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Economic Report into the Major Defence Bases in the Northern Territory

13 September 2010

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Contents

Glossary of Terms

Value Added - the value added of a business refers to the total value of goods and services provided by the business, less the goods and services that the business purchases as intermediate inputs. Thus value added is equivalent to wages and salaries plus profit.

Turnover - The turnover/revenue of a business refers to the total value of goods and services provided by the business. This will be equal to the goods and services that the business purchases as intermediate inputs, plus wages and salaries, plus profit.

Consumption – Total expenditure on goods and services that are privately consumed by households.

Living Standards – living standards derive from consumption, not value added, consumption (in principle) is a more appropriate measure of changes in living standards. As such, KPMG Econtech uses consumption as a measure of living standards.

Traded Goods - goods and services that can be sold in the larger State or national market as such, prices of these goods and services are determined in the larger market.

Non-Traded Goods - goods and services that can not be sold in the larger State or national market, i.e. these goods are only sold in the local market and therefore prices for these goods are determined in the local market.

Direct impacts - Direct impacts on employment, industry value added and industry turnover are the result of the Defence facilities operating within Northern Territory. For example, the direct contribution of the facilities to employment in Northern Territory include staff who are employed to work at the facilities e.g. Australian Defence Force (ADF) personnel, Australian Public Servant (APS) and contractors.

Indirect impacts - Indirect or flow on impacts are the result of two factors. The first is the impact of consumer spending in Northern Territory by people who are employed directly by the Defence facilities. The second is the impact of additional spending by upstream businesses that supply goods and services to the facilities.

Computable General Equilibrium (CGE) model - A CGE model combines economic data with economic theory to generate a model of an economy. This model can then be used to estimate how an economy may adjust to external shocks such as a policy change.

MMR - is a CGE model that estimates the effects of policies that are State or region specific. It divides Australia into 33 regions and 8 States and Territories, and contains 18 industries which correspond to the Australian and New Zealand Standard Industry Classifications used by the Australian Bureau of Statistics.

Key Findings

The Department of Defence (Defence) sought to identify the economic contribution major Defence bases in the Northern Territory provide to regional and state economies. KPMG Econtech estimated these impacts by identifying the direct economic impacts and estimating the indirect economic impacts using economic modelling. Hence, the full economic impacts of the Defence facilities are modelled using KPMG Econtech's MMR model, a computable general equilibrium (CGE) model.

Regional Results

Chart A shows the direct and indirect employment impacts of each base on the region in which they are located. Chart B shows the consumption impacts of each base on the region in which they are located.

Chart A: Employment Impacts (Jobs)

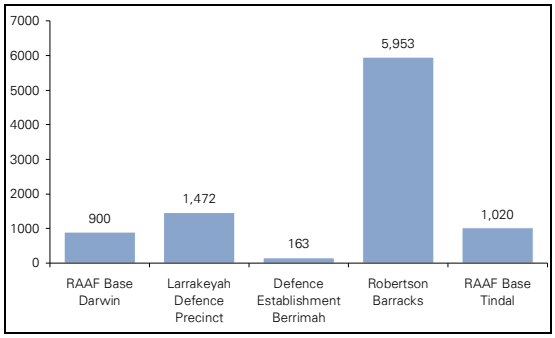
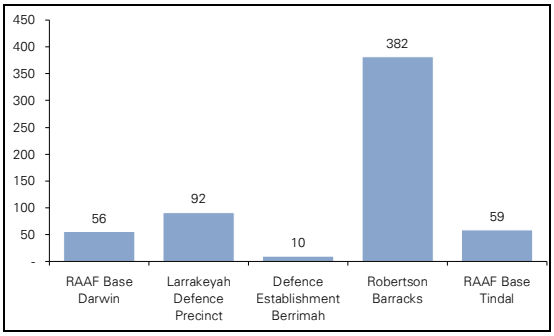


Chart B: Consumption Impacts ($m)



The results are to be interpreted as the average annual impact of the facility on the region compared to a scenario where the base no longer operates in the same region. For example, the modelling estimates that RAAF Base Darwin directly and indirectly supports 900 jobs in the Darwin regional economy, and contributes $56 million ($2008/09) annually to consumption in the Darwin regional economy.

Northern Territory Results

The state results estimate that Defence facilities currently contribute

- 11,116 jobs in the Northern Territory economy,
- contributes $674 million (2008/09 prices) annually to consumption in the Northern Territory,

than would otherwise be the case if the facilities no longer operated within the territory.

Executive Summary

Introduction

The Department of Defence (Defence) is seeking to identify the economic contribution major Defence bases in the Northern Territory provide to regional and state economies. Defence is particularly concerned about two key issues, namely:

- the impact of urban encroachment and incompatible urban land uses on the sustainability and viability of Defence's operations; and
- understanding the economic contribution of Defence's operations in the Northern Territory to the regional economy.

Defence has engaged KPMG Econtech to undertake an analysis of the economic contribution that specific Defence facilities currently make to the Northern Territory economy. In this study KPMG Econtech has estimated the economic impact of each facility on their regional economy and the economic impact of key Defence facilities on the Northern Territory economy using a consistent and robust methodology. The results in this report are expressed[1] in 2008/09 dollars based on reported activity in 2007/08.

Modelling Methodology

The economic impacts of the Defence facilities on the Northern Territory and regional economies were estimated by identifying the direct economic impacts and estimating the indirect economic impacts.

- *Direct impacts* on employment, industry value added and industry turnover are the result of the Defence facilities operating within Northern Territory. For example, the direct contribution to employment in Northern Territory include staff who are employed to work at the facilities e.g. Australian Defence Force (ADF) personnel, Australian Public Servant (APS) and contractors. The direct contribution of the facilities to turnover is the sum of payments made by Defence facilities to wages and salaries, expenditure on goods and services made by Defence such as utilities based in Northern Territory.
- *Indirect impacts* are the result of two factors. The first is the impact of consumer spending in Northern Territory by people who are employed directly by the Defence facilities. The second is the impact of additional spending by upstream businesses that supply goods and services to the facilities.

The direct impacts of the facilities can be estimated in a relatively straightforward manner using available data on Defence expenditure and employment numbers. Measuring the indirect impacts on the other hand requires the use of economic modelling. Hence, the full economic impacts of the Defence facilities are modelled using KPMG Econtech's MMR model.

MMR is a computable general equilibrium (CGE) model. A CGE model combines economic data with economic theory to generate a model of an economy. This model can then be used to

[1] Results including expenditure categories outlined in Chapter 5 have been scaled from the 2007/08 financial year to 2008/09 financial year.

estimate how an economy adjusts to external shocks such as a policy change. KPMG Econtech's MMR model estimates the effects of policies that are State or region specific. It divides Australia into 33 regions and 8 States and Territories, and contains 18 industries which correspond to the Australian and New Zealand Standard Industry Classifications used by the Australian Bureau of Statistics (ABS). Each of the regions are modelled individually, but following a consistent approach.

Defence Facilities

The specific Defence facilities separately analysed in this report are: RAAF Base Darwin, Larrakeyah Defence Precinct, Defence Establishment Berrimah; Robertson Barracks; and RAAF Base Tindal. An overview of the function of each base can be found below.

RAAF Base Darwin

RAAF Base Darwin's primary function is to enable the concentration and mounting of Australian Defence Force operations from Australia's north. While RAAF Base Darwin has no permanent aviation squadrons, it is a key staging base for maritime surveillance, patrol aircraft for border protection operations and multinational training exercises (such as Pitch Black 2010) and is expected to remain an alternative base for Army aviation activities conducted near Robertson Barracks. Units based at RAAF Base Darwin include:

- No. 396 Expeditionary Combat Support Wing;
- No. 92 Wing Detachment Darwin - Surveillance and response;
- No. 44 Wing Detachment Darwin - Air traffic control;
- No. 13 (City of Darwin) Squadron; and
- No. 144 Mobile Control and Reporting Unit Darwin - Radar operations.

Larrakeyah Defence Precinct

Larrakeyah Barracks is the Darwin headquarters of Northern Command (NORCOM) and provides HQ facilities, working and training accommodation in support of NORFORCE, Australia's regional surveillance capability in the NT and northern WA. HMAS Coonawarra at Larrakeyah Cove provides administrative, personnel, logistics and maintenance support to Australia's 12 Darwin-based vessels and personnel. HMAS Coonawarra also hosts visiting warships from time to time.

Units and functions based at Larrakeyah Defence Precinct include:

- HQ NORCOM;
- NORFORCE;
- 36 Water Transport Troop;
- HMAS Coonawarra; and
- Fleet Support Unit - Darwin.

Defence Establishment Berrimah

Defence Establishment Berrimah (DEB) is located on the Stuart Highway south of RAAF Base Darwin in the suburb of Winnellie. It has an area of approximately 166 hectares and operates primarily as an administrative and support facility with APS staff from the Defence Support Group being the major tenants.

In addition to providing administrative services to the wider Defence organisation and community DEB contains residences for ADF personnel and their families, as well as for single ADF members.

Robertson Barracks

Robertson Barracks is designated as a Forward Mounting Base for units accessing ranges and training areas in the region. Robertson Barracks also provides a significant number of living, working and training facilities and is the home of Australia's 1st Brigade (1 BDE) which operates Australia's mechanised force (including the M1A1 Abrams). The 1st Aviation Regiment, which operates the Tiger Armed Reconnaissance Helicopter (ARH), is co-located at Robertson Barracks in purpose-built facilities constructed in 2006.

Units and functions supported by Robertson Barracks include:

- 1st Brigade;
- 1st Aviation Regiment; and
- 1 Troop A Squadron Incident Response Regiment.

RAAF Base Tindal

Formerly a World War II airfield, RAAF Base Tindal is part of a chain of airfields that stretch across Australia from Townsville in Queensland to Learmonth in Western Australia. Once a "bare base" the current RAAF Base Tindal was opened in 1988 and is the home base for the flying operations of F/A-18 Hornets from 75 Squadron. Located approximately 18 kilometres south of Katherine, RAAF Base Tindal occupies an area of over 2,000 square kilometres and allows for the concentration of ADF operations and exercises in the north of Australia.

Units and functions based at RAAF Base Tindal include:

- 75 Squadron (75 SQN);
- 322 Expeditionary Combat Support Squadron (322 CESS);
- 44 Wing Detachment - Tindal;
- Northern Regions Operation Centre (NORTHROC);
- Delamere Range Facility; and
- Katherine Troop NORFORCE.

Modelling Inputs

Estimates of the direct employment impacts were used as the main modelling inputs into the MMR. The estimates of the direct impact of each facility is based on activity in each facility during the 2007/08 financial year. The direct employment impacts for each facility are presented in Table 1 below.

Table 1 Modelling Inputs - Direct Employment Impacts

Facility	Direct Employment (jobs)
RAAF Base Darwin	641
Larrakeyah Defence Precinct	1046
Defence Establishment Berrimah	117
Roberston Barracks	4128
RAAF Base Tindal	678
Total Northern Territory Defence Facilities	**6611**

Source: Department of Defence

We note that the direct employment impacts for each of the facilities differ in terms of the distributional impacts across industries (details of the distribution are provided within the body of the report). It is important to note that it is assumed that the facilities and operations associated with the facilities are removed from the Northern Territory and are not re-established elsewhere in the Territory. However, the facilities may be re-established somewhere else in Australia, but outside of the Northern Territory. The direct employment impacts are distributed across the Government Administration and Defence industry and the Property and Business Services industry, this distribution affects the size and distribution of the indirect impacts, as is illustrated in the modelling results.

Economic Impacts

The key results of the economic modelling at both the state and regional level are presented in Table 2. It is important to note that these are estimates of both the direct and indirect impacts and as such employment impacts are not identical to the direct employment impacts in Table 1.

Table 2 Economic Impacts Summary

Defence Facility	Employment (jobs)	Value Added ($m)	Turnover ($m)	Consumption ($m)
Regional Impacts				
Darwin Region				
RAAF Base Darwin	900	63.9	116.3	55.7
Larrakeyah Defence Precinct	1,472	105.4	189.4	91.6
Defence Establishment Berrimah	163	11.7	20.9	10.0
Robertson Barracks	5,953	427.9	768.0	381.7
Katherine Region				
RAAF Base Tindal	1,020	73.4	132.3	59.0
State Impacts				
Total	11,116	805.4	1,460.9	673.8

Source: KPMG Econtech MMR

Economic impact of Major Defence Facilities in Regional economies

Economic impact modelling was carried out at the regional economy level for five pivotal Defence facilities. The estimates of employment, value added and consumption impacts presented above represent the average annual economic impacts attributable to the facilities, based on reported activity in 2007/08.

As is the case with each of the Bases, the results show that a sizable proportion of the overall employment impact occurs in the Government Administration and Defence industry, as each of the bases directly employs a large number of APS and ADF staff within that industry. These direct employment impacts produce positive indirect employment impacts in industries that supply goods and services to the Bases and sell consumer goods to the Bases employees. Industries that benefit from demand created by Bases in the economy include: Retail Trade; Finance and Insurance; Education; and Health and Community Services. At the same time, expenditure by each base on goods and services within the regional economy contributes to price pressures within some industries. As such, some negative employment impacts are felt in industries that experience a loss of competitiveness through higher input prices. For example, it is estimated that RAAF Base Darwin has negative indirect employment impacts on industries including: Manufacturing; Construction; Transport and Storage; and Property and Business

Services. Importantly, the overall impact of the Defence base on employment in the Darwin region is positive.

These findings are consistent with the findings of previous modelling undertaken by KPMG Econtech for Defence, to measure the economic contribution of the RAAF Base, Richmond, to the Sydney economy. The pattern of direct and indirect impacts are consistent with previous findings Defence bases create positive indirect impacts in consumer focused industries that sell goods to Defence employees, while negative indirect impacts are generally seen in trade-exposed industries. Negative indirect impacts stem from the fact that traded goods prices are determined in the national market. As such, industries producing traded goods are not able to raise the price of their output in response to changes in input prices. However, as discussed above, some of these trade-exposed industries use similar inputs to Defence and thus would be facing price pressures as a result of Defence's presence. Accordingly, those tradable industries that use a similar set of inputs to Defence and does not sell a large proportion of their goods to the Defence bases or to Defence employees are worse off as a result of Defence's presence.

To take a specific example, the Bases increases the demand for goods and services produced by industries such as Finance and Insurance. This industry produces non-tradeable goods and services, and therefore they focus on selling in the Darwin region only. As such, industry production levels and prices for these services are determined by local demand. The Bases increases local demand and therefore leads to an increase in the prices charged by the Finance and Insurance industries. These higher prices would have a slight negative impact on industries that use these goods and services. Hence, production and employment in some industries, such as Property and Business Services, will be slightly lower, as businesses in these industries pay higher prices for business inputs. Importantly, Defence bases contribute positively to employment, value added and consumption in the region in which they are situated.

Key Economic Impacts for the Northern Territory

The Defence facilities that have been included in the Northern Territory analysis are: RAAF Base Darwin; Defence Establishment Berrimah; Larrakeyah Defence Precinct; Robertson Barracks; RAAF Base Tindal; and the Northern Territory Training Areas (Mount Bundy Training Area and the Bradshaw Training Area) and other smaller defence facilities in the Northern Territory. Additionally, the modelling also captures the increased expenditure from Naval ship visits to the region.

The modelling estimates that these Defence facilities and Naval ship visits currently support 11,116 jobs in the Northern Territory economy. The majority of these jobs are in the Government Administration and Defence industry, as most of the direct employment impacts are within that industry. At the same time, the facilities create additional employment in businesses that sell consumer goods to employees of Defence, and in industries that sell goods and services to Defence.

For example, by purchasing construction services, the Defence facilities and their contractors indirectly support employment in the construction industry. Expenditure by the employees of the Defence facilities and their contractors also supports employment in consumer focused industries including: Retail Trade; Education; and Health and Community Services.

The Defence facilities are also estimated to have negative employment impacts on some industries. By contributing to demand in the state economy, the Defence facilities place upward pressure on the prices of goods and services that are not traded between states. As such, some

negative employment impacts are felt in industries which use the non-traded goods and services as they experience a loss of competitiveness through higher input prices. Importantly, Defence bases contribute positively to employment in the Northern Territory.

The modelling estimates that Defence facilities currently contribute $805 million (2008/09 prices) annually to value added in NT. This is equivalent to the Defence facilities' contribution to Northern Territory GSP. Similarly to the employment impacts, the Defence facilities produce both positive and negative indirect impacts in industries within Northern Territory. Beneficiaries of Defence activity include: Retail Trade; Finance and Insurance; Education; and Health and Community Services. All of these industries receive a positive contribution to value added through sales to Defence facilities, contractors and their employees. Industries that experience negative value added impacts include: Construction; Transport and Storage; and Property and Business Services.

The overall impact of the Defence facilities on Gross State Product (value added) is positive. By supporting production (value added) in the state economy, the Defence facilities contribute to living standards in NT. The Defence facilities are estimated to contribute $673 million (2008/09 prices) annually to consumption in the Northern Territory.

1 Introduction

1.1 Overview and Objective

While it is generally acknowledged that Defence makes a significant contribution to the Northern Territory's economy, there is scope to understand the nature and extent of this contribution in greater detail. This understanding will help preserve Defence's ability to maintain and grow its Northern Territory presence.

Defence is particularly concerned about two key issues:

- the impact of urban encroachment and incompatible urban land uses on the sustainability and viability of Defence's operations; and
- understanding the economic contribution of Defence's operations in the Northern Territory to the regional economy.

As such, Defence is seeking to understand the contribution, impacts and linkages of it's activities in the Northern Territory in greater detail, and in particular the direct and indirect impacts of this activity:

- the **direct effect** stems from the level of employment and expenditure by Defence in the areas where it has bases; and
- the **indirect effect** is the combination of the spending by Defence employees and visitors in the community, and the spending by businesses that supply goods and services to Defence.

Broadly, the analysis seeks to:

- describe the economic profile of major Defence bases in the Northern Territory;
- identify the value (direct and indirect) of the Defence presence and operations to the Northern Territory's state and regional economies;
- summarise the value-added component of combined Defence output to the Territory's economy.

This analysis can be used to:

- build an understanding by local stakeholders with competing priorities as to the significance of Defence's activities in the Northern Territory; and
- ensure that the Defence presence and interests are taken into account by local communities, the Territory and local governments, developers, utilities and other planning authorities.

1.2 Report Structure

The report is structured as follows.

- Section 2 outlines the modelling approach that has been used to estimate the economic contribution of Defence facilities.
- Section 3 provides an overview of major Defence facilities in Northern Territory, detailing the history, location, principal functions and workforce estimate for each facility.
- Section 4 provides details on the regional economies in which the Defence facilities are located. This section provides information on the industry composition, population profile, social and economic indicators, and housing and income statistics for each region.
- Section 5 contains estimates of the direct economic impacts of the facilities.
- Section 6 presents the modelling results that estimate the contribution of Defence facilities to the Northern Territory economy.
- Section 7 presents the modelling results that estimate the regional contribution of the individual Defence facilities.
- Section 8 provides a brief conclusion of the analysis and results.

2 Modelling Approach

This section provides details of the modelling approach used to estimate the economic impacts of major Defence facilities in Northern Territory. We note that the methodology used for this engagement is consistent with that used to model the economic contribution of Defence facilities in South Australia, and the methodology used to model the economic contribution of the RAAF Base, Richmond, to the Northern Sydney[2] regional economy.

The section is structured as follows.

- Section 2.1 outlines the methodology used to estimate the economic impacts of Defence facilities on the Northern Territory economy including the assumptions and limitations of the report.

- Section 2.2 describes the scenarios that are used to estimate the economic impacts of the Defence facilities.

2.1 Methodology

The impacts of Defence facilities on the Northern Territory and regional economies can be assessed using a number of different economic metrics;

- employment;

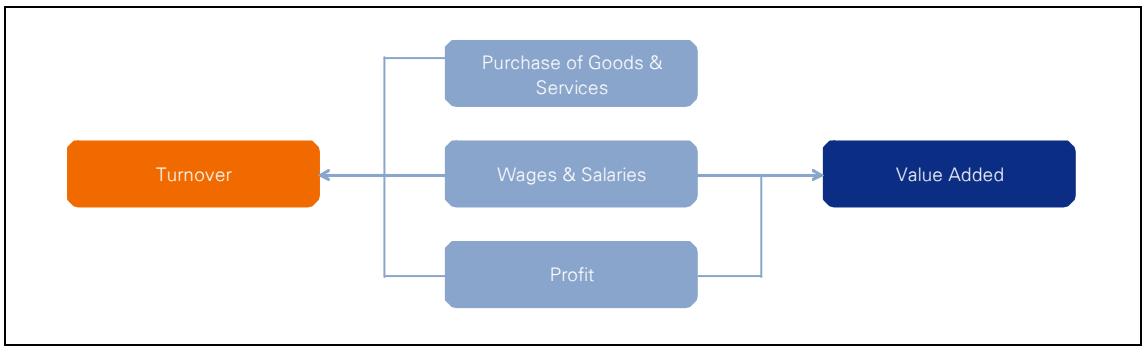
- value-added (or GDP);

- turnover (or revenue or sales); and

- living standards.

Chart 2.1.1 shows how these measures relate to one another.

Chart 2.1 Value Added vs. Turnover



[2] As defined by the ABS Statistical Regions

The previous chart shows the difference between turnover and value added.

