

Jemena Northern Gas Pipeline Pty Ltd

Northern Gas Pipeline

Draft Environmental Impact Statement

APPENDIX S – ECONOMIC IMPACT ASSESSMENT

Public

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Economic Impacts: The Northern Gas Pipeline



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This publication

This report describes the construction of a new natural gas pipeline in Northern Australia and the impact this project will have on the local, regional and State/Territory economies.

The project is at the approval stage and hence financial information is limited to feasibility studies. The report thus describes the broad parameters of a potential project at this location although the numbers are considered sound given Jemena's lengthy experience in pipeline construction and operation.

This is a study about economic impacts – it is not a study about the project profitability or the business case for the project.

The financial impacts outlined should be regarded as broadly indicative only. While every endeavour has been made to make them as representative as possible, no investment decisions should be based on this report without independent confirmation.

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Executive Summary

Summary project impacts

Parameter	Impact
Capital investment (\$m)	\$775m
Annual operating cost expenditure (\$m)	\$9m
Pipeline revenue (\$m)	\$70 at full capacity
Potential Australian value added (\$m)	\$180m for gas sold
Construction phase employment impacts:	
Direct local workforce	264
Total region impact with flow on impacts	545
Total NT impact with flow on impacts	1,009
Operations phase employment:	
Direct local	13
Total region impact with flow on impacts	16
Total NT impact with flow on impacts	21
Operations phase household income (\$m)	
Direct local	\$1.2m
Total region impact with flow on impacts	\$1.9m
Total NT impact with flow on impacts	\$1.9m

Chapter**1**

1. Introduction

1.1 Overview

This report has been prepared by Economics Consulting Services. It describes the economic impacts of a new natural gas pipeline planned for construction in Northern Australia.

Jemena Northern Gas Pipeline Pty Ltd (Jemena) has been selected by the Northern Territory Government to construct and operate a high pressure underground gas pipeline connecting the existing Amadeus Gas Pipeline in the Northern Territory to the Carpentaria Gas Pipeline near Mount Isa in Queensland. The project is referred to as the Northern Gas Pipeline (NGP). Construction is scheduled to commence in February 2017 and the pipeline is planned to be operational by in July 2018.

This report meets the requirements of the Northern Territory Government for an Economic and Social Impact Assessment (ESIA).

The ESIA will result in the development of an Economic and Social Impact Management Plan (ESIMP) which aims to mitigate any negative impacts of the project, encourage new businesses, expand existing businesses and foster sustainable development and community wellbeing.

The ESIA will be used to support approvals for the project under Northern Territory and Commonwealth environmental protection legislation. The pipeline section in Queensland has obtained environmental approvals and assessment of environmental impacts in Queensland will be limited to matters of national environmental significance under the Commonwealth legislation.

1.2 Jemena

Jemena owns and operates a diverse portfolio of energy and water transportation assets across the east coast of Australia. The company supplies gas, electricity and water to millions of households.

Jemena can trace its origins to Australian Gas Light Limited (AGL). This company was given a Royal Charter to build the first town gas distribution system in Sydney in 1837 and was the second company to list on the Australian Stock Exchange.

The pipeline will carry natural gas from onshore and offshore sources to customers in Queensland and potentially future customers in the Barkly Tablelands region of the Northern Territory. An industrial processing plant in Mt Isa is the foundation customer for the project.

Chapter

2

2. Project setting

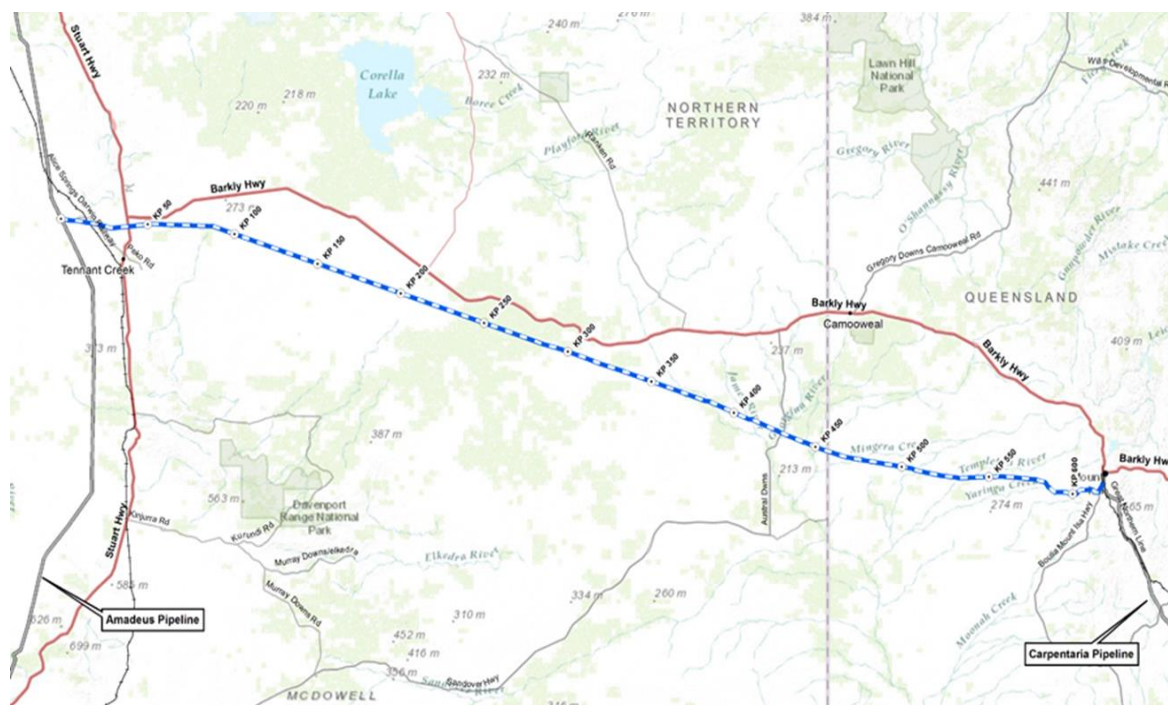
2.1 Pipeline context

Natural gas has been piped from the Palm Valley and Mereenie gas fields through the Amadeus Gas Pipeline to Darwin since 1986. In 2006, gas was brought onshore from the Timor Sea to the Darwin LNG plant and in 2009 from the Blacktip field in the Bonaparte Gulf. The availability of natural gas in excess of Northern Territory customer requirements now allows sale to other States and the proposed pipeline to Mt Isa facilitates this expansion.

