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Document prepared by:

Aurecon Australia Pty Ltd
ABN 54 005 139 873

Level 14, 32 Turbot Street
Brisbane QLD 4000

Locked Bag 331
Brisbane QLD 4001
Australia

T +61 7 3173 8000
F +61 7 3173 8001
E brisbane@aurecongroup.com
W aurecongroup.com

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Australia

T +61 7 3173 8000
F +61 7 3173 8001
E brisbane@aurecongroup.com
W aurecongroup.com

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Abbreviations

ABS	Australian Bureau of Statistics
CGC	Community Government Council
EIS	Environmental Impact Assessment
dmt/y	dry metric tonne / year
FTE	Full Time Equivalent employment positions for one year
ha	hectare, unit of area defined as 10,000m^2
I-O	Input-Output
LGA	Local Government Area
Mt/y	million tonnes / year
MRM	McArthur River Mine
MRRT	Minerals Resource Rent Tax
MRMDP	McArthur River Mine Phase 3 Development Project
MW	Mega watts (10^6 watts)
PRRT	Petroleum Resource Rent Tax
OH&S	Occupational Health and Safety
SLA	Statistical Local Area
SSD	Sub-Statistical Division

1 Introduction

This assessment has been prepared to identify potential economic impacts, including direct and indirect impacts, of the McArthur River Mine Phase 3 Development Project ('MRMDP"). The economic environment considerations that have been addressed for this Environment Impact Statement (EIS) are consistent with the scope of tasks that Aurecon was contracted to complete for MET Serve in April 2011.

These tasks are as follows:

- Describe the existing economic environment that may be affected by the MRMDP
- The significance of the MRMDP on the local and regional economic context
- The long and short-term beneficial (eg job creation) and adverse (eg competition with local small business) impacts that are likely to result from the development
- The potential, if any, for direct equity investment in the MRMDP by local businesses or communities
- The cost to all levels of government of any additional infrastructure provision
- Implications for future development in the locality (including constraints on surrounding land uses and existing industry)
- The potential economic impact of any major hazard identified
- The distributional effects of the MRMDP including proposals to mitigate any negative impact on disadvantaged groups
- The value of lost opportunities or gained opportunities for other economic activities anticipated in the future
- Impacts on local property values

Subsequent to the commencement of this economics work by Aurecon in May 2011, the Draft and Final Guidelines (August 2011) have been released by the Northern Territory Department of Natural Resources, Environment, the Arts and Sport.

The following assessment covers both the contracted scope of tasks and also the range of economic issues specified in the Final Guidelines. Where appropriate, each issue described and assessed in this report has been mapped to the relevant section of the Final Guidelines.

Reference sources used in the assessment include economic data in the public domain and project specific information. The "McArthur River Mine Expansion Project – EIS Schedule Summary V5" (February 2010) has been used extensively. In addition, Aurecon has requested costing, materials and labour data directly from MET Serve that have been used in the Input-Output (I-O) analysis to identify Territory economic impacts relating to employment, income and output from the MRMDP. Appendix B contains a description of the I-0 method adopted in this assessment.

The existing economic environment is described (see Section 2) in terms of the existing mine, demographic structure, community infrastructure and services and housing. The regional community of Borroloola and surrounding Gulf area have been scoped to develop baseline information.

Beneficial and adverse economic impacts are identified and assessed (see Section 3) including changes to existing land use, impacts to local community and demographic profile, and impacts associated with construction and operation of the mine expansion.

2 Existing socio-economic environment

2.1 Existing McArthur River Mine

The McArthur River Mine is located approximately 60 km south west of the township of Borroloola in the Gulf Region of the Northern Territory, approximately mid-way between Darwin and Mount Isa in Queensland.

McArthur River Mining Pty Ltd (MRM) is a company wholly-owned by Xstrata plc and is the operator of the McArthur River Mine. The mine is based on ‘Here’s Your Chance’ ore body which is one of the world’s largest zinc and lead deposits.

Underground operations commenced in 1995 and in 2006, the Northern Territory Government approved a $110 million open pit development which, combined with an expansion of the concentrator, extended the mine's life by an estimated 21 years to 2027. The open pit operation has approval to mine 43 million tonnes of the resource.

McArthur River Mine is a 24 hour operation. The concentrate is transported by road from the mine to the MRM operated Bing Bong coastal loading facility. From there it is loaded onto a barge and transported to waiting ships off shore in the Gulf of Carpentaria.

Figure 1 Photos of the Mine pit, Bing Bong Port, township of Borroloola and neighbouring housing village and airfield

The MRM has well developed supporting infrastructure including:

- Industrial precinct alongside the mine site housing the ore/mineral processing facilities, workshops, machinery storage facilities, and ore/mineral stockpile sites
- An accommodation village located 2 km from the mine containing individual accommodation, a bar area with games room, gym, swimming pool, cricket nets, golf driving range, tennis and volleyball courts
- Airport alongside the accommodation village/mine with regular services to Darwin fostering fly-in/fly-out
- Sealed road access to the existing coastal Bing Bong loading facility where Zinc concentrate is loaded onto barges and then onto shipping

McArthur River Station encompasses all the mining leases (including Bing Bong facility) associated with the MRM and is owned 100% by Colinta Holdings, an Xstrata subsidiary. McArthur River Station stocks approximately 10,000 head of cattle over square 8,000km, utilising approximately one third of the area for grazing. Cattle have been excluded from the mining and processing areas. Neighbouring pastoral enterprises are owned by private persons, companies, and Aboriginal groups.

The other mining development in the area is the Merlin diamond mine, approximately 60km south-west from MRM and 80 kilometres south of Borroloola.

2.2 Study area

The local area in which the MRM is situated is defined as the combined area of the Gulf Statistical Local Area (SLA) and the Borroloola Community Government Council (CGC) area, highlighted as the brown shaded area in Figure 2 below with the township of Borroloola located centrally. Borroloola CGC is a remote community located on the McArthur River in the Gulf of Carpentaria and classified as a separate geographic entity by the Australian Bureau of Statistics (ABS) to the Gulf SLA. Once considered a frontier town, Borroloola now is considered the major town of the Gulf region. The MRM is located 60km south west of Borroloola.

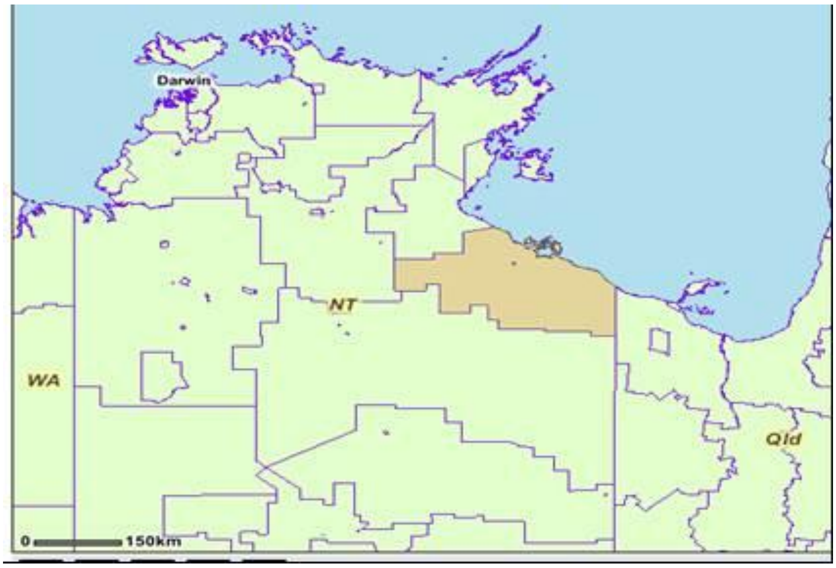


Figure 2 The Gulf Statistical Local Area within the Northern Territory (shaded area)

At a broader geographic boundary, the Lower Top End Sub-Statistical Division (SSD) captures all of the Gulf SLA, Borroloola CGA area and the area west to Western Australia, as highlighted below in Figure 3. The significance of these geographic classifications is that the ABS produces statistical data at the SSD, SLA, LGA and CGC levels. It is reiterated that data for the Gulf SLA and the Borroloola CGC has to be aggregated to determine total data for the shaded Gulf region.

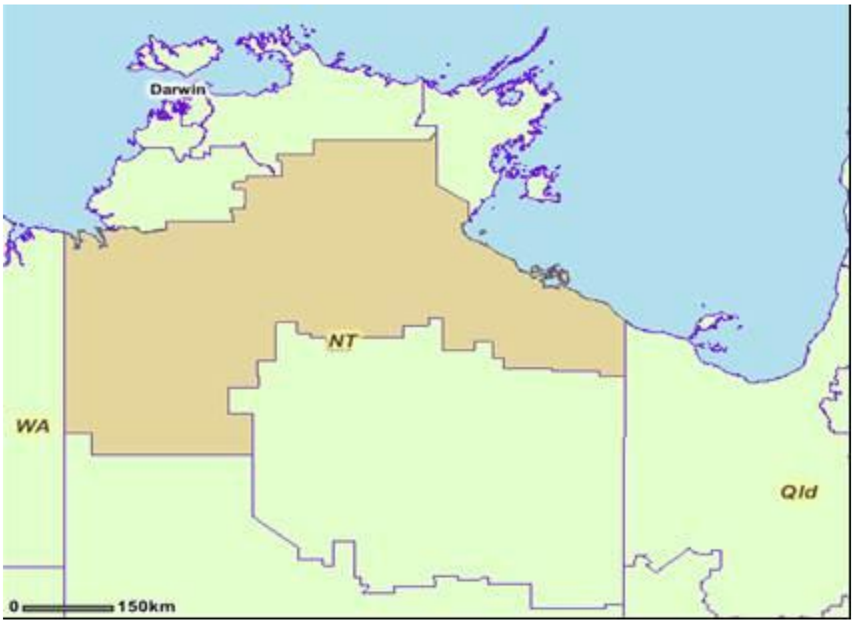


Figure 3 Lower Top End Sub-Statistical Division within the Northern Territory (shaded area)

2.3 Demographic Profile

The key characteristics of the local and regional demographic profiles are detailed below:

2.3.1 Population demographics

The data presented in this section (see Table 1) is drawn from the ABS 2006 Population Census. While this data is five years old, the inter census growth for the areas is likely to be small in absolute terms and hence the provided data can be considered representative of the existing socio-environment in 2011.

The 2006 Census indicated that there were 1862 people within the Gulf region comprising 847 people within the township of Borroloola and 1,015 across the Gulf SLA. Key features include:

- Borroloola's population has exhibited sustained growth between 1996 – 2006 with 551 persons in 1996, 769 persons in 2001 and 847 persons in 2006
- Gulf SLA has exhibited substantial population variation recording 1,027 persons in 1996 , 509 persons in 2001 and 1,015 persons in 2006
- Clearly the variability in seasonal conditions and employment opportunities, particularly in mining and to a lesser extent in agriculture and tourism, and impacts on population numbers within the Gulf SLA region.

Table 1 also highlights a number of other significant population and demographic indicators in 2006 that distinguished the township of Borroloola from that of the neighbouring Gulf SLA namely:

- A higher proportion of females within Borroloola at 45.3%, compared to the Gulf SLA's 40%
- A substantially higher proportion of Indigenous persons with 63.3% of the Borroloola township population acknowledged as Indigenous compared to 42% for the Gulf SLA
- A higher proportion of the population aged under 14 years with 29.5% of Borroloola's population aged below 14 compared to 20.6% for the Gulf SLA. Overall Borroloola had a much lower population median age of just 26 years, compared to 38 years for the Gulf SLA.
- A much higher proportion of households consisting of couple family with children at 28.1%, compared to 17.0% for the Gulf SLA
- A much lower proportion of households defined as "Other Household" (includes visitors, and temporary workers commonly associated with seasonal employment or temporary employment at mines) at 20.5% in Borroloola , compared to the Gulf SLA at 47%

Table 1 Population demographics

	Borroloola CGC			Gulf SLA			Lower Top End SSD			Total Northern Territory		
	1996	2001	2006	1996	2001	2006	1996	2001	2006	1996	2001	2006
Population	551	769	847	1,027	509	1,015	19,723	19,830	20,085	195,101	210,664	217,093
Males	51.0%	54.1%	54.7%	57.5%	69.0%	60.0%	54.2%	53.6%	52.5%	52.0%	52.3%	51.7%
Females	49.0%	45.9%	45.3%	42.5%	31.0%	40.0%	45.8%	46.4%	47.5%	48.0%	47.7%	48.3%
Indigenous persons[1]	63.5%	64.2%	63.3%	58.6%	54.8%	42.0%	36.1%	39.5%	40.5%	23.7%	24.1%	24.8%
Age Distribution												
0 - 14 years	34.7%	31.9%	29.5%	25.3%	19.1%	20.6%	27.4%	25.6%	24.7%	24.8%	23.6%	22.4%
15 - 24 years	15.4%	13.9%	17.2%	18.5%	16.7%	12.4%	16.0%	15.6%	14.6%	16.3%	15.2%	14.6%
25 – 34 years	16.9%	16.0%	18.1%	16.4%	24.4%	12.3%	19.6%	17.7%	15.2%	19.3%	18.4%	16.2%
35 – 44 years	13.3%	14.0%	12.9%	11.7%	19.7%	12.3%	14.3%	14.6%	13.9%	16.0%	16.0%	15.6%
45 – 54 years	9.8%	10.3%	9.3%	10.6%	13.4%	13.6%	10.1%	11.9%	12.2%	12.1%	13.4%	14.1%
55 – 64 years	6.4%	9.5%	7.2%	9.7%	3.9%	16.4%	7.2%	8.7%	11.7%	6.6%	8.1%	10.6%
65+ years	3.3%	3.9%	5.8%	8.0%	2.6%	12.1%	5.5%	5.8%	7.6%	4.9%	5.3%	6.5%
Average age	24yrs	27yrs	26yrs	28yrs	30yrs	38yrs	27yrs	29yrs	32yrs	29yrs	30yrs	33yrs
Household Type (% of dwelling)												
Couple family without children	13.2%	15.3%	12.3%	11.4%	12.5%	15.4%	15.3%	16.4%	15.1%	18.5%	19.5%	19.6%
Couple family with children	38.8%	31.6%	28.1%	24.8%	43.8%	17.0%	32.9%	30.9%	26.7%	34.6%	31.0%	28.4%
One parent family	17.8%	14.8%	19.9%	13.8%	12.5%	5.1%	9.1%	8.8%	9.6%	10.3%	10.3%	10.7%

	Borroloola CGC			Gulf SLA			Lower Top End SSD			Total Northern Territory		
Other Family	0%	2.6%	0%	3.8%	9.4%	1.2%	1.3%	1.4%	1.2%	1.3%	1.2%	1.2%
Lone Person household	5.4%	16.8%	19.3%	11.9%	7.8%	11.5%	13.5%	15.5%	16.4%	16.7%	18.6%	19.0%
Group household	2.3%	1.5%	0%	4.3%	0%	2.8%	3.0%	2.8%	2.4%	5.0%	4.3%	4.3%
Other Household[2]	22.5%	17.4%	20.5%	30.0%	14.1%	47.0%	25.0%	24.2%	28.6%	13.6%	15.2%	16.7%
Total Dwelling (number)	129	196	171	210	64	253	5,165	5,497	5,567	57,434	65,056	67,162
Household Finances												
% of households fully owned	15.5%	13.1%	17.7%	35.9%	4.7%	39.8%	20.3%	20.3%	20.6%	17.8%	18.3%	17.0%
% of households being purchased	4.2%	2.1%	na	2.9%	na	1.6%	10.1%	11.8%	14.0%	22.7%	24.2%	27.1%
% of households rented	63.4%	56.6%	68.8%	19.9%	81.3%	31.9%	53.7%	53.4%	46.2%	48.0%	45.2%	42.1%
Median individual income ($/weekly)	$190	$229	$333	$188	$212	$366	$273	$305	$383	$358	$442	$549
Median family income ($/weekly)	$506	$540	$772	$386	$485	$597	$706	$762	$973	$844	$1,030	$1,285
Median housing loan repayment ($/monthly)	$954	$758	$834	$173	na	$1,500	$831	$900	$1,062	$867	$1,000	$1,300
Median rent ($/weekly)	$45	$30	$30	$-	$30	$15	$81	$65	$75	$100	$110	$140
Labour Market												
% Unemployment	8.3%	4.5%	6.6%	2.7%	2.1%	2.9%	7.5%	6.6%	5.3%	7.4%	5.9%	4.3%
% Labour force participation	57.5%	52.4%	55.0%	58.6%	69.9%	55.4%	59.2%	57.5%	54.0%	63.4%	62.6%	60.6%
% Employment to population	52.7%	50.0%	51.4%	57.0%	68.4%	53.8%	54.7%	53.7%	51.2%	58.8%	58.9%	58.1%

	Borroloola CGC			Gulf SLA			Lower Top End SSD			Total Northern Territory		
Qualifications												
% of population with a Postgraduate Degree	0.8%	0.6%	na	1.0%	0.4%	0.5%	0.6%	0.8%	1.0%	1.2%	1.6%	2.0%
% of pop with Graduate Diploma/Graduate Certificate	2.2%	0.6%	1.7%	0.4%	0.8%	na	1.1%	1.0%	1.0%	1.4%	1.5%	1.5%
% of pop with Bachelor Degree	2.8%	4.0%	4.7%	3.5%	1.7%	6.1%	4.7%	5.7%	6.6%	7.1%	8.2%	9.0%
% of pop with Advanced Diploma and Diploma	3.1%	3.4%	2.5%	3.8%	1.8%	4.5%	4.9%	4.6%	5.2%	5.6%	5.6%	6.1%
% of pop with Certificate	9.8%	9.7%	14.7%	10.0%	6.9%	18.8%	12.7%	14.8%	16.6%	13.6%	15.9%	17.5%
% of pop with post-school qualification	18.7%	18.3%	23.6%	18.7%	11.7%	29.9%	24.0%	26.9%	30.4%	28.8%	32.9%	36.1%

Source: ABS (2007), *2006 Census of Population and Housing*

[1]Both Aboriginal and Torres Strait Islander

[2]Comprises 'Visitors only' and 'Other not classifiable' households.