- The turnover/revenue of a business refers to the total value of the goods and services provided by the business. This will be equal to the goods and services that the business purchases as intermediate inputs, plus wages and salaries, plus profit.

- In contrast, the value added of a business refers to the total value of goods and services provided by the business, less the goods and services that the business purchases as intermediate inputs. Thus, value added is equivalent to wages and salaries plus profit.

Value added is a measure that is often used to estimate the impact on living standards. However, value added is a measure of output rather than a measure of well-being. Because living standards derive from consumption, not value added, consumption (in principle) is a more appropriate measure of changes in living standards. As such, for this analysis, KPMG Econtech uses consumption as the measure of living standards rather than value added.

When measuring the impacts of the Defence facilities on the Northern Territory and regional economies, it is important to make a distinction between the direct and indirect economic impacts of the facilities.

- *Direct impacts* on employment, industry value added and industry turnover are the result of the Defence facilities operating within Northern Territory. For example, the direct contribution to employment in Northern Territory include staff who are employed to work at the facilities e.g. ADF personnel, APS and contractors. The direct contribution of the facilities to turnover is the sum of payments made by the Defence facilities and contractors to wages and salaries, expenditure on intermediate goods and any profits made by Defence contractors based in Northern Territory.

- *Indirect impacts* are the result of two factors. The first is the impact of consumer spending in Northern Territory by people who are employed directly by the Defence facilities. The second is the impact of additional spending by upstream businesses that supply goods and services to the facilities.

The direct impacts of the facilities can be estimated in a relatively straightforward manner using available data on Defence expenditure and employment numbers. Measuring the indirect impacts on the other hand requires the use of economic modelling. Hence, the full economic impacts of the Defence facilities are modelled using KPMG Econtech's MMR model.

2.1.1 MMR

KPMG Econtech's Murphy Model Regional (MMR) is a CGE model that estimates the effects of policies that are State or region specific. It divides Australia into 33 regions and 8 States and Territories, and contains 18 industries which correspond to the Australian and New Zealand Standard Industry Classifications used by the Australian Bureau of Statistics. Each of the regions are modelled individually, but following a consistent approach.

For this project, MMR has been further developed so that the Northern Territory is now broken into three separate sub-regions within the model: the Darwin region; the Katherine region; and the balance of the Northern Territory. These divisions are based on major statistical sub-divisions for Northern Territory that are used by the ABS. The regions disaggregated in the

model (Darwin and Katherine) correspond to the regional economies described in Section 4. The disaggregation of the Northern Territory into three regions was achieved by combining census data with the underlying labour force data which is used in MMR. Detailed census data on employment by industry was used to construct an industry profile of the Katherine region in 2006. As such, it was possible to split the underlying labour force data to develop a data set of employment by industry for the Katherine region, that is consistent with the labour force data used for all other regions in the model.

More detailed information about MMR is presented in Appendix B.

2.2 Scenarios

KPMG Econtech analysed a number of scenarios to estimate the current economic contributions of each of the facilities to the Northern Territory and regional economies.

For each of the facilities included in the analysis, KPMG Econtech modelled a scenario to measure the economic impact of the facility on the surrounding regional economy. KPMG Econtech also modelled an aggregate scenario which shows the economic impact of the combined Defence facilities on the Northern Territory economy. These scenarios were then compared with baseline 'snapshots' of the regional and state economies, to determine the current economic contribution of the facilities at a State and regional level.

It is important to note that it is assumed that the facilities and operations associated with the facilities are removed from the Northern Territory and are not re-established elsewhere in the Territory. However, the facilities may be re-established somewhere else in Australia, but outside of the Northern Territory.

2.2.1 Darwin Major Statistical Region Scenarios

The Defence precinct in Darwin includes the RAAF Base Darwin, Defence Establishment Berrimah, Larrakeyah Defence Precinct, Robertson Barracks. To estimate the economic contribution of the facilities to the Darwin regional economy, the following scenarios were modelled using MMR.

- Darwin Baseline Scenario – a scenario that models the current Darwin economy, including the contribution made by Defence facilities located within this region i.e. a 'snapshot' of the current Darwin economy.
- RAAF Base Darwin Scenario – a scenario that models the economic impacts of removing RAAF Base Darwin from the Darwin economy.
- Larrakeyah Defence Precinct Scenario – a scenario that models the economic impacts of removing the Larrakeyah Defence Precinct[3] from the Darwin economy.
- Defence Establishment Berrimah Scenario – a scenario that models the economic impacts of removing the Defence Establishment Berrimah from the Darwin economy.

[3] Larrakeyah Defence Precinct incorporates Larrakeyah Barracks, Coonawarra, Fleet Base North and Naval Fuel Installation

- Robertson Barracks Scenario – a scenario that models the economic impacts of removing Robertson Barracks from the Darwin economy.

The difference between each of the other Defence facility Scenarios and the Darwin Baseline Scenario provides an estimate of current contribution of each of the other Defence facility to the Darwin regional economy. The contribution of the base is calculated as the difference between the scenario where the RAAF Base Darwin is removed and Baseline Scenario. This provides an estimate of the current annual economic contribution of RAAF Base Darwin to the Darwin regional economy. These include the contribution of RAAF Base Darwin to industry value-added, industry turnover, industry employment and overall living standards in Darwin.

2.2.2 Katherine Major Statistical Region Scenarios

RAAF Base Tindal is the main Defence facility in the Katherine region. To estimate the economic impact of this facility on the Katherine regional economy, the following scenarios have been modelled.

To estimate the economic contribution of RAAF Base Tindal and the Bradshaw Training Area to the Katherine regional economy, the following scenarios were modelled using MMR.

- Katherine region Baseline Scenario – a scenario that models the current Katherine region economy, including the contribution made by RAAF Base Tindal and the Bradshaw Training Area i.e. a 'snapshot' of the current Katherine region economy.
- RAAF Base Tindal Scenario – a scenario that models the economic impacts of removing RAAF Base Tindal from the Katherine region economy.

The difference between the RAAF Base Tindal Scenario and the Katherine region Baseline Scenario provides an estimate of the current annual economic contribution of RAAF Base Tindal to the Katherine region regional economy. These include the contribution of RAAF Base Tindal to industry value-added, industry turnover, industry employment and overall living standards in the Katherine region.

2.2.3 Northern Territory Scenarios

To estimate the economic contribution of all Defence facilities to the Northern Territory economy, the following scenarios were modelled using MMR. This analysis includes the facilities that have been modelled at the regional level (RAAF Base Darwin; Defence Establishment Berrimah; Larrakeyah Defence Precinct; Robertson Barracks; and RAAF Base Tindal). As well as these, it also includes the Shoal Bay Receiving Station and the Northern Territory Training Areas (Mount Bundey and Bradshaw Training Area) and other smaller facilities. The modelling also captures the increased expenditure from Naval ship visits to the region.

- Northern Territory Baseline Scenario – a scenario that models the current Northern Territory economy, including the contribution made by Defence facilities i.e. a 'snapshot' of the current Northern Territory economy.
- Defence Facilities Scenario – a scenario that models the economic impacts of removing these Defence facilities and additional expenditure from Naval ship visits from the Northern Territory economy.

The difference between the Defence Facilities Scenario and the Northern Territory Baseline Scenario provides an estimate of the current annual economic contribution of Defence's facilities and operations to the Northern Territory economy.

3 Overview of Major Defence Facilities in the Northern Territory

The purpose of this section is to provide an overview of major Defence facilities in Northern Territory. Each subsection provides a brief history, followed by the location, principal functions and workforce estimates of each facility. Defence has provided the information contained in the following section.

3.1 RAAF Base Darwin

Established during World War II, RAAF Base Darwin is one of Australia's main forward operating bases and is a joint military-civilian airfield located near the heart of Darwin. RAAF Base Darwin provides a manned forward operational deployment base that allows for the rapid building of Defence forces across Australia when required.

RAAF Base Darwin's primary function is to enable the concentration and mounting of Australian Defence Force operations from Australia's north. While RAAF Base Darwin has no permanent aviation squadrons, it is a key staging base for maritime surveillance, patrol aircraft for border protection operations and multinational training exercises (such as Pitch Black 2010) and is expected to remain an alternative base for Army aviation activities conducted near Robertson Barracks. Units based at RAAF Base Darwin include:

- No. 396 Expeditionary Combat Support Wing;
- No. 92 Wing Detachment Darwin - Surveillance and response;
- No. 44 Wing Detachment Darwin - Air traffic control;
- No. 13 (City of Darwin) Squadron; and
- No. 144 Mobile Control and Reporting Unit Darwin - Radar operations.

Defence is currently investing around $50 million in RAAF Base Darwin as part of its Stage 2 redevelopment. This project will construct new facilities and upgrade existing buildings. Works include a fuel farm, workshops and a new logistics headquarters.

3.2 Larrakeyah Defence Precinct (including Naval Fuels Installations)

Covering 80 hectares and located just 2 kilometres from the Darwin CBD on a prominent headland, the Larrakeyah Defence Precinct (LDP) comprises two important military bases: Larrakeyah Barracks and HMAS Coonawarra (formerly Darwin Naval Base).

Larrakeyah Barracks is the Darwin headquarters of Northern Command (NORCOM) and provides HQ facilities, working and training accommodation in support of NORFORCE, Australia's regional surveillance capability in the NT and northern WA. HMAS Coonawarra at Larrakeyah Cove provides administrative, personnel, logistics and maintenance support to Australia's 12 Darwin-based vessels and personnel. HMAS Coonawarra also hosts visiting warships from time to time.

Units and functions based at Larrakeyah Defence Precinct include:

- HQ NORCOM;
- NORFORCE;
- 36 Water Transport Troop;
- HMAS Coonawarra; and
- Fleet Support Unit - Darwin.

3.3 Defence Establishment Berrimah

Defence Establishment Berrimah (DEB) is located on the Stuart Highway south of RAAF Base Darwin in the suburb of Winnellie. It has an area of approximately 166 hectares and operates primarily as an administrative and support facility with APS staff from the Defence Support Group being the major tenants.

In addition to providing administrative services to the wider Defence organisation and community DEB contains residences for ADF personnel and their families, as well as for single ADF members.

3.4 Robertson Barracks

Robertson Barracks is located 6km north of Palmerston on the Stuart Highway and covers approximately 964 hectares. Constructed in the early 1990s and named in memory of Lieutenant General Sir Horace Robertson, Robertson Barracks is a purpose-built facility that supports Army's mechanised and army aviation operations and is the largest single military base in the Darwin region.

Robertson Barracks is designated as a Forward Mounting Base for units accessing ranges and training areas in the region. Robertson Barracks also provides a significant number of living, working and training facilities and is the home of Australia's 1st Brigade (1 BDE) which operates Australia's mechanised force (including the M1A1 Abrams). The 1st Aviation Regiment, which operates the Tiger Armed Reconnaissance Helicopter (ARH), is co-located at Robertson Barracks in purpose-built facilities constructed in 2006.

Units and functions supported by Robertson Barracks include:

- 1st Brigade;
- 1st Aviation Regiment; and
- 1 Troop A Squadron Incident Response Regiment.

A $72 million redevelopment project commenced in 2009 to upgrade the existing facilities and infrastructure at Robertson Barracks. Improvements include new and upgraded training and working facilities, living-in accommodation, as well as new facilities and support services for 1 BDE.

3.5 RAAF Base Tindal

Formerly a World War II airfield, RAAF Base Tindal is part of a chain of airfields that stretch across Australia from Townsville in Queensland to Learmonth in Western Australia. Once a "bare base" the current RAAF Base Tindal was opened in 1988 and is the home base for the flying operations of F/A-18 Hornets from 75 Squadron. Located approximately 18 kilometres

south of Katherine, RAAF Base Tindal occupies an area of over 2,000 square kilometres and allows for the concentration of ADF operations and exercises in the north of Australia.

Units and functions based at RAAF Base Tindal include:

- 75 Squadron (75 SQN);
- 322 Expeditionary Combat Support Squadron (322 CESS);
- 44 Wing Detachment - Tindal;
- Northern Regions Operation Centre (NORTHROC);
- Delamere Range Facility; and
- Katherine Troop NORFORCE.

RAAF Base Tindal is currently receiving over $120 million of investment to construct and upgrade working accommodation and infrastructure. This investment includes new facilities to support the introduction of Australia's new Airborne Early Warning and Control aircraft, including new taxiways and operational facilities.

3.6 Northern Territory Training Areas

The Northern Territory Training Areas included in this study are the Mount Bundey Military Training Area and Bradshaw Training Area. These areas are important facilities for training Defence personnel in the Northern Territory. The Areas also host defence employees from across the country for various land combat training exercises. These exercises include Kakadu IV and Pitch Black.

Mount Bundey Military Training Area (MBTA) is located in the Pine-Creek Arnhem bio-geographic region of Northern Australia. The area is located 75km south-east of Humpty Doo, and comprises of 117,300ha. The base is bound on three sides by national parks, Kakadu National Park to east and south and the McKinlay Conservation Reserve to the west. The Bradshaw Training Area encompasses approximately 870,000ha and is located 0.5km north of Timber Creek.

The primary function of the facilities is to host training exercises for Defence personnel. The location of the sites makes them suitable for hosting land-based combat operations. These operations include Exercise Kakadu, which seeks to improve maritime interoperability and is a vital maritime exercise that strengthens ties with Australia's international counterparts.

In 2007/08 the Northern Territory Training areas is estimated to have directly employed a total of 9 ADF personnel on-site personnel, however, many hundreds exercise or transit these bases throughout each year.

The Bradshaw Field Training Area has plans for new infrastructure to provide engineering services to allow the use of Bradshaw as a field training area for the 1st Brigade. This project includes roads, training force maintenance area, base camp, range control and caretaker facilities.

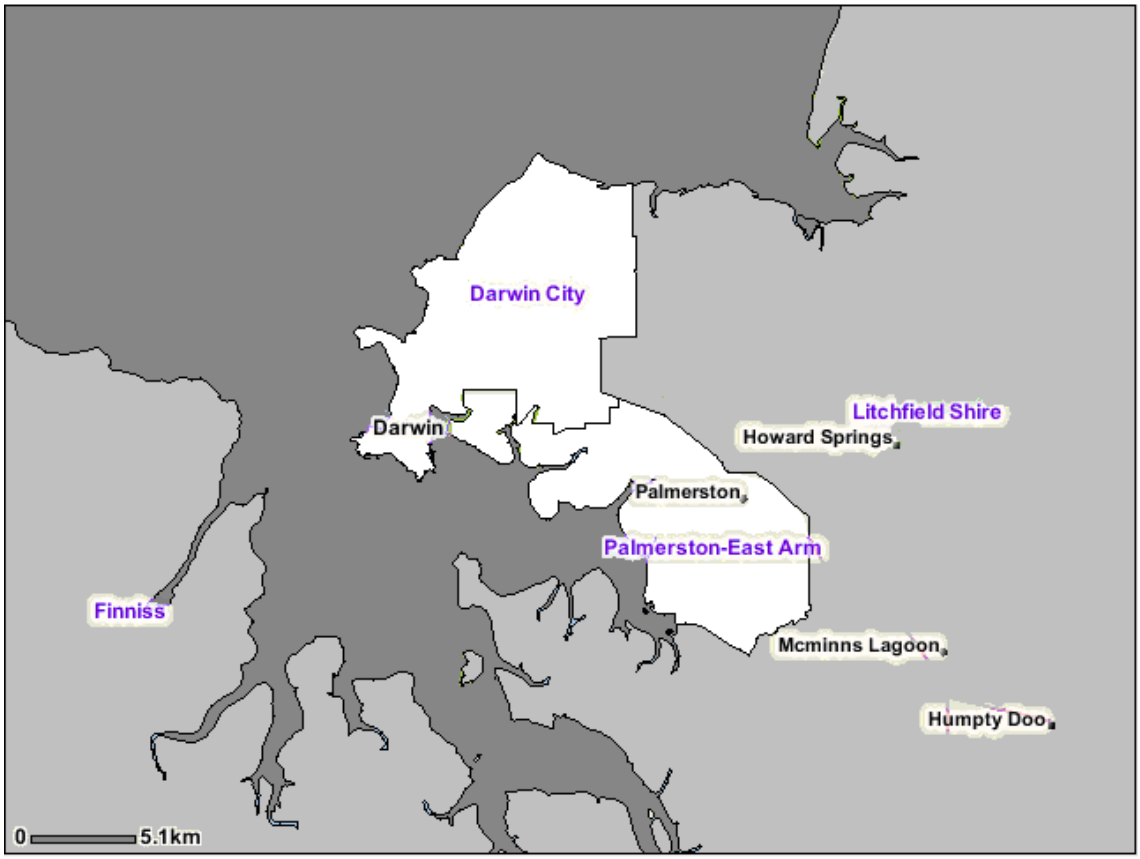
4 Snapshot of the Local Economy

The regional profiles are designed to provide contextual understanding about the region in which the Defence bases are operating. The profile provides information about the region as a whole compared to the Northern Territory and Australia. The source of the data used in the profile is the ABS Census 2006. The objective of this section is to provide an overview of the local economy in which the Defence facilities operate.

4.1 Darwin Region

For data collection purposes and analysis, the Darwin has been defined by the ABS Census statistical subdivision. This makes it easier to match statistical information with the economic catchments used in this study. The Darwin Region is contained by the statistical sub divisions (SSD) Darwin City and Palmerston-East Arm as defined in Chart 3.1.1 below. The Darwin Region is part of the larger Darwin statistical division. These divisions are based on major statistical sub-divisions for Northern Territory that are used by the ABS, and is the region that the economic modelling undertaken in this study is based on.

Chart 4.1.1: Darwin Region



Source: Australian Bureau of Statistics – Census Data

Demographic Profile

The estimated resident population of the Darwin Region in 2006 was around 78,000. Population growth in the region of 1.4 per cent was stronger than both Northern Territory (1.0 per cent) and Australia (1.1 per cent) over the 10-years to 2006.

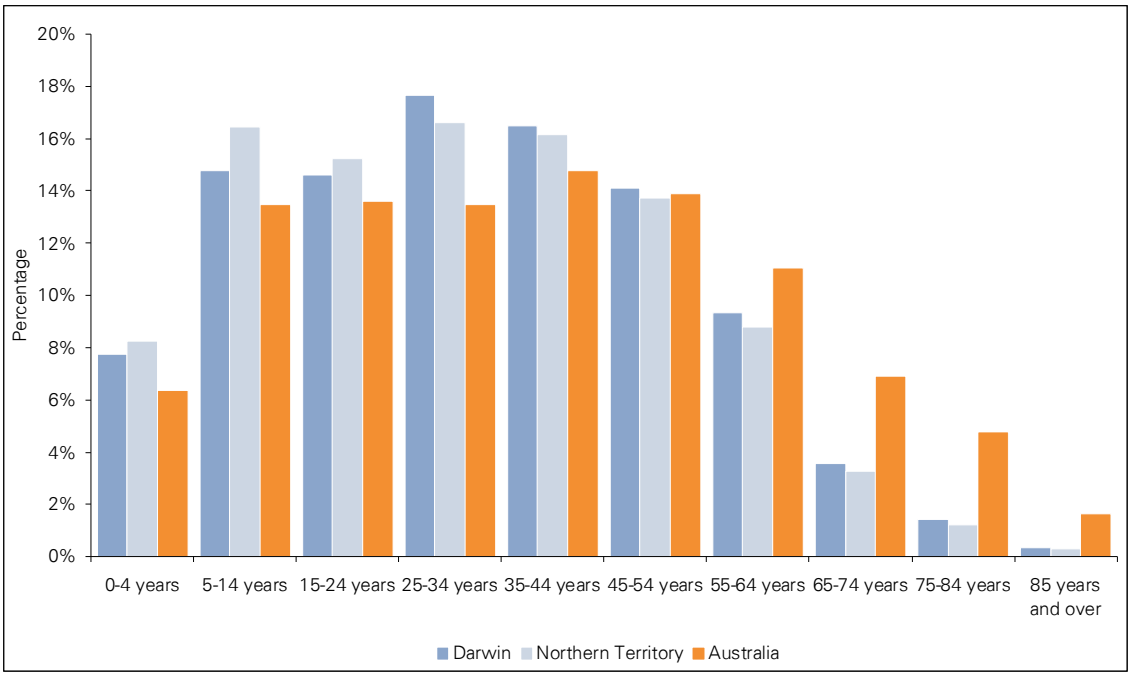
Table 4.1.1 Darwin Region - Rates of Population Growth - 1996 - 2006

	Population			CAGR		
	1996	2001	2006	1996-2001	2001-2006	1996-2006
Darwin Region	78,394	84,725	90,435	*1.6%*	*1.3%*	*1.4%*
Northern Territory	175,342	183,799	192,898	*0.9%*	*1.0%*	*1.0%*
Australia	**17,752,829**	**18,588,308**	**19,855,288**	***0.9%***	***1.3%***	***1.1%***

Source: ABS Census

Note: CAGR = Compounded annual growth rate

Chart 4.1.2: Age Profile - 2006



Source: Australian Bureau of Statistics – Census Data

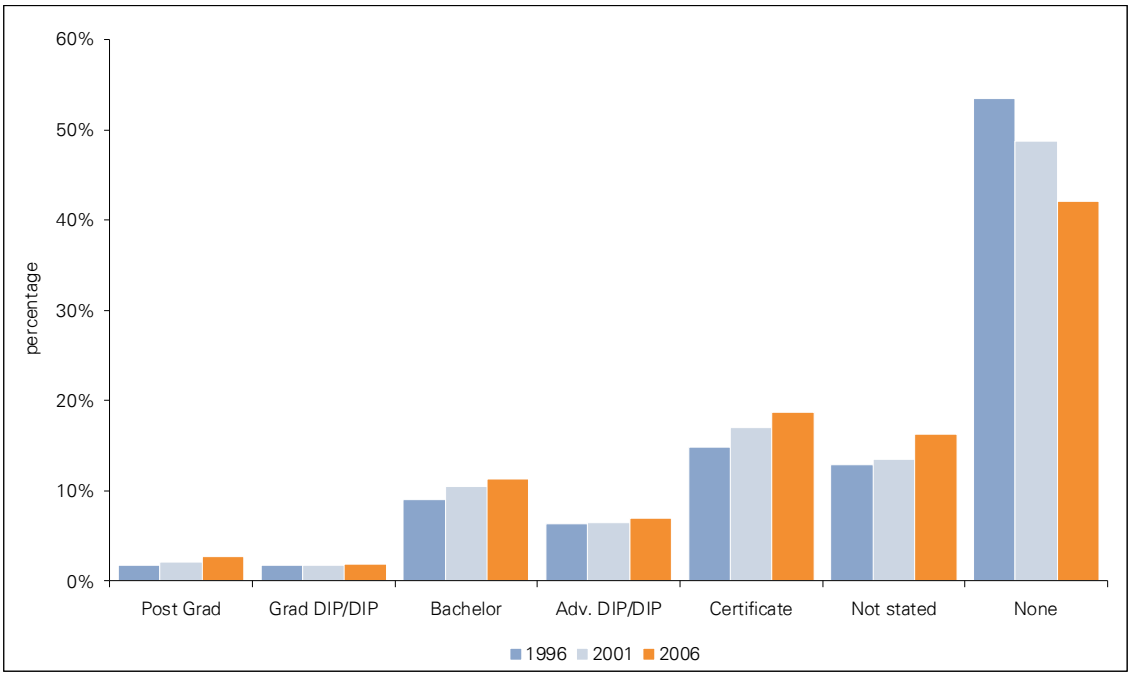
The Darwin Region has a higher proportion of children, young adults and middle aged (35-55 years) than Australia, similar to the Northern Territory as a whole, reflective of a younger population. This may be a result of imported labour from other regions, including people who move to the region for work opportunities, particularly in Defence positions.