2.2 Location

The project consists of a 622 kilometre (km) buried pipeline from Warrego 45km north-west of Tennant Creek to the Carpentaria Gas Pipeline at a location 7km south-west of Mount Isa (Qld) (Figure 1).

Figure 1: Pipeline location



Source: Jemena

2.3 Pipeline location and land use

The pipeline runs across two Local Government Areas (LGAs) - Barkly Regional Council area in the NT and Mount Isa City Council area in Queensland. Around three quarters of the pipeline length is in the NT and one quarter in Queensland. The majority of land traversed by the pipeline is remote and sparsely populated semi-arid pastoral land used for grazing cattle.

A compressor station and gas plant will be constructed at Warrego on the Philips Creek Pastoral Station and adjacent to the existing Amadeus Gas Pipeline. It will be serviced from Tennant Creek.

In the NT the project will see impacts during the relatively short construction phase followed by much smaller impacts when the pipeline is operating. During construction the following activities will occur in Tennant Creek that have the potential to impact local residents and businesses:

- Rail transport of equipment from Darwin to Tennant Creek rail siding
- Road transport of equipment from Tennant Creek rail siding to Tennant Creek laydown yard
- Road transport of equipment from laydown yard to construction corridor
- Road transport of personnel through Tennant Creek from Alice Springs and Tennant Creek Airports to construction camps
- Storage of equipment and machinery in laydown yard at Tennant Creek
- Temporary accommodation in town for up to 200 workers during the peak construction phase

A number of outstations, homesteads and service centres are located within 20km of the pipeline route including:

- Pakulki family outstation near Tennant Creek (3km from the pipeline)
- Three Ways Roadhouse on the Barkly Highway near Tennant Creek (5km)
- Wiitin family outstation near Tennant Creek (6.8km)
- Barkly Roadhouse (17km)
- Austral Downs homestead (3.5km)

The roadhouses are not major population hubs but are busy service areas, particularly in the dry season when tourism in the region is at a peak.

All other homesteads and outstations are located more than 20km from the pipeline, compressor stations and facilities.

The significant population centres in the general vicinity of the pipeline are:

- Tennant Creek – 22km distance
- Camooweal 75 km
- Mt Isa – 6km from the city centre in an industrial area

The largest Aboriginal community along the pipeline is Alpuurulam in the NT which is 47km south of the pipeline. The community is keen to be involved in employment and business opportunities.

During construction, the following project activities will occur near Mt Isa:

- Road transport of equipment from Tennant Creek through Mount Isa to the laydown yard
- Road transport of personnel from Mount Isa Airport to the construction corridor
- Storage of equipment and machinery in laydown yard
- Compressor station construction at Mica Creek
- Temporary accommodation in town for up to 110 workers during the peak construction phase

When the pipeline is operating there will be an estimated 13 full time equivalent positions associated with maintenance and operations. These employees and contractors will work from Tennant Creek and Mt Isa with occasional accommodation in camps along the pipeline.

At Mt Isa, the pipeline connects to the Mt Isa Meter and Compressor Station at Mica Creek which is the terminus of the Ballera gas pipeline. The gas gate station is next to the Mica Creek Power Station. This power station is on the outer fringe of Mt Isa on the Diamantina Development Road (Figure 2). There are some offices associated with the gas station next to the pipeline. A group of houses are located 600 metres away on the southern boundary of the power station.

Figure 2: Pipeline location at Mt Isa



2.4 The local and regional context

The economic impact of a project depends on the scale of the project and the size of the economy in which it operates. The impact is assessed by examining the consequences of adding the new project to the existing economy. This includes new construction investment, additional workers and an increased flow of purchases and sales associated with the construction and operating activities. It is common to examine the impacts at local, regional and State levels. There are no strict definitions of local or regional areas.

Local is defined for this study to imply a physical impact from the project such as noise, dust, emissions, lighting, or visual presence from both construction and transport operations. The pipeline does not pass through urban areas other than a short distance into the industrial area on the edge of Mt Isa. Other than this short distance at Mt Isa, there are no significant towns or Aboriginal community settlements within 10km of the pipeline route and hence the impact of the actual pipe welding and trenching will not have a significant physical impact on these settlements.

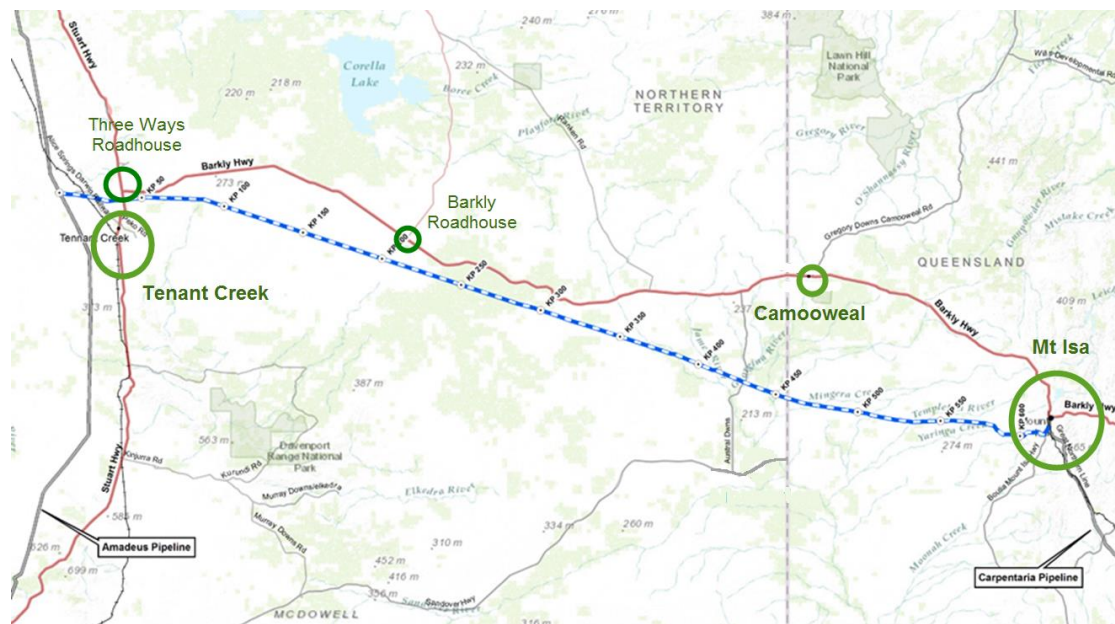
There is a substantial transport program associated with the pipe and to a lesser extent, the compressor stations. The pipe will be imported through the port of Darwin and railed then trucked to a holding yard at Tennant Creek. It will then be trucked to the laying areas all the way to Mt Isa. The trucks used will be similar to those currently using the Barkly Highway and while this will increase the traffic levels, the impact will not be substantial.