As indicated below in

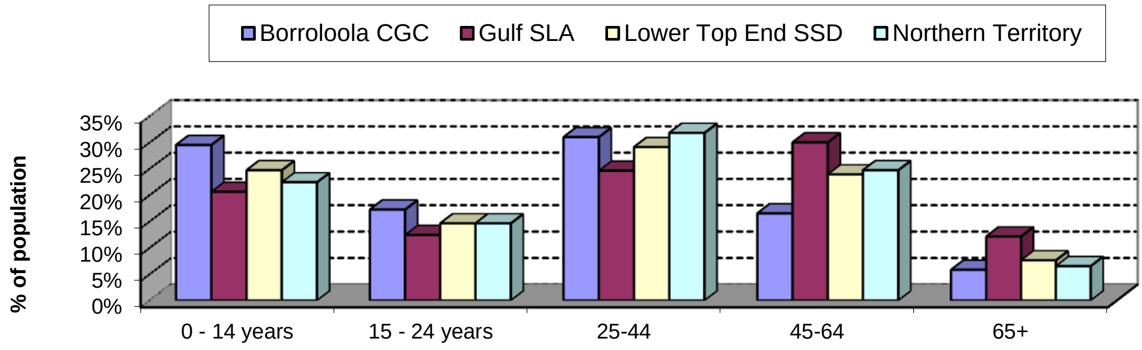


Figure 4, the township of Borroloola had a very high proportion of its population within the young age groups of 0 – 14 years and 15 – 24 years, and a much lower proportion of people aged 45 – 64 and 65 years plus.

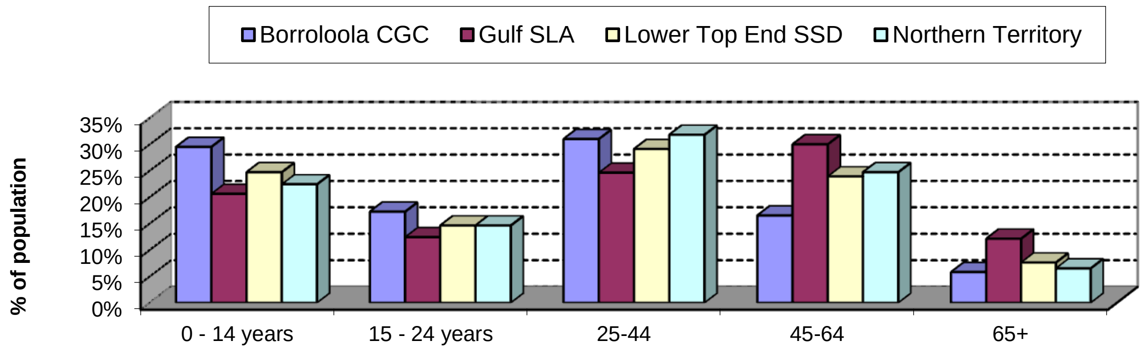


Figure 4 **Age profiles across the study areas for 2006**

2.4 Housing

Table 2 highlights the number of dwellings identified from the most recent ABS Census (2006). Within the CGC of Borroloola 170 dwellings were identified with the most common form of housing being “Separate houses” which made up 78.2% of all dwelling, followed by “Other dwelling” at 17.1%.

The Gulf SLA includes the surrounding 60,513 km^2 (Borroloola CGC excluded), and captures the MRM. As highlighted in Table 2, the most common form of housing throughout the Gulf SLA was “Other dwelling” accounting for 131 of the 254 dwellings within the region. A number of these “Other Dwellings” in 2006 are likely to include on-site mining accommodation (i.e. MRM and Merlin diamond mine), on-farm accommodation dwelling for station staff, and cabins at King Ash Bay for visitors/tourists.

Table 2 **Overview of dwelling types from 2006 Census**

Dwelling structure	Borroloola CGC	Gulf SLA	Combined Borroloola/Gulf	Lower Top End SSD	Northern Territory

Dwelling structure	Borroloola CGC	Gulf SLA	Combined Borroloola/Gulf	Lower Top End SSD	Northern Territory
Separate house	133 (78.2%)	123 (48.4%)	256 (60.4%)	3,604 (64.8)	43,057 (64.1%)
Semi-detached, row or terrace house, townhouse, etc	-	-	-	118 (2.1%)	6,516 (9.7%)
Flat, unit & apartment	8 (4.7%)	-	8 (1.9%)	364 (6.5%)	10,280 (15.3%)
Other dwelling	29 (17.1%)	131 (51.6%)	160 (37.7%)	1,477 (26.5%)	7,208 (10.7%)
Dwelling structure not stated	-	-	-	3 (0.05%)	101 (0.15%)
Total	170	254	424	5,566	67,162

Source: ABS (2007), *2006 Census of Population and Housing*

Combining both the area of Borroloola CGC and the surrounding Gulf SLA, a total of 424 dwellings were recorded from the 2006 ABS Census. “Separate Houses” accounted for the vast majority of dwellings (60.4%), followed by “Other dwelling” which accounted for 37.7%. In comparison “Other dwelling” only represented 10.7% of all Northern Territory dwellings highlighting the temporary and transient nature of the Gulf region in terms of population and employment in such industries as mining, agriculture and tourism.

Table 3 below examines in more detail dwelling ownership of “Separate house” and “Other Dwelling” within Borroloola CGC and the Gulf SLA.

Table 3 Ownership of separate house and other dwellings from 2006 Census

Dwelling structure	Borroloola CGC		Gulf SLA		Combined Borroloola & Gulf	
	Separate house	Other dwelling	Separate house	Other dwelling	Separate house	**Other dwelling**
Fully owned/being purchased	15 (11.3%)	15 (51.7%)	21 (17.1%)	84 (64.1%)	36 (14.1%)	**99 (61.9%)**
Rented: Real estate agent	-	-	-	-	-	**-**
Rented: State/Territory housing authority	14 (10.5%)	-	-	3 (2.3%)	14 (5.5%)	**-**
Rented : Housing co-operative/community/ church group	65 (48.9%)	-	49 (29.8%)	-	114 (44.5%)	**-**
Other Landlord type	12 (9.0%)	8 (27.6%)	6 (4.9%)	6 (4.6%)	18 (7.0%)	**14 (8.8%)**
Landlord type not stated	10 (6.8%)	-	11 (8.9%)	-	21 (8.2%)	**-**
Other Tenure type	3 (2.3%)	6 (20.7%)	11 (8.9%)	7 (5.3%)	14 (5.5%)	**13 (8.1%)**
Tenure type not	14	-	22	28	36	**28**

stated	(10.5%)		(17.9%)	(12.4%)	(14.1%)	**(17.5%)**
Total Dwellings	**133**	**29**	**123**	**131**	**256**	**160**

Source: ABS (2007), *2006 Census of Population and Housing*

As highlighted above in Table 3 only a small proportion of "Separate houses" are fully owned (14.1%). The majority of "Separate houses" were rented out by housing co-operative/community/church groups (44.5%). In contrast the majority of "Other dwelling" are fully owned (61.9%), highlighting that on-mine site accommodation and on-farm accommodation is very significant within this region.

2.5 Residential market

2.5.1 Darwin and Katherine

Houses and units

MRMDP will remain predominantly a fly-in/fly-out operation, with the construction workforce and additional operational workforce to be housed on site (extensions to be made adjacent to the existing accommodation facilities). Existing MRM employees are flown in directly from Darwin, with a number of employees catching connecting flights either intra-state or interstate.

A significant number of MRM employees permanently reside within Darwin, with only a small proportion of MRM employees residing locally (Borroloola, King Ash Bay, neighbouring rural properties etc). Xstrata Zinc continues to seek local people and invests substantially in training and education programs, which over time will increase the number of locals employed at MRM. At the end of 2009, 36 employees or 17.4% of the MRM workforce were from the local community of Borroloola.

The additional workforce resulting from MRMDP (i.e. construction and operational related) are likely to reside within the Darwin area (or fly-in/fly-out from interstate on a connecting flight). Although Katherine is the closest major township to MRM, it is located approximately 650km away, which is approximately a 7 hour drive.

Darwin is the capital city of the Northern Territory and is Australia's most northerly capital city. The estimated population of Darwin during June 2010 was just 127,500 residents, making Darwin the smallest capital city in Australia. Table 4 highlights the trends in average market prices for the residential housing market within both Darwin and Katherine (for comparative purposes) for houses and units.

Table 4 Overview of residential housing market at Katherine and Darwin

Year	Katherine		Darwin[1]	
	Median House Price (% change YOY)	Median Unit Price (% change YOY)	Median House Price (% change YOY)	Median Unit Price (% change YOY)
2002	$142,250 (8.6%)	$129,000 (12.2%)	$195,000 (7.4%)	$116,750 (10.1%)
2003	$145,000	$130,000	$210,000	$117,500

Year	Katherine		Darwin[1]	
	Median House Price (% change YOY)	Median Unit Price (% change YOY)	Median House Price (% change YOY)	Median Unit Price (% change YOY)
	(1.9%)	(0.8%)	(7.7%)	(0.6%)
2004	$155,250 (7.1%)	$115,000 (-11.5%)	$246,750 (17.5%)	$129,000 (9.8%)
2005	$169,750 (9.3%)	$127,500 (10.9%)	$290,000 (17.5%)	$157,000 (21.7%)
2006	$200,000 (17.8%)	$137,000 (7.5%)	$354,500 (22.2%)	$215,000 (36.9%)
2007	$252,000 (26.0%)	$202,500 (47.5%)	$390,000 (10.0%)	$243,750 (13.4%)
2008	$270,000 (7.1%)	$210,000 (3.7%)	$415,000 (6.4%)	$268,000 (9.9%)
2009	$296,250 (9.7%)	$180,000 (-14.3%)	$450,000 (8.4%)	$325,000 (21.3%)
2010	$325,000 (9.7%)	$255,000 (41.7%)	$530,000 (17.8%)	$345,000 (6.2%)

[1]Data relating to the suburb of Malak within the Darwin region
Source: Information accessed from www.realestate.com.au website on the 15th June 2011

As highlighted above, average house prices within Darwin are in the early to mid $500,000 in 2010, having sustained strong growth since 2002 (more so for houses than units). In 2010 alone, average house prices increased by 17.8% within Darwin.

A key factor driving the Darwin property market has been the boom in mining and resource developments, with other mining projects across the Northern Territory adopting a similar model to that of MRM where on-site mine accommodation and direct fly-ins/fly-outs to Darwin. The fly-in/fly-out model incorporating on-site accommodation insulates the regional communities from the vagaries of mining operations (highly variable and temporary workforce varies according upon stage of mine development).

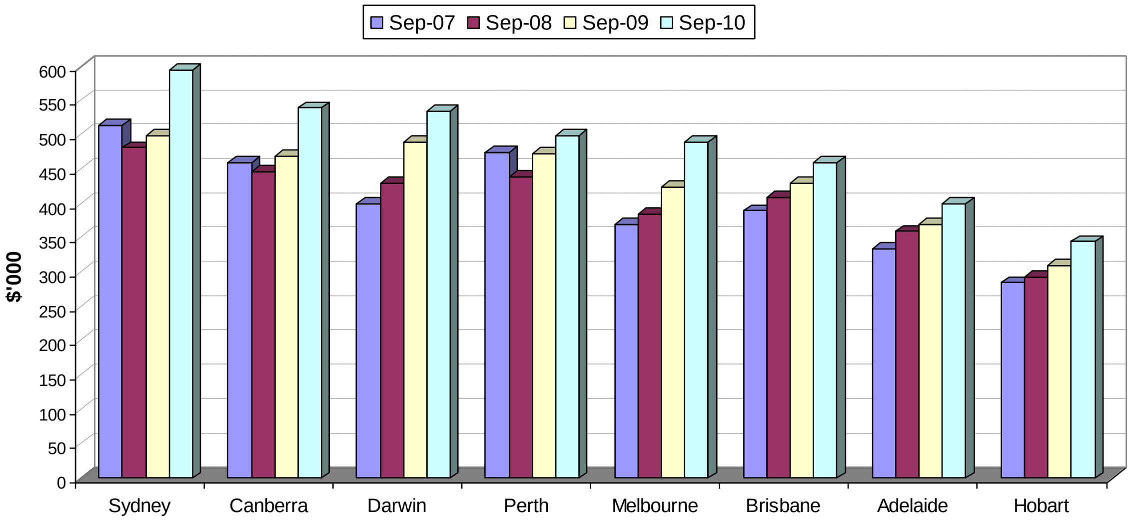
Darwin's rental market

The March 2011 Economic Summary Market Monitor (LJ Hooker) states that rents for:

- 2 bedroom unit at $450 per week, up 4.6% from the December 2010 quarter, but still down 2.1% for the year-to-date. Vacancy rates for units at 1.6%
- 3 bedroom house rents decreased 3.6% to $530 per week; however on a year to date basis were up 3.9%. Vacancy rates for houses stand at 1.5%

2.5.2 Darwin residential market compared to other capital cities

The residential market place (sale and rental) within Darwin has grown strongly in recent years, resulting in median house prices being comparable to many other capitals across Australia as highlighted below in Figure 5. In fact, median house prices in Darwin (Sept 2010) where higher than those at Perth, Melbourne, Brisbane, Adelaide and Hobart. Figure 5 below also highlights that medium house prices within Darwin have increased every year between 2007 and 2010, in contrast to the Sydney, Canberra and Perth marketplaces in which medium prices declined in 2008.



Raw data sourced from ABS (2011), *House Price Indexes: Eight Capital Cities,* Cat. No. 6416.0

Figure 5 Comparison of house prices across capital cities

The Darwin and environs residential building construction market is forecast to grow substantially over the short and medium term. This growth and demand for residential and non-residential building based skills and resources are generated by a significant number of government and privately funded projects ramping up over the next few years.

It is forecast in the next five years that 11 major projects of differing proportions, including upgrade of the Robertson Defence Barracks, Darwin Prison and NTG Infrastructure program, will create in excess of 6000 jobs requiring skilled workers from the residential and non-residential building construction sector in and around Darwin.

A key factor fuelling the growth in Darwin market prices has been the proposed $12 billion Inpex Gas project development, involving the piping of gas from the Browse Basin in Western Australia (800 km away) to a plant facility at Darwin for processing, prior to shipping for export markets. A peak construction workforce of 2,000 people will be required over five years in Darwin. The proposed Inpex Gas project encouraged a number of developers to begin residential projects in the Darwin area, and also attracted residential property investors to purchase into the market ahead of the proposed gas plant development.

2.5.3 Non-residential accommodation in Roper Gulf and Katherine

There is a small amount of commercial temporary accommodation available within the Gulf/Borroloola region consisting of 3 hotels/motels/serviced apartments (see Table 5 below), much of which is aligned with servicing the growing tourism sector. Visitors and stakeholders associated with MRM are also likely to utilise the hotels/motels within the Roper Gulf region, as the township of Katherine, approximately 7 hours' drive, is too distant.

Vacancy rates for the hotels/motels/serviced apartments within Roper Gulf decline during the monsoon/wet/summer season, when flooding generally restricts access to the region over extended periods of time.

Table 5 **Overview of commercial accommodation with Roper Gulf (S) and Katherine (township)**

	Roper Gulf (S)	Katherine (T)	Katherine Daly (TR)
Establishments	3	9	12
Rooms	70	515	585
Beds	184	1,618	1,802
Room Occupancy Rate:			
Oct 2010	59.5%	65.4%	64.7%
Nov 2010	60.6%	63.4%	63.1%
Dec 2010	38.3%	45.9%	45.0%
Average length of (days)			
Oct 2010	1.7	1.9	1.9
Nov 2010	2.9	2.4	2.4
Dec 2010	1.7	2.3	2.2

Source: ABS (2011), *Tourist Accommodation Small Area Data, Northern Territory*, Dec 2010, Cat. No. 8635.7.55.001

In addition, there is a range of accommodation facilities at King Ash Bay (52 km from Borroloola) including a caravan park, cabins and a lodge (predominantly servicing the recreational fishing/tourism sector).

2.6 Labour

2.6.1 Labour profile

The labour profile for the Gulf region around the MRM is presented in Table 6 and is sourced from the ABS 2006 Census. It is the only comprehensive published statistics relating to local areas. As highlighted below in Table 6, the labour force within Borroloola and the Gulf region is relatively small at around 810 persons at the time of the census and there were a total of 29 people unemployed and looking for work. Although limited new working opportunities exists within this area, the unemployment rate for Borroloola and Gulf was below that of the state at the time of the last census.

Table 6 Labour profile data from 2006 Census

	Borroloola CGC	Gulf SLA	Combined Borroloola/Gulf	Lower Top End SSD	Northern Territory
Employed, worked full-time	190	223	413	4,538	63,683
Employed, worked part-time	140	145	285	2,013	21,237
Employed, away from work	21	63	84	906	9,275
Unemployed, looking for work	16	13	29	415	4,206
Total labour force	367	444	811	7,872	98,401
Not in the labour force	186	252	438	4,510	44,597
% Unemployed	4.4%	2.9%	3.6%	5.3%	4.3%
% Labour force participation	61.9%	55.4%	56.1%	54.0%	60.6%
% Employment to population	59.2%	53.8%	58.2%	51.2%	58.1%

Source: ABS (2007), *2006 Census of Population and Housing*

2.6.2 Occupations

As highlighted below the most common occupations undertaken by employees within the Gulf/Borroloola region are:

- Labourers (31.4%)
- Technicians & Trades Workers (16.1%)
- Professionals (11.0%)
- Machinery Operators and Drivers (10.7%)
- Managers (9.3%)

This is in stark contrast to the profile for the Northern Territory in which Professionals are the main occupations type with 18.5% of the workforce, followed by Technical & Trade workers at 15% and Clerical and Administrative workers at 14.4%. State-wide, Labourers make up only 11.7% of the workforce, compared to the 31.4% within the Gulf/Borroloola region.