Education

In the Darwin Region, 58.0 per cent of the population aged 15 years and over hold a post-school qualification (40,613 persons). The most common level of qualification are certificates (32.4 per cent of residents) and Bachelor Degree (19.5 per cent). The most common qualification by field of study in the Darwin Region was engineering and related technologies (16.0 per cent of all post-school qualifications held by residents), followed by management & commerce (14.0 per cent) and society and culture (9.7 per cent). These qualifications mirror the qualifications attained at the national level.

The following chart shows educational attainment in the Darwin Region across the past three Census collection nights. Over the 10-year period, the number of residents obtaining post school education has increased in all areas of attainment. Across the same period, the total number of residents with a post-school qualification has increased at an average annual rate of 3.9 per cent.

Chart 4.1.3: Darwin Region Educational Attainment – 1996, 2001, 2006



Source: Australian Bureau of Statistics – Census Data

Employment and Occupation

The Darwin Region has a significantly higher labour force participation rate than the Northern Territory and Australian average. This can be further explained by the high level of working aged population in the Darwin region.

Table 4.2.2 Labour Force Participation - 2006

	Darwin Region		Northern Territory		Australia	
	Number	% of total	Number	% of total	Number	% of total
Total labour force	47,970	68.5%	91,186	62.8%	9,607,984	60.4%
Not in the labour force	14,606	20.8%	37,149	25.6%	5,271,114	33.1%
Labour force not stated	7,479	10.7%	16,961	11.7%	1,038,978	6.5%
Total	**70,055**	**100.0%**	**145,296**	**100.0%**	**15,918,076**	**100.0%**

Source: ABS Census

Furthermore, the unemployment rate of 3.6 per cent in Darwin is significantly lower than the Northern Territory and Australian unemployment rates, of 4.4 per cent and 5.2 per cent respectively. This can be partly explained by the Australian Governments Community Development Employment Projects which supports Indigenous Australians to achieve economic independence. The initiative provides Indigenous Australians with community-managed activities to help build skills and improve employability.

Table 4.1.3 Labour Force Participation - 2006

	Darwin Region		Northern Territory		Australia	
	Number	% of total	Number	% of total	Number	% of total
Total Employed	46,250	96.4%	87,179	95.6%	9,104,175	94.8%
Total Unemployed	1,720	3.6%	4,007	4.4%	503,809	5.2%
Total	**47,970**		**91,186**		**9,607,984**	

Source: ABS Census

The most common employment occupation in the Darwin Region is Professionals , as is also the case in the Northern Territory and Australia. Clerical workers and Technicians in the Darwin Region were the next most common.

Table 4.1.4 Occupation Profile - 2006

	Darwin Region		Northern Territory		Australia	
	Number	%	Number	%	Number	%
Managers	5,895	*12.7%*	10,542	*12.1%*	1,202,261	*13.2%*
Professionals	9,194	*19.9%*	15,841	*18.2%*	1,806,016	*19.8%*
Technicians	6,953	*15.0%*	12,870	*14.8%*	1,309,256	*14.4%*
Community	5,525	*11.9%*	10,910	*12.5%*	801,902	*8.8%*
Clerical	7,628	*16.5%*	12,672	*14.5%*	1,365,810	*15.0%*
Sales Workers	3,943	*8.5%*	6,437	*7.4%*	896,209	*9.8%*
Machinery	2,516	*5.4%*	5,105	*5.9%*	604,616	*6.6%*
Labourer	3,797	*8.2%*	10,364	*11.9%*	952,519	*10.5%*
Other	804	*1.7%*	2,437	*2.8%*	165,595	*1.8%*
Total	**46,255**	***100.0%***	**87,178**	***100.0%***	**9,104,184**	***100.0%***

Source: ABS Census

Industry Profile

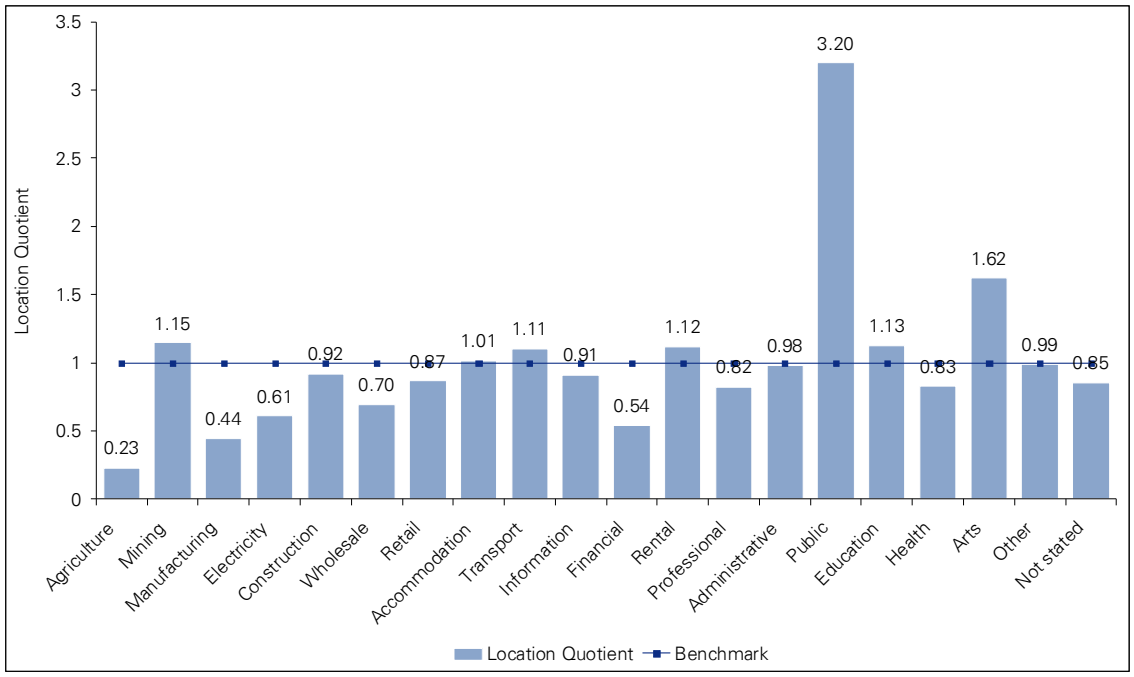
The chart below shows location quotients for Darwin Region for each industry sector. Location quotients give an indication of which industry sectors are significant in the region, and are based

on regional employment by industry[4]. A location quotient greater than 1 indicates that an industry is relatively concentrated in the region, compared to Australia as a whole.

This analysis indicates that the Darwin Region has a high concentration of employment in Public administration and safety industry, compared to the national average. This result is unsurprising given the presence of numerous Defence facilities in the Darwin Region and Defence employment is a component of the Public administration and safety industry.

Other significant industries in the Darwin Region are: Arts and recreation services; Mining; Transport, postal and warehousing; Rental hiring and real estate services; and Education and training.

Chart 4.1.4: Darwin Region - Industry Profile 2006



Source: Australian Bureau of Statistics – Census Data

The following table shows the percentage of persons employed by industry on census nights in 1996, 2001 and 2006. In 2006, the industries employing the largest number of people are Public administration and safety (21.4 per cent), followed by Retail trade (9.8 per cent).

[4] Location Quotient = ((regional employment in industry$_{(i)}$ in year$_{(t)}$ / total regional employment in year$_{(t)}$) / (national employment in industry$_{(i)}$ in year$_{(t)}$) / (total national employment in year$_{(t)}$))

Table 4.1.5 Employment by industry - Darwin Region							
	1996		2001		2006		CAGR
	People	%	People	%	People	%	1996-2006
Agriculture, forestry & fishing	318	*0.8%*	428	*1.0%*	325	*0.7%*	*0.2%*
Mining	528	*1.3%*	400	*0.9%*	623	*1.3%*	*1.7%*
Manufacturing	1,645	*4.2%*	2,021	*4.8%*	2,144	*4.6%*	*2.7%*
Electricity, gas, water & waste services	270	*0.7%*	490	*1.2%*	277	*0.6%*	*0.3%*
Construction	3,041	*7.7%*	2,403	*5.7%*	3,307	*7.1%*	*0.8%*
Wholesale trade	1,607	*4.1%*	1,671	*3.9%*	1,401	*3.0%*	*-1.4%*
Retail trade	3,597	*9.1%*	4,416	*10.4%*	4,545	*9.8%*	*2.4%*
Accommodation & food services	2,945	*7.5%*	3,213	*7.6%*	2,959	*6.4%*	*0.0%*
Transport, postal & warehousing	1,774	*4.5%*	2,217	*5.2%*	2,403	*5.2%*	*3.1%*
Information media & telecommunications	956	*2.4%*	950	*2.2%*	816	*1.8%*	*-1.6%*
Financial & insurance services	1,030	*2.6%*	988	*2.3%*	961	*2.1%*	*-0.7%*
Rental, hiring & real estate services	773	*2.0%*	846	*2.0%*	877	*1.9%*	*1.3%*
Professional, scientific & technical services	2,087	*5.3%*	2,657	*6.3%*	2,520	*5.4%*	*1.9%*
Administrative & support services	1,136	*2.9%*	1,531	*3.6%*	1,430	*3.1%*	*2.3%*
Public administration & safety	7,244	*18.4%*	7,494	*17.7%*	9,891	*21.4%*	*3.2%*
Education & training	3,049	*7.7%*	3,564	*8.4%*	3,989	*8.6%*	*2.7%*
Health care & social assistance	3,509	*8.9%*	3,668	*8.6%*	4,014	*8.7%*	*1.4%*
Arts & recreation services	975	*2.5%*	824	*1.9%*	1,049	*2.3%*	*0.7%*
Other services	1,528	*3.9%*	1,619	*3.8%*	1,704	*3.7%*	*1.1%*
Inadequately described/Not stated	1,359	*3.5%*	1,042	*2.5%*	1,024	*2.2%*	*-2.8%*
Total	**39,371**	***100.0%***	**42,442**	***100.0%***	**46,259**	***100.0%***	***1.6%***
Source: ABS Census					38.82%	12.87%	

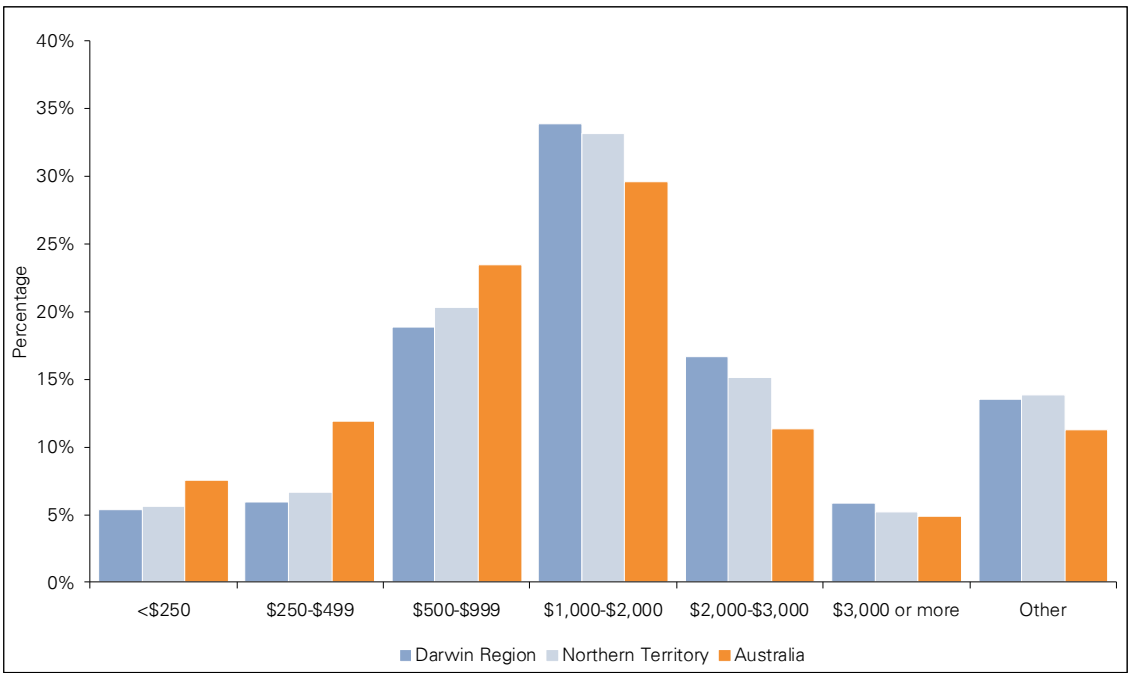
Employment in the Darwin Region increased 17.6 per cent over the ten-year period. Industries that contributed to the growth in the period were Public administration and safety, Retail trade and Education and training. This was partially offset by a decrease in wholesale trade, information media and telecommunications and financial services.

Income Profile

The income of households living in the Darwin Region is an important indicator of their socio-economic status. The 2006 Census data indicates that the Darwin Region residents are relatively wealthy compared to Northern Territory and Australia. Consistent with this, the median weekly household income in the Darwin Region (Darwin $1,286 Palmerston $1,255) is significantly higher than in the Northern Territory ($549) and Australia ($1,027). The income distribution shows that a larger proportion of employees in the Darwin region are in the mid to high end of the income scale when compared to the state and national averages. The can partly be explained by the high concentration of people employed in the Public Administration and safety industry which includes Defence personnel. This industry has a higher average weekly earnings of $1348 compared to the average across all industries of $1291 per week.[5]

[5] Australian Bureau of Statistics (cat 6302.0) - Average Weekly Earnings, Australia, Feb 2010

Chart 4.1.5: Income Distribution - 2006



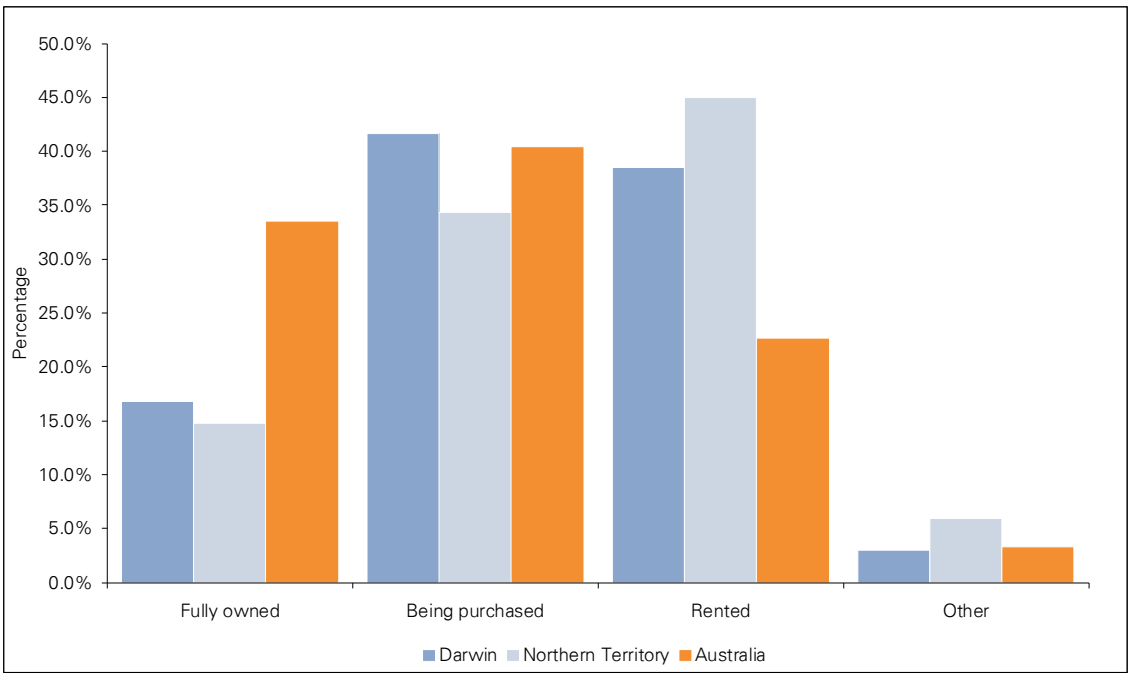
Source: Australian Bureau of Statistics – Census Data

Household Tenure

The following chart shows the house ownership structure in the Darwin region compared to Northern Territory and Australia in 2006. The median weekly rent in Darwin Region (Darwin $200, Palmerston $182) is significantly higher than the Northern Territory median ($140) and higher than the median of the Australian figure ($190). Despite the higher rent seen in Darwin, the Darwin Region still contain a larger proportion of households that are renting, almost double the proportions renting in Australia as a whole. There is a clear seasonality effect in net-interstate migration,[6] which can be indicative of a transient city. As such, this may explain the high proportion of people renting as they have only temporarily moved to this state.

[6] ABS Australian Demographic Statistics, Sep 2008 (cat 3101.0)

Chart 4.1.6: Household Tenure 2006

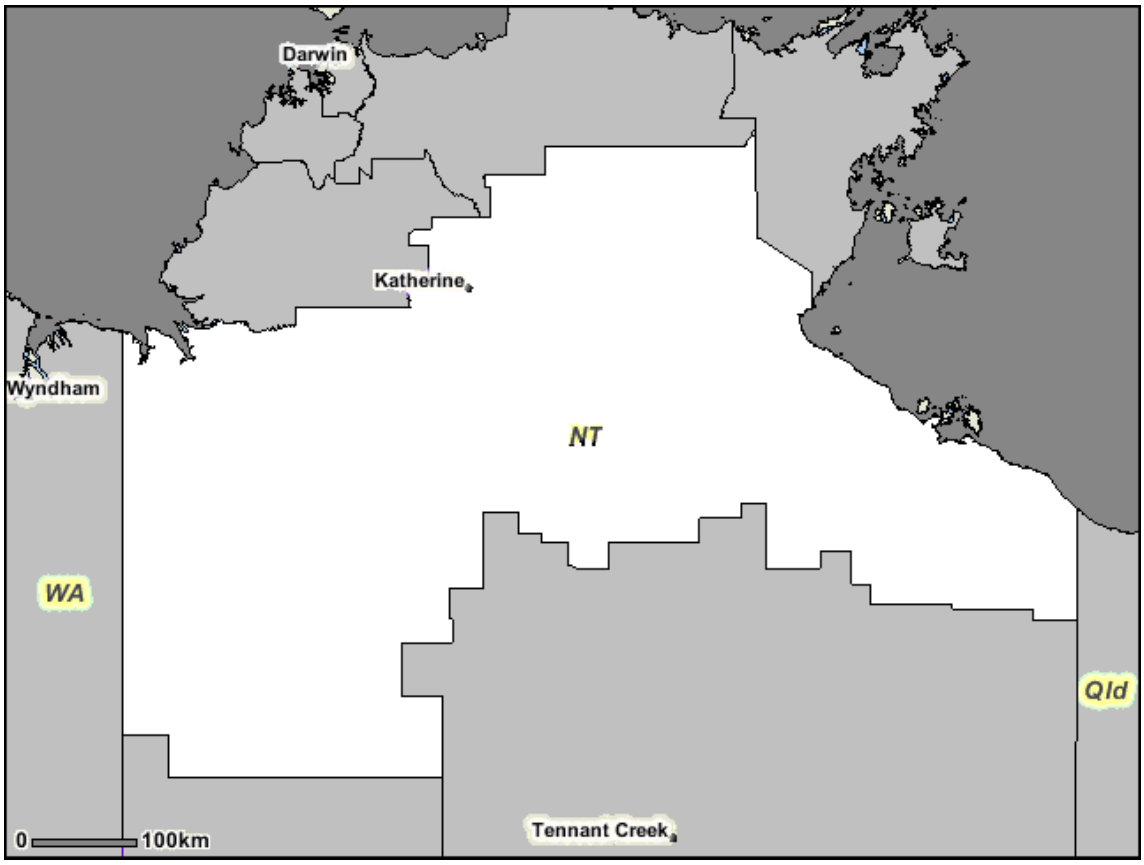


Source: Australian Bureau of Statistics – Census Data

4.2 Katherine Region

For data collection and analysis purposes, the Katherine Region has been defined by the ABS Census statistical areas. This makes it easier to match statistical information with the economic catchments used in this study. The Katherine Region is contained by the statistical subdivision (SSD) Lower Top End NT.