The workforce will be accommodated in Tennant Creek and Mt Isa and in camps along the route. There will be a significant impact on accommodation in Tennant Creek where the estimated 200 workers will utilise most of the beds in the town. The impact in Mt Isa with far more accommodation will be far less significant.

Given the physical impact of the construction and transport activities and the location of settlements, the local area for this project would be:

- Tennant Creek urban area
- Three Ways Roadhouse
- Barkly Roadhouse
- Mt Isa urban area
- Camooweal

There will be some pastoral station homesteads and smaller Aboriginal communities in the vicinity of the Barkly Highway but the majority of the population affected by the construction activities will be in these five locations (Figure 3).

Figure 3: Local area and pipeline location

Australian Bureau of Statistics (ABS) provides demographic data from the 2011 census for four of these locations. There is no published data for the small populations at the highway service centres. The locations included encompass only the urban areas of the settlement and hence the total area covered is 117 square kilometres with a population in June 2011 of 24,242 (Table 1). The exclusion of the roadhouse service centres is unlikely to have any significant impact on these numbers.

Table 1: Defined local area statistics

Census code	Locality	Area (sq km)	Population	Indigenous	Indigenous share
UCL715007	Tennant Creek	42	3,062	1,565	51%
UCL722002	Alpuurulam	10	423	391	92%
UCL312005	Mt Isa	62	20,570	2,852	14%
UCL322136	Camooweal	2.7	187	103	55%
Total		117	24,242	4,911	20%

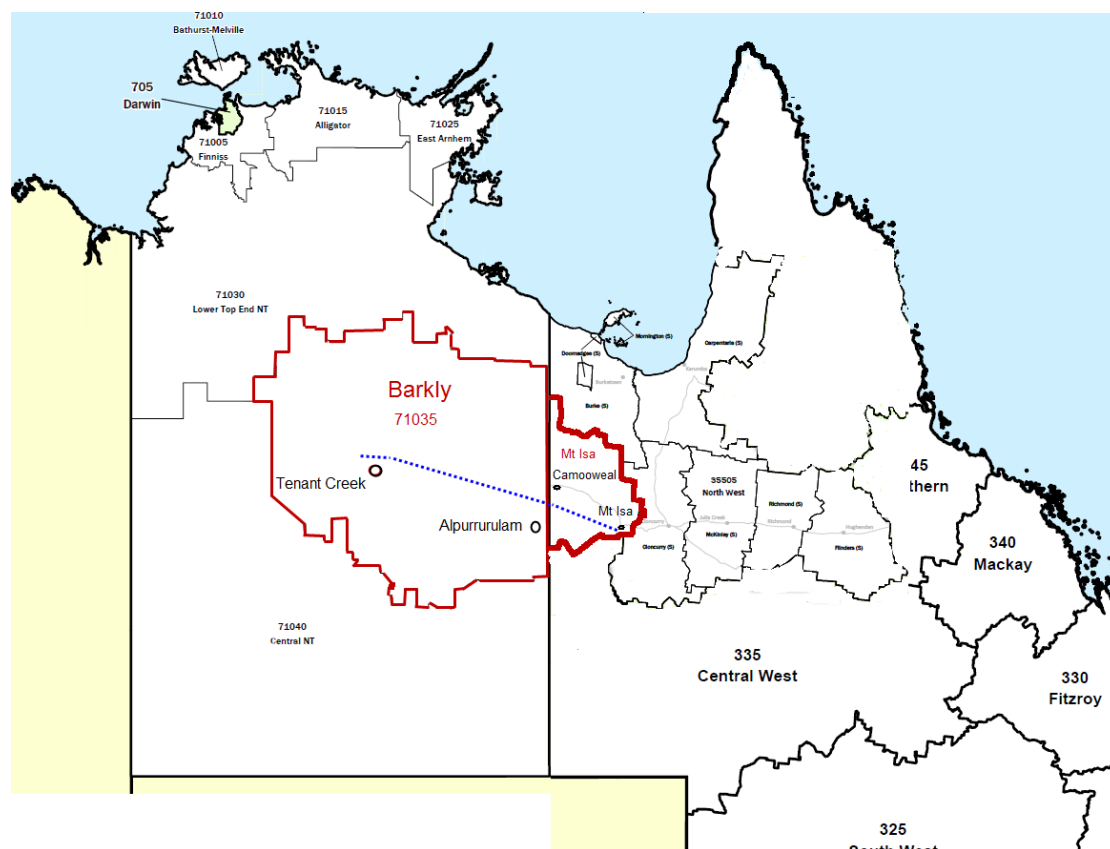
Source: ABS 2011

The defined area is dominated in population terms by Mt Isa with 85% of the total followed by Tennant Creek with 13%. Alpuurulam and Camooweal contributed only 2.5% to the population. Indigenous people (Aboriginal and Torres Strait origin) made up 20% of the population with most residing in Mt Isa and Tennant Creek. Tennant Creek, Alpuurulam and Camooweal have a majority Indigenous share of the population while Mt Isa, although having the largest number of Indigenous people, represented only 14% of the population.

The **region** in terms of economic impact is defined more broadly to include any area that might see a measurable impact. This includes areas from which employees might be drawn as well as goods and services. In lightly populated and remote areas the main roads are the prime determinant of the movement of employees and services.

The **region** is thus defined to include the full Barkly Tablelands LGA and the Mt Isa Local Government area which is extensive and includes Camooweal (Figure 4).