Table 7 **Labour occupation profile data from 2006 Census**

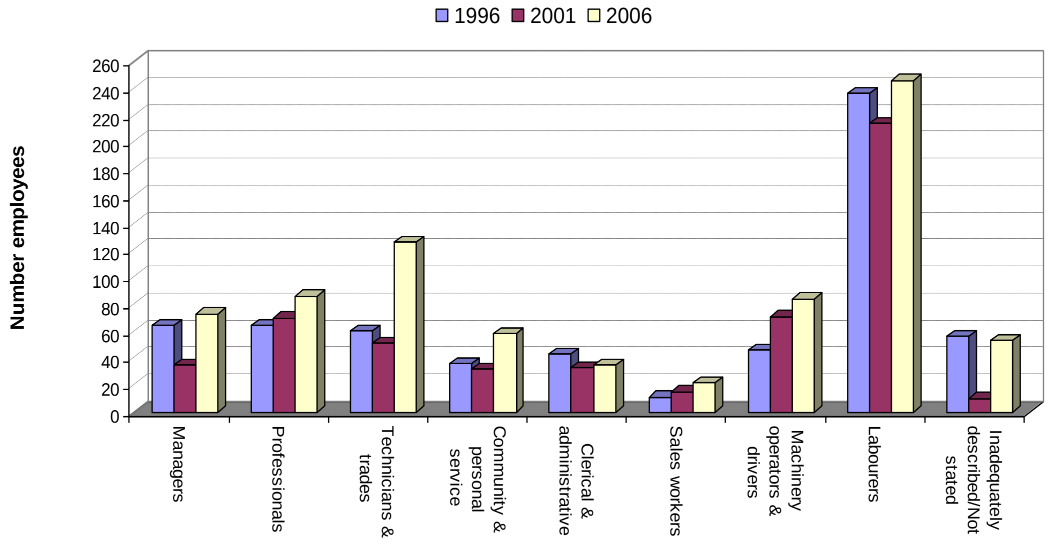
	Borroloola CGC	Gulf SLA	Combined Borroloola/Gulf	Lower Top End SSD	Northern Territory
Managers	32 *(9.1%)*	41 *(9.5%)*	73 *(9.3%)*	930 *(12.5%)*	11,779 *(12.5%)*
Professionals	41 *(11.7%)*	45 *(10.4%)*	86 *(11.0%)*	1,069 *(14.3%)*	17,440 *(18.5%)*
Technicians & trades workers	63 *(18.0%)*	63 *(14.5%)*	126 *(16.1%)*	1,166 *(15.6%)*	14,146 *(15.0%)*
Community & personal service workers	31 *(8.9%)*	27 *(6.2%)*	58 *(7.4%)*	972 *(13.0%)*	11,365 *(12.1%)*
Clerical and Administrative workers	12 *(3.4%)*	23 *(5.3%)*	35 *(4.5%)*	783 *(10.5%)*	13,532 *(14.4%)*
Sales workers	10 *(2.9%)*	12 *(2.8%)*	22 *(2.8%)*	388 *(5.2%)*	6,810 *(7.2%)*
Machinery operators and drivers	21 *(6.0%)*	63 *(14.5%)*	84 *(10.7%)*	387 *(5.2%)*	5,533 *(5.9%)*
Labourers	125 *(35.7%)*	121 *(27.9%)*	246 *(31.4%)*	1,438 *(19.3%)*	10,998 *(11.7%)*
Inadequately described/Not stated	15 *(4.3%)*	38 *(8.8%)*	53 *(6.8%)*	322 *(4.3%)*	2,587 *(2.7%)*
Total	**350** *(100%)*	**433** *(100%)*	**783** *(100%)*	**7,455** *(100%)*	**94,190** *(100%)*

Source: ABS (2007), *2006 Census of Population and Housing*

Figure 6 below highlights the breakdown of occupation by type for the Gulf/Borroloola region over the 1996 to 2006 period. As highlighted within Figure 6:

- Technicians & Trades increased from 60 in 1996 to 126 in 2006
- Machinery Operators & Drivers increased from 46 in 1996 to 84 in 2006
- Professionals increased from 64 in 1996 to 86 in 2006
- Managers increased from 64 in 1996 to 73 in 2006

A number of the additional positions identified from the 2006 Census would relate directly to staff employed at MRM residing locally, but also to locals that indirectly service the MRM (transport companies, accommodation & food, construction & building/machinery/equipment maintenance, etc).



Source: Raw data sourced from *ABS 2006 Census of Population and Housing*

Figure 6 **Changes in occupation type and number for the combined Gulf/Borroloola region**

2.6.3 Wage rates

As indicated above, the majority of employees within the Gulf/Borroloola region are employed as Labourers (31.4%) and Technicians and Trades workers (16.1%), Table 8 below highlights the average incomes for a wide range of occupations for the Northern Territory, starting from $28,375 per annum for Farm /Forestry & Garden workers, through to $115,782 for Engineering Professionals. The average for the Territory was $67,443.

Table 8 **Employee earnings by occupation for Northern Territory (May 2010)**

	Weekly income	Annual Wages
Farm, forestry and garden workers	$544.20	$28,375
Child carers	$576.70	$30,069
Cleaners and laundry workers	$811.10	$42,291
Education aides	$819.90	$42,750
Personal carers and assistants	$822.20	$42,870
Receptionists	$831.70	$43,365
Hospitality workers	$882.20	$45,998
Agricultural, medical and science technicians	$963.90	$50,258
Food trades workers	$981.80	$51,191
Freight handlers and shelf fillers	$968.40	$50,492
General clerks	$1,013.70	$52,854
Health and welfare support workers	$1,127.30	$58,777
Personal assistants and secretaries	$1,153.10	$60,123

	Weekly income	Annual Wages
Logistics clerks	$1,208.50	$63,011
Bricklayers, and carpenters and joiners	$1,252.10	$65,284
Contract, program and project administrators	$1,275.90	$66,525
Food preparation assistants	$1,285.40	$67,021
Office and practice managers	$1,300.80	$67,824
Fabrication engineering trades workers	$1,319.50	$68,799
Construction and mining labourers	$1,354.70	$70,634
Plumbers	$1,426.10	$74,357
School teachers	$1,456.20	$75,926
Social and welfare professionals	$1,459.70	$76,109
Natural and physical science professionals	$1,475.80	$76,948
Truck drivers	$1,535.30	$80,051
Machine operators	$1,706.30	$88,966
Electricians	$1,825.70	$95,192
Building and engineering technicians	$1,948.30	$101,584
Mechanical engineering trades workers	$1,976.70	$103,065
Engineering professionals	$2,220.60	$115,782

Source: Raw data sourced from *ABS Employee Earnings and Hours Australia, May 2010, Cat.no. 6306.0*

MRM currently employs approximately 360 personal, of which approximately 80 reside locally. Taking into account the range of occupations undertaken by the 80 local residents working at MRM, it has been estimated that the average MRM annual salary for local residents is approximately $85,000 which is well above the average Territory salary of $67,443.

2.7 Industries

2.7.1 Jobs by industry of occupation

Table 9 below highlights jobs by industry for the Borroloola CGC and neighbouring Gulf SLA area, and provides comparison with the Lower Top End SSD and Northern Territory. Of the 350 residents of Borroloola CGC with employment in 2006, 211 (60.3%) were within the Public Administration & Safety sector, confirming Borroloola's primarily function as a primary service centre of Government services for the entire Gulf region.

The surrounding Gulf SLA also had most of its workforce employed within the Public Administration & Safety sector, which accounted for 121 (29.1%) of its 430 workforce. However, it also had a significant number of residents employed within the Mining sector at 99 or 23% of the Gulf SLA workforce and Agricultural sector at 55 (12.8%). The Construction sector was also very significant employing 31 persons or 7.2% of the regional workforce.

On a territory-wide basis, the Public administration & Safety sector is the largest sector employing 20.4% of the state's workforce. Agriculture employed 2.7% of the state's workforce, while Mining accounted for only 2.1% in 2006.

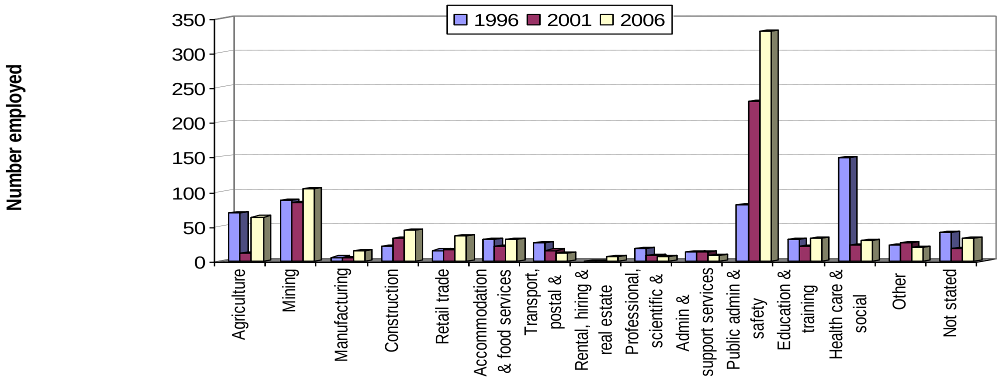
Table 9 Labour occupation profile data from 2006 Census

	Borroloola CGC	Gulf SLA	Combined Borroloola/Gulf	Lower Top End SSD	Northern Territory
Agriculture, forestry & fishing	9 *(2.6%)*	55 *(12.8%)*	64 *(8.2%)*	631 *(8.5%)*	2,583 *(2.7%)*
Mining	5 *(1.4%)*	99 *(23.0%)*	104 *(13.3%)*	163 *(2.2%)*	1,981 *(2.1%)*
Manufacturing	6 *(1.7%)*	9 *(2.1%)*	15 *(1.9%)*	155 *(2.1%)*	4,666 *(5.0%)*
Electricity, gas, water & waste services	0	0	0	56 *(0.8%)*	624 *(0.7%)*
Construction	14 *(4.0%)*	31 *(7.2%)*	45 *(5.8%)*	399 *(5.4%)*	6,962 *(7.4%)*
Wholesale trade	0	0	0	116 *(1.6%)*	2,358 *(2.5%)*
Retail trade	26 *(7.4%)*	10 *(2.3%)*	36 *(4.6%)*	525 *(7.0%)*	8,321 *(8.8%)*
Accommodation & food services	14 *(4.0%)*	17 *(4.0%)*	31 *(4.0%)*	346 *(4.6%)*	5,961 *(6.3%)*
Transport, postal & warehousing	3 *(0.9%)*	9 *(2.1%)*	12 *(1.5%)*	208 *(2.8%)*	4,421 *(4.7%)*
Information media & telecommunications	0	0	0	56 *(0.8%)*	1,331 *(1.4%)*
Financial & insurance services	0	4 *(0.9%)*	4 *(0.5%)*	77 *(1.0%)*	1,587 *(1.7%)*
Rental, hiring & real estate services	0	7 *(1.6%)*	7 *(0.9%)*	52 *(0.7%)*	1,400 *(1.5%)*
Professional, scientific & technical services	3 *(0.9%)*	4 *(0.9%)*	7 *(0.9%)*	145 *(1.9%)*	4,440 *(4.7%)*
Administrative & support services	0	9 *(2.1%)*	9 *(1.2%)*	248 *(3.3%)*	2,833 *(3.0%)*
Public administration & safety	211 *(60.3%)*	121 *(28.1%)*	332 *(42.6%)*	2,152 *(28.9%)*	19,241 *(20.4%)*
Education & training	22 *(6.3%)*	12 *(2.8%)*	34 *(4.4%)*	582 *(7.8%)*	7,930 *(8.4%)*
Health care & social assistance	16 *(4.6%)*	14 *(3.3%)*	30 *(3.8%)*	927 *(12.4%)*	9,315 *(9.9%)*
Arts & recreation services	0	3 *(0.7%)*	3 *(0.4%)*	84 *(1.1%)*	1,939 *(2.1%)*
Other services	10 *(2.9%)*	3 *(0.7%)*	13 *(1.7%)*	200 *(2.7%)*	3,323 *(3.5%)*
Inadequately described/Not stated	11 *(3.1%)*	23 *(5.3%)*	34 *(4.4%)*	333 *(4.5%)*	2,975 *(3.2%)*
Total	**350** *(100%)*	**430** *(100%)*	**780** *(100%)*	**7,455** *(100%)*	**94,191** *(100%)*

Source: ABS (2007), *2006 Census of Population and Housing*

Figure 7 below highlights industry of employment for the combined Borroloola and Gulf region over 1996 to 2006. Clearly there has been a substantial increase in the number of employees within Public Administration & Safety, from 81 in 1996 to 332 in 2006. Also noticeable is the substantial decline in Health Care & Social assistance positions from 149 in 1996 to only 30 in 2006. Rather than a loss in Health Care & Social assistance, it is likely that many people have reclassified their field of employment in subsequent census studies as Public Administration & Safety accounting for a large proportion of the growth within that sector.

As highlighted in Figure 7, employment within Agriculture is highly variable (influenced by seasonal and market conditions), declining from 70 in 1996 to 12 in 2001, before increasing in 2006 to 64. Mining positions increased from 88 in 1996 to 104 in 2006, while Construction jobs increased from 22 in 1996 to 45 in 2006.



Raw data sourced from ABS (2007) *2006 Census Community Profile Series*

Figure 7 Industry of employment for Borroloola/Gulf region between 1996 and 2006

2.7.2 Types and numbers of businesses

ABS statistics pertaining to the size and number of businesses were available for the Roper Gulf Shire (S) and not at the SLA/CGC level for either the Gulf or Borroloola. Table 10 highlights the distribution of businesses within Roper Gulf Shire. Key observations are:

- Total of 81 businesses recorded within Roper Gulf Shire in 2009
- The majority of businesses were operating within the Agriculture, Forestry/Fishing sector (21), followed by Retail Trade (15) and Accommodation/Cafes/restaurants (12).
- 18 businesses had a gross annual turnover of less than $100,000, while another 18 businesses had a turnover between $100,000 and $200,000
- 15 businesses had a gross turnover of between $2 million and $5 million (all within Retail Trade, Accommodation/Cafes/ Restaurants and Rental/Real Estate)
- 3 businesses had a turnover of between $10 million and $20 million (Agriculture/Forestry/Fishing).

Table 10 Business count by industry for the Roper Gulf (S) (June 2009)

Industry	$0 to $100 k	$100 k to $200 k	$200 k to $500 k	$500k to $1 m	$1 m to $2 m	$2 m to $5 m	$5 m to $10 m	Over $10 m	Total
Agriculture, Forest' & Fishing	6	-	3	3	6	-	-	3	21
Mining	-	-	-	-	-	-	-	-	-
Manufacturing	-	-	-	-	-	-	-	-	-
Electricity and gas and water supply	-	-	-	-	-	-	-	-	-
Construction	3	6	3	-	-	-	-	-	12
Wholesale trade	-	-	-	3	-	-	-	-	3
Retail trade	-	-	3	-	3	9	-	-	15
Accommodation Cafes & restaurants	-	-	3	6	-	3	-	-	12
Transport and storage	3	-	3	-	-	-	-	-	6
Information Media and telecommunications	-	-	-	-	-	-	-	-	-
Financial and insurance	-	-	-	-	-	-	-	-	-
Rental, Hiring & Real Estate Services	-	-	-	-	-	3	-	-	3
Professional & Technical services	-	-	-	-	-	-	-	-	-
Admin & Support services	-	-	-	-	-	-	-	-	-
Public Admin & Safety	-	-	-	-	-	-	-	-	-
Education	-	-	-	-	-	-	-	-	-
Healthcare & social assist'	3	-	-	-	-	-	-	-	3
Arts & Recreational services	-	-	-	-	-	-	-	-	-
Other Services	-	-	-	-	-	-	-	-	-
Not classified	3	-	3	-	-	-	-	-	6
Total Businesses	**18**	**6**	**18**	**12**	**9**	**15**	**0**	**3**	**81**

Source: ABS (2010) *Counts of Australian Businesses, including Entries and Exits, June 2007 - June 2009*, Cat No. 8165.0

As highlighted below in Figure 8, of the 81 businesses for the Roper Gulf Shire, 25.9% were engaged within the Agriculture/Forestry/Fishing sector, followed by another 18.5% engaged in Retail Trade, and 14.8% in both Construction and Accommodation/Cafes/Restaurants.

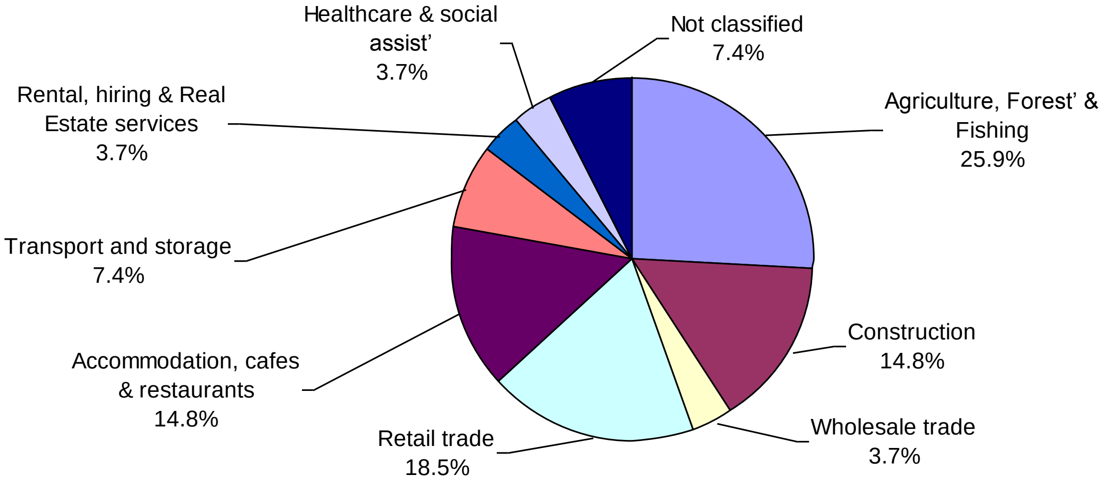


Figure 8 **Breakdown of Roper Gulf Shire's businesses by sector**

It is noted that Table 10 highlights that no mining businesses existed within Roper Gulf Shire in 2009. However, the ABS database highlights the existence of 3 mines grossing $50 to $200 million, and another 3 mines grossing $200m or more, all located within the Northern Territory with their locations un-specified.

Data compiled by the Department of Resources (Northern Territory Government) identified that $193 million worth of zinc/lead concentrate was produced in 2008-09 within the Northern Territory. As the only major zinc mine within the Northern Territory, MRM would account for the vast majority (if not all) of the $193 million of production (and thereby accounting for one of the 3 mines within the Northern Territory) that produced between $50 million and $100 million as at June 2009. Therefore, in addition to the 81 businesses identified within Table 10, there is also at least one mine (MRM) within the Roper Gulf Shire which had a gross turnover of between $50 million and $200 million.

Although the Territory's economy is well defined in terms of value added and industry/sector contribution, there are no sources of reliable published data for the Roper Gulf Shire. However, an insight into the structure and characteristics of the Roper Gulf Shire economy is possible using the information presented above in Table 10. A total of 81 businesses were identified as of June 2009 operating across 8 industries (including 6 businesses not classified to an industry sector). Each of these 81 businesses was grouped within bands of gross turnover, starting from $0 to $25,000, etc. Using bracket mid-points, Aurecon estimate that the 81 recognised businesses within the Roper Gulf Shire had an approximate combined gross turnover of approximately $128 million as of June 2009.