Chart 4.2.1: Katherine Region



Source: Australian Bureau of Statistics – Census Data

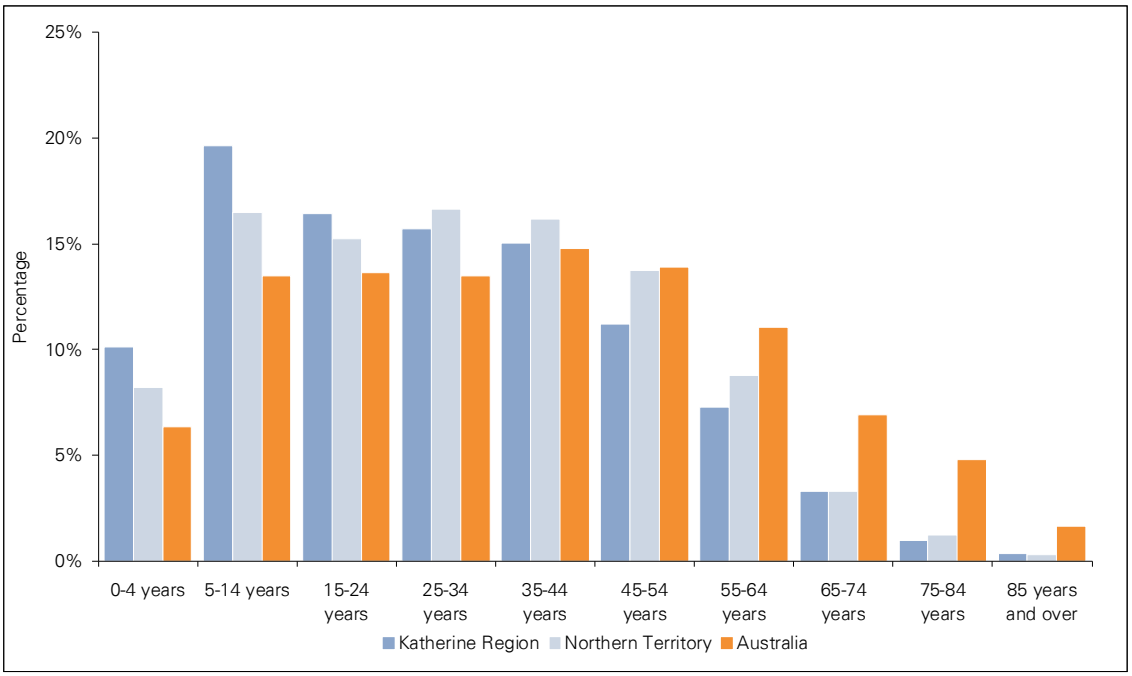
Demographic Profile

The estimated resident population of the Katherine Region in 2006 was 16,464 persons. The population in the Katherine Region increased by 0.3 per cent on average over the 1996-2006 period, unlike the Northern Territory and Australia, which experienced faster growth over the same period. The Katherine region experienced subdued growth over the 2001-2006 period. This is unsurprising given the region is very sparse and contains no major cities and few population centres.

Table 4.2.1 Katherine Region - Rates of Population Growth - 1996 - 2006+C48						
	Population					CAGR
	1996	2001	2006	1996-2001	2001-2006	1996-2006
Katherine Region	15,913	16,260	16,464	*0.4%*	*0.2%*	*0.3%*
Northern Territory	175,342	183,799	192,898	*0.9%*	*1.0%*	*1.0%*
Australia	**17,752,829**	**18,588,308**	**19,855,288**	***0.9%***	***1.3%***	***1.1%***

Source: ABS Census

Chart 4.2.2: Age Profile - 2006



Source: Australian Bureau of Statistics – Census Data

Similar to Northern Territory, the Katherine Region has a higher proportion of children and people aged 15 to 35 years than Australia. The Katherine Region also contains a lower proportion of older people, reflective of a younger population, again similar to the Territory as a whole.

Education

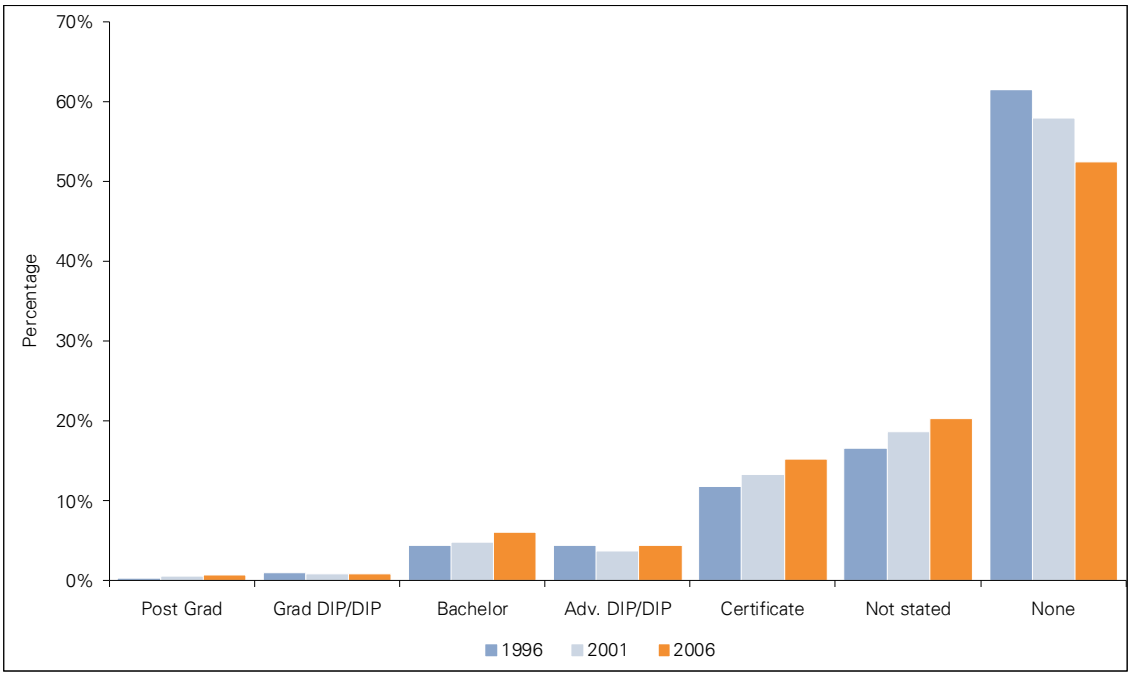
In the Katherine Region, 47.5 per cent of the population 15 years and over hold a post-school qualification (5,494 persons). Of these residents, 31.9 per cent hold a Certificate and 12.8 per cent hold a Bachelor Degree.

The most common qualification by field of study in the Katherine Region on Census night 2006 was Engineering and related technologies (14.6 per cent of all post-school qualifications held by residents), followed by Management & commerce (9.0 per cent) and Health (7.2 per cent).

The following chart shows the educational attainment in the Katherine Region across the past three Census collection nights. Over the 10-year period, the number of residents obtaining post school education has increased in all areas with the exception of Advanced and Graduate Diplomas', which has remained constant over the period. Across the same period, the total

number of residents without a post-school qualification has decreased at an average annual rate of 1.0 per cent.

Chart 4.2.3: Katherine Region Educational Attainment – 1996, 2001, 2006



Source: Australian Bureau of Statistics – Census Data

The Katherine Region has a significantly lower participation rate that the Northern Territory and Australia.

Table 4.2.2 Labour Force Participation - 2006

	Katherine Region		Northern Territory		Australia	
	Number	% of total	Number	% of total	Number	% of total
Total labour force	6,610	*57.2%*	91,186	*62.8%*	9,607,984	*60.4%*
Not in the labour force	3,106	*26.9%*	37,149	*25.6%*	5,271,114	*33.1%*
Labour force not stated	1,848	*16.0%*	16,961	*11.7%*	1,038,978	*6.5%*
Total	**11,564**	***100.0%***	**145,296**	***100.0%***	**15,918,076**	***100.0%***

Source: ABS Census

The unemployment rate of 5.7 per cent in the Katherine Region is significantly higher than the Northern Territory rate of 4.4 and the Australian rate of 5.2.

Table 4.2.3 Labour Force Participation - 2006

	Katherine Region		Northern Territory		Australia	
	Number	% of total	Number	% of total	Number	% of total
Total Employed	6,234	*94.3%*	87,179	*95.6%*	9,104,175	*94.8%*
Total Unemployed	376	*5.7%*	4,007	*4.4%*	503,809	*5.2%*
Total	**6,610**		**91,186**		**9,607,984**	

Source: ABS Census

The low participation rate and high unemployment rate may be explained by the size and remoteness of the Katherine Region and lack of employment opportunities within the region.

Table 4.2.4 Occupation Profile - 2006						
	Katherine Region		Northern Territory			Australia
	Number	%	Number	%	Number	%
Managers	724	*11.6%*	10,542	*12.1%*	1,202,261	*13.2%*
Professionals	845	*13.6%*	15,841	*18.2%*	1,806,016	*19.8%*
Technicians	907	*14.5%*	12,870	*14.8%*	1,309,256	*14.4%*
Community	875	*14.0%*	10,910	*12.5%*	801,902	*8.8%*
Clerical	649	*10.4%*	12,672	*14.5%*	1,365,810	*15.0%*
Sales Workers	349	*5.6%*	6,437	*7.4%*	896,209	*9.8%*
Machinery	278	*4.5%*	5,105	*5.9%*	604,616	*6.6%*
Labourer	1,305	*20.9%*	10,364	*11.9%*	952,519	*10.5%*
Other	302	*4.8%*	2,437	*2.8%*	165,595	*1.8%*
Total	**6,234**	***100.0%***	**87,178**	***100.0%***	**9,104,184**	***100.0%***

Source: ABS Census

The most common employment occupation in the Katherine Region was Labourers followed by Technicians. Residents employed as Professionals and Clerical workers were the next most common.

Industry Profile

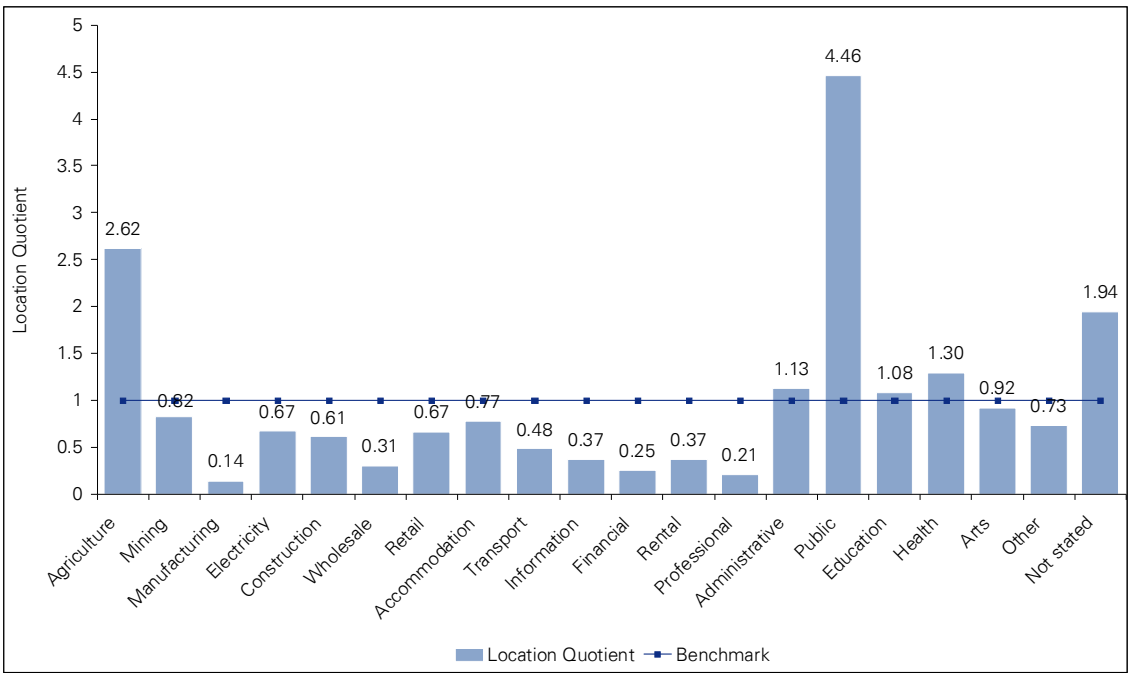
The chart below shows location quotients for the Katherine Region for each industry sector. Location quotients give an indication of which industry sectors are significant in the region, and are based on regional employment by industry[7]. A location quotient greater than 1 indicates that an industry is relatively concentrated in the region, compared to Australia as a whole.

This analysis indicates that the Katherine Region has a high concentration of employment in the Public administration and safety industry. Similar to the Darwin Region, this result is expected given a large defence facility, the RAAF Base Tindal is located in the Katherine Region.

Other significant industries in the Katherine Region in 2006 include: Administrative & support services, Education & training, and Health care & social assistance. Consistent with the limited employment opportunities, other industries are significantly underrepresented, highlighting the importance of RAAF Tindal to the region as a whole.

[7] Location Quotient = ((regional employment in industry$_{(i)}$ in year$_{(t)}$ / total regional employment in year$_{(t)}$) / (national employment in industry$_{(i)}$ in year$_{(t)}$) / (total national employment in year$_{(t)}$))

Chart 4.2.4: Katherine Region - Industry Profile 2006



Source: Australian Bureau of Statistics – Census Data

The following table shows the percentage of persons employed on census nights in 1996, 2001 and 2006. In 2006, the industries employing the largest number of people were Public administration and safety, Health care and social assistance; and Agriculture forestry and fishing.

Table 4.2.5 Employment by industry - Katherine Region

	1996		2001		2006		CAGR
	People	%	People	%	People	%	1996-2006
Agriculture, forestry & fishing	480	*7.5%*	464	*7.3%*	505	*8.1%*	*0.5%*
Mining	221	*3.5%*	76	*1.2%*	60	*1.0%*	*-12.2%*
Manufacturing	168	*2.6%*	91	*1.4%*	90	*1.4%*	*-6.1%*
Electricity, gas, water & waste services	59	*0.9%*	75	*1.2%*	41	*0.7%*	*-3.6%*
Construction	263	*4.1%*	308	*4.8%*	296	*4.7%*	*1.2%*
Wholesale trade	132	*2.1%*	162	*2.5%*	83	*1.3%*	*-4.5%*
Retail trade	430	*6.7%*	468	*7.4%*	472	*7.6%*	*0.9%*
Accommodation & food services	398	*6.2%*	402	*6.3%*	305	*4.9%*	*-2.6%*
Transport, postal & warehousing	164	*2.6%*	159	*2.5%*	141	*2.3%*	*-1.5%*
Information media & telecommunications	37	*0.6%*	49	*0.8%*	45	*0.7%*	*2.0%*
Financial & insurance services	76	*1.2%*	60	*0.9%*	60	*1.0%*	*-2.3%*
Rental, hiring & real estate services	32	*0.5%*	52	*0.8%*	39	*0.6%*	*2.0%*
Professional, scientific & technical services	133	*2.1%*	149	*2.3%*	87	*1.4%*	*-4.2%*
Administrative & support services	156	*2.4%*	188	*3.0%*	221	*3.5%*	*3.5%*
Public administration & safety	1,845	*28.9%*	2,114	*33.2%*	1,861	*29.8%*	*0.1%*
Education & training	465	*7.3%*	450	*7.1%*	516	*8.3%*	*1.0%*
Health care & social assistance	815	*12.7%*	582	*9.1%*	848	*13.6%*	*0.4%*
Arts & recreation services	50	*0.8%*	73	*1.1%*	80	*1.3%*	*4.8%*
Other services	210	*3.3%*	238	*3.7%*	170	*2.7%*	*-2.1%*
Inadequately described/Not stated	261	*4.1%*	206	*3.2%*	315	*5.1%*	*1.9%*
Total	**6,395**	***100.0%***	**6,366**	***100.0%***	**6,235**	***100.0%***	***-0.3%***
					32.24%	16.36%	

Source: ABS Census

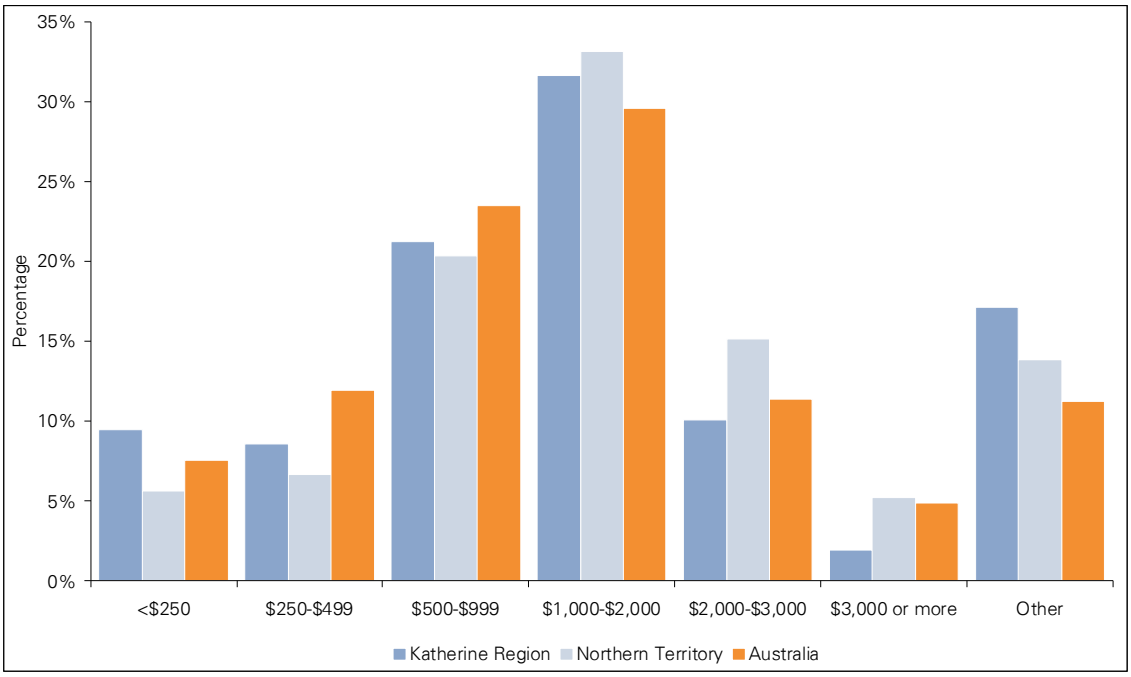
Employment in the Katherine Region decreased 0.3 per cent over the ten-year period from 1996-2006. The decline was driven by falls in the Mining, Manufacturing and Professional,

scientific and technical services industries. This was partially offset by an increase in employment in the Arts and recreation services industry.