Figure 4: The region



Source: ABS, Economics Consulting Services

The two LGA's cover a vast area of 371,436 square kilometres (km) and are approximately 660 km north to south and 900 km from west to east (Table 2).

Table 2: Defined region statistics

Census code	Locality	Area (sq km)	Population	Indigenous	Indigenous share
70420	Barkly	303,295	5,722	3,649	64%
35300	Mt Isa (C)	43,188	21,237	2,983	14%
Total		346,483	26,959	6,632	25%

Source: ABS 2011

The population in the region was estimated at 26,959 with 25% of Indigenous descent. Nearly two thirds of the Barkly region population were of Aboriginal descent.

The defined region population was only 11% more than the defined local area and hence for this study the two zones will be effectively similar in demographic characteristics. Finance figures are available for the larger area but not for the smaller centres such as Alpuurulam and Camooweal and hence the economic focus of this study means that the larger area is a better basis for impact assessment than the local area. The Barkly and Mt Isa LGA's will be referred to in this study as the **region**. A local area will not be defined for the demographic analysis.

The Northern Territory will form the second level of analysis given the focus of the EIS on environmental approvals for the NT.

The geographical delineations for the project thus have three categories including Australia as a whole (Table 3).

Table 3: Area definitions

Region	NT	Australia
Barkly LGA ABS code 70202	Code 7 State	Australia
Mt Isa (LGA) ABS code 355055300		

2.5 Demography

2.5.1 Region

The Barkly LGA had a higher share of young people (under 20 years) than the region as a whole while Mt Isa had a higher share in the working age group (20-64 years). These differing age distributions meant that the median age for Barkly was a little lower than Mt Isa and the region as a whole (Table 4).

Table 4: Local area demographic profile

Parameter	Barkly	Mt Isa	Total
Population	5,722	21,237	26,959
Male proportion (%)	50%	53%	53%
Under 20 years	35%	31%	32%
20-64 years	59%	63%	62%
65+ years	6%	6%	6%
Median age	28	30	30

Source: ABS 2011

2.5.2 Northern Territory

The region had a very similar demographic profile to the Northern Territory as a whole with a very similar median age, sex balance and age profile (Table 5).

Table 5: Northern Territory and local area demographic profile

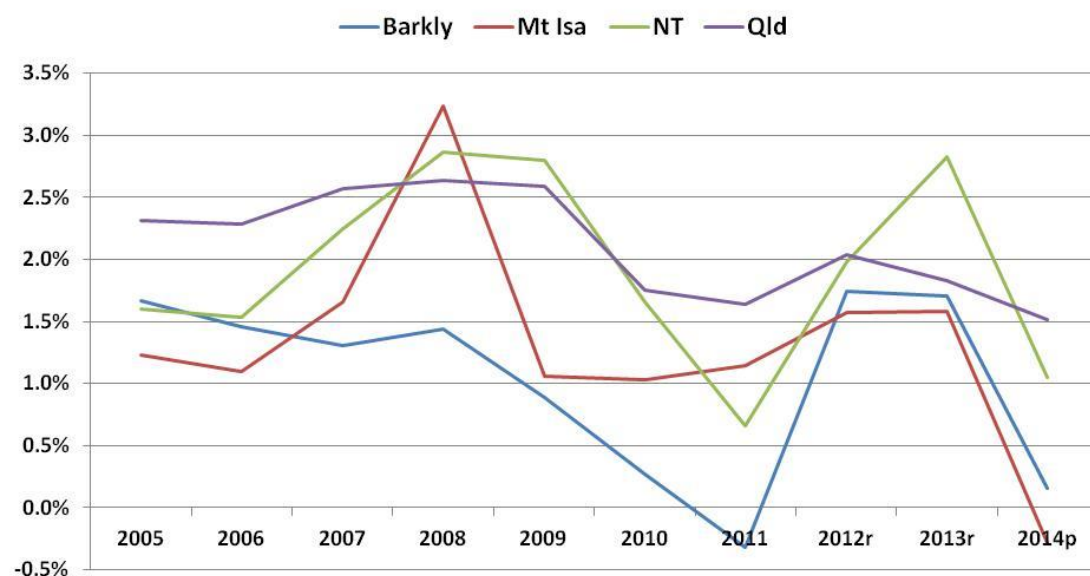
Parameter	Region	NT
Population	26,959	211,945
Male proportion (%)	53%	52%
Under 20 years	32%	30%
20-64 years	62%	64%
65+ years	6%	6%
Median age	30	31

Source: ABS 2011

Tennant Creek, Mt Isa the Northern Territory and Queensland all experienced increases in population over the decade from 2004 to 2014. The increases were significantly higher at the State/Territory level with Queensland leading the way (23%) followed by the NT (21%) and then Mt Isa (14%) with the Barkly region the slowest growing at 11%.

In most years the growth rates for the Barkly region and Mt Isa were below those of the NT and Queensland (Figure 5). Both the Barkly region and Mt Isa saw one year of population decline.

Figure 5: Population change, 2004 to 2014



Source: ABS Cat 3218

2.6 Employment and education

2.6.1 Region

An estimated 26% of the population had completed Year 12 at school across the region but only 16% in Barkly compared with 29% in Mt Isa (Table 6).

There were 642 people unemployed and looking for work at the 2011 census representing 5% of the workforce. Unemployment rates were far higher in Barkly Shire (8.8%) than in Mt Isa (4.3%). Workforce participation in Barkly was correspondingly low at 48% and far lower than Mt Isa at 67%.

Table 6: Region education and employment profile

Parameter	Barkly	Mt Isa	Total
Completed year 12 schooling	16%	29%	26%
Unemployed and looking	177	465	642
Workforce participation	48%	67%	63%
Unemployment rate	8.8%	4.3%	5.0%

Source: ABS, 2011 Community profiles

The service sectors and in particular public administration, education and health services were the most significant employment sectors in Barkly Shire each contributing more than 10% of the jobs (Table 7). Mt Isa is dominantly a mining town (over 30% of jobs) although health and education services were still important.