Table 11 Estimated gross turnover by businesses within sector groups for Roper Gulf Shire

Industry	June 2009
Agriculture, Forestry and Fishing	$ 57,525,000
Construction	$ 2,062,500
Wholesale Trade	$ 2,250,000
Retail Trade	$ 37,050,000
Accommodation and Food Services	$16,050,000
Transport, Postal and Warehousing	$ 1,312,500
Rental, Hiring and Real Estate Services	$ 10,500,000
Health Care and Social Assistance	$ 187,500
Not Classified	$ 1,162,500
Total all industries	**$ 128,100,000**

Source: Aurecon calculations using raw data from ABS (2011) *Counts of Australian Businesses, including Entries and Exits, June 2007 - June 2009*, Cat No. 8165.0

As highlighted earlier within Table 10, 21 of the 81 recognised businesses within Roper Gulf Shire were engaged in Agriculture, including 3 that had a gross turnover of between $10 million and $20 million in June 2009. As highlighted above in Table 11, the Agricultural sector had the highest recognised total business gross turnover with $57.5 million, followed by Retail Trade at $37 million, and Accommodation & Food Services at $16 million.

Note that the ABS database does not highlight any mining businesses within Roper Gulf Shire. However the ABS database (June 2009) highlights the existence of 3 mines grossing $50 to $200 million, and another 3 mines grossing $200 million or more all located within the Northern Territory but specific location unknown. Data compiled by the Department of Resources (Northern Territory Government) identified that $193 million worth of Zinc/Lead concentrate was produced in 2008-09 within the Northern Territory. As the only major Zinc mine within the Northern Territory, MRM would account for the vast majority (if not all) of the $193 million of production. Therefore, in addition to the 81 businesses identified above in Table 11, there was also at least one mining business (MRM) within the Roper Gulf Shire which had a gross turnover (value of production) of at least $190 million. Note that MRM also produces silver, which would increase the value of production above the $193 million for Zinc and Lead.

Figure 9 below highlights the breakup of total gross business turnover within the Roper Gulf Shire for 2008/09 by industry group. Clearly, the mining sector dominates accounting for 59.8% of gross total business turnover ($190 m from MRM plus $128 million from the 81 recognised businesses) within the Roper Gulf Shire in 2008/09. Agriculture is the next most significant industry accounting for 18.1% of total gross business turnover, followed by Retail Trade at 11.7%.

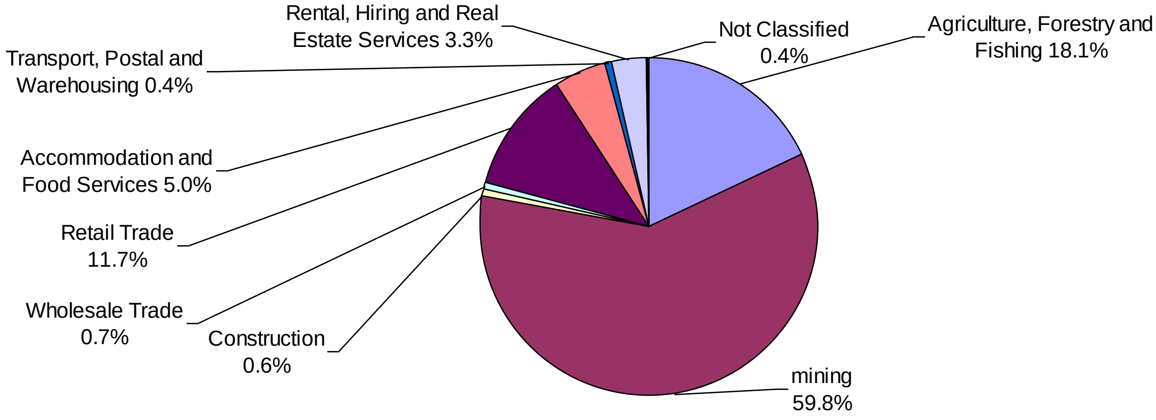


Figure 9 Estimated gross turnover by businesses within sector groups for Roper Gulf Shire in 2008-09

2.7.3 Key industries relevant to the project

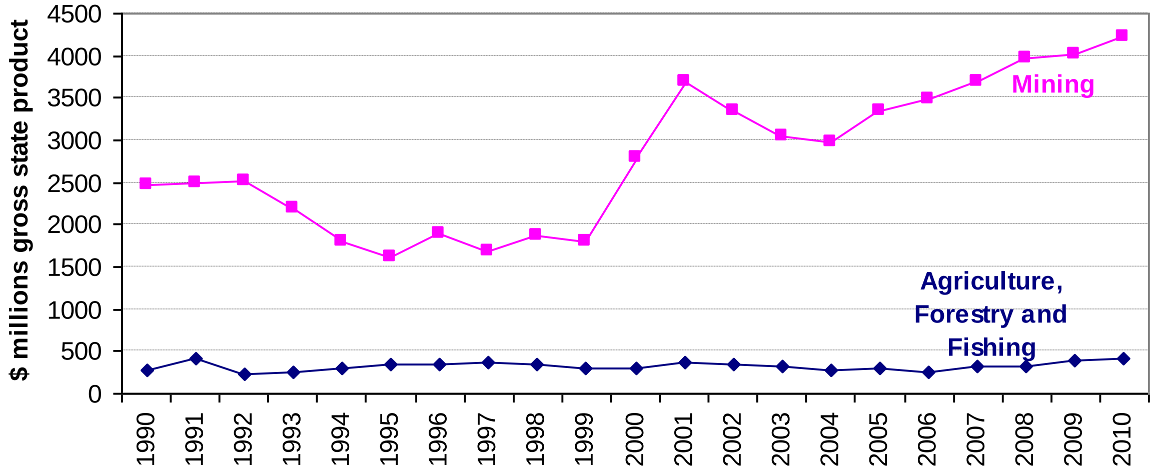
Although a wide range of industries are impacted either directly or indirectly by MRMDP at the local and Territory level, the following three have been examined in more detail:

- Mining: Largest private sector of employment within the local region
- Agriculture: 2nd largest private sector of employment within the local region after Mining. Agriculture is also the dominant land use activity within the local area
- Construction: 3rd largest private sector of employment within the local region after Mining and Agriculture, and likely to benefit directly and indirectly from MRMDP.

Mining

Both the mining and agriculture/forestry/fishing production sectors are capital and resource intensive, and significant in terms of employment within remote rural communities. Within the combined Borroloola CGC and Gulf SLA, Mining accounted for 13.3% of the regional workforce while Agriculture/Forestry/Fishing accounted for 8.2% (Table 8).

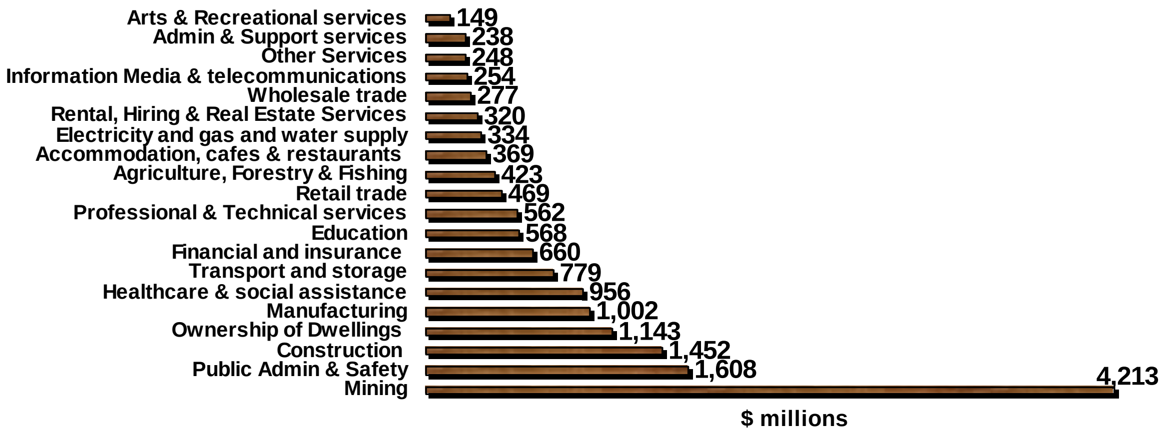
At the state level, Agriculture/Forestry/Fishing accounted for 2.7% of the workforce compared to Mining at 2.1%. The following analysis seeks to review the economic significance of the mining and Agricultural/Forestry/Fishing sectors at the state and local level. Figure 10 below highlights the growing disparity in terms of economic growth over the past two decades between the two sectors at the state level.



Raw data sourced from ABS (2010) *Australian National Accounts: State Accounts 2009-10,* Cat.NO. 5220.0

Figure 10 Mining sector contribution to the Northern Territory economy compared to that of Agriculture

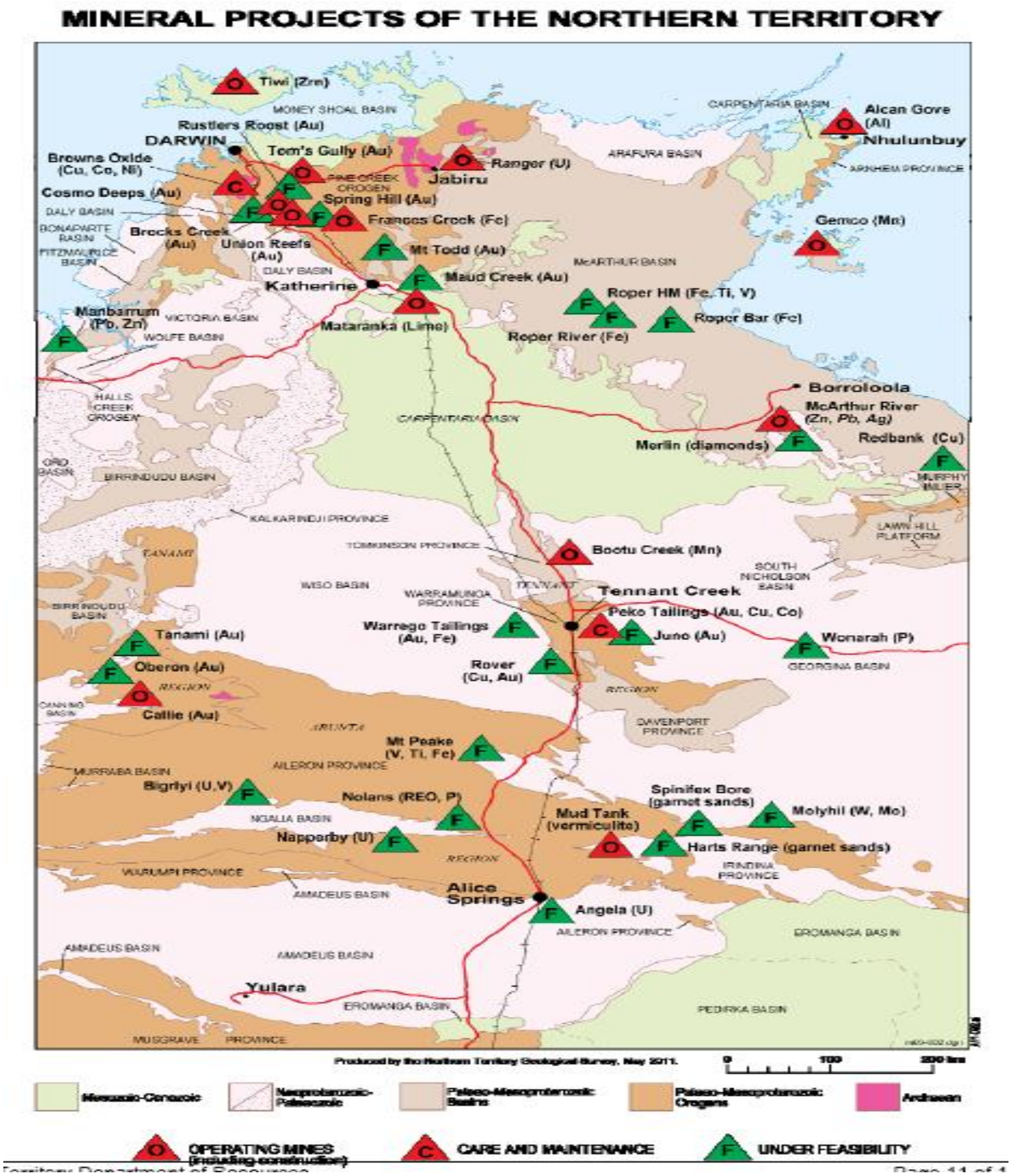
Figure 11 provides a breakdown of the Territory's economy in 2009/10 from a value-added perspective, which was valued at 16.024 billion. The Mining sector directly accounted for 26.3% ($4,213 million) of the Northern Territory's 2009-2010 economy. In addition, the mining sector is a substantial purchaser of goods and services, providing substantial income to support sectors including Transport (air, road and sea), Construction, Accommodation, Food Service and Professional/Scientific & Technical Services.



Raw data sourced from ABS (2010) *Australian National Accounts: State Accounts 2009-10,* Cat.NO. 5220.0

Figure 11 Industry value added for the Northern Territory 2009/2010

Outputs from the Mining sector accounted for over 64% of Northern Territory exports in 2008-09 (see Figure 18). Figure 12 below highlights existing and proposed new mining activities for the state.



Map sourced from Department of Resources, Northern Territory Government. Ore-struck, Maps: Mineral Projects of the Northern Territory (http://www.nt.gov.au/d/orestruck)

Figure 12 **Significant Mineral Projects for the Northern Territory**

Figure 12 identifies the number of mining activities across the Northern Territory, many of which are under feasibility investigation. Table 12 below highlights the major mines currently operating within NT in 2011, and together these 7 mines account for the vast majority of the $4.213 billion in value adding (Figure 11) attributed to the mining sector in 2009/10.

Table 12 Major mines currently operating in the Northern Territory (2011)

Mine	Location	Commodity
Alcan Gove Mine	Gove Peninsula	Bauxite/alumina: open pit
Bootu Creek Manganese Project	125Km north of Tennant Creek	Iron ore: open pit
Frances Creek Mine Project	180km south of Darwin	Manganese: open pit.
Gemco Mine	Groote Eylandt	Manganese: open pit.
McArthur River Mine	45km south west of Borroloola	Zinc-lead: open pit
Ranger Mine	260km east of Darwin	Uranium oxide: open pit
The Granites Gold Mine/Tanami Operations	560km north west Alice Springs	Gold ore: underground

Source: Department of Resources, Northern Territory Government. Ore-struck, Report: *Mining Developments in the Northern Territory* (http://www.nt.gov.au/d/orestruck)

As highlighted above in Figure 12, there are a substantial number of proposed mining activities across the Northern Territory. As highlighted below in Table 13 there are 30 proposed mining developments at various stages of progression throughout the Northern Territory.

Table 13 New mines within the Northern Territory

Company	Project	Location	Product	Development
Recent (Past 24 months)				
Gemco	Gemco Refirb	Groote Eylandt	Manganese	Plant upgrade
Crocodile Gold	Brocks Creek	Pine Creek	Gold	Reopen mine
Crocodile Gold	Howley	Pine Creek	Gold	Reopen mine
Crocodile Gold	Union Reefs	Pine Creek	Gold	Reopen plant
OM Manganese	Bootu Creek	Tennant Creek	Manganese	Secondary Plant
Matilda Zircon	Tiwi Islands	Tiwi	Zircon	Reopen mine
Crocodile Gold	Princess Louise	Pine Creek	Gold	New mine
Crocodile Gold	North Point	Pine Creek	Gold	New mine
Pending (Next 12 months)				
AAM	Spinifex Bore	Alice Springs	Garnet sands	New mine
Aust Ilmenite Res	SILL80	Roper River	Fe, Ti, V	New mine
ERA Ltd	Ranger heap leach	Jabiru	Uranium	Expansion
HAR (HNC)	Browns Oxide	Batchelor	Cu, Co & Ni	New plant
HAR (HNC)	Area 55	Batchelor	Cu, Co & Ni	Satellite pit
Matilda Zircon	Lethbridge Sth	Tiwi Islands	Zircon	New deposit
Minemakers	Wonarah	Tennant Creek	Phosphate	New mine
Redbank Mines	Redbank	Gulf	Copper	New pits & plant

Company	Project	Location	Product	Development
Potential (Next 12 – 36 months)				
Arafura Resources	Nolans	Arunta	REO, P, U	New mine
Aard Metals	Warrego Tails	Tennant Creek	Magnetite, Au	Reprocessing
Crocodile Gold	Cosmo Deeps	Pine Creek	Gold	Underground
Energy Metals	Bigrlyi	Ngalia Basin	U, V	New mine
ERA Ltd	Ranger 3 Deeps	Jabiru	Uranium	Underground
Korab	Geolsec	Batchelor	Phosphate	New mine
Newmont	Callie Deeps	Tanami	Gold	Expansion
Sherwin Iron	Roper River	Roper River	Iron ore	New mine
Tanami Gold	Tanami Central	Tanami	Gold	Reopen mine
Thor Mining	Molyhil	Alice Springs	Mo, W	Reopen mine
TNG Limited	Mt Peake	Alice Springs	V, Ti, Fe	New mine
Western Desert Res	Roper Bar	Roper River	Iron Ore	New mine
Westgold Res	Rover	Tennant Creek	Gold, Cu	New mine
Xstrata	McArthur River	Gulf	Zn, Pb & Ag	Expansion

Source: Department of Resources, Northern Territory Government. *Ore Struck Top End Secret 2: Mining Developments in the Northern Territory*, May 2011.

As indicated earlier, the MRM is the most significant mining activity within the Roper Gulf Shire. It is a highly mechanised mining activity involving the bulk handling of material including the ore material mined, and the zinc/lead/silver concentrate refined on site for bulk export.

Servicing the mining equipment and on-site processing facilities, the mine site, on-site staff and supporting infrastructure, requires a wide array of products and services from other business sectors, some of which will be sourced from the local Roper Gulf Shire, but most of which will be provided by businesses located at Darwin.