Income Profile

The income of households living in the Katherine Region is an important indicator of their socio-economic status. The 2006 Census data indicates that the Katherine Region residents are relatively wealthy compared to Northern Territory. The median weekly household income in the Katherine Region ($1,040) is significantly higher than the Northern Territory ($549) and higher than Australia ($1,027). Similar to the Darwin Region, the income distribution shows that 50 per cent of employees in the Katherine Region are in the mid to high end of the income scale when compared to the state and national averages. The can partly be explained by the high concentration of people employed in the Public Administration and safety industry which includes Defence personnel. This industry has a higher average weekly earnings of $1348 compared to the average across all industries of $1291 per week

Chart 4.2.5: Income Distribution 2006

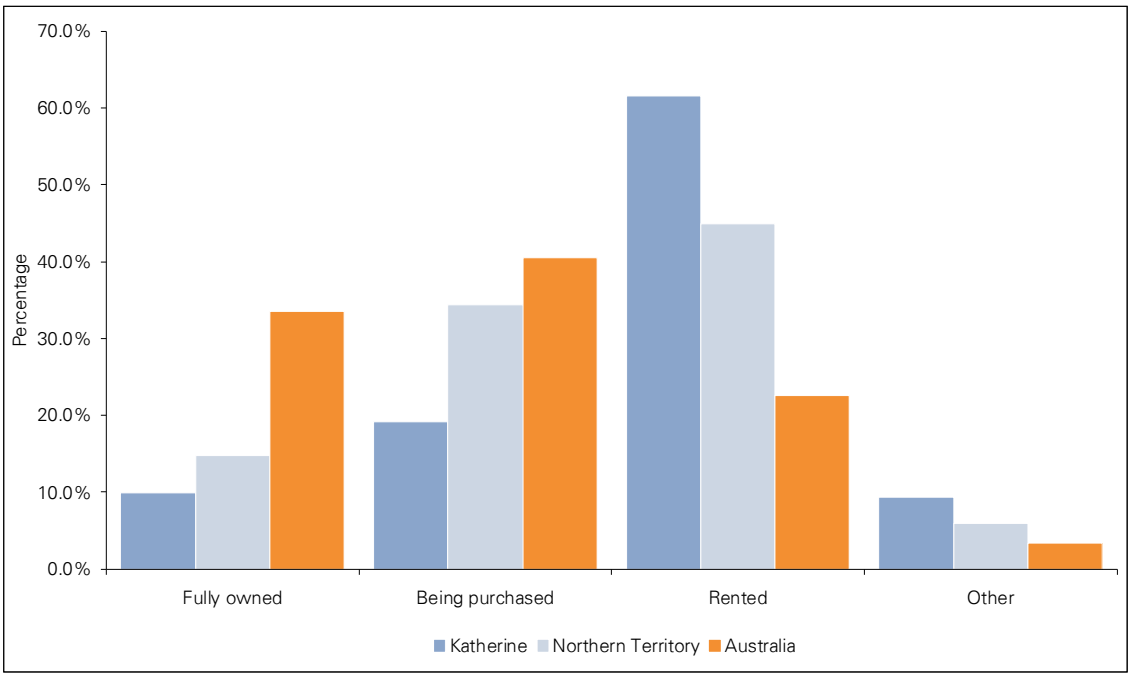


Source: Australian Bureau of Statistics – Census Data

Household Tenure

The following chart shows the house ownership structure in the Katherine Region compared to Northern Territory and Australia in 2006. The Katherine Region also contains a larger proportion of households that are renting, more than double the proportions renting in the Northern Territory and Australia. The median weekly rent in the Katherine Region ($75) was significantly lower than the Northern Territory median ($140) and the median for Australian ($190). The low rental costs combined with the remoteness of the region goes some way to explaining the high incidence of renting.

Chart 4.2.6: Household Tenure



Source: Australian Bureau of Statistics – Census Data

5 Modelling Inputs

As outlined in Section 2.1, the Defence facilities contribute directly to employment and expenditure in the regional economies. Estimates of the direct impacts for each facility have been used as inputs into MMR to determine the indirect or flow-on activity that is supported by the respective facilities. The following section details the main data inputs that are used to model the scenarios that are outlined in section 2.2.

For the purposes of this study, four major direct impacts have been identified and estimated to be used as inputs into MMR. These impacts represent the economic activity that would not occur within the regional economies if the Defence facilities ceased to operate in the region.

- Defence facility employees – each facility directly employs permanent staff, including ADF and APS personnel.
- Contractor employees – the Defence facilities directly employ contractors to provide services such as facilities maintenance, equipment maintenance, and IT and technical support.
- Defence facility expenditure – each Defence facility contributes directly to turnover in the regional economies through expenditure on goods and services, and through capital expenditure on equipment and infrastructure[8].
- Visitor expenditure – both the Bradshaw Training Area and the Mount Bundey Military Training Area support economic activity by hosting a large number of visitors each year that attend the facilities for training purposes. These visitors purchase on goods and services from the local economy.

Estimates of the direct impacts of each facility were sourced by the Department of Defence and provided to KPMG Econtech. Following consultation with relevant stakeholders, the estimated direct impacts for each facility were converted into an appropriate data set to be used as an input into MMR. All estimates of direct impacts are based on employment and expenditure in the 2007/08 financial year. Employment and expenditure are shock variables within MMR which are used to simulate the economic impact of Defence facilities.

Where estimates of both employment and expenditure were available, employment impacts were used as the favoured shock variable. This was done to avoid double counting the direct impacts of facilities. Employment and expenditure are interlinked within the model, as expenditure on wages and operating costs is related to employment. As such, removing Defence employment from the model impacts on Defence expenditure in the model. Alternatively, reducing Defence expenditure in the model leads to lower Defence employment. Hence, reducing both expenditure and employment for a given facility would double count the direct impact, *unless* the expenditure is not directly associated with employment at the facility.

Estimates of direct employment and direct expenditure were used within MMR, to simulate the impact of removing the facilities. Specifically, estimated employment impacts were entered into MMR as employment shocks broken down by Australia and New Zealand Standard

[8] Note that capital expenditure only has a direct impact on the regional economy when assets are purchased from local sources. For example, capital expenditure on hardware and equipment that is imported into the region does not have a direct impact on the regional economy.

Industry Classification (ANZSIC) industry. Estimated expenditure impacts were entered into MMR as expenditure shocks broken down by ANZSIC industry.

Defence provided estimates of employment and estimates of expenditure broken down by expense category for each of the bases, as detailed in the following sections.

5.1.1 RAAF Base Darwin Direct Impacts

RAAF Base Darwin contributes directly to the Darwin economy by employing staff and contractors, and by spending money on operations and capital within the regional economy.

In 2007/08, RAAF Base Darwin is estimated to have directly employed a total of 641 FTEs, which are predominantly Defence employees and contractors. These employees are split between two industries, Government Administration and Defence and Property and Business Services.

In 2007/08, RAAF Base Darwin is estimated to have spent $43 million in Northern Territory on wages, capital and operating expenses. A breakdown of these expenses is presented in the following Table.

Table 5.1: RAAF Base Darwin Expenses ($2007-08)

RAAF Base Darwin - Expenses	
Expense Category	**Expenditure ($m)**
Salaries	22.7
Utilities (elec)	2.8
Utilities (gas, water, sewerage)	1.1
Garrison Support	4.3
Comprehensive Maintenance Services Fees	4.5
General Suppliers	1.1
Facilities Operations (FACOPS)	6.7
Total	**43.2**

Source: KPMG Econtech estimates based on information provided by the Department of Defence
** Data has been inflated from 2006/07 to 2007/08. It has been adjusted for price inflation only and does not take into account any growth that may have occurred during this period*

Modelling Inputs

Based on the estimates presented above, the direct employment impacts were identified as an appropriate input to model the economic impacts of RAAF Base Darwin. It is important to note that we did not remove the Gross Replacement Value of RAAF Base Darwin from the economy as the modelling captures the impact of the facility no longer being operational, not the impact of closing the base itself.

Table 5.2: RAAF Base Darwin Modelling Inputs

RAAF Base Darwin - Modelling inputs	
Industry	**Total FTEs (jobs)**
Property and Business Services	168
Government Administration and Defence	473
Total	**641**

Source: KPMG Econtech estimates based on information provided by the Department of Defence

5.1.2 Larrakeyah Defence Precinct Direct Impacts

The Larrakeyah Defence Precinct[9] contributes directly to the Darwin economy by employing staff and contractors, and by spending money on operations and capital within the regional economy.

In 2007/08 the Larrakeyah Defence Precinct is estimated to have directly employed a total of 1,046 FTE's.

In 2007/08, the Larrakeyah Defence Precinct is estimated to have spent $32 million in Northern Territory on wages, capital and operating expenses. A breakdown of these expenses is presented in the following Table.

Table 5.3: Larrakeyah Defence Precinct Expenses ($2007-08)

Larrakeyah Defence Precinct - Expenses	
Expense Category	**Expenditure ($m)**
Salaries	16.8
Utilities (elec)	2.2
Utilities (gas, water, sewerage)	0.6
Garrison Support	2.7
Comprehensive Maintenance Services Fees	3.6
General Suppliers	1.4
Facilities Operations (FACOPS)	4.7
Total	**32.0**

Source: KPMG Econtech estimates based on information provided by the Department of Defence
** Data has been inflated from 2006/07 to 2007/08. It has been adjusted for price inflation only and does not take into account any growth that may have occurred*

[9] Larrakeyah Defence Precinct includes the estimates provided for Coonawarra and Fleet Base North

Modelling Inputs

Based on the estimates presented above, the direct employment impacts were identified as an appropriate input to model the economic impacts of Larrakeyah Defence Precinct. It is important to note that we did not remove the GRV of the precinct from the economy as the modelling captures the impact of the facility no longer being operational, not the impact of closing the base itself. As such, the modelling inputs for Larrakeyah Defence Precinct are presented in the following table.

Table5.4: Larrakeyah Defence Precinct Modelling Inputs

Larrakeyah Defence Precinct - Modelling Inputs	
Industry	**Total FTEs (jobs)**
Property and Business Services	96
Government Administration and Defence	950
Total	**1,046**

Source: KPMG Econtech estimates based on information provided by the Department of Defence

5.1.3 Defence Establishment Berrimah Direct Impacts

The Defence Establishment Berrimah contributes directly to the Darwin economy by employing staff and contractors, and by spending money on operations and capital within the regional economy.

In 2007/08, Defence Establishment Berrimah is estimated to have directly employed a total of 117 FTE's.

In 2007/08, Defence Establishment Berrimah is estimated to have spent $15.6 million in Northern Territory on wages, capital and operating expenses. A breakdown of these expenses is presented in the following Table.

Table 5.5: Defence Establishment Berrimah Expenses ($2007-08)

Defence Establishment Berrimah - Expenses	
Expense Category	**Expenditure ($m)**
Salaries	9.3
Utilities (elec)	1.2
Utilities (gas, water, sewerage)	0.3
Garrison Support	3.0
Comprehensive Maintenance Services Fees	0.7
Facilities Operations (FACOPS)	1.0
Total	**15.6**

Source: KPMG Econtech estimates based on information provided by the Department of Defence
** Data has been inflated from 2006/07 to 2007/08. It has been adjusted for price inflation only and does not take into account any growth that may have occurred*

Modelling Inputs

Based on the estimates presented above, the direct employment impacts were identified as an appropriate input to model the economic impacts of Defence Establishment Berrimah. It is important to note that we did not remove the GRV of DEB from the regional economy as the modelling captures the impact of the facility no longer being operational, not the impact of closing the base itself. As such, the modelling inputs for Defence Establishment Berrimah are presented in the following table.

Table 5.6: Defence Establishment Berrimah Modelling Inputs

Defence Establishment Berrimah	
Industry	**Total FTEs (jobs)**
Property and Business Services	0
Government Administration and Defence	117
Total	**117**

Source: KPMG Econtech estimates based on information provided by the Department of Defence

5.1.4 Robertson Barracks Direct Impacts

The Robertson Barracks contributes directly to the Darwin economy by employing staff and contractors, and by spending money on operations and capital within the regional economy.

In 2007/08 the Robertson Barracks is estimated to have directly employed a total of 3828 FTE's.

In 2007/08, Robertson Barracks is estimated to have spent $181 million in Northern Territory on wages, capital and operating expenses. A breakdown of these expenses is presented in the following Table.

Table 5.7: Robertson Barracks Expenses ($2007-08)

Robertson Barracks - Expenses	
Expense Category	**Expenditure ($m)**
Salaries	144.9
Utilities (elec)	5.4
Utilities (gas, water, sewerage)	0.7
Garrison Support	8.0
Comprehensive Maintenance Services Fees	10.0
Facilities Operations (FACOPS)	12.4
Total	**181.5**

Source: KPMG Econtech estimates based on information provided by the Department of Defence
** Data has been inflated from 2006/07 to 2007/08. It has been adjusted for price inflation only and does not take into account any growth that may have occurred*

Modelling Inputs

Based on the estimates presented above, the direct employment impacts were identified as an appropriate input to model the economic impacts of Robertson Barracks. It is important to note that we did not remove the GRV of the Barracks from the economy as the modelling captures

the impact of the facility no longer being operational, not the impact of closing the base itself. As such, the modelling inputs for Robertson Barracks are presented in the following table.

Table 5.8: Robertson Barracks Modelling Inputs

Robertson Barracks - Modelling Inputs	
Industry	**Total FTEs (jobs)**
Property and Business Services	300
Government Administration and Defence	3,828
Total	**4,128**

Source: KPMG Econtech estimates based on information provided by the Department of Defence

5.1.5 RAAF Base Tindal Direct Impacts

The RAAF Base Tindal contributes directly to the Katherine economy by employing staff and contractors, and by spending money on operations and capital within the regional economy.

In 2007/08 the RAAF Base Tindal is estimated to have directly employed a total of 598 FTEs.

In 2007/08, the RAAF Base Tindal is estimated to have spent $535 million in Northern Territory on wages, capital and operating expenses. A breakdown of these expenses is presented in the following Table.

Table 5.9: RAAF Base Tindal Expenses ($2007-08)

RAAF Base Tindal - Expenses	
Expense Category	**Expenditure ($m)**
Salaries	27.9
Utilities (elec)	3.4
Utilities (gas, water, sewerage)	0.5
Garrison Support	4.7
Comprehensive Maintenance Services Fees	8.4
Facilities Operations (FACOPS)	3.5
Total	**48.4**

Source: KPMG Econtech estimates based on information provided by the Department of Defence
** Data has been inflated from 2006/07 to 2007/08. It has been adjusted for price inflation only and does not take into account any growth that may have occurred*

Modelling Inputs

Based on the estimates presented above, the direct employment impacts were identified as an appropriate input to model the economic impacts of RAAF Base Tindal. It is important to note that we did not remove the GRV of RAAF Base Darwin from the economy as the modelling captures the impact of the facility no longer being operational, not the impact of closing the base itself. As such, the modelling inputs for RAAF Base Tindal are presented in the following table.

Table 5.10: RAAF Base Tindal Modelling Inputs

RAAF Base Tindal - Modelling Inputs	
Industry	**Total FTEs (jobs)**
Property and Business Services	80
Government Administration and Defence	598
Total	**678**

Source: KPMG Econtech estimates based on information provided by the Department of Defence

5.1.6 Northern Territory Direct Impacts

The direct impacts of all of the Defence facilities on the Northern Territory economy is estimated as the sum of employment and expenditure impacts of each facility. This includes the five facilities discussed above, as well as some additional facilities that have not been modeled individually. The Defence facilities that have been included in this analysis are: RAAF Base Darwin; Defence Establishment Berrimah; Larrakeyah Defence Precinct; Robertson Barracks; Shoal Bay Receiving Station; RAAF Base Tindal; and the Northern Territory Training Areas. To capture the economic impact of the training facilities it is important to take into account the increased visitors and their spending in the region due to the exercises that the training areas play host to. Thus, the modelling also captures the expenditure from Naval ship visits to the region for these exercises.

In 2007/08 the Northern Territory Bases were estimated to have directly employed a total of 6155 FTEs.

In 2007/08, Defence had a total housing stock of 1,827 houses in the Darwin region and 193 houses in the Katherine region. The following table provides details housing and rental expenditure estimates.

Table 5.11: Northern Territory Housing Stock ($2007-08)

Northern Territory Housing Stock		
	Darwin Region	**Katherine Region**
Total housing stock	1,827	193
Defence-owned	753	193
Assessed rent per annum	$22,518,080	$0
Defence Rental Assistance	$2,498,028	$91,000
New constructions	64	0
New direct lease/acquisitions	6	0

Source: KPMG Econtech estimates based on information provided by the Department of Defence

In 2007/08, the Northern Territory bases are estimated to have spent $337 million in Northern Territory on wages, capital and operating expenses. A breakdown of these expenses is presented in the following Table.

Table 5.12: Northern Territory Expenses ($2007-08)

Northern Territory - Expenses	
Expense Category	**Expenditure ($m)**
Salaries	221.5
Utilities (elec)	16.3
Utilities (gas, water, sewerage)	3.2
Garrison Support	26.3
Comprehensive Maintenance Services Fees	29.1
General Suppliers	2.4
Facilities Operations (FACOPS)	38.2
Total	**337.0**

Source: KPMG Econtech estimates based on information provided by the Department of Defence
** Data has been inflated from 2006/07 to 2007/08. It has been adjusted for price inflation only and does not take into account any growth that may have occurred*

The Bradshaw Training Area and the Mount Bundey Military Training Area support economic activity by hosting a large number of visitors each year that visit the facilities for training purposes. In the case of these facilities, the Defence purchases items such as rations and fuel from the regional economy in order to facilitate training exercises.

In addition, there is induced spending in the state economy due to higher visitor numbers from Defence exercises (for example the training areas recently hosted two larger exercises, Exercise Pitch Black and Kakadu). Spending by training attendees is induced in the sense that the visitors would not have spent money in the Northern Territory economy had the training exercises not taken place. As such, this expenditure can be categorised as a direct impact of the training areas. This has flow-on impacts as visitors spend on goods and services in the local economy and stimulates the supply chain of businesses that sell consumer goods.

The Department of Business, Economic and Regional Development (BERD) assessed the economic impact of naval ship visits to the Port of Darwin. The study uses a survey on crew spend undertaken in 2007. This data has been used to estimate the approximate economic value of the naval ships visits from 1999 (when a peak number of ships visited the Port of Darwin) to 2007 (where the least number of ship visits occurred).

The survey included crew members from five Royal Australian Navy ships, four major fleet units and one minor war vessel, and one United States Navy major war survey. The survey estimated the average spend per sailor per day to be $227.90 and the estimated crew spend for 2007 to be $5.5 million. These figures were used to estimate the value of the sector in 2007 and an average over the years 1999 to 2007. The following table provides an estimate of these figures.

Table 5.13: Estimated value of naval ship visit to the Port of Darwin

Estimated Value of the Sector				
		2007		**Avg 1999-2007**
Crew Spend	$	5,534,639	$	8,359,400
Husbandry	$	580,000	$	3,570,000
Fuel Tariff	$	178,994	$	202,800
Total	**$**	**6,293,633**	**$**	**12,132,200**

Source: Department of Business, Economic and Regional Development (BERD)

Based on the survey data, the estimated value of the sector has been allocated across the ANZSIC industries used in MMR to capture the increased activity from the naval ship visits to the region. The survey provided estimates of the spend patterns of the sailors, broken into eight expense categories: Accommodation, Cafes and Restaurants; Electronic Equipment, Entertainment, Internet and Phone, Public Bars and Clubs, Shopping and Transportation. As such, the crew spend has been spread across a number of ANZSIC industries as presented in the following table.

Table 5.15: Estimated value of naval ship visit to the Port of Darwin by ANZSIC Industry

Estimated value of the sector by MMR Industry	
Industry	**Expenditure ($m)**
Manufacturing	3.57
Retail Trade	2.16
Accommodation, Cafes and Restaurants	4.84
Transport and Storage	0.91
Cultural and Recreational Services	0.66
Total	**12.13**

Source: Department of Business, Economic and Regional Development (BERD)

Based on the estimates presented above, both employment and expenditure impacts were identified as an appropriate input to model the economic impacts for the Northern Territory Defence facilities. It is important to note that the modelling captures the economic impacts based on the difference between a baseline scenario (current situation) and a scenario under which the facilities cease operations. This is in contrast to a scenario under which the facilities close down. As such, the GRV of each facility has not been included.

The modelling inputs for the combined Defence facilities and induced activity from naval ship visits to Northern Territory are presented in the following table.

Table 5.15: Northern Territory Modelling Inputs

Total Northern Territory Defence Facilities - Modelling Inputs		
Industry	**Total FTEs (jobs)**	**Expenditure ($m)**
Manufacturing		3.57
Retail Trade	-	2.16
Accommodation, Cafes and Restaurants	-	4.84
Transport and Storage	-	0.91
Property and Business Services	740	-
Government Administration and Defence	7,105	-
Cultural and Recreational Services	-	0.66
Total	**7,845**	**12.13**

Source: KPMG Econtech estimates based on information provided by the Department of Defence

6 Economic Impact of Major Defence Facilities in Regional Economies

Economic impact modelling was carried out at the regional economy level for five pivotal Defence facilities. The following section outlines the regional modelling results, presenting estimates of the current contribution of the Defence facilities to the regional economies in which they are located. The following estimates of employment, value added and consumption impacts represent the average annual economic impacts attributable to the facilities, based on reported activity in 2007/08.

6.1 Overview of Results

As is the case with each of the Bases, the results show that a sizable proportion of the overall employment impact occurs in the Government Administration and Defence industry, as each of the bases directly employs a large number of APS and ADF staff within that industry. As was noted in the region profiles, Defence contributes positively to both the Darwin and Katherine regions. This can be seen in the high concentration of employment in Public administration and safety industry, compared to the national average. Employees in this sector pay higher incomes, as such, the data shows higher median weekly household income in the Regions. These direct employment impacts produce positive indirect employment impacts in industries that supply goods and services to the Bases and sell consumer goods to the Bases' employees. Industries that benefit from demand created by Bases in the economy include: Retail Trade; Finance and Insurance; Education; and Health and Community Services.

At the same time, expenditure by each base on goods and services within the regional economy contributes to price pressures within some industries. As such, some negative employment impacts are felt in industries that experience a loss of competitiveness through higher input prices. For example, it is estimated that RAAF Base Darwin has negative indirect employment impacts on industries including: Manufacturing; Construction; Transport and Storage; and Property and Business Services. Importantly, the overall impact of the Defence base on employment in the Darwin region is positive.

