium Metal Plant</i> located in Fitzroy Shire. ❑ \$250 million <i>Astral Calcining Project</i>, Gladstone. ❑ <i>Orica Ammonia Plant</i>.

7.7.5 Tourism

- Tourism attractions in the Gladstone region include gorges, rivers and national parks, farmstays, mines and other industrial features, historical villages and museums and other Indigenous based tourism.
- Established tourism attractions in the Central region includes Dreamtime Cultural Centre and Heritage Village in Rockhampton, Stockman's Hall of Fame and Qantas Founders Museum in Longreach and Waltzing Matilda Centre at Winton.
- A large established tourism industry exists in the Whitsunday's supported by tourist accommodation and facilities and natural tourist attractions. Developments completed in the last 18 months or due for completion this year total \$311 million, with further developments at an advanced planning stage totalling \$555 million.
- There are opportunities for outback tourism in the region, with the increasing trend towards nature based and culture based tourism.

Infrastructure & Projects Proposed
<ul style="list-style-type: none">❑ \$14.1 million <i>Able Point Marina</i> located at Airlie Beach.❑ \$700 million <i>Clarke's Cove Tourist Resort</i> located near Earlando in Whitsunday Shire.❑ \$190 million <i>Port of Airlie</i> located at Airlie Beach.❑ \$500 million <i>Quay Largo Tourist Resort</i> located at Midge Point, 110 kilometres north west of Mackay.❑ \$25.8 million <i>Vision Airlie</i> project located at Airlie Beach.❑ \$600 million <i>Whitsunday Springs Tourist Resort</i> located at Abbot Point.
Infrastructure & Projects under Study
<ul style="list-style-type: none">❑ \$25 million (stage one) <i>Monte Cristo Resort</i> on Curtis Island, Gladstone.❑ Stockland, <i>Auckland Creek Shopping Centre</i>, Gladstone.

7.8 Christmas Island & Cocos (Keeling) Islands (Indian Ocean Territories) ³⁰

7.8.1 Regional Overview

- The estimated population of the Indian Ocean Territories (IOT) is 2,100 (2000) a reduction from 2,561 at the 1996 census. Approximately 70 % of the population live on Christmas Island.
- The largest industry sectors in the Cocos (Keeling) Islands in 1996 indicated by the number of persons employed included public administration, trade, education, finance & business services and health.
- The largest industry sectors on Christmas Island in 1996 included accommodation, personal services, mining, public administration, and education.
- In 1996, service industries that were above the average level of service provision index in the Cocos (Keeling) Islands were public administration and education, while the best provided services on Christmas Island were accommodation, transport and communications, public administration, education and personal services.
- Common industry sectors that were under the Western Australian average level of service provision index in the IOT were trade, finance and business and health services.

7.8.2 Infrastructure

- The Federal Government has spent approximately \$58 million on infrastructure development in the IOT in 1998/99. This involved the construction or upgrading of hospitals, schools, seaports, airports, telephone networks and utility reticulation systems including water sewerage and electricity.
- Recommendations from the Australian Grants Commission has indicated the level of capital works expenditure necessary in the region over the next five years is in the order of \$88.93 million - \$26.68 million for Cocos (Keeling) and \$62.25 for Christmas Island.
- The Federal Government has therefore committed \$22 million for 2000/2001 to upgrade infrastructure, with a further \$2.9 million per year to ensure service delivery standards are equivalent to mainland Australian communities.
- The Federal Government also subsidises a weekly air service between Perth and the IOT. Christmas Island also has an air service to Jakarta.
- A \$500 million satellite launching facility has been proposed for Christmas Island, which would provide significant opportunities to local businesses.

7.8.3 Agriculture

- The agricultural sector in the IOT is very small. Coconut plantations on Cocos Island is no longer a core economic activity.

- Horticulture and aquaculture operations have been investigated and may provide opportunities with further developments in air and sea transport services.