Table 7: Employment by Industry (red font for more than 10% of jobs)

Sector	Barkly	Mt Isa	Total
Agriculture	206	120	326
Mining	49	3,238	3,287
Manufacturing	4	472	476
Electricity and utilities	19	134	153
Construction	104	591	695
Wholesale trade	15	269	284
Retail trade	124	832	956
Accommodation/food services	97	525	622
Transport/postal/warehousing	39	393	432
Information/media/telecommunications	8	63	71
Financial and insurance services	7	82	89
Rental/hiring/real estate services	13	148	161
Professional/scientific/technical services	22	231	253
Administrative and support services	49	304	353
Public administration and safety	465	622	1,087
Education and training	237	713	950
Health care and social assistance	192	955	1,147
Arts and recreation services	34	30	64
Other	154	610	764
Total	1,838	10,332	12,170

Source: ABS, Cat. No. 2001.0, Community Profiles, 2011

2.6.2 Northern Territory

The region had a slightly lower education attainment level than the NT but a slightly higher workforce participation rate and lower unemployment rate (Table 8).

Table 8: Northern Territory and local education and training profile

Parameter	Region	NT
Completed year 12 schooling	26%	30%
Unemployed and looking	465	5,489
Workforce participation	67%	64%
Unemployment rate	5.0%	5.3%

Source: ABS, 2011 Community profiles

The Northern Territory as a whole had a very high proportion of the workforce engaged in public administration and safety (over 20%) with a total of 40% engaged in this sector along with health and education services (Table 9). This was significantly higher than the defined region where the inclusion of Mt Isa made mining the single largest employment sector followed by health care.

Table 9: Northern Territory and local education and training profile (red font over 10%)

Sector	Region	NT
Agriculture, forestry and fishing	3%	2%
Mining	27%	3%
Manufacturing	4%	4%
Electricity and utilities	1%	1%
Construction	6%	8%
Wholesale trade	2%	2%
Retail trade	8%	8%
Accommodation/food services	5%	6%
Transport/postal/warehousing	4%	5%
Information/media/ telecommunications	1%	1%
Financial and insurance services	1%	1%
Rental/hiring/real estate services	1%	1%
Professional/scientific/technical services	2%	5%
Administrative and support services	3%	3%
Public administration and safety	9%	21%
Education and training	8%	9%
Health care and social assistance	9%	10%
Arts and recreation services	1%	2%
Other	6%	7%
Total	100%	100%

Source: ABS, 2011 Community profiles

The largest single occupation category for region workers was as technicians and tradespeople (21%) compared with professionals (20%) in the Northern Territory as a whole (Table 10). A relatively high 32% of the Territory workforce held manager or professional positions compared with 24% in the region. Machinery operators and drivers were well represented in the region (15% of the jobs).

Table 10: Northern Territory and region occupations, 2011 (red font 15% or more)

Category	Region	NT
	Share	Share
Managers	9%	12%
Professionals	16%	20%
Technical	21%	15%
Community/personal services	9%	13%
Administration	11%	15%
Sales	6%	7%
Machinery and drivers	15%	6%
Labourers	10%	10%
Other	3%	2%
Total	100%	100%

Source: ABS, Cat. No. 2001.0, Community Profiles, 2011

2.7 The Economy

2.7.1 Region income

The median household weekly income averaged \$1,880 across the area with Mt Isa at \$2,064 being more than 70% above the average for Barkly at \$1,200 (Table 11).

Table 11: Local area income profile, 2011

Parameter	Barkly	Mt Isa	Total
Median weekly income(\$)	\$1,203	\$2,064	\$1,880

Source: ABS, Cat. No. 2001.0, Community Profiles, 2011

2.7.2 Northern Territory income

Due to the influence of Mt Isa in the local area, the median household income in the region was above the Northern Territory as a whole (Table 12).

Table 12: Local area demographic profile, 2011

Parameter	Region	NT
Median weekly income(\$)	\$1,880	\$1,674

2.7.3 Local area business structure (2015)

There were 201 businesses in the Barkly Shire area in June 2015 with the five dominant sectors being construction, retail trade, agriculture, property services and hospitality related together accounting for 63% of the total (Table 13). There were no businesses in the electricity and utilities sector, the information, media and telecommunications sector or the arts and recreation sector.

Over half were one person businesses such as tradesmen in the construction sector, property service agencies and agriculture enterprises. Only six businesses had more than 20 employees.

Table 13: Barkly Businesses by industry and employee number, 2015

Sector	None	1-4	5-19	20+	Total
Agriculture	14	3	6		23
Mining		3			3
Manufacturing		3			3
Construction	20	9	7		36
Wholesale Trade	3				3
Retail Trade	5	10	8	3	26
Accommodation/Food Services	6	8	6		20
Transport/Postal/Warehousing	5	3			8
Financial and Insurance Services	8				8
Property Services	19		3		22
Professional/Scientific/Technical Services	9				9
Administrative and Support Services	5		3		8
Public Administration and Safety			3		3
Education and Training	3			3	6
Health Care and Social Assistance	3				3
Other	14	3	3		20
Total	114	42	39	6	201

Source: ABS, Cat. No. 8165.0

There were 1,280 businesses in the Mt Isa Shire in June 2015 with construction making up 17% followed by agriculture (pastoral properties) with 13% together making up 30% of the businesses (Table 14). As with the Barkly Shire, there were no businesses in the Information Media/Telecommunications sector.

Again over half (57%) were one person businesses but there were 12 with more than 20 employees (large stations made up half). There were no businesses operating in the electricity, gas or water utility sectors in Barkly or Mt Isa region presumably as these are government services.

Table 14: Mt Isa region Businesses by industry and employee number, 2015

Sector	None	1-4	5-19	20+	Total
Agriculture	111	35	14	6	166
Mining	10	4	7		21
Manufacturing	15	15	10		40
Electricity and utilities	3				3
Construction	109	62	35	7	213
Wholesale Trade	10	6	5	3	24
Retail Trade	31	38	25	4	98
Accommodation/Food Services	15	12	17	9	53
Transport/Postal/Warehousing	84	26	9		119
Financial and Insurance Services	67	3	5		78
Property services	128	11	7	3	149
Professional/Scientific/Technical Services	30	19	8	5	62
Administrative and Support Services	20	19	13	3	55
Public Administration and Safety	3	3			6
Education and Training	4	9	3	3	19
Health Care and Social Assistance	20	10	9		39
Arts and Recreation Services	8	3			11
Other	51	44	27		124
Total	719	319	196	46	1,280

Mining, oil and gas and pipeline companies face stringent government regulations in terms of health and safety, environment management, employee relations and financial governance. This generally translates into a requirement for suppliers to have similar standards meaning that only companies with the scale to develop and manage such practices are used as contractors. Companies with less than five employees may have special expertise in a “niche” area but most will not become suppliers to large projects. This will generally limit the number of businesses that can become suppliers in this area to the firms that have more than five employees and are engaged in a relevant activity such as mining, utility services, construction, hospitality services, transport, information and telecommunications and service sectors. There is the potential for other companies to grow into suppliers over time.