These findings are consistent with the findings of previous modelling undertaken by KPMG Econtech for Defence, to measure the economic contribution of the RAAF Base, Richmond, to the Sydney economy. The pattern of direct and indirect impacts are consistent with previous findings that Defence bases create positive indirect impacts in consumer focused industries that sell goods to Defence employees, while negative indirect impacts are generally seen in trade-exposed industries. Negative indirect impacts stem from the fact that traded goods prices are determined in the national market. As such, industries producing traded goods are not able to raise the price of their output in response to changes in input prices. However, as discussed above, some of these trade-exposed industries use similar inputs to Defence and thus would be facing price pressures as a result of Defence's presence. Accordingly, those tradable industries that use a similar set of inputs to Defence and does not sell a large proportion of their goods to the Defence bases or to Defence employees are worse off as a result of Defence's presence.

To take a specific example, the Base increases the demand for goods and services produced by industries such as Finance and Insurance. This industry produces non-tradeable goods and services, and therefore they focus on selling in the Darwin region only. As such, industry production levels and prices for these services are determined by local demand. The Base

increases local demand and therefore leads to an increase in the prices charged by the Finance and Insurance industries. These higher prices would have a slight negative impact on industries that use these goods and services. Hence, production and employment in some industries, such as Property and Business Services, will be slightly lower, as businesses in these industries pay higher prices for business inputs. Importantly, Defence bases contribute positively to employment, value added and consumption in the region in which they are situated.

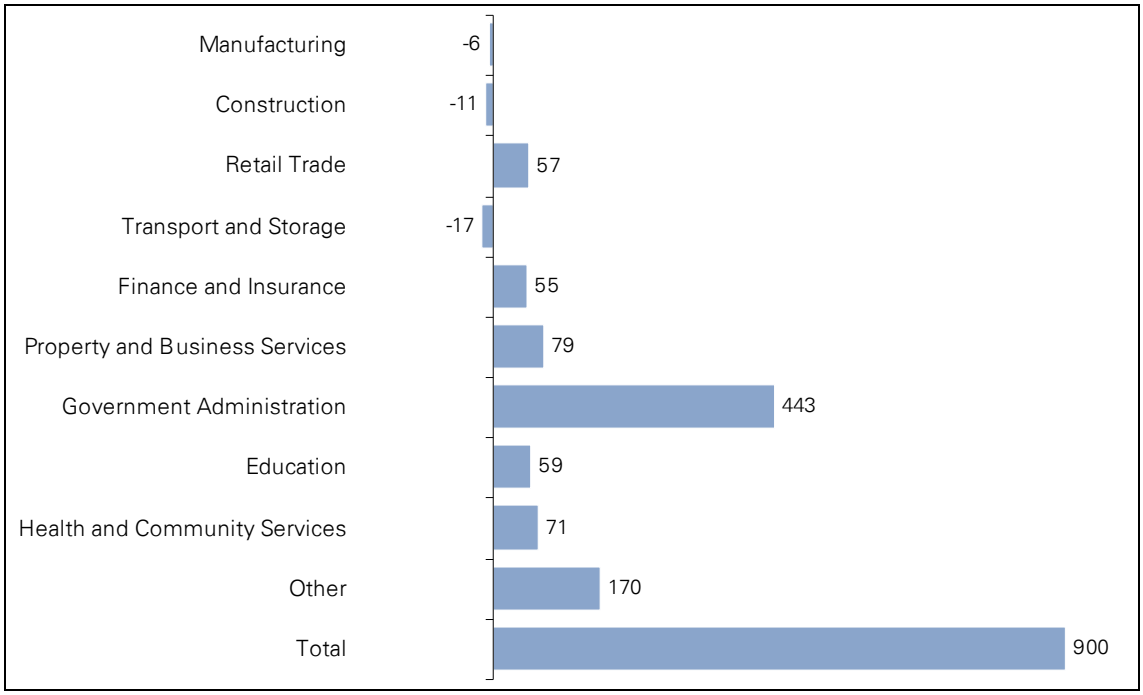
The following sections provide the detailed results for each scenario that was modelled. More detailed results (including estimates of turnover impacts) are provided in Appendix A.

6.1.1 RAAF Base Darwin

Employment

The modelling estimates that RAAF Base Darwin directly and indirectly supports 900 jobs in the Darwin regional economy. These jobs are distributed amongst different industry sectors as indicated in Chart 6.1.

Chart 6.1 RAAF Base Darwin Contribution to Employment in Darwin (jobs)



Source: KPMG Econtech MMR
Note: The sum of impacts may not add exactly to total due to rounding.

A sizable proportion of the overall employment impact occurs in the Government Administration and Defence industry (443 jobs), as RAAF Base Darwin directly employs a large number of APS staff within that industry. These direct employment impacts produce positive indirect employment impacts in industries that supply goods and services to RAAF Base Darwin and sell consumer goods to RAAF Base Darwin employees. Industries that benefit from demand created by RAAF Base Darwin in the Darwin economy include: Retail Trade; Finance and Insurance; Education; and Health and Community Services.

At the same time, expenditure by RAAF Base Darwin on goods and services within the Darwin economy contributes to price pressures within some industries. As such, some negative employment impacts are felt in industries that experience a loss of competitiveness through higher input prices. For example, it is estimated that RAAF Base Darwin has negative indirect employment impacts on industries including: Manufacturing; Construction; Transport and Storage; and Property and Business Services. The Property and Business services industry, in particular, experiences strong negative impacts due to higher input prices, as it uses similar inputs as the Government Defence and Administration industry i.e. competes directly with RAAF Base Darwin for resources. Importantly, the overall impact of the Defence base on employment in the Darwin region is positive.

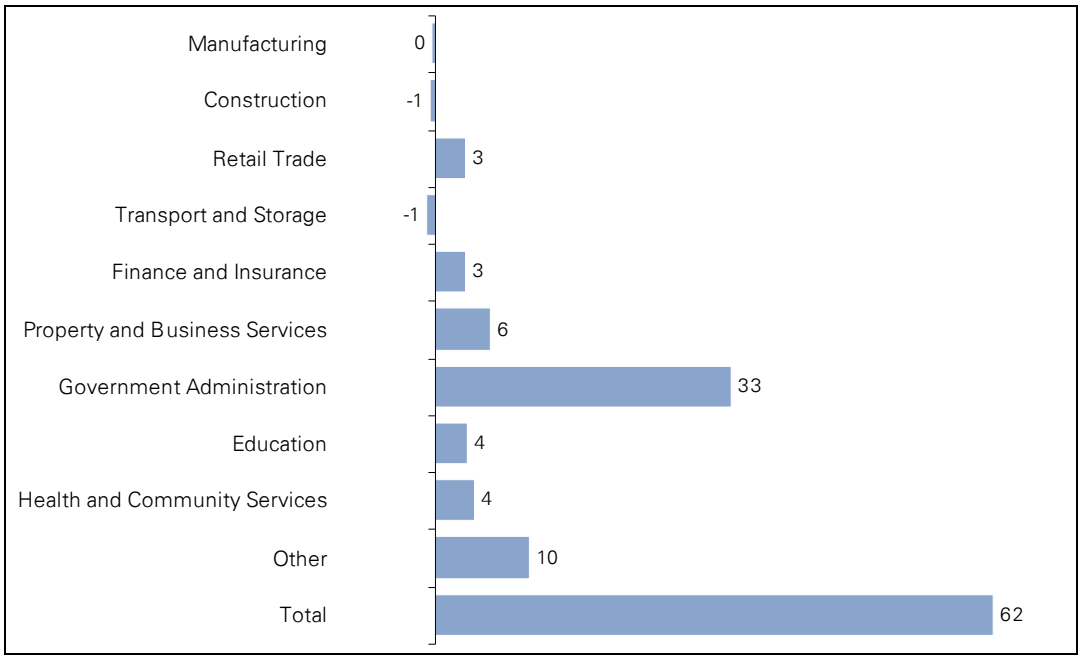
Value Added

The modelling estimates that RAAF Base Darwin directly and indirectly contributes $64 million (2008/09 prices) annually to value added in the Darwin regional economy. This impact is distributed amongst different industry sectors, as indicated in Chart 6.2.

Similar to the employment impacts, the bulk of the value added contribution occurs in the Government Administration and Defence industry ($34 million). Impacts in this industry can be primarily attributed to wage payments by RAAF Base Darwin.

The pattern of indirect value added impacts reflect the employment impacts, with positive indirect impacts occurring in industries such as Finance and Insurance and Health and Community Services. Likewise, negative indirect impacts occur in industries that experience a loss of competitiveness due to increased input prices, with a negative impact ($1 million) occurring in both the Construction and Transport and Storage industries. Overall the RAAF Bases Darwin contributes positively to value added in the region.

Chart 6.2 RAAF Base Darwin Contribution to Value Added in Darwin ($ 2008/09 m)



Source: KPMG Econtech MMR
Note: The sum of impacts may not add exactly to total due to rounding.

Living Standards

As outlined in Section 3.2, living standards are often measured in terms of gross domestic product (or value-added). However, this is not a good measure of living standards because value-added is a measure of output, rather than a measure of well-being. Capacity to consume goods is highly correlated with leading living standard indicators such as poverty rates, literacy/numeracy levels etc. As living standards derive from consumption, not value added, consumption (in principle) is a more appropriate measure of changes in living standards. As such, in line with the Productivity Commission's practice when measuring living standards, KPMG Econtech uses consumption as the measure of living standards instead of value-added.

By supporting production in the regional economy, RAAF Base Darwin contributes to living standards in Darwin. The modelling estimates that RAAF Base Darwin contributes $56 million ($2008/09) annually to consumption in the Darwin regional economy. Notably, the consumption impact is similar in magnitude to the value added impact, as a large proportion of the value added impacts occur in consumer-focused industries.

Summary

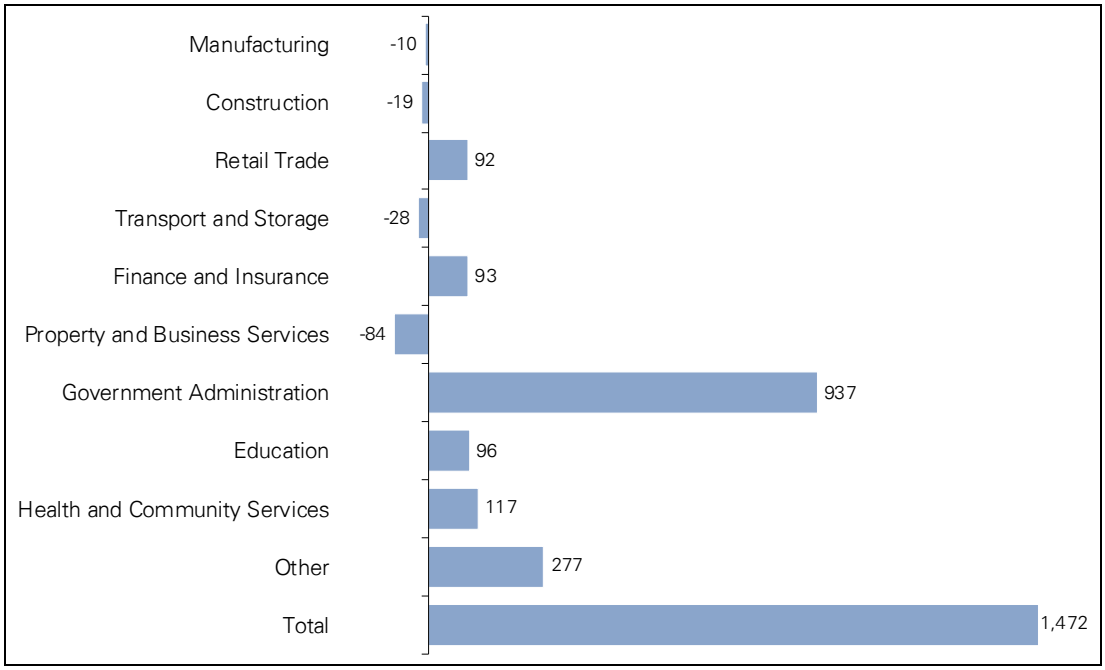
The modelling estimates that RAAF Base Darwin directly and indirectly supports 900 jobs in the Darwin region. That is, total employment in the Darwin region is 1.5 per cent greater than would otherwise be the case if the base did not operate in the region. This includes a 3.6 per cent gain in employment in the Government Administration and Defence industry, a 1.0 per cent lift in employment in the Property and Business Services industry and a 1.3 per cent lift in employment in the Retail Trade industry. In level terms, the operations of RAAF Base Darwin directly and indirectly contributes $64 million (2008/09 prices) annually to value added, and contributes $56 million ($2008/09) annually to consumption in the Darwin regional economy. In percentage terms, the operations of RAAF Base Darwin leads to a 1.0 per cent gain in valued added and a 1.1 per cent gain in consumption in the Darwin region.

6.1.2 Larrakeyah Defence Precinct

Employment

The modelling estimates that the Larrakeyah Defence Precinct directly and indirectly supports 1,471 jobs in the Darwin regional economy. These jobs are distributed amongst different industry sectors, as indicated in Chart 6.3. The largest employment impacts occur in the Government Administration and Defence industry (937 jobs), as the Larrakeyah Defence Precinct directly employs a large number of ADF staff within that industry.

Chart 6.3 Larrakeyah Defence Precinct Contribution to Employment in Darwin (jobs)



Source: KPMG Econtech MMR
Note: The sum of impacts may not add exactly to total due to rounding.

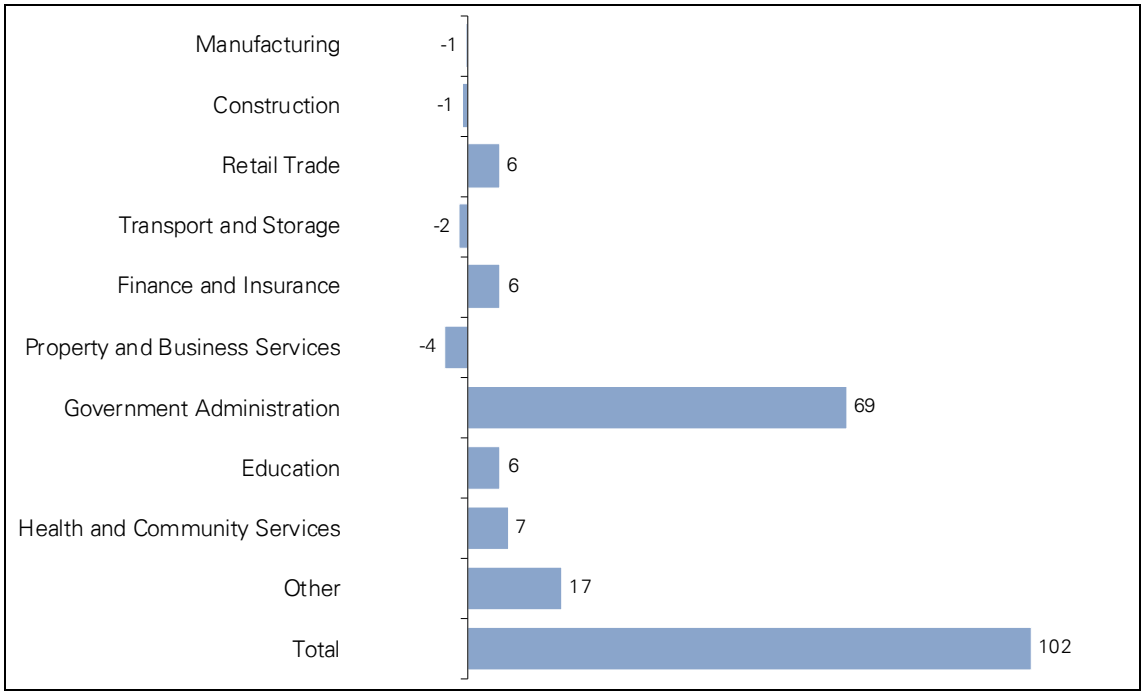
This direct employment stimulates positive indirect employment impacts in industries that supply the Larrakeyah Defence Precinct and its contractors, and industries that sell consumer goods to ADF and contractor employees. The industries that benefit from higher demand include Retail Trade; Finance and Insurance; Education; and Health and Community Services.

At the same time, expenditure by the Larrakeyah Defence Precinct and its contractors contributes to price pressures for some goods and services in the Darwin economy. This causes negative employment impacts in some industries that by pushing up input prices for the industries that benefited from the higher demand. For example, the modelling estimates that the Larrakeyah Defence Precinct has negative indirect employment impacts on industries including: Manufacturing Construction; Transport and Storage; and Property and Business Services. Interestingly, the Property and Business services industry experiences net negative employment impacts despite the fact that the Larrakeyah Defence Precinct directly employees a number of contractors in that industry. In this case, the modelling estimates that the negative indirect impacts on Property and Business Services outweigh the positive direct employment impacts. Overall the Larrakeyah Defence Precinct has a positive impact on employment in the region.

Value Added

The modelling estimates that the Larrakeyah Defence Precinct directly and indirectly contributes $105 million (2008/09 prices) annually to value added in the Darwin regional economy. This impact is distributed amongst different industry sectors as indicated in Chart 5.4 As with the employment impacts, a large proportion of the value added contribution occurs in the Government Administration and Defence industry ($71 million). Impacts in this industry can be primarily attributed to wage payments.

Chart 6.4 Larrakeyah Defence Precinct Contribution to Value Added in Darwin ($ 2008/09 m)



Source: KPMG Econtech MMR
Note: The sum of impacts may not add exactly to total due to rounding.

Living Standards

By supporting production in the regional economy, the Larrakeyah Defence Precinct contributes to living standards in the Darwin region. The modelling estimates that the Larrakeyah Defence Precinct contributes $92 million ($2008/09) annually to consumption in the Darwin regional economy.

Summary

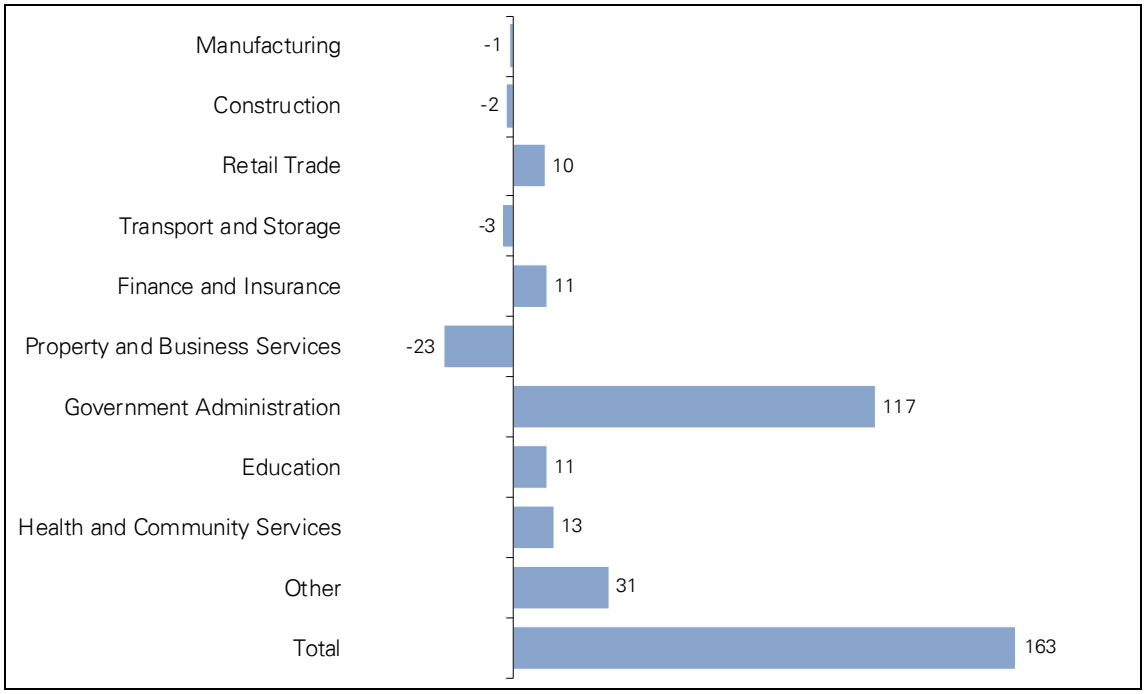
The modelling estimates that Larrakeyah Defence Precinct directly and indirectly supports 1,471 jobs in the Darwin region. That is, total employment in the Darwin region is 2.4 per cent greater than would otherwise be the case if the base did not operate in the region. This includes a gain of 7.6 per cent in employment in the Government Administration and Defence industry, a gain of 3.5 per cent in employment in the Finance and Insurance industry and a gain of 2.1 per cent in employment in the Retail Trade industry. The operations of Larrakeyah Defence Precinct leads to a 1.6 per cent lift in valued added and a 1.8 per cent lift in consumption in the Darwin region. In level terms, the operations of Larrakeyah Defence Precinct also directly and indirectly contributes $105 million (2008/09 prices) annually to value added, and contributes $92 million ($2008/09) annually to consumption in the Darwin regional economy.

6.1.3 Defence Establishment Berrimah

Employment

The modelling estimates that the Defence Establishment Berrimah directly and indirectly supports 163 jobs in the Darwin regional economy. These jobs are distributed amongst different industry sectors as indicated in Chart 6.5.