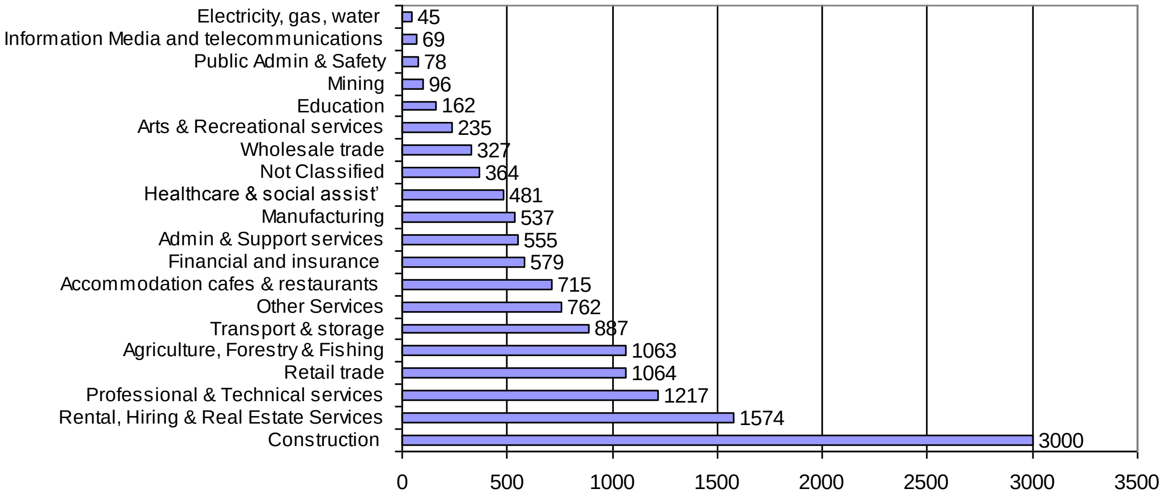
A contract fleet of road-trains are used for trucking the zinc/lead/silver concentrate from the MRM to the Bing Bong Port, where the bulk carrier MV Aburri ships the concentrate to the Offshore Transfer Zone for loading to ocean-going ships. Carpentaria Shipping Services (CSS) operates the Aburri, and is a joint venture involving Indigenous Business Australia and a local indigenous enterprise, the Mawurli and Wirriwangkuma Aboriginal Association (MAWA).

Other local business sectors that rely on the MRM activity for income (either directly or indirectly) would include Construction, Property and Business Services, Accommodation, and Food Service.

2.7.3.1 Agriculture/forestry/fishing

As highlighted earlier the Agriculture/Forestry/Fishing production sector is capital and resource intensive, and significant in terms of employment particularly within remote rural communities. Within the combined Borroloola CGC and Gulf SLA the Agriculture/Forestry/Fishing sector accounted for 8.2% (Table 8) of the local labour workforce.

At the state level the Agriculture/Forestry/Fishing sector accounted for 2.7% of the workforce. The following analysis seeks to review the economic significance of the Agricultural/Forestry/Fishing sector at the state and local level. Figure 13 below highlights that 1,063 businesses were engaged within the Agriculture/Forestry/Fishing sector across the Northern Territory as at June 2009.



Raw data sourced from ABS (2010) *Regional Statistics, Northern Territory, May 2010,* Cat.NO. 1362.7

Figure 13 Number of businesses by industry for the Northern Territory June 2009

Other significant features of the Agriculture/Forestry/Fishing sector at the state level include:

- Value added contribution of $423 million to the state's economy in 2009/10 (Figure 11)
- Exports of $1.6 million Aquaculture, $202 million Agriculture and $1.7 million in Fishing/hunting & trapping during 2008-09 (Table 15)
- Employed 3,583 people (2006 Census) (Table 8).

Figure 14 below provides an indication of the make-up of Agricultural sector. Clearly, livestock production (cattle & calves) dominates the Agricultural sector within the Northern Territory.

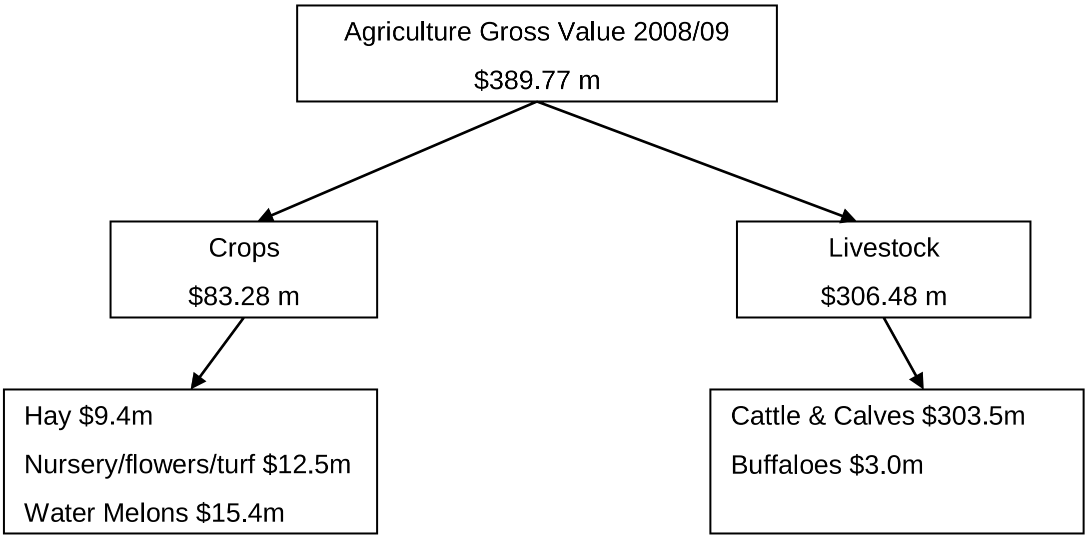


Figure 14 **Overview of Agricultural production for the Northern Territory 2008/09**

According to the ABS, a total area of 48,409,584 ha of land was utilised for grazing (mainly beef) activities in 2008/09 across the Northern Territory. At a high level of analysis (and generalising the stocking and production rate across all of Northern Territory) the average value of production (cattle/calves/buffalo) is $6.33 per ha in 2008/09.

At the Roper Gulf regional level the Agriculture/Forestry/Fishing is a significant industry. As indicated earlier within Table 9, 21 of the 81 businesses within Roper Gulf Shire were engaged within Agriculture /Forestry /Fishing. Figure 15 below provides details of size of business by employment:

- 6 Business had no employees (other than the business owner)
- 6 Business had between 1 – 4 employees
- 6 Business had between 20 – 49 employees.

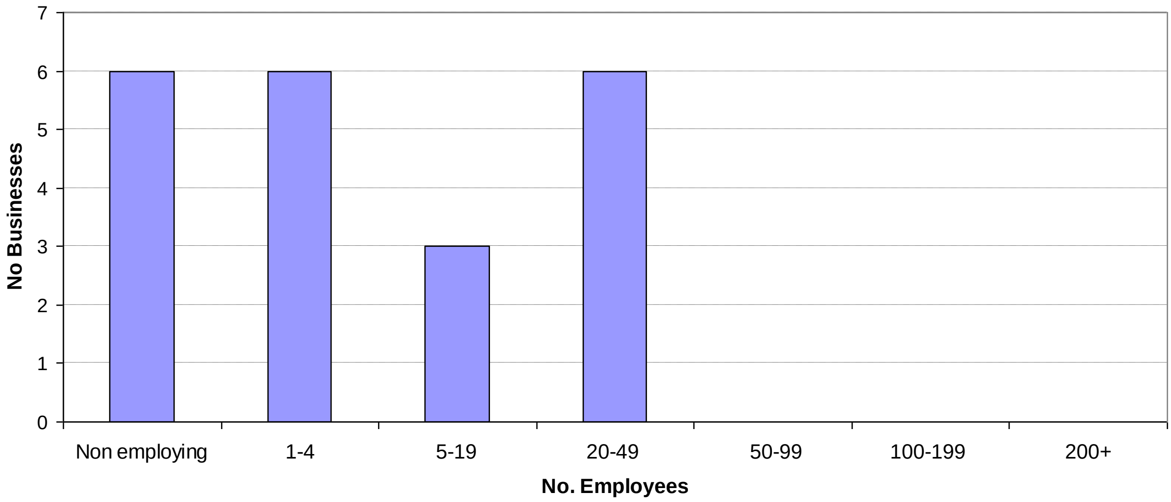


Figure 15 **Overview of Agriculture/Forestry/Fishing businesses by employee size within the Roper Gulf Shire June 2009**

Unfortunately, no additional information is available regarding the Agriculture/Forestry/Fishing sector specifically for the Roper Gulf Shire. However, the majority of the 21 businesses identified as operating in Agriculture/Forestry/Fishing are likely to be extensive grazing enterprises breeding cattle. There may a small number of businesses engaged in fishing, but these are more likely to be linked with tourism related activities.

The McArthur River station Pastoral Lease, including the Tawallah and Bing Bong pastoral leases covers an area of over 8,000 km2. The Pastoral leases are 100% owned by Colinta Holdings Pty Ltd, an Xstrata subsidiary. All of the MRM and associated infrastructure including Bing Bong Port are located within the pastoral lease lands.

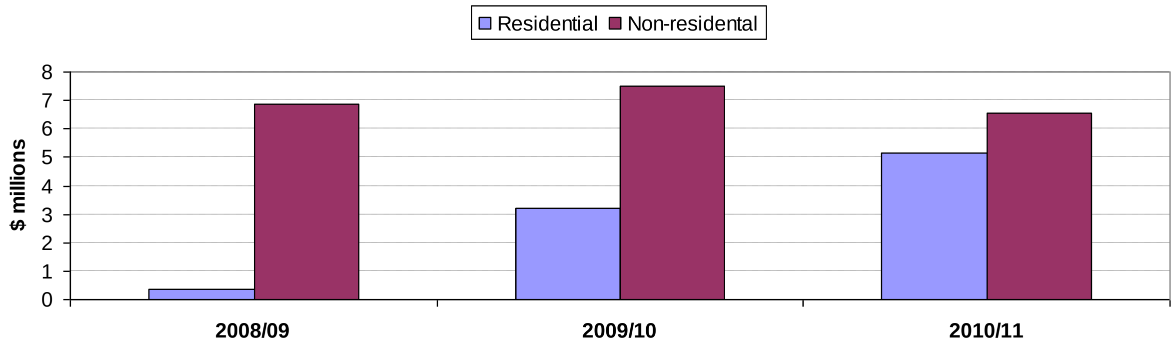
McArthur River station continues to operate as a commercial cattle production business, stocking approximately 10,000 head of cattle. Cattle have been excluded from a number of areas including the Caranbirini Conservation Reserve, and from the mining and processing areas of the MRM.

The proposed MRMDP project will not impact upon the existing cattle grazing operations on McArthur River station. Cattle are already fenced well away from the operational footprint of the MRM and associated infrastructure, and therefore no changes in fencing or cattle grazing lands are planned for MRMDP.

Construction

Construction is the most significant sector within the Northern Territory in terms of business numbers (3,000)(Figure 11) as at June 2009, and also in terms of employment with 6,962 people employed within the Construction sector (Table 8), second only to Public Administration & Safety.

Within the Roper Gulf Shire, the Construction sector is very significant in terms of economic activity. As highlighted below in Figure 18, the value of approval for residential building has increased rapidly from approximately $350,000 in 2008-09 to $5.2 million in 2010/11. In comparison the value of building approvals for non-residential construction has remained relatively constant at $6 million to $7 million per annum.



Source: ABS (2011), *Building Approvals Australia,* Cat. No. 8731.0

Figure 16 Breakdown of the value of building approvals within the Roper Gulf Shire

A total of 12 construction related businesses were identified within Roper Gulf Shire (Table 9) as at June 2009. Of these 12 businesses:

- 3 businesses had a gross turnover between $0 and $100,000
- 6 businesses had a gross turnover between $100,000 and $200,000
- 3 businesses had a gross turnover between $200,000 and $500,000.

A number of these 12 construction businesses within Roper Gulf Shire will benefit either directly or indirectly from MRMDP by:

- Engagement at the actual MRM mine site for either construction or maintenance related activities in relations to buildings and facilities
- Engagement for the construction/maintenance of housing (off-site) for local residents employed by the mine
- Engagement for the construction/maintenance of commercial buildings and infrastructure (off mine site) to businesses supplying goods and services to MRM.

During the construction phase for the MRMDP, up to 900 additional staff will be accommodated on-site for construction related activities over a two year period. A number of local construction businesses are likely to be engaged for minor works and maintenance related activities during the MRM construction period, and post construction during the operational phase.

2.8 Territory economy

Industry value-adding contribution

An overview of the Northern Territory's economy between 2004 and 2010 is provided below in Table 14. In terms of contributing to the state's economy, the Mining sector has grown from approximately $3 billion (in value added terms) in 2004 to $4.2 billion in 2010 (increase of 41.8%), and is clearly the most significant industry contributing to the Territory's economy between 2004 and 2010.

In comparison, the growth in value added achieved by other key sectors between 2004 and 2010 includes:

- 34.0% for Total All Industries
- 21.8% for Public Administration & Safety (valued at $1.608 billion in 2010)
- 5.5% for Construction (valued at $1.452 billion in 2010)
- 24.1% for Ownership of Dwellings (valued at $1.143 billion in 2010)
- 21.7% for Manufacturing (valued at $1.002 billion in 2010)
- 48.2% for Healthcare & Social assistance ($956 million in 20210)

Table 14 Gross value added for the Northern Territory (Chain volume measures)

Industry	June 2004	June 2005	June 2006	June 2007	June 2008	June 2009	June 2010
Agriculture, Forest' & Fishing	280	296	262	312	321	403	423
Mining	2,971	3,344	3,496	3,695	3,964	4,018	4,213
Manufacturing	823	802	798	814	870	949	1,002
Electricity and gas and water supply	249	259	265	306	296	315	334
Construction	1,376	1,489	1,458	1,430	1,643	1,769	1,452
Wholesale trade	138	138	174	203	228	249	277
Retail trade	353	377	378	413	455	475	469
Accommodation Cafes & restaurants	281	323	348	351	334	362	369

Industry	June 2004	June 2005	June 2006	June 2007	June 2008	June 2009	June 2010
Transport and storage	553	656	700	725	776	771	779
Information Media and telecommunications	204	209	219	234	249	252	254
Financial and insurance	445	442	495	604	689	676	660
Rental, Hiring & Real Estate Services	223	280	379	348	307	319	320
Professional & Technical services	326	422	559	546	560	553	562
Admin & Support services	135	171	227	231	238	222	238
Public Admin & Safety	1,320	1,412	1,365	1,449	1,489	1,589	1,608
Education	482	485	495	509	539	555	568
Healthcare & social assist'	645	691	747	798	855	907	956
Arts & Recreational services	119	122	122	125	141	154	149
Other Services	198	201	200	222	228	238	248
Ownership of Dwellings	921	968	1,013	1,042	1,078	1,111	1,143
Total All Industries	11,955	12,978	13,647	14,331	15,257	15,887	16,023

Source: ABS (2010) *Australian National Accounts: State Accounts*, Cat No. 5220.0. Table 8 Expenditure, Income and Industry Components of Gross State Product, Northern Territory, Chain volume measures and current prices.

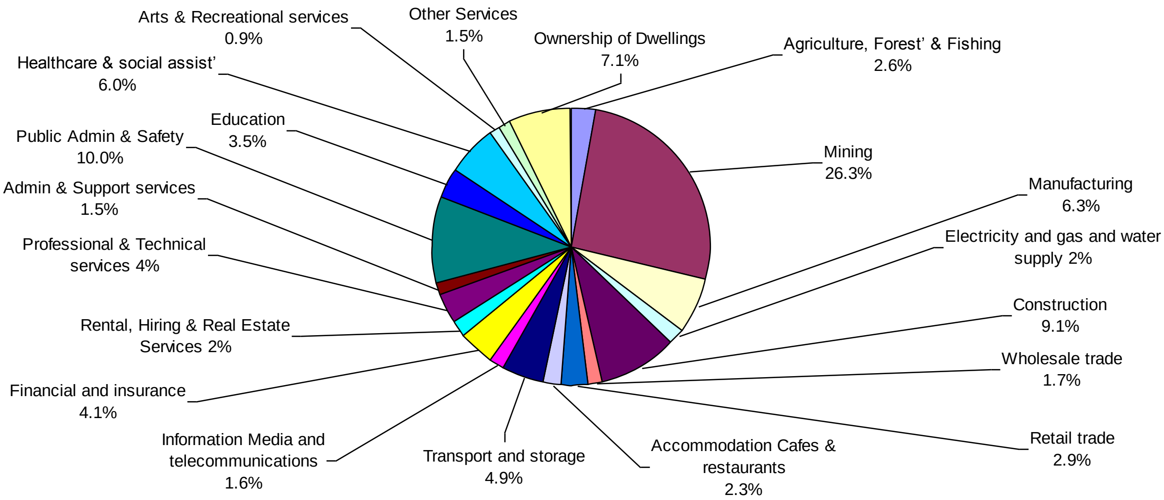
As highlighted below in Figure 17, the Mining sector directly accounted for 26.3% of the Northern Territory's economy (in value-added terms) in 2009/2010. Other key sectors in terms of value-adding to the state's economy include Public Administration & Safety at 10%, Construction 9.1%, and Ownership of Dwellings 7.1%.

The Mining sector is also a high cost sector in that it purchases significant quantities of products and services from the following sectors:

- Manufacturing; provision of products (particularly chemicals) for use in processing/refining, cleaning, maintenance, rehabilitation, etc.
- Electricity, Gas and Water Supply; provision of large volumes of power (electricity/gas) to power equipment, machinery, processing/cleaning facilities and supporting infrastructure at the mine site, mining accommodation (whether on or off mine site), and port facilities handling the export of mining products for export
- Construction; for construction of accommodation facilities, office, workshops, and structures/sheds housing processing facilities
- Retail & Wholesale Trade; for the provision of products to the mine
- Accommodation Cafes & restaurants; provision of catering services to mines, providing accommodation to visiting stakeholders, etc.
- Transport and Storage; transport of supplies, equipment, materials and staff to the mine and back, and transport of mining product output to markets (predominantly export)
- Information media and telecommunications: utilisation of all forms of media to keep stakeholders informed, and use of telecommunication services for mining operations/staff
- Financial and Insurance; extensive insurance coverage of mining staff, facilities, equipment and machinery, use of financing to facilitate hire/purchase of additional equipment & machinery, expansion of on mine site accommodation/processing/supporting infrastructure facilities

- Rental, Hiring & Real Estate Services; particularly housing temporary staff off mine site, equipment and machinery rental
- Professional & Technical Services; provision of technical services related to mine management, environmental management, engineering services and waste disposal.

Therefore, the actual contribution of the Mining sector to the Northern Territory economy will be much higher than the directly identifiable 26.3% highlighted below in Figure 17.



Raw data sourced from ABS (2010) *Australian National Accounts: State Accounts*, Cat No. 5220.0.

Figure 17 Breakdown of Industry Value Added for the Northern Territory 2009/2010

Exports

The economic contribution of certain sectors and industries may also be identified via the value of export sales. Table 15 below highlights the value of exported items for 2007-08 and 2008-09 from the Northern Territory.