A few sectors that might provide services to a pipeline project are absent from the “larger” end of the business sector including; information, media and telecommunications, public administration and safety, education and training and arts and recreation services. This suggests that such services may need to be sourced from outside the region rather than from the local economy.

2.7.4 Northern Territory business structure

There were 14,237 businesses in the Northern Territory in June 2015 with 21% in construction and 11% in property services together making up a third of the businesses (Table 15). The region also has a high level of construction and property businesses but also a high agriculture count reflecting its location in the pastoral area.

As in the region, over half (60%) were one person businesses but the Territory had 616 business with more than 20 employees including 129 in hospitality and 105 in the construction sector. The smallest sector was in firms providing electricity, gas or water utility services.

Table 15: Northern Territory and Local businesses by industry and employee number, 2015

Sector	Region	Share (%)	NT	Share (%)
Agriculture	189	13%	936	7%
Mining	24	2%	82	1%
Manufacturing	43	3%	455	3%
Electricity and utilities	3	0%	38	0%
Construction	249	17%	3,056	21%
Wholesale Trade	27	2%	331	2%
Retail Trade	124	8%	898	6%
Accommodation/Food Services	73	5%	727	5%
Transport/Postal/Warehousing	127	9%	921	6%
Information Media/Telecommunications			96	1%
Financial and Insurance Services	86	6%	1,165	8%
Property services	171	12%	1,601	11%
Professional/Scientific/Technical Services	71	5%	1,119	8%
Administrative and Support Services	63	4%	361	3%
Public Administration and Safety	9	1%	352	2%
Education and Training	25	2%	63	0%
Health Care and Social Assistance	42	3%	176	1%
Arts and Recreation Services	11	1%	779	5%
Other	144	10%	1,081	8%
Total	1,481		14,237	

2.8 Setting summary

- The pipeline is mostly located in a remote pastoral station setting away from built up areas other than the entry into the Mt Isa industrial area.
- The project is mostly in the Northern Territory extending into Queensland.
- The pipeline route passes about 22km from Tennant Creek and into Mt Isa around 6km south of the central business area.
- There are only five small roadhouse service centres, family outstations and a pastoral homestead located within 20km of the pipeline route.
- The Territory compressor station and gas plant are located in a remote location well away from Tennant Creek. The Mt Isa compressor station is located near the Mica Creek Power Station adjacent to existing gas supply pipelines.
- The region for the economic impact assessment is defined to include the Barkly and Mt Isa Local Government Areas with a combined population at the 2011 census of 26,959 people.
- Over 97% of the population lived in the urban centres of Mt Isa or Tennant Creek.
- Population growth rates in the region have been generally modest with some years of negative growth.
- Education attainment has been low in Barkly with only 16% completing year 12 schooling. The region completion level at 26% was slightly less than that the 30% achieved in the Territory.
- Workforce participation in Mt Isa is comparable with other Australian areas but was low in Barkly with less than half of the population employed or looking for work.
- The service sectors and in particular public administration, education and health were the largest employment sectors in Barkly Shire while Mt Isa is dominantly a mining town although health and education services are important employers.
- The dominance of Mt Isa in the population of the region means that the regional overall had a large share of jobs in the mining sector followed by health care. In comparison, the NT had a very high proportion engaged in public administration and safety and health and education services.
- The largest single occupation category in the region was technicians and tradespeople (21%) compared with professionals (20%) in the Northern Territory as a whole. Machinery operators and drivers were well represented in the region.
- Average household incomes in Mt Isa were more than 70% higher than in Barkly with this influence making the region average more than 12% above the NT.
- The two Shires had 1,481 businesses in June 2015 with over 90% having less than 5 employees. Construction and property services were key sectors in both the region and the Territory as a whole with the region also having a large share of agricultural enterprises reflecting its location.
- Business sectors that appear most capable of providing services at the scale of a major construction project include construction, transport and warehousing services and accommodation and food.
- The structure of the business sector suggests that project services likely to be sought outside the region include energy and water related services, financial services, telecommunications, rental and hiring, professional, scientific and technical services and health care.

Chapter**3**

3. The Project

3.1 The pipeline

The project consists of constructing and operating a new 12-inch x 622 km buried natural gas pipeline connecting the existing Amadeus Gas Pipeline (AGP) at the Warrego Compressor Station in the Northern Territory (NT) to the existing Carpentaria Gas Pipeline (CGP) at Mt Isa in Queensland (Qld). Associated pipeline infrastructure includes transfer/compressor stations at each end, four Main Line Valves and five cathodic protection stations. The total permanent footprint above ground is around 20 hectares. Gas deliveries are expected to continue for at least 30 years. At the end of project life all above-ground infrastructure will be removed in accordance with legislative requirements applicable at the time.

During construction, temporary land impact will consist of a 30m wide pipeline construction right of way, workforce accommodation camps, access tracks (existing and new), additional works areas (turn-around points and laydown areas), water supply bores and dams for storing water required for dust suppression and hydrostatic testing (pressure testing) of the pipeline. Access tracks to the permanent above-ground facilities or any access tracks or dams retained on request of the landholders will be decommissioned and rehabilitated on completion of the construction phase.

Following construction of the pipeline, landholders will be able to resume use of the land, other than the conduct of excavation activities or erection of permanent structures or buildings over the buried pipeline. Pipeline markers will be provided at fences and road crossings. An operational easement will be established; however, there is no ongoing requirement for vegetation clearance or maintenance along the pipeline easement.

3.2 Timeline

Project construction is planned to start in February 2017 with completion of the pipeline scheduled before end-November 2017 to avoid the wet season. Construction of compressor stations will continue through to February 2018 (Table 16).