Chart 6.5 Defence Establishment Berrimah Contribution to Employment in Darwin (jobs)



Source: KPMG Econtech MMR
Note: The sum of impacts may not add exactly to total due to rounding.

The largest employment impact occurs in the Government Administration and Defence industry (117 jobs) as a result of the direct employment impacts of the Base. These direct employment impacts produce positive indirect employment impacts in industries that supply the Base and its contractors, and industries that sell consumer goods to ADF and contractor employees. These industries that benefit from higher demand include Retail Trade; Finance and Insurance; Education; and Health and Community Services.

At the same time, expenditure by the Defence Establishment Berrimah and its contractors contributes to price pressures for some goods and services in the Darwin economy. This causes negative employment impacts in some industries by pushing up input prices. For example, the modelling estimates that the Defence Establishment Berrimah has negative indirect employment impacts on industries including: Manufacturing, Construction; Transport and Storage; and Property and Business Services.

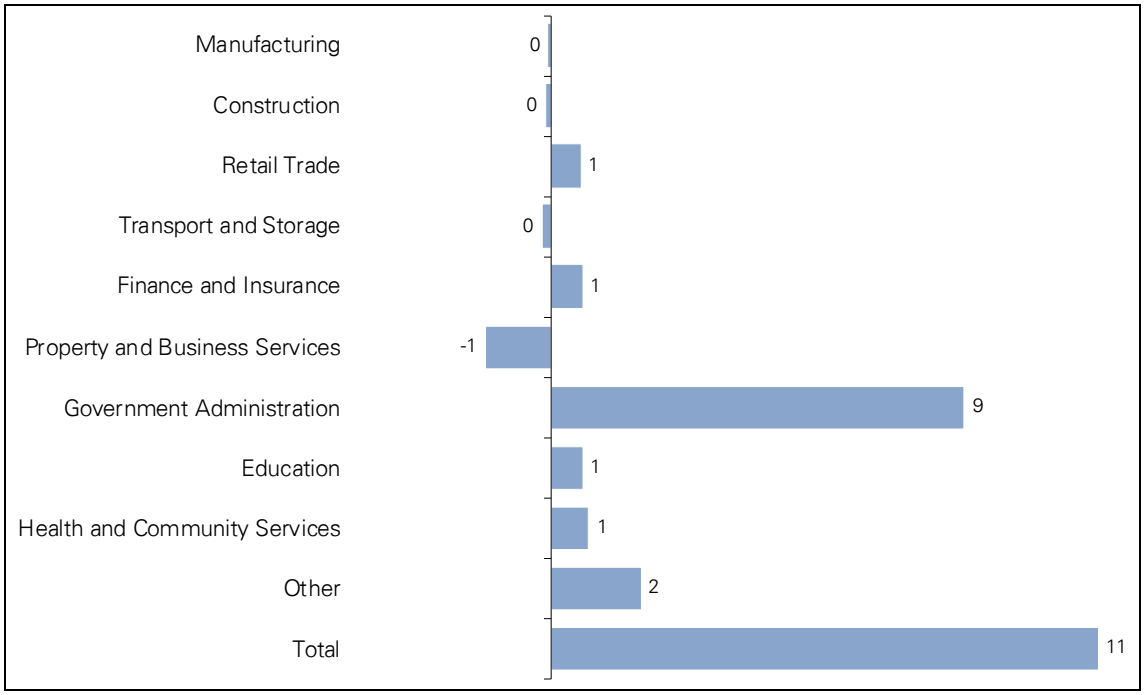
Similar to the Larrakeyah Defence Precinct, the negative indirect impacts on Property and Business Services outweigh the positive direct employment impacts. This results in the Property and Business services industry having net negative employment impacts despite the fact that the Base directly employees a number of contractors in that industry.

Value Added

The modelling estimates that the Defence Establishment Berrimah directly and indirectly contributes $12 million (2008/09 prices) annually to value added in the Darwin regional economy. This impact is distributed amongst different industry sectors as indicated in Chart 6.6.

Similar to the employment impacts, the bulk of the value added contribution occurs in the Government Administration and Defence industry ($9 million). Impacts in this industry can be primarily attributed to wage made payments by Defence Establishment Berrimah. The pattern of indirect value added impacts mirror the employment impacts, with positive indirect impacts occurring in industries such as Finance and Insurance and Health and Community Services. Likewise, negative indirect impacts occur in industries that experience a loss of competitiveness due to increased input prices, as can be seen in the Property and Business Services industry. The overall impact of the Defence Establishment Berrimah on value added in the region is positive.

Chart 6.6 Defence Establishment Berrimah Contribution to Value Added in Darwin ($ 2008/09 m)



Source: KPMG Econtech MMR
Note: The sum of impacts may not add exactly to total due to rounding.

Living Standards

By supporting production in the regional economy, the Defence Establishment Berrimah contributes to living standards in the Darwin region. The modelling estimates that the Defence Establishment Berrimah contributes $10 million ($2008/09) annually to consumption in the Darwin regional economy.

Summary

The modelling estimates that Defence Establishment Berrimah directly and indirectly supports 163 jobs in the Darwin region. That is, total employment in the Darwin region is 0.3 per cent greater than would otherwise be the case if the base did not operate in the region. This includes a 0.9 per cent lift in employment in the Government Administration and Defence industry, a 0.4 per cent lift in employment in the Finance and Insurance industry and a 0.2 per cent lift in employment in the Retail Trade industry. Defence Establishment Berrimah also directly and indirectly contributes $12 million (2008/09 prices) annually to value added, and contributes $10 million ($2008/09) annually to consumption in the Darwin regional economy. In percentage terms, the operations of Defence Establishment Berrimah leads to a 0.2 per cent gain in valued added and a 0.2 per cent lift in consumption in the Darwin region.

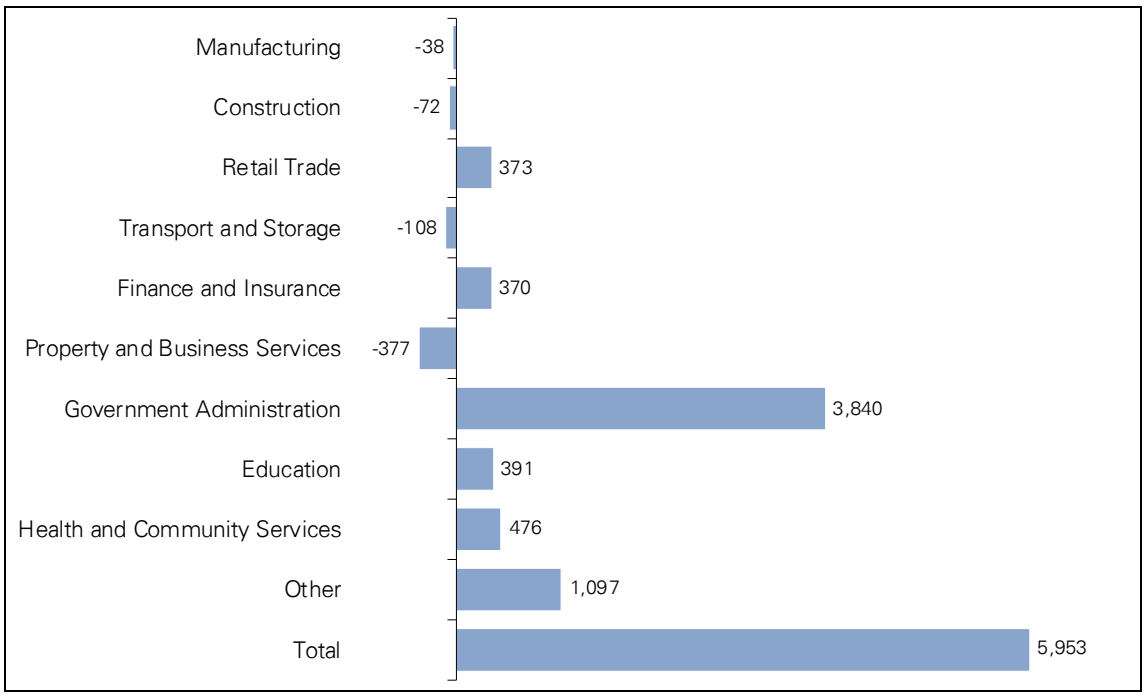
6.1.4 Robertson Barracks

Employment

The modelling estimates that Robertson Barracks directly and indirectly supports 5,953 jobs in the Darwin regional economy. These Barracks employed the largest number of personnel compared to the other Northern Territory bases that were examined. These jobs are distributed amongst different industry sectors as indicated in Chart 6.7.

A sizable proportion of the overall employment impact occurs in the Government Administration and Defence industry (3,840 jobs), as Robertson Barracks directly employs a large number of APS staff within that industry. These direct employment impacts produce positive indirect employment impacts in industries that supply goods and services to Robertson Barracks and sell consumer goods to Robertson Barracks employees. Retail Trade, Finance and Insurance, Education and Health and Community Services industries benefit from demand created by Robertson Barracks in the Darwin economy.

Chart 6.7 Robertson Barracks Contribution to Employment in Darwin (jobs)



Source: KPMG Econtech MMR
Note: The sum of impacts may not add exactly to total due to rounding.

Employment is also indirectly impacted by expenditure by Robertson Barracks on goods and services within the Darwin economy, by contributing to price pressures within some industries. This leads to negative employment impacts in industries that experience a loss of competitiveness through higher input prices. These industries experiencing a negative employment include: Manufacturing; Construction; Transport and Storage; and Property and Business Services.

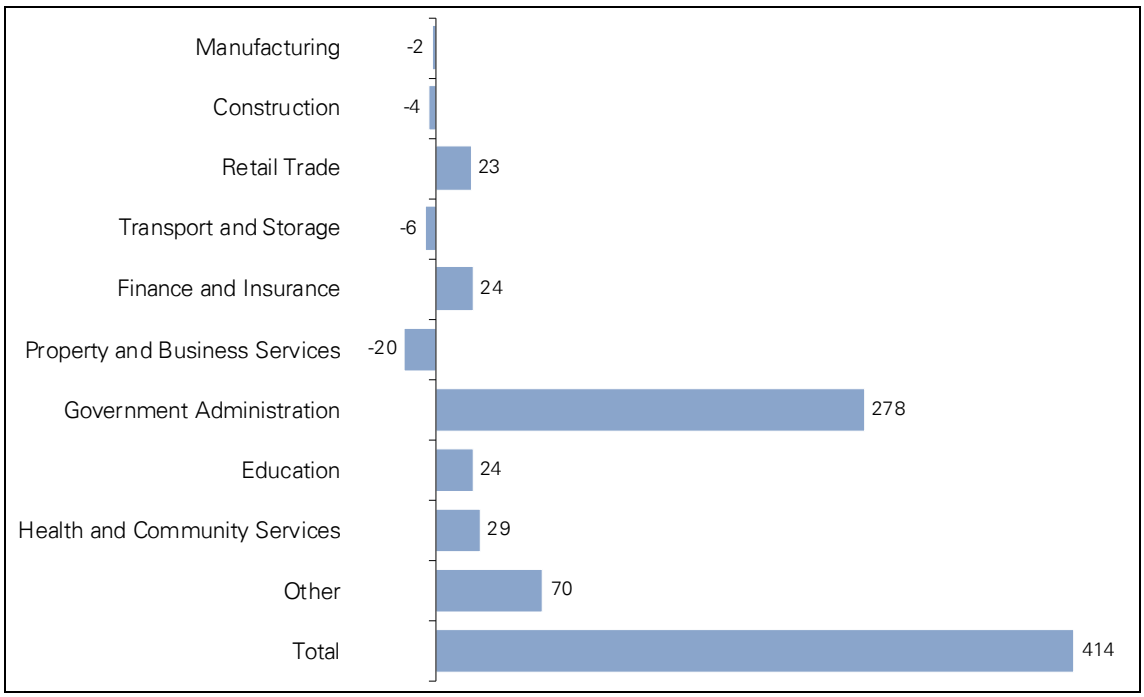
Again the Property and Business services industry experiences strong negative impacts due to higher input prices, as it uses similar inputs as the Government Defence and Administration industry (i.e. competes directly with Robertson Barracks for resources). Importantly, Robertson Barracks contribute positively to employment in the region.

Value Added

The modelling estimates that the Robertson Barracks directly and indirectly contributes $428 million (2008/09 prices) annually to value added in the Darwin regional economy. This impact is distributed amongst different industry sectors as indicated in Chart 6.8.

Similar to the employment impacts, a large proportion of the value added contribution occurs in the Government Administration and Defence industry ($278 million). This impact in the industry can be primarily attributed to payments by the Robertson Barracks to wages. The overall impact of the Robertson Barracks on value added in the region is positive.

Chart 6.8 Robertson Barracks Contribution to Value Added in Darwin ($ 2008/09 m)



Source: KPMG Econtech MMR
Note: The sum of impacts may not add exactly to total due to rounding.

The pattern of indirect value added impacts mirror the employment impacts, with positive indirect impacts occurring in industries such as Retail Trade, Finance and Insurance, Education and Health and Community Services. Likewise, negative indirect impacts occur in industries that experience a loss of competitiveness due to increased input prices, with a sizeable negative impact ($20 million) occurring in Property and Business Services.

Living Standards

By supporting production in the regional economy, the Robertson Barracks contributes to living standards in the Darwin region. The modelling estimates that the Robertson Barracks contributes $381 million ($2008/09) annually to consumption in the Darwin regional economy.

Summary

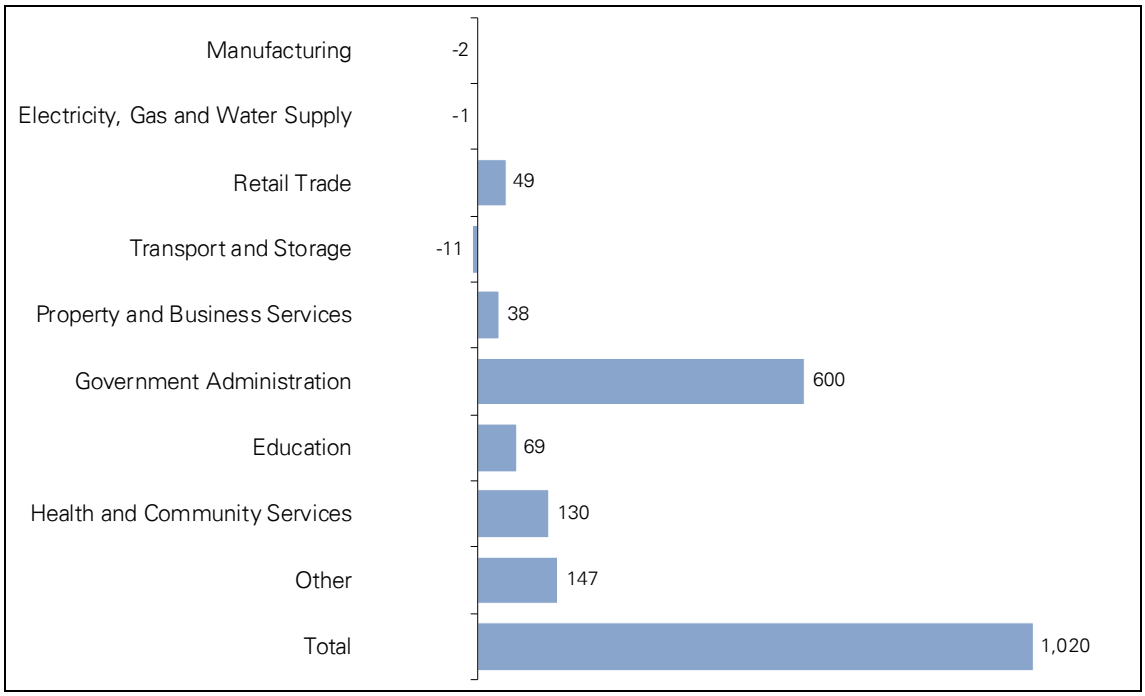
The modelling estimates that Robertson Barracks directly and indirectly supports 5,953 jobs, in the Darwin region, a 9.7 per cent lift in employment than would otherwise be the case if the base did not operate in the region. This includes a 3.1 per cent gain in employment in the Government Administration and Defence industry, a 13.8 per cent gain in employment in the Finance and Insurance industry and a 0.2 per cent gain in employment in the Retail Trade industry. Robertson Barracks also directly and indirectly contributes $428 million (2008/09 prices) annually to value added, and contributes $382 million ($2008/09) annually to consumption in the Darwin regional economy. In percentage terms, the operations of Robertson Barracks leads to a lift of 6.6 per cent in value added and a 7.5 per cent lift in consumption in the Darwin region.

6.1.5 RAAF Base Tindal

Employment

The modelling estimates that the RAAF Base Tindal directly and indirectly supports 1,020 jobs in the Katherine regional economy. These jobs are distributed amongst different industry sectors, as indicated in Chart 6.9. The largest employment impacts occur in the Government Administration and Defence industry (600 jobs), as the RAAF Base directly employs a large number of ADF staff within that industry.

Chart 6.9 RAAF Base Tindal Contribution to Employment in Katherine (jobs)



Source: KPMG Econtech MMR
Note: The sum of impacts may not add exactly to total due to rounding.

These direct employment impacts produce positive indirect employment impacts and industries that sell consumer goods to ADF and contractor employees and in industries that supply the RAAF Base and its contractors. As can be seen in Chart 6.9, industries that benefit from these flow on impacts include: Retail Trade; Finance and Insurance; Education; and Health and Community Services and Property and Business services.

At the same time, expenditure by the RAAF Base and its contractors contributes to price pressures for some goods and services in the Darwin economy. This causes negative employment impacts in some industries by pushing up input prices. For example, the modeling estimates that the RAAF Base has negative indirect employment impacts on industries including: Manufacturing and Transport and Storage. Importantly, RAAF Base Tindal contributes positively to employment in the Katherine region.

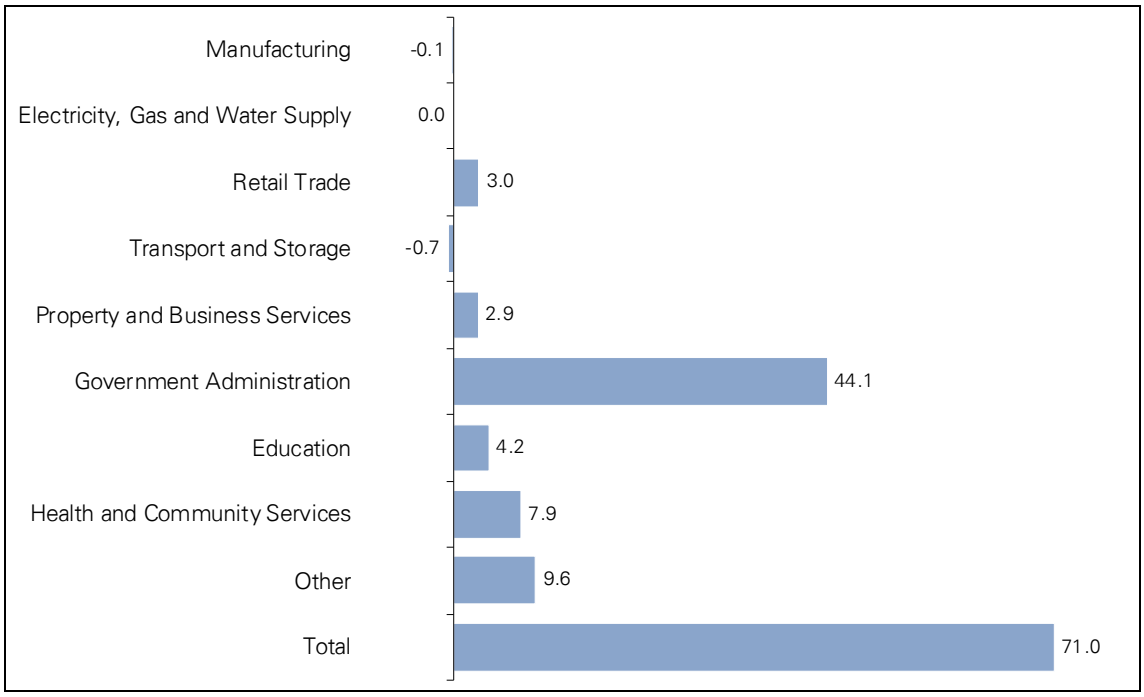
Value Added

The modelling estimates that RAAF Base Tindal directly and indirectly contributes $73 million (2008/09 prices) annually to value added in the Katherine regional economy. This impact is distributed amongst different industry sectors, as indicated in Chart 6.10.

Similar to the employment impacts, the bulk of the value added contribution occurs in the Government Administration and Defence industry ($46 million). Impacts in this industry can be primarily attributed to wage payments by RAAF Base Darwin.

The pattern of indirect value added impacts mirror the employment impacts, with positive indirect impacts occurring in industries such as Finance and Insurance and Health and Community Services. Likewise, negative indirect impacts occur in industries that experience a loss of competitiveness due to increased input prices, with a negative impact occurring in both the Manufacturing and Transport and Storage industries. The overall impact of the RAAF Base Tindal on value added in the region is positive.

Chart 6.10 RAAF Base Tindal Contribution to Value Added in Katherine ($ 2008/09 m)



Source: KPMG Econtech MMR
Note: The sum of impacts may not add exactly to total due to rounding.

Living Standards

By supporting production in the regional economy, the RAAF Base Tindal contributes to living standards in Katherine. The modelling estimates that the RAAF Base contributes $59 million ($2008/09) annually to consumption in the Katherine regional economy.