Table 15 **Export of goods from the Northern Territory**

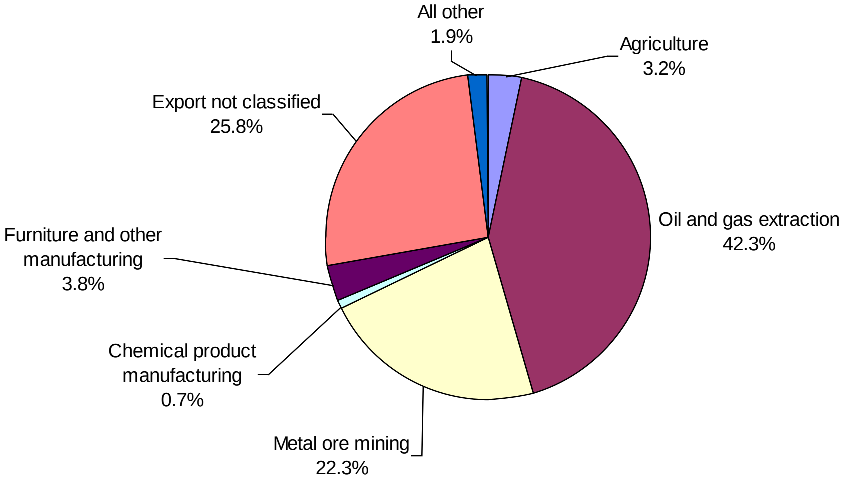
Industry	2007-08 ($'m)	2008-09 ($'m)
Agriculture	253.652	202.031
Aquaculture	0.259	1.645
Forestry and logging	0.786	0.103
Fishing, hunting and trapping	0.998	1.705
Agriculture, forestry and fishing support services	0.0	0.036
Oil and gas extraction	1,452.377	2,660.860
Metal ore mining	1,390.028	1,399.984
Non-metallic mineral mining and quarrying	4.859	1.075
Food product manufacturing	1.749	3.642
Beverage and tobacco product manufacturing	0.268	0.389
Textile, leather, clothing and footwear manufacturing	7.372	10,793.6
Wood product manufacturing	0.084	0.396
Pulp, paper and converted paper product manufacturing	0.024	0.141
Printing (including the reproduction of recorded media)	0.062	0.176
Petroleum and coal product manufacturing	10.156	20.760
Basic chemical and chemical product manufacturing	49.686	45.751
Polymer product and rubber product manufacturing	2.608	2.739
Non-metallic mineral product manufacturing	0.767	0.536
Primary metal and metal product manufacturing	26.089	15.285
Fabricated metal product manufacturing	12.691	14.946
Transport equipment manufacturing	4.367	11.779
Machinery and equipment manufacturing	15.212	31.528
Furniture and other manufacturing	155.348	240.004
Publishing (except internet and music publishing)	0.143	0.169
Sum of items not readily classified and those which are confidential and cannot be more specifically classified	1,154.016	1,625.187
Total	**4,543.598**	**6,291.659**

Source: ABS (2010) *Regional Statistics, Northern Territory*, *May 2010*., Cat.NO. 1362.7
Export valued at *f.o.b* basis.

As highlighted by Table 15 above, the value of total exports increased from approximately $4.5 billion in 2007-08 to $6.3 billion in 2008-09 (increase of $1.8 billion or 38.5% in one year). Key drivers for the increase was the increase in value of Oil and Gas extraction (increased by $1.2 billion), and an increase in items not readily classified ($471 million). Of interest is that the value of Agriculture exports declined by $51.6 million between 2007-08 and 2008-09, highlighting the seasonal nature of that sector.

As highlighted below in Figure 18, Oil and Gas extraction accounted for 42.3% of the total value of exports from the Northern Territory in 2008-09, followed by Metal Ore Mining at 22.3%. Combined, these two products representing the mining sector account for 64.6% of all exports. A proportion of mining products are also likely to be within the “Export not classified” group, including Uranium Oxide.

Other than mining products, other key exports in 2008-09 include Furniture & Other Manufacturing (3.8%), Agriculture (3.2%), and All Other (1.9%).



Raw data sourced from ABS (2010) *Regional Statistics, Northern Territory, May 2010,* Cat.NO. 1362.7

Figure 18 **Key exported commodities from the Northern Territory in 2008-2009**

3 Project environment

3.1 Purpose of the MRMDP

The third phase of development at McArthur River Mine involves increasing mine production from 2.5 million tonnes per year (Mt/y) of ore to 5.5 Mt/y. Concentrate would continue to be trucked to the Bing Bong port loading facility for export shipping (via the existing offshore barge loading facility). The indicative capital expansion cost of the project is $270 million.

Table 16 Key features of the proposed MRMDP

Item	Current Approved Project	Proposed McArthur River Mine Phase 3 Development Project
Reserves	53 million tonnes	Likely mining reserve of 119 million tonnes total
Mine Life	Until 2027	Additional 9 years to 2036
Mining method	Open pit mine using conventional drilling, blasting, loading and haulage methods	No Change
Open Pit Dimensions	Length – 1500 metres Width – 800 metres Depth – 210 metres Overall footprint – 103 hectares	Length – 1750 metres Width – 1500 metres Depth – 420 metres Overall footprint – 205 hectares (within the existing approved bunded area)
Mining Rate Capacity	2.5 Mt/y of ore	Up to 5.5 Mt/y of ore
Tailings	Tailings discharged to Tailings Storage Facility (TSF)	Existing TSF used, with upgrades
Waste rock	Stored on surface in overburden emplacement facility (OEF) – capacity 185 Mt	Stored on surface in existing and new overburden emplacement facility – an additional 500 Mt.
Processing	Flotation process producing concentrate (46% Zn concentrate grade)	No change in method. Upgrade of processing capacity.
Power	Gas fired turbines producing 20 MW. Fired with natural gas delivered to site via a pipeline from Daly Waters	Gas power station upgrade to a total of 45-50 MW
Product/year	360,000 dmt/y of lead-zinc-silver concentrate (166,000 tonnes of zinc in concentrate)	800,000 dmt/y of lead-zinc-silver concentrate (368,000 tonnes of zinc in concentrate)
Transport	Concentrate trucked to Bing Bong Loading Facility and barged offshore for transfer and shipment	No change in method. Approximate doubling of concentrate volume trucked to Bing Bong for shipment (up from 9 truck movements per day to 18)

Water Management	Bore fields water supply (if required) Mine water collected and utilised in the process Emergency discharge licence in place	To continue. Existing water management structures to be upgraded. No diversions necessary
Workforce	440 employees and contractors	Construction workforce peak 900 Approximately 550 permanent staff and contractors (operational)

Source: Xstrata Zinc Australia (2011), *McArthur River Mine Phase 3 Development Project, Notice of Intent.*

As highlighted above in Table 16, the MRMDP seeks to more than double annual Zinc concentrate production, and extend the mine life by 9 years. The extended mine pit will be contained within the existing mine site bunded footprint.

Upgrades and extensions are required for a number of on-site infrastructure facilities. Significant upgrades are required for the tailings storage facility, gas-fired power plant, and processing facilities. An extension of the overburden emplacement facility is required to store an additional 500 Mt of waste rock. There is no requirement for upgrades to the existing road, port and shipping (between Bing Bong port and off-shore barge/transfer facilities) infrastructures.

3.2 Project stages

The economic impact analysis of the MRMDP has been divided into the following development stages:

- Stage 1 Construction: covering the construction period of 2012 and 2013 (inclusive). The current MRM ore mining activities and production rates are maintained, but additional capital and operational expenditure along with additional staff (construction, manufacturing, mining, and administrative) are required for the upgrade and/or expansion of existing facilities and infrastructure to support proposed MRMDP operational activities.
- Stage 2 Uplift in production: covering the period between 2014 and 2027 (inclusive). This covers the operational period that overlaps with the projected operational period of the current MRM (Phase 2 Open pit) that has been operational since 2006. The existing Phase 2 mining operations are forecast to be decommissioned at the end of 2027.
- Stage 3 Extended mine operational life: covering the period between 2028 and 2036 (inclusive). This covers the additional operational period of the MRM resulting from Phase 3 expansion.
- Stage 4 Decommissioning: covering the period 2037 to 2039 (inclusive). Ore mining and processing has ceased, but a reduced workforce is maintained on site to decommission the site.

3.3 Economic impact areas

3.3.1 Background

The MRMDP has the potential to positively impact the local, state and national economies. At the local Borroloola/Gulf SLA level, there will be a direct increase in demand for labour, local services and supplies.

At the state level there will be substantial increase in demand for medium and large sized businesses, particularly within the Darwin region, to supply products and services to the mine. The majority of existing FIFO staff resides within Darwin, and this is expected to continue with the expanded FIFO workforce. Territory government revenue’s will receive a significant boost in terms of additional royalty payments and payroll taxes.

At the national level, the increased lead-zinc-silver concentrate production will raise Australia's commodity exports, having a positive impact on the national trade balance.

For each of the stages namely Stage 1 (Construction), Stage 2 (Uplift in production), Stage 3 (Extended mine operational life) and Stage 4 (Decommissioning), the economic impacts of the MRMDP are individually examined based on projected direct expenditure (less purchases on products/equipment sourced from overseas) on goods and services.

Input-Output modelling was utilised to examine the indirect flow-on implications in terms of total Output, Household Income, Value Added effects, and Employment to the Northern Territory's economy. In relation to the generation of employment numbers, I-O modelling assumes past relationships between expenditure and employment numbers and these projected direct employment numbers may differ to actual project employment projection numbers.

Specifically economic aggregates were presented within the following first round and second round impact types:

- Direct : increases in economic activity that are directly generated in the industry receiving the impact
- Indirect – Industrial Support : flow-on impacts from industries that support the industry receiving the direct impact
  Indirect – Consumption : changes in consumption by the household sector in response to income changes from the direct and indirect impacts[1]

For modelling purposes it was assumed that all domestic goods and services were provided by firms located within the Northern Territory. However, through the actions of firms supplying MRMDP and consumption impacts, economic benefit will also flow-on to other states which have also examined within the r Input-Output modelling[2].

There will be direct economic impacts to the local Borroloola/Gulf SLA economy resulting in employment and profit (value added) opportunities for local businesses. Due to the limitation of data and limitations with Input-Output modelling, the quantifiable economic impacts have been identified for the local community based solely upon an assessment of mining employee income (of those expected to reside locally) and employee income from indirect positions created by the MRMDP.

This analysis also examines the proposed economic outputs of the MRMDP, and identifies the financial and economic implications for all levels of governments including territory and national, both in terms of potential costs associated with the requirement to provide additional infrastructure and service support, and also potential sources of additional revenue via associated charges and tax streams.

[1] Note that a degree of double counting occurs with Consumption induced impacts, therefore these values should be interpreted with caution.
[2] For more information regarding economic leakages interstate from the resources sector, see paper by Rolfe et al (2011).

3.3.2 Stage One: Construction (2012 and 2013 inclusive)

The analysis presented concerns new construction activities directly related to MRMDP proposal. The direct additional economic stimuli are the expenditures related to construction and operational activities that occur over and above that for existing Phase 2 operations.

Key modelling input assumptions for Stage 1 are:

- Total projected additional Capex expenditure over this 2 year period is $245 million. It is estimated that only 75% or $184 million is likely to be locally sourced (imported products/materials excluded). Modelling an annual average of $92 million per annum as the direct economic stimulus (via expenditure) on local/state goods and services.
- Total projected additional Opex expenditure over this 2 year period is $7 million, all of which is expended for goods and services sourced within Northern Territory. This new Opex over and above the existing MRM Opex was advised as part of Stage 1. An average of $3.5 million per annum has been modelled as the direct economic stimulus (via expenditure) on local/state goods and services, and mine staff costs.

The following table summarises the Stage 1 Construction (2012 – 2013) impact of the MRMDP annualised construction expenditure on the Northern Territory and national economies.

Table 17 Annual economic impact of Stage 1 Construction

	Value added ($m)	Income ($m)	Employment (FTE persons)	Output ($m)
Mining	$37.65	$5.44	50	$60.62
Manufacturing	$0.60	$0.29	5	$1.90
Electricity, Gas, Water & Waste Services	$0.80	$0.24	3	$1.42
Construction	$21.43	$9.05	137	$54.11
Wholesale Trade	$0.27	$0.16	6	$0.53
Retail Trade	$0.71	$0.44	15	$1.16
Accommodation & Food Services	$0.48	$0.25	11	$0.93
Transport, Postal and Warehousing	$1.20	$0.47	10	$2.17
Information Media & Telecommunications	$0.32	$0.10	2	$0.59
Financial & Insurance services	$1.74	$0.75	6	$2.28
Rental, Hiring & Real Estate Services	$1.25	$0.42	8	$2.16
Professional, Scientific & Technical Services	$1.35	$0.94	14	$2.71
Administrative & Support Services	$0.65	$0.54	12	$1.16
Other[1]	$5.19	$1.62	30	$7.02
Direct	$48.96	$12.14	189	$95.50
Indirect - Industrial Support	$15.56	$5.29	75	$29.25
Indirect - Consumption	$9.12	$3.30	45	$13.99
Total Northern Territory	$73.64	$20.73	309	$138.74

Rest of Australia	$6.24	$2.24	25	$17.08
Total Australia	**$79.88**	**$22.97**	**334**	**$155.82**

[1]Includes the sectors of Agriculture Forestry & Fishing, Public Administration & Safety, Education & Training, Health Care & social assistance, Arts & recreational services, and Other services.
FTE = Full Time Equivalent employment positions for one year
Source: Aurecon

The economic impacts resulting from direct mine expenditure of $191 million ($95.5 per annum) on the Northern Territory economy during Stage 1 Construction over 2 years are estimated to:

- increase total output across all industries by $277.5 million ($138.7 million per annum)
- increase household income by $41.5 million ($20.7 million per annum)
- create direct employment opportunities of 189 FTE, and support the creation of another 120 FTE indirectly
- increase Gross State Product by $147.3 million ($73.6 million per annum).

Nationally and inclusive of the above Northern Territory impacts, the MRMDP Stage 1 Construction will:

- increase total output across all industries by $311.6 million ($155.8 million per annum)
- increase household income by $45.9 million ($23 million per annum)
- support the creation of 334 FTE's nationally
- increase Gross National Product by $159.8 million ($79.9 million per annum).

3.3.3 Stage Two: Uplift in production (2014 to 2027)

Stage 2 of the MRMDP is projected to have duration of 14 years covering the period between 2014 and 2027 (inclusive). This period overlaps with the projected operational period of the current MRM Phase 2 Open pit expansion. Phase 2 has been operational since 2006 at an annual mining rate of 2.5 Mtpa, and Phase 2 is forecast to be decommissioned at the end of 2027.

The proposed Phase 3 expansion will see the mining rate increase up to 5.5 Mtpa, up from 2.5 Mtpa.

Key modelling input assumptions for Stage 2 are:

- Total projected additional Capex expenditure over this 14 year period is $136 million. Aurecon's review estimates that only 75% or $102 million is likely to be locally sourced (imported products/materials excluded). Modelling an annual average of $7.3 million per annum as the direct economic stimulus (via expenditure) on local/state goods and services.
- Total projected net additional Opex expenditure over this 14 year period is $3.14 billion in total, all of which is expended for goods and services sourced within Northern Territory. This Opex is over and above any Opex for the existing MRM over the same period. An average Opex of $224.1 million per annum has been adopted in the model as the direct economic stimulus (via expenditure) on local/state goods and services, and mine staff costs.

The following table summarises the Stage 2 Uplift in production (2014 – 2027) impact of the MRMDP annualised construction spend upon the Northern Territory and national economies.

Table 18 Annual economic impact of Stage 2 Uplift in Production

	Value added ($m)	Income ($m)	Employment (FTE persons)	Output ($m)
Mining	$170.61	$24.65	282	$274.70
Manufacturing	$0.95	$0.46	8	$2.97
Electricity, Gas, Water & Waste Services	$1.81	$0.56	7	$3.23
Construction	$3.44	$1.45	22	$8.68
Wholesale Trade	$0.50	$0.30	5	$0.99
Retail Trade	$1.26	$0.78	24	$2.06
Accommodation & Food Services	$0.90	$0.47	19	$1.73
Transport, Postal and Warehousing	$2.53	$0.98	16	$4.57
Information Media & Telecommunications	$0.53	$0.16	3	$0.97
Financial & Insurance services	$2.84	$1.22	10	$3.72
Rental, Hiring & Real Estate Services	$1.76	$0.59	11	$3.02
Professional, Scientific & Technical Services	$2.33	$1.62	24	$4.67
Administrative & Support Services	$0.67	$0.57	13	$1.21
Other[1]	$9.38	$3.01	54	$6.76
Direct	$142.82	$21.04	216	$231.27
Indirect - Industrial Support	$40.48	$9.93	167	$69.15
Indirect - Consumption	$16.20	$5.86	115	$24.86
Total Northern Territory	$199.51	$36.82	498	$325.28
Rest of Australia	$17.28	$3.98	40	40.05
Total Australia	$216.79	$40.80	538	$365.33

[1]Includes the sectors of Agriculture Forestry & Fishing, Public Administration & Safety, Education & Training, Health Care & social assistance, Arts & recreational services, and Other services.
FTE = Full Time Equivalent employment positions for one year
Source: Aurecon

The economic impacts resulting from direct mine expenditure of $231 million per annum on the Northern Territory economy during Stage 2 over 2014 to 2027 are estimated to:

- increase total output across all industries by $4.6 billion ($325 million per annum)
- increase household income by $515.5 million ($36.8 million per annum)
- create direct employment opportunities of 216 FTE, and support the creation of another 167 through industrial support and 115 FTE through consumption induced effects
- increase Gross State Product by $2.8 billion ($199.5 million per annum).

Nationally and inclusive of the above Northern Territory impacts, the MRMDP Stage 2 operations will:

- increase total output across all industries by $5.1 billion ($365.3 million per annum)
- increase household income by $571.2 million ($40.8 million per annum)
- support the creation of 538 FTE's nationally
- increase Gross National Product by $3 billion ($216.8 million per annum).

3.3.4 Stage Three: Extended mine operational life (2028 to 2036)

Stage 3 of MRMDP is projected for the 9 years between 2028 and 2036 (inclusive). The existing MRM is projected for decommissioning at the end of 2027, whereas Phase 3 proposes to extend the operational mining capacity of MRM to the end of 2036.

Annual ore production during Stage Three is 4.6Mtpa, down slightly from the 5.5 Mtpa ore mined during Stage 2 (2014-2027).

Key modelling input assumptions for Stage 3 are:

- Total projected additional Capex expenditure over this 9 year period is $205 million. Aurecon's review estimates that only 75% or $154 million is likely to be locally sourced (imported products/materials excluded). Modelling an annual average of $17.1 million per annum as the direct economic stimulus (via expenditure) on local/state goods and services.
- Total projected additional Opex expenditure over this 9 year period is $2.188 billion, all of which is expended for goods and services sourced within the Northern Territory. An average of $243.1 million per annum has been modelled as the direct economic stimulus (via expenditure) on local/state goods and services, and mine staff costs.