7.8.4 Mining

- A private phosphate mining operation exists on Christmas Island that achieves a sales turnover near \$50 million per annum. The mine is a major contributor to regional employment.
- The operation is currently seeking exploration licences to locate additional phosphate, which is expected to support local activity and provide contract and supply opportunities to other Island businesses for the next 20 years.

7.8.5 Tourism

- With further improvements in visitor capacity and more frequent air services, the opportunity exists to invest in accommodation, tourism services and facilities in the region.
- A number of small tourism operators presently provide fishing and diving services in the region.
- Tourism numbers to the region average around 250 per year, since the closure of a resort-casino complex on Christmas Island.
- IOT tourism assets include its remoteness, national parks, forest and marine environments.

8. REGIONAL INDUSTRY COMPARISONS

The spreadsheets shown in **Appendix One** represent a broad economic study comparing regional population and employment data that helps to identify the key industry sectors and industry trends in the eight regions of Northern Australia.

Regional industry comparisons are organised as follows:

Demographic Information:

Including population and employment growth from 1996.

Employment by Industry:

Indicating the number of people employed by industry, which is grouped into the 17 main two-digit ANZSIC industry categories for each region. This comparison indicates:

- The largest industry sectors contributing to employment in the region.
- The growth of each industry sector from 1996.
- The concentration of each industry sector relative to the rest of the nation.
- The change of each industry sectors concentration since 1996.

Level of Service Delivery:

Indicating the number of employees supporting the regions service industry sectors. This comparison shows:

- The population to employment ratio and changes from 1996.
- The level of service delivery for each service industry expressed as a percentage for the region compared to the state or territory average, and change from 1996.

9. ACKNOWLEDGEMENTS

This paper has been largely prepared as a desktop study, supplemented by the authors' regional knowledge, statistical data, telephone interviews and restricted visits to regional stakeholders to supplement information collected.

An extensive range of documents were specifically provided by a variety of Federal, Queensland, Northern Territory and Western Australian Governments. These include papers prepared for the Northern Australia Forum held in Katherine in October 2000, which was the event that led to the commissioning of this paper. The Kimberley, Pilbara and Gascoyne Economic Development Commissions were consulted directly and provided valuable input. Interviews were conducted with Northern Territory government and business stakeholders. Telephone and email contact was made with economic development organisations throughout the area included in Queensland, who provided details of current projects. A large number of follow up telephone discussions have been conducted across the Northern Australian region, encompassing government, regional organisations and private stakeholders.

This has been supplemented through contact with a variety of State Government regional offices and agencies, in Queensland and the Northern Territory. In some cases additional information has been secured from government department and regional organisations web sites. Documents specifically quoted or referred to in the course of preparation of the paper are listed in **Section 11**.

A list of organisations contacted and consulted in one form or another follows:

- Department of Foreign Affairs and Trade
- Austrade
- (Department of) Agriculture Forestry and Fisheries Australia
- Department of Transport and Regional Services
- Australian Bureau of Statistics
- Departments of Primary Industry in all three States covered
- Department of Commerce and Trade, Western Australia
- Department of Industries and Business, Northern Territory
- Department of State Development, Queensland
- Supermarket to Asia
- Australian Seafood Industry Council
- ATSIC Commercial Development Commission
- Kimberley Development Commission
- Pilbara Development Commission
- Gascoyne Development Commission
- Northern Territory Chamber of Commerce and Industry
- Area Consultative Committees, Northern Territory, Far North Queensland and North Queensland
- National Heritage Trust
- Australian National University
- Australian Institute of Marine Science
- Horticultural Research & Development Corporation

- Torres Strait Regional Authority
- Cairns Region Economic Development Corporation
- Cairns Port Authority
- Gulf Local Authorities Development Association
- Cape York Peninsula Development Association
- Townsville Enterprise Limited
- Mount Isa Chamber of Commerce
- Mt Isa Shire Council
- Bowen Collinsville Enterprise Inc.
- Mackay Whitsunday REDC
- Central Highland Development Commission
- Central Queensland University
- Gladstone Area Promotion & Development Limited
- Rockhampton Enterprise Limited
- Dr Geoff Stocker, Forestry Consultant
- Greenfield Resources, Brisbane (RIRDC Forestry project)
- Proponents of various specific projects

Information on Christmas and Cocos (Keeling) Islands has been provided through the Department of Transport and Regional Services.