Summary

The modelling estimates that RAAF Tindal directly and indirectly supports 1,020 jobs in the Katherine region. That is, total employment in the Katherine region is 13.8 per cent greater than would otherwise be the case if the base did not operate in the region. This includes a 26.4 per cent lift in employment in the Government Administration and Defence industry, an 18.1 per cent lift in employment in the Property and Business Services industry and an 11.8 per cent lift in employment in the Retail Trade industry than would otherwise be the case. The operations of RAAF Tindal leads to a 9.9 per cent gain in valued added and a 10 per cent gain in consumption in the Katherine region. In level terms, RAAF Tindal directly and indirectly contributes $73 million (2008/09 prices) annually to value added, and contributes $59 million ($2008/09) annually to consumption in the Katherine regional economy

7 Economic Impacts of Major Defence Facilities on the Northern Territory Economy

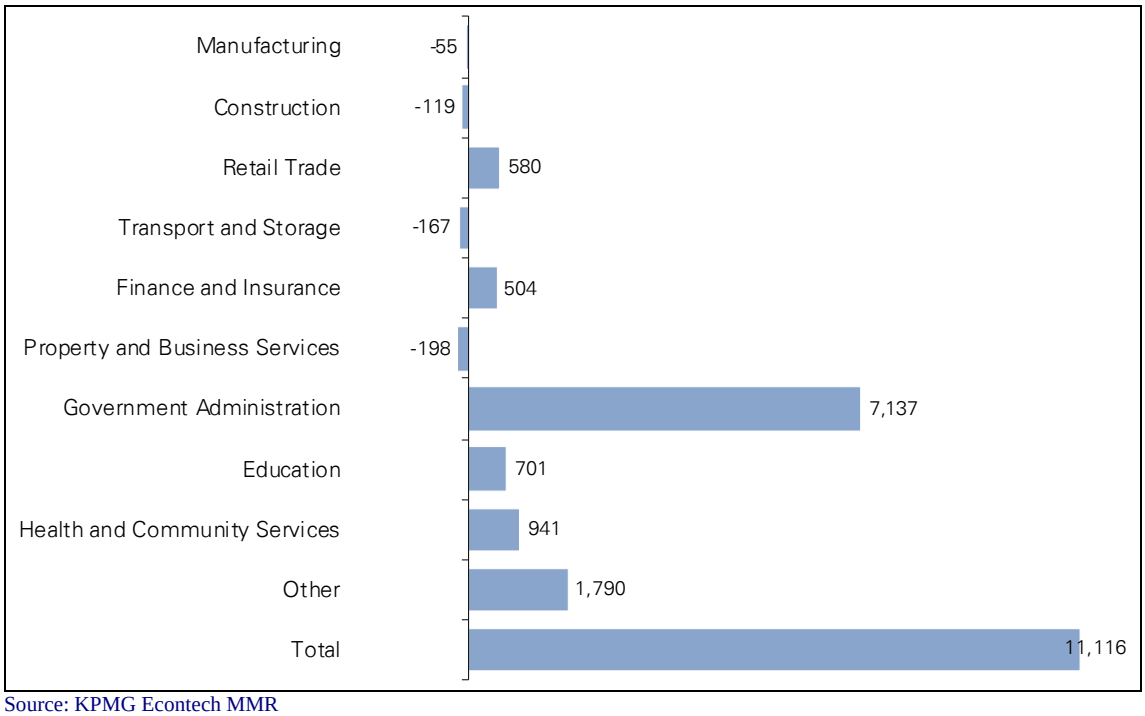
The following section outlines the modelling results for Northern Territory, presenting estimates of the current contribution of the Defence facilities to the Northern Territory economy as a whole. The estimates of employment, value added and consumption impacts represent the average annual economic impacts attributable to the Defence facilities, based on reported activity in 2007/08. The Defence facilities that have been included in this analysis are: RAAF Base Darwin; Defence Establishment Berrimah; Larrakeyah Defence Precinct; Robertson Barracks; RAAF Base Tindal; and the Northern Territory Training Areas (Mount Bundy Training Area and the Bradshaw Training Area) and smaller defence facilities in the Northern Territory. Additionally, the modelling also captures the expenditure from Naval ship visits to the region.

The section is structured as follows. Section 7.1 details the employment impacts broken down by industry sector. Section 7.2 presents the estimated value added impacts broken down by industry sector. Section 7.3 presents the estimated contribution that Defence facilities make to living standards in Northern Territory.

7.1 Employment

The modelling estimates that Defence facilities currently support 11,116 jobs in the Northern Territory economy. These jobs are distributed between different industry sectors as a result of the direct and indirect impacts that the Defence facilities have on economic activity, as discussed in Chapter 5.

Chart 7.1 Defence Facility Contribution to Employment in Northern Territory (jobs)



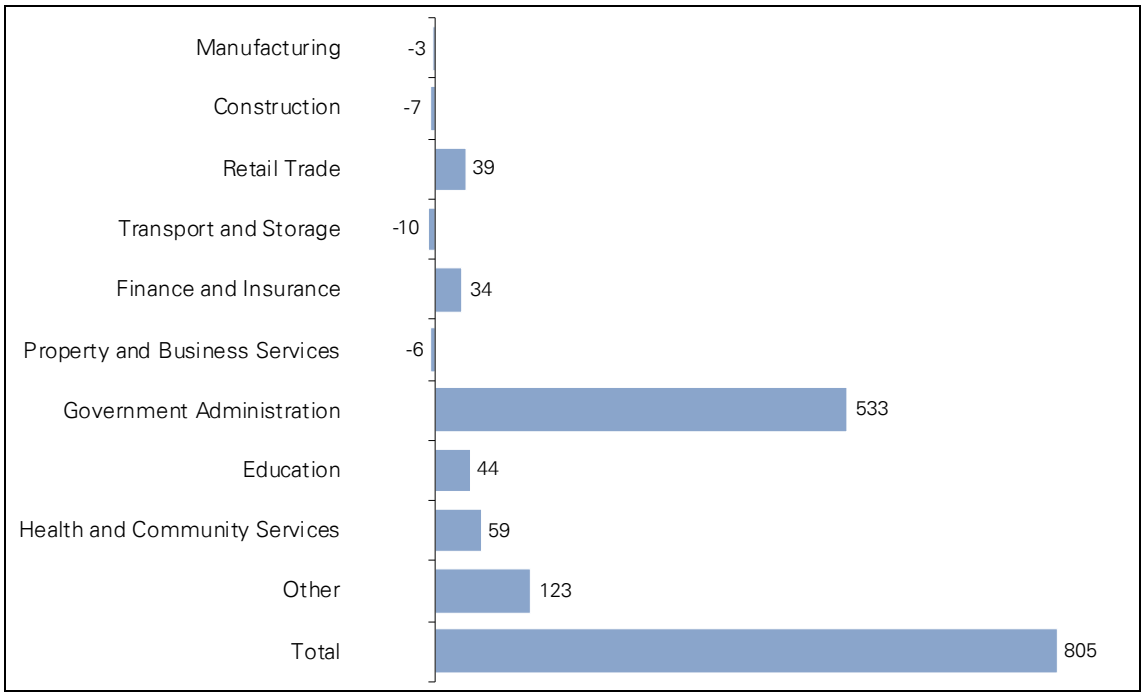
Source: KPMG Econtech MMR
Note: The sum of impacts may not add exactly to total due to rounding.

7.2 Value Added

The modelling estimates that Defence facilities currently contribute $805 million (2008/09 prices) annually to value added in the Northern Territory. This is equivalent to the Defence facilities' contribution to Northern Territory Gross State Product (GSP).

The pattern of indirect value added impacts mirror the employment impacts, with positive indirect impacts occurring in industries such as Finance and Insurance and Health and Community Services. Likewise, negative indirect impacts occur in industries that experience a loss of competitiveness due to increased input prices, with a negative impact occurring in both the Construction and Transport and Storage industries. The overall impact of the Defence facilities on Gross State Product (value added) is positive.

Chart 7.2 Defence Facility Contribution to Value Added in Northern Territory ($ 2008/09 m)



Source: KPMG Econtech MMR
Note: The sum of impacts may not add exactly to total due to rounding.

7.3 Living Standards

By supporting production (value added) in the state economy, the Defence facilities contribute to living standards in the Northern Territory. As outlined in Section 2.2, living standards are often measured in terms of gross domestic product (or value-added). However, this is not a good measure of living standards because value-added is a measure of output, rather than a measure of well-being. Because living standards derive from consumption, not value added, consumption (in principle) is a more appropriate measure of changes in living standards. As such, in line with the Productivity Commission's practice when measuring living standards, KPMG Econtech uses consumption as the measure of living standards instead of value-added.

The four Defence facilities are estimated to contribute $673 million (2008/09 prices) annually to consumption in the Northern Territory.

8 Conclusions

The results of the analysis find that Defence facilities make a significant contribution to employment and output in the Northern Territory economy. It is important to note that it is assumed that the facilities and operations associated with the facilities are removed from the Northern Territory and are not re-established elsewhere in the Territory. However, the facilities may be re-established somewhere else in Australia, but outside of the Northern Territory.

A summary of the results are presented in Table 8.1.

Table 8.1: Summary of Modelling results ($2008/09m)

Economic Impacts Summary				
Defence Facility	**Employment (jobs)**	**Value Added ($m)**	**Turnover ($m)**	**Consumption ($m)**
Regional Impacts				
Darwin Region				
RAAF Darwin	900	63.9	116.3	55.7
Larrakeyah Defence Precinct	1,472	105.4	189.4	91.6
Defence Establishment Berrimah	163	11.7	20.9	10.0
Robertson Barracks	5,953	427.9	768.0	381.7
Katherine Region				
RAAF Katherine	1,020	73.4	132.3	59.0
State Impacts				
Total	11,107	804.5	1,458.5	673.2

Source: KPMG Econtech MMR

Overall, the facilities were found to directly and indirectly support approximately 11,116 jobs in the Northern Territory, contributing $805 million to GSP in 2008/09. Defence currently supports 11,116 jobs in the Northern territory economy, this equates to a sizeable portion of those employed in the Northern Territory.

Appendix A – Detailed Results

Economic Impacts of Defence Facilities in Northern Territory			
Industry	**Employment (jobs)**	**Value Added ($m)**	**Turnover ($m)**
Agriculture, Forestry and Fishing	-25	-1.5	-2.9
Mining	-20	-1.2	-2.2
Manufacturing	-55	-3.0	-9.5
Electricity, Gas and Water Supply	-9	-0.5	-1.0
Construction	-119	-7.1	-14.7
Wholesale Trade	136	8.3	20.3
Retail Trade	580	37.6	72.2
Accommodation, Cafes and Restaurants	420	31.5	75.7
Transport and Storage	-167	-9.9	-20.3
Communication Services	474	31.1	52.7
Finance and Insurance	504	32.9	51.4
Property and Business Services	-198	-5.9	-12.3
Government Administration	7137	515.9	992.9
Education	701	42.6	49.8
Health and Community Services	941	57.3	72.7
Cultural and Recreational Services	246	16.5	29.2
Personal and Other Services	568	34.7	59.6
Ownership of Dwellings	0	0.0	0.0
Total	**11116**	**779.2**	**1413.3**

Source: KPMG Econtech MMR

Economic Impacts of RAAF Base Darwin in Darwin			
Industry	**Employment (jobs)**	**Value Added ($m)**	**Turnover ($m)**
Agriculture, Forestry and Fishing	-1	0.0	-0.1
Mining	-1	-0.1	-0.1
Manufacturing	-6	-0.4	-1.1
Electricity, Gas and Water Supply	-1	-0.1	-0.1
Construction	-11	-0.7	-1.4
Wholesale Trade	14	0.9	2.1
Retail Trade	57	3.4	6.6
Accommodation, Cafes and Restaurants	37	2.2	5.3
Transport and Storage	-17	-1.0	-2.1
Communication Services	46	2.8	4.7
Finance and Insurance	55	3.4	5.2
Property and Business Services	79	6.1	12.7
Government Administration	443	32.8	63.1
Education	59	3.6	4.2
Health and Community Services	71	4.3	5.5
Cultural and Recreational Services	25	1.5	2.7
Personal and Other Services	50	3.0	5.2
Ownership of Dwellings	0	0.0	0.0
Total	**900**	**61.8**	**112.5**

Source: KPMG Econtech MMR

Economic Impacts of the Larrakeyah Defence Precinct in Darwin			
Industry	**Employment (jobs)**	**Value Added ($m)**	**Turnover ($m)**
Agriculture, Forestry and Fishing	-1	-0.1	-0.1
Mining	-2	-0.1	-0.2
Manufacturing	-10	-0.6	-1.9
Electricity, Gas and Water Supply	-1	-0.1	-0.2
Construction	-19	-1.1	-2.3
Wholesale Trade	23	1.4	3.3
Retail Trade	92	5.6	10.7
Accommodation, Cafes and Restaurants	59	3.6	8.7
Transport and Storage	-28	-1.7	-3.5
Communication Services	81	5.0	8.4
Finance and Insurance	93	5.7	9.0
Property and Business Services	-84	-4.3	-9.0
Government Administration	937	68.6	132.0
Education	96	5.8	6.8
Health and Community Services	117	7.1	9.0
Cultural and Recreational Services	38	2.3	4.2
Personal and Other Services	81	4.9	8.4
Ownership of Dwellings	0	0.0	0.0
Total	**1472**	**102.0**	**183.2**

Source: KPMG Econtech MMR

Economic Impacts of the Robertson Barracks in Darwin			
Industry	**Employment (jobs)**	**Value Added ($m)**	**Turnover ($m)**
Agriculture, Forestry and Fishing	-4.2	-0.3	-0.5
Mining	-7.9	-0.5	-0.9
Manufacturing	-37.8	-2.3	-7.1
Electricity, Gas and Water Supply	-5.5	-0.3	-0.6
Construction	-72.0	-4.3	-8.9
Wholesale Trade	91.4	5.6	13.6
Retail Trade	372.9	22.8	43.8
Accommodation, Cafes and Restaurants	232.7	14.8	35.6
Transport and Storage	-107.6	-6.4	-13.3
Communication Services	308.6	20.2	34.2
Finance and Insurance	369.7	24.2	37.8
Property and Business Services	-377.1	-20.0	-42.0
Government Administration	3,839.9	277.6	534.3
Education	391.1	23.8	27.8
Health and Community Services	476.4	29.0	36.8
Cultural and Recreational Services	152.8	10.0	17.6
Personal and Other Services	329.3	20.1	34.6
Ownership of Dwellings	0.0	0.0	0.0
Total	**5,952.6**	**414.0**	**743.0**

Source: KPMG Econtech MMR

Economic Impacts of RAAF Base Tindal in Katherine			
Industry	**Employment (jobs)**	**Value Added ($m)**	**Turnover ($m)**
Agriculture, Forestry and Fishing	-9	-0.5	-1.0
Mining	-1	-0.1	-0.1
Manufacturing	-2	-0.1	-0.4
Electricity, Gas and Water Supply	-1	0.0	-0.1
Construction	-9	-0.5	-1.1
Wholesale Trade	10	0.6	1.4
Retail Trade	49	3.0	5.8
Accommodation, Cafes and Restaurants	39	2.5	6.1
Transport and Storage	-11	-0.7	-1.4
Communication Services	31	2.1	3.5
Finance and Insurance	30	2.0	3.2
Property and Business Services	38	2.9	6.0
Government Administration	600	44.1	84.9
Education	69	4.2	4.9
Health and Community Services	130	7.9	10.1
Cultural and Recreational Services	14	1.0	1.7
Personal and Other Services	42	2.6	4.5
Ownership of Dwellings	0	0.0	0.0
Total	**1020**	**71.0**	**128.0**

Source: KPMG Econtech MMR

Appendix B – MMR

This attachment outlines the features of MMR, the economic model used to simulate the economic impacts of the various Defence facilities on the SA regional economy.

MMR estimates the effects of policies or events that are state or region specific. It is a Computable General Equilibrium (CGE) model that divides Australia into 34 regions and the 7 states and territories, with 18 industries. MMR uses statistical information from the ABS Input-Output tables and labour force survey. The regions used are based on the ABS statistical regions applied in its labour force survey. The 18 industries correspond to the Australian and New Zealand Industry Classification (ANZSIC) also used by the ABS. Each region is modelled individually but utilising a consistent approach. MMR is calibrated using national and regional data for 2007/08.

In MMR, a distinction is made between industries that produce tradeables and industries that produce non-tradeables. This distinction is based on specific economic assumptions. For example, industries that produce tradeables have a national or international focus, and production levels of these industries are dependent on prices prevailing on national or world markets. In contrast, industries that produce non-tradeables focus on their own region and production levels of these industries depend on local demand. An increase in local demand will lead to an increase in the prices charged by industries that produce non-tradeables.

Each region in MMR is modelled individually but following a consistent approach. Further, medium-term equilibrium is modelled for each region, which would be broadly achieved over a period of about three years.

This medium-term equilibrium is far enough into the future for equilibrium to be obtained in product markets. Also, consumer spending is at a sustainable level so that the trade account for each region, taking into account both international and inter-regional trade, is in balance.

Further, the medium-term equilibrium is not far enough into the future for businesses in each region to adjust their capital stocks. It is also not far enough into the future for labour markets to attain equilibrium so national industry wage rates are taken as given.

Key Assumptions

The results in this report are based on the standard version of the model, which provides medium-term estimates. The medium-term equilibrium in MMR is based on specific economic assumptions.

On the one hand, this medium-term equilibrium of about three years is far enough into the future for equilibrium to be obtained in product markets. Also, consumer spending is at a sustainable level so that the trade account for each region, taking into account both international and inter-regional trade, is in balance.

On the other hand, this medium-term equilibrium is not far enough into the future for labour markets to attain equilibrium; rather industry wage rates are taken as given. Three years is also not far enough into the future for businesses in each region to adjust their capital stocks.

In MMR, the distinction between industries that produce tradeables and industries that produce non-tradeables is also based on specific economic assumptions.

Industries that produce tradeables have a national or international focus, and production levels of these industries are driven by prices prevailing on national or world markets. In contrast, industries that produce non-tradeables focus on their own region and production levels of these industries depend on local demand.

MMR is flexibly configured so that individual industries can be treated as either producing tradeables or non-tradeables, depending on what makes more economic sense in the context of the particular regional policy.

Consulting

MMR has been used successfully in many projects such as the following.

- "Electricity price Modelling Impacts of Feed-in-Tariff", ACT Government, 2009-10
- "The Economic Impacts of the Manuka Oval and Canberra Stadium", ACT Government, 2009.
- "Economic Impacts of Regional Development Policies in Victoria", Regional Development Victoria, 2009.
- "The Contribution of the Star City Casino Complex to the NSW Economy", URS, 2007.
- "Economic Impact Assessment of the Re-Development of the Centrepoint, Imperial Arcade and Skygarden Shopping Centres", Allens Arthur Robinson, 2006.
- "Modelling the Economic and Social Impacts of Various Scenarios for the RAAF Base Richmond", the Department of Defence, December 2006.
- "The Impact of the Hunter Economic Zone on the Hunter Region and New South Wales Economies", the Hunter Economic Zone, June 2004.
- "The Economic Impact of the Establishment of Business Transformation Outsourcing (BTO) Centres in Brisbane and the Gold Coast", IBM, July 2004.
- "The Impact of Totalcare Industries Limited on the ACT economy", Totalcare Industries Limited, 2001.

Regional Detail

As discussed above, MMR divides Australia into 32 regions. MMR estimates the effects of policies that are state or region specific in each of the following 32 regions, which match the 32 ABS statistical regions.

1. Sydney	2. Hunter
3. Illawarra	4. South Eastern NSW
5. Richmond-Tweed and Mid-North Coast	6. Northern-Central-Far Western NSW
7. Murray-Murrumbidgee	8. Melbourne
9. Barwon-Western District	10. Central Highlands-Wimmera
11. Loddon-Mallee	12. Goulburn-Ovens-Murray
13. All Gippsland	14. Brisbane
15. South and East Moreton	16. North and West Moreton
17. Wide Bay-Burnett	18. Darling Downs-South West
19. Mackay-Fitzroy-Central Qld	20. Northern-North West
21. Far North	22. Adelaide
23. North and West SA	24. South and East SA
25. Perth	26. Lower Western WA
27. Remainder WA	28. Greater Hobart-Southern
29. Northern Tasmania	30. Mersey-Lyell
31. Northern Territory	32. Australian Capital Territory

Industry Detail

As explained above, each region in MMR contains 18 industries corresponding to the ANZSIC industry divisions used by the ABS. MMR estimates the effects of policies that are state or region specific in each of the following 18 industries.

A. Agriculture, Forestry and Fishing	B. Mining
C. Manufacturing	D. Electricity, Gas & Water
E. Construction	F. Wholesale Trade
G. Retail Trade	H. Accommodation, Cafes & Restaurants
I. Transport	J. Communication Services
K. Finance & Insurance	L. Property & Business Services
M. Government Administration and Defence	N. Education
O. Health & Community Services	P. Cultural & Recreational Services
Q. Personal & Other Services	R. Ownership of Dwellings

MMR Model Outputs

For each region and industry, MMR produces estimates of the effects of regional or state policy changes on:

- employment;
- turnover;
- value added; and
- consumption.