The following table summarises the Stage 3 Extended mine operational life (2028 – 2036) impact of the MRMDP annualised construction spend upon the Northern Territory and national economies.

Table 19 Annual economic impact of Stage 3 Extended mine operational life

	Value added ($m)	Income ($m)	Employment (FTE persons)	Output ($m)
Mining	$188.70	$27.26	252	$303.81
Manufacturing	$1.09	$0.53	10	$3.41
Electricity, Gas, Water & Waste Services	$2.04	$0.63	8	$3.64
Construction	$5.87	$2.48	38	$14.83
Wholesale Trade	$0.57	$0.34	6	$1.12
Retail Trade	$1.44	$0.89	28	$2.34
Accommodation & Food Services	$1.02	$0.54	21	$1.97
Transport, Postal and Warehousing	$2.86	$1.11	19	$5.17
Information Media & Telecommunications	$0.61	$0.19	3	$1.11
Financial & Insurance services	$3.25	$1.39	11	$4.26
Rental, Hiring & Real Estate Services	$2.03	$0.69	13	$3.49
Professional, Scientific & Technical Services	$2.66	$1.85	27	$5.33

	Value added ($m)	Income ($m)	Employment (FTE persons)	Output ($m)
Administrative & Support Services	$0.79	$0.67	15	$1.42
Other[1]	$10.70	$3.43	62	$14.55
Direct	$159.71	$24.02	230	$260.24
Indirect - Industrial Support	$45.44	$11.29	168	$77.88
Indirect - Consumption	$18.47	$6.68	115	$28.34
Total Northern Territory	$223.62	$41.99	513	$366.46
Rest of Australia	$18.93	$4.53	41	$45.12
Total Australia	$242.55	$46.52	554	$411.58

[1]Includes the sectors of Agriculture Forestry & Fishing, Public Administration & Safety, Education & Training, Health Care & social assistance, Arts & recreational services, and Other services.
FTE = Full Time Equivalent employment positions for one year
Source: Aurecon

The economic impacts resulting from direct mine expenditure of $260 million per annum on the Northern Territory economy during Stage 3 over 2028 to 2036 are estimated to:

- increase total output across all industries by $3.3 billion ($366 million per annum)
- increase household income by $378 million ($42 million per annum)
- create direct employment opportunities of 230 FTE, and support the creation of another 168 through industrial support and 115 FTE through consumption induced effects
- increase Gross State Product by $2 billion ($223.6 million per annum).

Nationally and inclusive of the above Northern Territory impacts, the MRMDP Stage 3 operations will:

- increase total output across all industries by $3.7 billion ($411.6 million per annum)
- increase household income by $418.7 million ($46.5 million per annum)
- support the creation of 554 FTE's nationally
- increase Gross National Product by $2.2 billion ($242.5 million per annum).

3.3.5 Stage Four: Decommissioning (2037 to 2039)

Stage 4 of the MRMDP is projected for a 3 year period between 2037 and 2039 (inclusive). Although decommissioning was previously planned at the end of 2027, Phase 3 expansion has deferred Decommissioning until 2037-2039 and increased the investment requirement due to the expanded size of operations.

Key modelling input assumptions for Stage 4 are:

- Total projected expenditure over this 3 year period is $132 million
- Total projected additional expenditure over this 3 year period is $132 million, all of which is expended for goods and services sourced within Northern Territory. An average of $44 million per annum has been modelled as the direct economic stimulus (via expenditure) on local/state goods and services, and mine staff costs.

The following table summarises the Stage 4 Decommissioning (2037 – 2039) impact of the MRMDP annualised construction spend upon the Northern Territory and National economies.

Table 20 Annual economic impact of Stage 4 Decommissioning

	Value added ($m)	Income ($m)	Employment (FTE persons)	Output ($m)
Mining	$16.75	$2.42	23	$26.97
Manufacturing	$0.28	$0.14	3	$0.89
Electricity, Gas, Water & Waste Services	$0.37	$0.11	2	$0.66
Construction	$10.24	$4.32	65	$25.85
Wholesale Trade	$0.12	$0.07	2	$0.25
Retail Trade	$0.33	$0.21	7	$0.54
Accommodation & Food Services	$0.23	$0.12	5	$0.43
Transport, Postal and Warehousing	$0.56	$0.22	4	$1.01
Information Media & Telecommunications	$0.15	$0.05	1	$0.27
Financial & Insurance services	$0.81	$0.35	3	$1.06
Rental, Hiring & Real Estate Services	$0.59	$0.20	4	$1.01
Professional, Scientific & Technical Services	$0.63	$0.44	7	$1.26
Administrative & Support Services	$0.30	$0.26	6	$0.55
Other[1]	$2.42	$0.76	14	$3.24
Direct	$22.38	$5.66	92	$44.0
Indirect - Industrial Support	$7.15	$2.46	34	$13.49
Indirect - Consumption	$4.25	$1.54	20	$6.51
Total Northern Territory	$33.77	$9.65	146	$64.00
Rest of Australia	$2.86	$1.04	12	$7.88
Total Australia	$36.63	$10.69	158	$71.88

[1]Includes the sectors of Agriculture Forestry & Fishing, Public Administration & Safety, Education & Training, Health Care & social assistance, Arts & recreational services, and Other services.
FTE = Full Time Equivalent employment positions for one year
Source: Aurecon

The economic impacts resulting from direct mine expenditure of $44 million per annum on the Northern Territory economy for Stage 4 over 2037 to 2039 are estimated to:

- increase total output across all industries by $192 million ($64 million per annum)
- increase household income by $29 million ($9.7 million per annum)

- create direct employment opportunities of 92 FTE, and support the creation of another 34 through industrial support and 20 FTE through consumption induced effects
- increase Gross State Product by $101.3 million ($33.8 million per annum).

Nationally and inclusive of the above Northern Territory impacts the MRMDP Stage 4 decommissioning will:

- increase total output across all industries by $215.6 million ($71.9 million per annum)
- increase household income by $32.1 million ($10.7 million per annum)
- support the creation of 158 FTE's nationally
- increase Gross National Product by $109.9 million ($36.6 million per annum).

3.4 Local significance

The level of economic impact that the MRMDP will have upon the local community is determined twofold:

- By the amount of goods and services soured from local businesses, particularly catering services, short term accommodation, and property services to name a few
- By the number of mining staff residing locally

3.4.1 Local procurement

The Northern Territory Government has a major initiative *Buy Territory*, promoting expenditure on local goods and services to support Territory Businesses, jobs and the economy.

MRM have a local procurement policy to encourage using local businesses which are technically capable and commercially competitive. All potential suppliers to MRM need to be accredited by MRM, and demonstrate that they:

- *Enforce high standards of occupational health and safety for their employees and contractors*
- *Have regard to environmental considerations when manufacturing, packing or transporting their goods*
- *Respect human rights*
- *Are appropriately insured*
- *Are providing products and services that are fit for purpose* (Xstrata Zinc Australia (2011), McArthur River Mine Community Information Newsletter, *Regional Development*, August 2011, Page 1)

MRM's procurement procedures are typical of business practice and generally involve a tendering and negotiation process, and contract management.

The following analysis highlights the significance of MRM local procurement policy. In 2005, MRM invested a total of $60 million on goods and services with 415 Northern Territory based suppliers representing a wide range of product and service industries as highlighted below in Table 21.

Table 21 **Spending by MRM with Northern Territory and Local Suppliers (2005)**

	Total Northern Territory Sources		Local Community Sources	
Product/service category	Spending	No. Suppliers	Spending	No. Suppliers
Utilities	$21,633,779	2		
Fuel	$7,342,135	2		
Transport and Freight Services (Air, road and sea)	$11,814,168	13	$5,838,965	3
Mining Support Companies	$1,328,335	5		
Heavy Equipment Maintenance	$1,660,924	2		
General Workshop Supplies	$1,990,793	23		
Tyres	$611,159	1		
Electrical Supplies	$1,331,421	6		
Labour Hire	$4,308,817	10	$52,500	2
General Goods	$1,518,438	84	$4,200	5
Safety Goods	$609,365	7		
Steel Supplies	$496,963	7		
Conveyor Belt Supplies	$328,456	1		
Security Services	$625,501	3		
Professional Services	$322,468	3		
Trade Services including plumbing, refrigeration, pest control, TV	$179,304	4	$27,000	2
Bearings	$223,968	2		
Hoses, Hydraulic Services and Pumps	$1,030,868	11		
General and heavy Equipment Hire	$735,035	19	$45,500	3
Light Vehicles	$116,099	2		
Building and Construction Services	$993,598	18		
Office Supplies	$128,832	3		
Office Rental	$73,883	2	$15,400	1
Computer and IT supplies	$74,585	3		
Training Services	$96,686	5		
Tourism and Accommodation	$70,355	4	$4,000	1
Professional Body Memberships	$32,949	2		
General Goods and Services (under $5,000pa)	$238,974	165		
Community Organisations	$22,400	5	$22,400	5
Total	$59,939,316	415	$6,009,965	22

Source: URS (2005), McArthur River Mine Open Cut Project, Draft Environmental Impact Statement August 2005, Page 13-23 & 13-24.

In 2010 MRM spent $7 million on local procurement within Borroloola and $60 million on local procurement within the Northern Territory (Community Information Newsletter, Regional Development to Employment, August 2011).

At the local level including the township of Borroloola and Gulf SLA, a relationship can be drawn between the level of direct employment at the existing MRM and consumption spending within the area. Of the existing 440 workforce, approximately 80 workers reside locally that nominally includes the township of Borroloola, Robinson River township, and local stations.

As indicated within this report, the mine requires both a substantial short term construction workforce in 2012 and 2013 and a long term expanded operational workforce. This will potentially have substantial economic flow-on effects to the local community.

As indicated earlier within Table 1 the unemployment level within the township of Borroloola (6.6%) was well above the state average (4.3%) as at the last census (2006), while the unemployment rate for the Gulf SLA (2.9%) was relatively much lower. The following section examines the significance of local employment income attributable to the MRM.

3.4.2 Local employment income

This analysis examines the local employment income that is directly attributed to MRMDP. As indicated earlier, MRM currently employs 440 staff directly at the mine site, of which 80 reside locally. As indicated earlier within Table 9, 104 of the 780 workforce for the Borroloola/Gulf region were engaged within mining (Census 2006), with MRM being the main operational mine at the time, and a smaller secondary mining operation at Merlin Diamond mines.

An influx of workers is required for MRMDP during the Stage 1 Construction (2012 – 2013). Due to the short term nature of this Construction stage, the need for skilled construction workers, and the lack of local workers available with these skillsets, it is envisaged that the entire construction workforce would be FIFO basis from Darwin, with on-site accommodation constructed to house the workforce.

As highlighted below in Table 22, it is estimated by the proponent that MRMDP will require 220 additional and direct mine site jobs during Stage 1 Construction, 205 additional positions in Stage 2 Uplift in production, 355 additional positions in Stage 3 Extended mine operational life, and 115 additional employment opportunities in Stage 4 Decommissioning. It is noted that these additional employment positions cover a variety of positions including mining, processing, construction, manufacturing, and a substantial number of administrative positions.

Table 22 Overview of average mine site employment opportunities at MRMDP

	Darwin		Borroloola/Gulf		Northern Territory		
Stage	Existing	Additional[1]	Existing	Additional[1,2]	Existing	Additional[1]	Total
Stage 1 Construction 2012 & 2013	360	220	80	-	440	220	660
Stage 2 Uplift in Production 2014 to 2027	285	170	65	35	350	205	555
Stage 3 Extended mine operational life 2028 to 2036	0	290		65	-	355	355
Stage 4 Decommissioning 2037 to 2039		90		25		115	115

[1]Directly attributed to MRMDP expansion.
[2]Currently 18.5% of the MRM workforce reside locally (township of Borroloola/Gulf SLA). It is projected that this ratio of local employment is maintained with MRMDP expansion.
Source: Aurecon calculations based on data sourced from Excel spread sheet provided by MET Serve: *Copy of MRM Ph 3 Project personnel V38 r2.xlsx*

As illustrated in the table above, an additional 35 residents from the local region defined by township of Borroloola and Gulf SLA are projected to gain employment at MRM during Stage 2 (2014 to 2027). An additional 65 employment opportunities for local residents is projected for Stage 3 (2028 to 2036), and 25 employment opportunities for Stage 4 (2037 to 2039).

The following analysis highlights the significance of additional local employment income directly attributed to MRMDP staff. The average annual salary level at MRM taking into account direct employees and contractors, and the variety of job tasks from mining to administrative to support services, is $85,000 per annum.

A significant proportion of the annual salary income will be spent on local goods and services, supporting local businesses. According to the ABS data the average household spends approximately 76% of gross household income on goods and services other than Income tax, Mortgage repayments and Superannuation and life insurance.

Table 23 Average weekly household expenditure proportions in Northern Territory

Broad expenditure group	Proportion
Current housing costs (selected dwelling)	15.5%
Domestic fuel and power	2.0%
Food and non-alcoholic beverages	12.8%
Alcoholic beverages	3.2%
Tobacco products*	1.0%
Clothing and footwear	2.9%
Household furnishings and equipment	3.6%
Household services and operation	4.9%
Medical care and health expenses	2.7%

Broad expenditure group	Proportion
Transport	13.1%
Recreation	11.0%
Personal care	1.4%
Miscellaneous goods and services	6.7%
Sub-Total (Goods & Services)	80.6%
Other Payments	
Income tax	14.1%
Mortgage repayments - principal (selected dwelling)	3.2%
Superannuation and life insurance	2.0%
Total	**100%**

[1] *Data for the Fourth Quintile, Gross Household Income, which mining staff are more likely to fit in.*
Raw data sourced from ABS (2011), *Household Expenditure Survey, Australia: Summary of Result 2009-10, Northern Territory Cat. No. 6530.0*

For the purposes of this study, it is estimated that MRMDP staff residing locally will spend 60% of their expenditure on goods and services locally, whilst the remainder is likely to be spent elsewhere (travel, holidays, purchase of goods and services from outside the region). The table below highlights the economic significance of MRMDP from the prospective of local employment income.

Table 24 Annual expenditure on local goods and services within the Borroloola/Gulf SLA Region by MRM employees

	Stage 1 (2012 & 2013)	Stage 2 (2014 to 2027)	Stage 3 (2028 to 2036)	Stage 4 (2037 to 2039)
Number of Existing MRM employees residing locally[1]	80	65	0	0
Total annual local salary income[2]	$6.80 m	$5.53 m	-	-
Estimated expenditure on goods & services by MRM staff residing locally[3]	$3.30 m	$2.68 m	-	-
Projected MRMDP employees residing locally[1]	-	35	65	25
Total annual local salary income[2]	$-	$2.98 m	$5.53 m	$2.13 m
Total additional expenditure on goods & services by MRMDP staff residing locally[3]	$-	$1.44 m	$2.68 m	$1.03 m

[1] *Locally defined as the township of Borroloola and Gulf SLA.*
[2] *Based on the current average MRM salary of $85,000.*
[3] *Estimated at 48.4% of total gross income. Calculated as 60% of the net expenditure undertaken on goods and services. Expenditure on goods and services was earlier highlighted as being 80.6% of total income, see Table 23 above.*

It is estimated that during Stage 2 the 35 additional MRM staff residing locally will receive approximately $2.98 million in salary income, spending approximately $1.44 million on goods and services supporting local businesses. Note that this only includes direct MRM employees, and that additional indirect employment positions within the local community will also occur as a result of MRMDP expenditure on local goods and services.

The operational workforce of MRM consists of a combination of owner operator management staff and contractor engaged staff. In addition to direct mining staff, the project requires an extensive number of supporting personal including:

- Administrative: administrative officers/clerks, reception & mail, payroll, recruitment, community liaison officer, stores/purchasing clerks, warehousing clerk, etc.
- Technical support: IT support, geologists, engineers (mechanical, mining, electrical, chemical environmental), surveyors
- Safety: site security, health rehabilitation officer, OH&S officers, First Aid nurse, etc.
- Trades: Carpenters, plumbers, scaffolders, electricians, fitters & turners
- Miscellaneous: Cooks, cleaners, gardeners/grounds maintenance

To date local residents have been actively engaged by MRM, with locals representing 18.5% of the existing workforce. MRM realise the value of employing local residents including:

- Local employees are more likely to remain with the project over a much longer period of time, reducing recruitment and training costs
- Locals do not incur substantial travel time and costs (in comparison to FIFO personnel)
- Local salaries end up supporting local businesses

As a long-term project involving a significant investment, MRM seeks to a constructive long-term relationship with the local community. As such, MRM will continue to proactively seek to employ locals by:

- Promoting certain vacancies locally, particularly where matching skillsets with the local workforce has been identified
- Promoting on-site training and development programs, particularly for local indigenous community members (see discussion below)

Key outcomes for local training and education for 2010 include 13 apprenticeships and 20 trainees (Certificate II in Entry into Mining) (Xstrata Zinc Australia (2011) McArthur River Mine, Community Information Newsletter, *Pathways to Employment*, August 2011)

Employment strategies for Indigenous people

MRM has developed an Indigenous employment and training strategy in order to sustain and grow Indigenous workforce at MRM above 20 per cent of the total permanent employee base. *"MRM was successful in increasing Indigenous employment from17% in 2009 to 21% in 2010, surpassing the target of 20% for the first time* (Xstrata Zinc Australia 2010). The Indigenous employment and training strategy was developed in association with the Traditional Owners, Borroloola School, Northern Territory and Australian Governments, training providers and recruitment services. The strategy targets Indigenous residents of the region including the Gurdanji, Mara, Garawa and Yanyuwa people, as well as Indigenous residents of other regions on a FIFO basis.

In addition to direct recruitment for job vacancies, MRM have a trainee program to engage school leavers and unskilled or semi-skilled workers, offering nine alternative career paths for trainees (Xstrata Zinc Australia (2011) McArthur River Mine Community Information Newsletter, *Pathways to Employment*, August 2011).

Employment strategies for people with a disability

MRM is governed by Xstrata's global employment principles expressed within its Business Principles and the commitments stipulated within its Sustainable Development Policy, which states that:

"*We are an equal opportunities employer, and value the benefits to our business that are brought about through a rich diversity in our employee base. Our recruitment, remuneration and promotion policies and procedures aim to ensure that equal opportunity is afforded to all, irrespective of race, nationality, religion, gender, age, sexual orientation, disability, political or other opinion or any other basis. Xstrata is committed to upholding the UN Universal Declaration of Human Rights and the International Labour Organisation (ILO) Declaration on Fundamental Principles and Rights at Work*."

(www.xstrata.com/sustainability/ourpeople/employees/ourapproach/managementandstrategy)

MRM endorses diversity within its workforce including personnel with disabilities, subject to ensuring the high levels of workplace health and safety requirements are maintained.