The ready cooperation received from the many individuals and organisations contacted was greatly appreciated and made the task manageable.

10. FURTHER INFORMATION AND KEY CONTACTS

The body of the paper includes contacts in relation to specific projects or areas of interest where appropriate. The following is a general list of key contacts for further information.

Western Australia Department of Commerce and Trade	
Perth	ph: 08) 9327 5666
Broome	ph: 08) 9192 1700
Gascoyne Development Commission	ph: 08) 9941 1803
Pilbara Development Commission	ph: 08) 9185 0188
Kimberley Development Commission	ph: 08) 9168 1044
Northern Territory Department of Industries and Business	
Darwin	ph: 08) 8924 4200
Alice Springs	ph: 08) 8951 8533
Katherine	ph: 08) 8973 8180
Tennant Creek	ph: 08) 8962 4439
Queensland Department of State Development Offices:	
Gladstone	ph: 07) 4971 2300
Rockhampton	ph: 07) 4938 4572
Mackay	ph: 07) 4967 1099
Townsville	ph: 07) 4799 7068
Mt Isa	ph: 07) 4747 2144
Cairns	ph: 07) 4048 1111
Cairns Region Economic Development Corporation	ph: 07) 4051 2166
Townsville Enterprise Limited	ph: 07) 4726 2728
Bowen Collinsville Enterprise Limited	ph: 07) 4786 0612
Mackay Whitsunday REDC	ph: 07) 4953 2655
Central Highlands Development Commission (Emerald)	ph: 07) 4982 4386
Gladstone Area Promotion & Development Limited	ph: 07) 4972 4000
Rockhampton Enterprise Limited	ph: 07) 4927 0292
Cocos (Keeling) Islands (Shire Office)	ph: 08) 9162 6669
Christmas Island (Shire Office)	ph: 08) 9164 8300
Area Consultative Committees	
Pilbara	ph: 08) 9144 0651
Kimberley	ph: 08) 9192 2450
Mid West/Gascoyne	ph: 08) 9964 5757
Northern Territory	ph: 08) 8941 7550
Far North Qld	ph: 07) 4051 7836
Worknorth Advisory Group (Qld)	ph: 07) 4772 4166
Mackay	ph: 07) 4944 0661
Central Qld	ph: 07) 4921 3639
Torres Strait	ph: 07) 4069 1255

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- ² Department of Foreign Affairs and Trade (2001) *From Sheep's Back to Cyberspace – Trade and Regional Australia in Changing Times* ISBN 0 642 45659 3
- ³ W S Cummings (July 2000) *The Tropical Turnaround – the Impact of a Successful Northern Australia on Australia's Economic Progress & Policies since the 1960's*. Paper presented to Economics 2000, 29th Annual Conference of Economists, (Economic Society of Australia).
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- ¹¹ Government of Western Australia, Department of Commerce and Trade (1998) *Invest in Regional Western Australia*
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- ³⁰ The Department of Transport and Regional Services (2000): *Indian Ocean Territories Situation report; Far North Queensland Situation Report; Northern Region Situation Report; Central Region Situation Report; Pilbara Region Situation Report; Kimberley Region Situation Report; Gascoyne Region Situation Report*, Centre for Agricultural and regional Economics, Armidale.
- NIEIR – National Economics (1999) *State of the Regions*
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Dept. of Commerce & Trade & Gascoyne Development Commission (1999) *Gascoyne Economic Perspective*

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Department of Commerce and Trade Kimberley Development Commission (1999) *Kimberley Economic Perspective*

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