Table 16: Timeline

Period	Event
September 2016 – February 2017	Pipe sections transported from Darwin Port to Tennant Creek and Mount Isa laydown areas.
February 2017	Construction of access tracks and pipeline corridor, temporary facilities, vehicle turnarounds and temporary construction camp
February 2017 – November 2017	Pipeline construction
February 2017 – February 2018	Construction of compressor/transfer stations
July 2018 – June 2048	Pipeline operation

3.3 Development investment

Final financial data is not available for the project but benchmarks from other gas transmission pipelines and feasibility study data provide an indicative capital cost of \$1.24 million (m) per kilometre meaning a total of \$775m. Based on a typical cost breakdown it is estimated that \$275m (35%) will be spent on equipment and materials for the gas plant, compressor stations and pipeline. The largest cost category will be the actual construction at \$338m representing 44% of the total cost (Table 17). In this breakdown, civil engineering represents the design and supervision while construction and services are the transport and installation activities.

Table 17: Construction costs by nature of expenditure

Component	Share (%)	Cost (\$m)
Materials procurement	35%	275
Civil engineering	4%	30
Construction and services	44%	338
Professional and technical services	4%	30
Planning and administration	13%	102
Total	100%	775

An estimated \$140m will be spent on coated steel pipe and gas equipment imported from overseas leaving \$637m invested in Australia (Table 18). This includes Jemena planning and management costs, costs of the lead construction contractor and all costs associated with land access and pipeline construction. The estimated expenditure in the NT is about \$111m with \$75m of this in the region.

Table 18: Construction cost by location (\$m)

Sector	OS	Aust	NT	Region
Equipment procurement	\$138	\$137		
Civil engineering and construction		\$30		
Construction services		\$338	\$111	\$75
Professional and technical services		\$30		
Planning and administration		\$102		
Total	\$138	\$637	\$111	\$75

Local expenditure will include payments to Pastoral Station Lessees Traditional Owners, Land Councils, site preparation and a share of the capital expenditure based on the wages component involved in construction and installation. The NT expenditure includes the region spend.

The flow on effect of this investment is to increase the economic output of Australia by \$1,379m with the NT impact a total of \$213m and the region \$160m (Table 19).

Table 19: Construction phase economic impact

Sector	Area	Output multiplier (\$m)	Aust output (\$m)	NT output (\$m)	Region output (\$m)	Aust impact (\$m)	NT impact (\$m)	Region impact (\$m)
Civil Engineering	Australia	2.22	30			67		
	NT	2.91						
	Region	2.13						
Construction services	Australia	2.25	475			1,067		
	NT	1.92		111			213	
	Region	2.14			75			160
Professional and technical services	Australia	2.00	30			60		
	NT	1.78						
	Region	2.10						
Administration	Australia	1.81	102			185		
	NT	2.76						
	Region	2.05						
Total			637	111	75	1,379	213	160

Construction of a 662km gas transmission pipeline is a major exercise.

The labour requirement is estimated to involve 900 positions working for various durations meaning that the full time equivalent workforce is lower at 617 person years (Table 20). The positions in each geographical area range from 392 in the region to an estimated 876 positions in Australia as a whole.

Specialist welding skills and technical skills for the gas plant and compressor stations mean that 24 jobs will be sourced overseas with 876 from Australia. A large proportion of the jobs are expected to be sourced in the Territory (64%) and the company has plans to engage 131 Indigenous people out of the 392 positions in the region.

Table 20: Construction phase employment

Activity	Positions	FTE	OS	Aus	NT	Region
Planning	163	119		163	54	22
Construction services	91	59		91	68	47
Pipeline contractor	72	55		72	33	15
Pipeline services	65	52		65		
Bags and skids	12	7.5		12	12	12
Installation	364	217	24	340	277	198
Compressor stations	126	104		126	119	98
Commissioning	7	2.7		7		
Total	900	617	24	876	563	392

The actual number of people engaged at any time will vary significantly from these levels given the seasonal pattern of construction and the fact that the project including planning will last for at least two years. The analysis in this report is based on the estimated full time equivalent job equivalent number and the categories simplified to match the categories in the input-output transaction tables (Table 21).

Table 21: Construction phase jobs

Sector	FTE	OS	Aus	NT	Region
Civil Engineering and construction	119	14	364	289	210
Construction services	379		119	52	38
Professional and technical services	119		119	39	16
Total	616	14	602	380	264

There will be a total of 602 FTE jobs in Australia of which an estimated 380 will come from the NT and 264 from the region.

Civil construction projects have larger multiplier factors than professional services given the demands for support services from numerous other sectors (Table 16). The consequence of this flow on multiplier impact is to create a total of 1,314 FTE positions in Australia which is more than double the direct workforce (Table 22).

Table 22: Construction phase FTE jobs economic impact

Sector	OS	Aus	NT	Region
Economy	24	1,314	1,009	545

The regional impact estimated at 545 jobs in total will be significant in that economy representing nearly 5% of the estimated 12,000 workforce in the 2011 census.

Wages and salaries have been estimated from the capital expenditure on the basis of other industry benchmarks (details in Appendix 1).

The estimated \$288m in wages and salaries broken down into the study areas suggests expenditure on people engaged from the region at \$126m and \$181m in the NT as a whole (the NT estimate includes the region).

With the multiplier flow-on impact, the project increases household income in Australia by an estimated \$678m. NT incomes are increased by \$348m and the region by \$215m (Table 23).

Table 23: Construction phase wages and salary estimate by area and flow on

Sector	Area	Income multiplier	Aust income (\$m)	NT income (\$m)	Region income (\$m)	Aust impact (\$m)	NT impact (\$m)	Region impact (\$m)
Civil Engineering	Australia	2.44	20			48		
	NT	2.16		12			27	
	Region	1.85			9			16
Construction services	Australia	2.72	169			459		
	NT	2.12		107			226	
	Region	1.89			74			140
Professional and technical services	Australia	2.07	23			47		
	NT	1.81		14			26	
	Region	1.53			10			15
Administration	Australia	1.63	77			125		
	NT	1.46		48			70	
	Region	1.31			34			44
Total			288	181	126	678	348	215

3.4 Operating costs

The 30 year operating phase of the project is far longer than the two year construction phase and will have longer term consequences although operating costs are relatively low.