3.4.3 Housing

MRM already accommodates all its existing FIFO employees at a purpose built village on site, adjacent to the onsite airport. It is proposed to extend the accommodation village northwards to accommodate extra dongas to cater for the increased operational workforce.

MRMDP proposes to build a temporary camp for the construction period, which will be decommissioned once all construction activities are complete.

3.4.4 Local community infrastructure and services

The impact of the MRMDP on community infrastructure and services will be limited by the fact that the majority of the additional workforce will be FIFO and accommodated at the mine site.

In 2007 MRM in conjunction with the Northern Territory Government established the MRM Community Benefits Trust which is allocating $1.35 million per year for the first eight years, and $1.25 million in each of the following years subject to regular reviews over the life of the mine.

The Trust's plan for 2011 is to continue supporting the development of community facilities, but with a focus on supporting education, encouraging healthy lifestyles for youth and improve understanding of traditional culture. In 2011 the trust has the resources to invest a total of up to $3 million in grants, scholarships and bursaries to benefit the Borroloola community.

3.4.5 Local property value impacts

MRM already employs 80 local residents sourced from within the townships of Borroloola and Robinson River, and also from surrounding stations. Maintaining the existing ratio of engaging 18.5% of its workforce using local residents, the MRMDP offers an additional 20 employment opportunities. Considering the existing relatively high unemployment rates for Borroloola, and the traineeship training programs that MRM already have in place, the engagement of an additional 20 local residents at the mine site is not expected to alter significantly the existing local property market conditions or prices.

3.4.6 Regional significance through exports

The MRMDP would result in a significant increase in the value of mineral exports from the Northern Territory. As highlighted by Table 25 below MRMDP aims to more than double the existing production rate, and also to extend mining operations by 9 years.

Table 25 Additional lead-zinc-silver production attributed to MRMDP

	Phase 2 Existing Operations	Phase 3 Expansion project
Product	360,000 dmt/y of lead-zinc-silver concentrate (166,000 tonnes of zinc in concentrate)	800,000 dmt/y of lead-zinc-silver concentrate (368,000 tonnes of zinc in concentrate)
Time	Current until 2027	Proposed from 2014 to 2036

Source: Xstrata Zinc Australia (2011), *McArthur River Mine Phase 3 Development Project, Notice of Intent.*

3.5 Costs to government

Potential costs to government are discussed in this section and relate specifically to MRMDP.

Road

Under the MRMDP, concentrate will continue to be transported to the Bing Bong port in covered concentrate haulage trucks in the same manner that occurs at present. The existing route will be used along the Carpentaria Highway from the mine to Borroloola, and from Borroloola to the port at Bing Bong, bypassing Borroloola township. The frequency of truck trips will increase from approximately 9 trucks per day to 18 trucks per day.

No additional infrastructure investment is required.

Port

The existing facilities at Bing Bong Port are sufficient to cater for the additional production from MRMDP. The average number of return trips taken by the Aburri will increase from approximately 110 to 250 per year.

No additional infrastructure investment is required.

Power

Gas fired power generation already exist on site, generating 24MW (Megawatts). The existing power generation facilities are sufficient to facilitate the construction phase of MRMDP, and will be expanded to 27MW in 2012.

The operational phase of MRMDP requires an additional 20 to 25 MW of power generation. A range of options are currently been investigated to facilitate additional power generation on site. Funding for the development of additional power generation requirements will be funded by the project, and not require any additional infrastructure investment from government sources.

Accommodation

The MRMDP will accommodate all of its FIFO employees on site within its existing purpose built accommodation village. Extensions are planned on site to house temporary construction workers, and to accommodate the additional staff required for the operational phase. Maintaining the existing ratio of engaging local residents for 18.5% of the workforce results in an additional 20 local residents engaged at the mine site.

Based on projected mining staff requirements for MRMDP and the existing pool of available residents unemployed within the local community, there is no requirement to attract new residents to the Borroloola/Gulf region solely for the MRMDP. As such, there is no requirement for additional public housing linked to the MRMDP. If anything, the MRMDP offers to extend the operational phase of the existing MRM operations, extending employment and income benefits for 80 existing local residents.

3.6 Government revenues

This section considers the possible impacts on government revenues arising from the MRMDP, particularly Territory payroll taxes and royalties. In 2010 MRM paid $4.2 million in government taxes and charges which consists mainly of royalty and payroll tax duties (Xstrata Zinc Australia (2011) McArthur River Mine Community Information Newsletter*, Regional Development*, August 2011).

3.6.1 Royalties

The proposed Commonwealth's Minerals Resource Rent Tax (MRRT) and Petroleum Resource Rent Tax (PRRT) are focused on taxing the biggest and most profitable commodities, namely iron ore, coal, oil and gas. It is noted that Zinc/Lead/Silver is omitted from this new tax.

However, the Mineral Royalty Scheme of the Northern Territory is applicable to MRM, which is a profit based royalty regime based on the net value of a mine's annual production. In addition in market prices, mining costs are taken into account in royalty calculations.

Royalties were increased from 18% to 20% as of 1st July 2010, thereby increasing the royalty amounts payable.

3.6.2 Territory payroll tax

Companies or groups of companies that pay $1.5 million or more a year in wages must pay payroll tax. There are deductions, concessions and exemptions available to eligible entities. As of the 1 July 2011 the current payroll tax is 5.5% of total taxable wages (Revenue Circular RC-PRT-006: 2011-2012 Payroll Tax Change, Territory Revenue Office, Northern Territory Treasury).

The additional employment and associated territory payroll tax liability is highlighted below in Table 26. It is assumed that all additional staff directly employed by MRM or contractors, is over and above any exemption or payroll tax deduction levels. Average earnings for additional MRMDP personnel are estimated conservatively at $85,000 per annum. The table below highlights the MRMDP staffing levels and forecast Territory payroll taxes.

Table 26 Additional Territory payroll taxes to the Northern Territory Government

Stage	Additional Staffing Levels	Additional payroll taxes to the Northern Territory Government[1]
Stage 1 Construction 2012 & 2013	220	$1,028,500 per annum
Stage 2 Uplift in Production 2014 to 2027	205	$958,375 per annum
Stage 3 Extended mine operational life 2028 to 2036	355	$1,659,625 per annum
Stage 4 Decommissioning 2037 to 2039	115	$537,625 per annum

[1]*In current dollars, assuming average mine site wages of $85,000 per annum, and payroll tax of 5.5%.*

Assuming that the full value of MRMDP wages attracts payroll tax, it is estimated that the Northern Territory Government would receive additional payroll tax revenues over the life of the project of $32.0 million. It is noted that this analysis only examines the level of payroll tax generated by the mine site staff, and that flow-on jobs created by the MRMDP may also generate significant amounts of payroll taxes to the Northern Territory government.

3.6.3 Local government revenue

For the Borroloola/Gulf SLA Region, a proportion of the new employment and new mine expenditure generated by the MRMDP will stimulate housing and commercial/ retail development. To the extent that new land is developed or converted into higher value use and hence higher rateable land, local government revenues would benefit.

However, an estimate of the likely revenue generated would depend critically on actual market for residential/commercial development on greenfield sites, and the capacity of the local government authority to provide appropriately zoned land to meet demand if needed.

3.7 Ecosystem impacts and alternative land use

3.7.1 Ecosystem impacts

The land surrounding the existing MRM consists of open woodland, supporting extensive cattle grazing operations. Approximately 1,255 ha of remnant vegetation requires clearing for the MRMDP. Where rehabilitation activities do not return the final landforms to a grazing land use, native bushland species will be established. This vegetation and associated ecosystem provide significant goods and services, many of which are both difficult to fully identify and value from an economic perspective. The majority of the land to be cleared is only suited to extensive cattle grazing. Land that is disturbed by the MRMDP will be returned to low level grazing land where practicable.

The general benefits of an ecosystem are stated as:

- Provisioning services such as food, water, timber and fibre
- Regulating services that affect climate, floods, disease, wastes and water quality
- Cultural services that provide recreational, aesthetic and spiritual benefits, and
- Supporting services such as soil formation, photosynthesis and nutrient cycling

As many of these services and products fall outside the current market system, the full value of the ecosystem from an economic perspective is difficult to estimate (Skinner & Hall 2007).

In valuing the 1,225 ha of remnant vegetation to be cleared, the economic value of this ecosystem has been assessed utilising two approaches:

- Comparison to past studies
- As a carbon sink

Comparison to past studies

The most useful study identified was by Curtis (2003) who undertook a study to place an economic value of the ecosystem of the Wet Tropics World Heritage Area of north-east Queensland.

Curtis (2003) identifies a total of 10 ecosystem services, and valued each utilising various methodologies including multiple criteria analysis (evaluates and ranks alternatives based on preferences (weights) for multiple-criteria and the values of those criteria) and Delphi panel (the formation of an interactive panel of experts, each of which are asked to share their expertise and work toward a consensus resolution of matters of opinion). Curtis (2003) identifies the value of remnant ecosystems within the Wet Tropics at $210 to $236 per ha per annum. However, this analysis is based upon perceived willingness to pay by various stakeholders.

BushBids is a market based instrument that has been recently introduced to protect native vegetation on private land in the Eastern Mount Lofty Ranges of South Australia, where only 8.4% of the original vegetation remaining. Through two rounds of single-sealed bid reverse auctions, stewardship agreements covering 2,256 ha of fragmented native grassland and grassy woodland were awarded to protect vegetation that also contained threatened plant and animal species. The combined result for both round one (2008) and round two (2011) was a bid price of $59.00 per ha per year (Woodlands BushBids Report 2011, South Australian Murray-Darling Basin Natural Resources Management Board).

It is noted that the $59 per ha/pa offered by the BushBids project to maintain highly valued remnant vegetation on private properties within South Australia provides a useful market indicator of the economic value. However it only involved a total of 70 sites, with the average being a 58 ha per property. Within the environment at MRM in which remnant vegetation dominates the landscape, the likely economic value would be substantially lower than the transactions captured for the BushBids project of $59.00 per ha/pa.

For the purposes of this project, $59 per ha/pa has been applied. The economic value assigned to the 1,255 ha of remnant vegetation to be cleared is estimated at $74,045 per annum in total.

Carbon sink

A second economic valuation technique considered is to value the area of remnant vegetation to be cleared for the MRMDP as a carbon sink (sequestration). In some ways, this methodology relies on partial market signals which are easier to validate from an economic perspective. As a carbon sink, the remnant vegetation has two carbon values: stored carbon in current state, and an annual sequestration value. Maraseni et al (2006) provide a useful indication of soil carbon within a spotted gum location in a low rainfall area of South East Queensland. A remnant forest was observed to contain approximately 300 tonne soil carbon per ha, and was able to sequester approximately 2 to 3 tonnes per annum.

Assuming a carbon value of $23 per tonne (which is the current price proposed for carbon tax), then the potential value of the 1,255ha of remnant vegetation at MRM is calculated as:

- $8.66 million in total carbon currently stored in the soil (300 tonne ha soil carbon, which is assumed to be totally lost upon clearing)
- $86,595 per annum, being the annual value of carbon sequestered by the remnant vegetation based on carbon sequestered into the soil at 3 tonne per annum

3.7.2 Alternative land use

A total of 1,255 ha of vegetation require clearing for the proposed MRMDP. Although this area is already fenced off to exclude cattle grazing, it has an economic value in terms of supporting cattle grazing operations. To the extent that mining operations reflect a higher economic use of the land, there would be, prima facie, a net economic benefit from a change in land use.

According to the ABS, a total area of 48,409,584 ha of land was utilised for grazing (mainly beef) activities in 2008/09 across the Northern Territory. At a high level of analysis (and generalising the stocking and production rate across all of the Northern Territory) the average value of production (cattle/calves/buffalo) is $6.33 per ha in 2008/09.

The cattle grazing opportunity cost of the 1,255 ha of vegetation to be cleared @$6.33 per ha, is $7,944 per annum. Note that production rates (stocking rates) and market prices vary substantially from year to year, however the $6.33 gross per ha annual grazing value is considered to be representative for the area.

Although the site will be rehabilitated after completion of mining operations through the restoration of native and improved vegetation where possible, it is unlikely that cattle grazing will be re-instated over the majority of the site.

4 Conclusions

The following conclusions have been drawn from the preceding economic impact analysis for the MRMDP:

Significant economic stimulus to the Northern Territory economy

The output of all industries in the Northern Territory is estimated to increase by $8.4 billion over the construction, operational and decommissioning stages of the MRMDP. These MRMDP stages will also contribute an estimated $5 billion to value added (ie GSP) to the Northern Territory economy over the 2012 to 2039 period.

Economic impact on the Australian economy

On a national basis and inclusive of Northern Territory output is estimated to increase by $ 9.3 billion over the MRMDP's 2 year construction stage and 26 year operational and decommissioning stages. Nationally the MRMDP will also contribute an estimated $5.5 billion to value added (ie GSP) over the same period.

New jobs

Direct and indirect employment opportunities will vary over the life of MRMDP from construction (2012-2013) until decommissioning (2037-2039). Within the Northern Territory, it is estimated to result in an additional 189 direct jobs and 120 indirect jobs, a total of 309 jobs over the 2 year construction stage.

During the operational stages between 2014 and 2036 it is estimated that MRMDP will support an additional 220 direct and ongoing jobs and 280 indirect and ongoing jobs, totalling 500 ongoing jobs over the period within the Northern Territory, and also support an additional 540 jobs nationally inclusive of the Northern Territory.

In an aggregate sense, the Northern Territory will gain an additional 5,748 direct FTEs and 6,897 indirect FTEs, totalling an estimated 12,645 FTEs where an FTE equates to one full year of employment. Cumulatively Australia will gain an additional 13,660 FTEs inclusive of the Northern Territory over the life of the project.

Support to the local Gulf economy

The MRMDP will also provide substantial additional employment opportunities for local residents, boosting local income. During the operational stages between 2014 and 2036, an additional 35 to 65 employment opportunities will arise creating additional local salary income of $3 million to $5.5 million per annum.

The MRMDP will also result in an increase in local procurement expenditure within the Borroloola region, which in 2010 totalled approximately $7 million.

Boost for state government revenue

Subject to exchange rate variations, market prices and cost of mining over the life of the mine, the MRMDP is projected to make substantial royalty payments to the Northern Territory Government. The MRMDP will also incur significant Territory payroll taxes totalling approximately $32 million throughout the project's life to 2039.

Boost for Federal government revenue

Although the proposed MRMDP is exempt from the proposed MRRT announced in the 2010 Federal Budget, substantial company tax will be incurred by the proponent providing the Australian Government with a revenue stream over the life of the project.

Substantial boast to balance of payments

The MRMDP is proposing to more than double annual production of lead-zinc-silver concentrate for export, which will improve Australia's current account in the balance of payments.

Minor cost in terms of revenues forgone

The economic significance of clearing 1,255ha for the MRMDP from its alternative productive use of cattle grazing is estimated at approximately $7,944 per annum, the clearing of carbon reserves within the existing vegetation is estimated at $11.26 million; and the native vegetation to be cleared also has an ecosystems services value, which is estimated at $74,045 per annum.

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Appendices

Appendix A
Map of Roper Gulf Shire

Source: Roper Gulf Shire web site on http://www.ropergulf.net.au

Appendix B
Input Output Methodology

The impacts on the regional economic environment can be assessed using input-output analysis. As it is an economic impact analysis, it does not address project evaluation matters that are better suited to cost benefit analysis which returns the net economic worth of a project.

The input-output approach is based on industry tables that model the structure of an economy by describing inter-industry relationships. It is a useful approach that can describe total impact on an economy from an initial increase in demand in a particular industry. The underlying data set for this analysis was the national 2006-07 Input - Output tables as published by the ABS (2011) (*Australian National Accounts: Input – Output Tables, Electronic Publication. Final Release 2006-07 Tables*, Cat. No. 5209.0.55.001). The compilation of a state based table for the Northern Territory was achieved using published state accounts from ABS (2011) (*Australian National Accounts: State Accounts,* June 1990 – June 2010, Table 1 Gross State Product & Table 10 Expenditure, Cat. No. 5220.0), and updates on state and industry employment using ABS (2011) (*Labour Force, Australia, Detailed, Quarterly*, Table 5 Employed persons by State and Industry, Nov 1984 – May 2011, Cat. No 6291.0.55.003).

Economic impacts at a regional and national level can be traced through the economic system in a number of difference ways. In this assessment, the following impacts are considered:

- Direct multiplier effects – increases in economic activity (value added) and employment that are directly generated in the industry receiving the impact
- Indirect multiplier effects – flow-on impacts from industries that support the industry receiving the direct impact
- Induced multiplier effects – changes in consumption by the household sector in response to income changes from the direct and indirect impacts
- Total multiplier effects – the sum of the direct, indirect and induced effects outlined above

These impacts are measured in a number of different ways:

- Industry Output
- Value-added
- Employment
- Household income

While output measures consider the gross value of production, they include the value of raw materials generated in earlier stages of production. There is a potential tendency to double count the impact. Consequently, value added is used, as it only considers the value of incremental raw materials at each stage.

Employment measures the number of jobs required to meet additional production in the economy. It may occur through increased use of existing labour or creation of additional jobs, and typically expressed in terms of equivalent full-time employment (FTEs).

There are a number of limitations relating to the application of an input-output methodology which are discussed in the following points:

- This study relies on linkages between mining and downstream/upstream sectors (including households and government) observed at the national level, which is dominated by the coal and iron ore sectors. As such the inter-sectoral relations for *Non Ferrous Metal Ore Mining* (which Zinc/Lead/Silver falls within) may differ slightly to that observed at the national level for the Mining sector; however these differences are likely to be minor. As such, care should be taken interpreting the specific industry impacts identified within the analysis, and more attention paid to the summary impacts at the state and national levels.

- Further, it should be noted that this method has a general bias to overstate impacts, as the ABS has noted that “the theoretical basis (of multiplier effects) produces estimates which somewhat overstate the actual impacts in terms of output and employment” (ABS 2002). This is mitigated by conservative estimates of the initial construction and operation impacts.

Inter-industry relationships are implicitly assumed to be linear across the scale of impacts and relative prices for inputs and outputs are assumed to remain in fixed proportion irrespective if supply conditions for inputs. This means that the results of input-output analysis do not take into account shortages in factors of production or changes in relative prices of inputs. In effect, these tables do not take into account marginal effects or economies of scale or unused capacity.

Aurecon Australia Pty Ltd
ABN 54 005 139 873

Level 14, 32 Turbot Street
Brisbane QLD 4000

Locked Bag 331
Brisbane QLD 4001
Australia

T +61 7 3173 8000
F +61 7 3173 8001
E brisbane@aurecongroup.com
W aurecongroup.com