The operating workforce includes financial and management staff and technical staff engaged in daily pipeline operations and management. Most of these employees will be located in Jemena capital city offices. Pipeline operations are highly sophisticated and electronic monitoring systems mean that daily operations can be done remotely with a small number of people. There will be some local jobs largely involved with maintenance of the gas plant, pipeline and pipeline corridor.

Around 40 positions are expected to be involved in operations activities with the estimated full time equivalent being 18 jobs. Thirteen of these are estimated to be in the NT of whom 13 will be based in the region almost entirely in Tennant Creek and Mt Isa.

The same industry sectors are involved in pipeline operations as the construction phase with expenditure in plant and pipeline maintenance, land management and administration services. However, the ABS statistics include a gas supply sector for this region and hence the multiplier factors are used for this sector (Table 24). As with construction, a population weighted multiplier factor was calculated for the region from the multipliers for the Mt Isa and Barkly Local Government Areas. For the operations phase of the projects, the employment multipliers range from 1.09 to 1.25 in the Shires with a weighted average of 1.21 and 1.63 for the NT (Table 24).

Table 24: Operating phase multipliers for gas supply sector

Sector	Area	Production Multiplier	Jobs multiplier	Income multiplier
Gas supply	Australia	2.038	1.985	2.159
	N.Territory	2.705	1.634	1.772
	Mt Isa	2.307	1.247	1.647
	Barkly Tb.	1.115	1.088	1.201
	Region	2.057	1.214	1.553

The flow on impact is to create 36 jobs in Australia with 16 of these in the region and potentially 21 in the NT (Table 25). Household income will increase in the region by \$1.9m and by \$3.7m in Australia. The expenditure on operations will see Australian economic output increase by \$18m.

Table 25: Operations phase impacts

Sector	OS	Aust	NT	Region
Jobs (FTE)	0	18	13	13
Job impact (FTE)	0	36	21	16
Household income (\$m)	0	\$1.7	\$1.2	\$1.2
Income impact (\$m)	0	\$3.7	\$1.9	\$1.9
Expenditure (\$m)	\$0.3	\$8.9	\$0.7	\$0.5
Economic impact (\$m)	na	\$18.2	\$1.8	\$1.0

3.5 Business involvement

The company has indicated a commitment to supporting local business with preference given to competitive and qualified local business operators. Jemena has prepared a Local Industry Participation Plan (LIPP) which aims to maximise the use of Northern Territory goods, services and labour in the planning, construction, commissioning and operations of the pipeline.

Jemena has been working closely with communities and businesses along the proposed route from the start of the bidding process, to harness as much local and Indigenous participation as possible in the delivery and management of the pipeline. Based on this stakeholder consultation and an analysis of business capacity, Jemena has determined that:

1. 67% of the 200 supply contracts could be competitively tendered for by Northern Territory businesses with an estimated value of \$112m in the construction phase and \$0.5m during the operations phase.
2. 63% of the potential 900 jobs could be filled from the Northern Territory labour market meaning a potential 386 Full Time Equivalent (FTE) jobs.
3. During the operations phase an estimated 38 out of 41 jobs could be filled from the Northern Territory labour market, resulting in a potential 12 FTE.
4. 56 contracts have been identified that could be undertaken by Indigenous businesses and organisations and at least 162 jobs have been identified that could be filled by Indigenous people.

The achievement of these estimates will be dependent on the competitiveness of individual business, individual interest and aspiration.

To ensure remote communities benefit as much as possible from the NEGI project in the long-term, Jemena will use a preference selection process and will invest in training programs, Indigenous apprenticeships and a new Indigenous social enterprise in Tennant Creek to provide support services for construction and road maintenance projects in the area.

Jemena intends to implement a three part capacity building program:

1. Small to Medium Enterprise (SME) Business Growth Program:

- SME Business Investment Fund
- SME Business Roadshow & Procurement Workshops
- ICN NT Engagement

2. Regional Employment Plan:

- NT & Regional Recruitment Strategy
- Project Ready Work Program
- Jemena Talent Pool
- Gas Operator Training Program
- Tennant Creek Social Enterprise

3. Remote Community Social Investment Program

These Programs represent an investment of more than \$2m in Northern Territory capacity during the construction phase and the first year of operations.

3.6 Indigenous involvement

Half of the Northern Territory is Aboriginal land under the Aboriginal Land Rights (Northern Territory) Act and most of the remainder is subject to the Native Title Act, and hence the importance of Indigenous land access issues cannot be overstated.

Jemena intends to promote remote community social and economic development through a social investment program comprising:

1. Remote Community Appropriate Technology (RCAT) Investment Program during the construction Phase
2. Investment in Community Social Programs during the operations phase.

Both initiatives would be designed and delivered after consultation with communities and other stakeholders, particularly through the social impact assessment consultation.

Jemena expects to invest a total of \$200,000 during the construction phase and approximately \$50,000 per annum during the operations phase.

3.7 Revenue

Pipeline tariffs have been set to recover the overall investment in the project and pipeline and allow shareholders to make a return on their investment.

The NGP is currently designed to carry up to 90TJ/d of gas to Mount Isa. Jemena has posted a base tariff for use of the pipeline of \$1.40/GJ for Firm Forward Haulage (FFH). Nitrogen removal from the natural gas is essential and adds approximately \$0.72 to the tariff bringing the total to around \$2.12/GJ for gas transported. Other services attract different rates but the FFH rate provides a reasonable basis for future income and is estimated at around \$70 million a year at full capacity. At the time of this EIS the pipeline is approximately 1/3 contracted, but it is expected that at or near full contract capacity will be sold by time of operation.

The NGP will connect into the Carpentaria Gas Pipeline (CGP) at Mount Isa and hence connect northern Australian gas fields to the eastern states gas pipeline network. Displacement of the gas currently being transported to Mount Isa through the CGP will allow that gas to be sold to other buyers. The operator of the CGP has pipelines that connect the Moomba fields to Curtis Island and this creates the potential for the both displaced and northern Australian gas to supplement domestic gas shortfalls in the eastern States with sales to manufacturers or exports as LNG.

If the displaced gas and extra gas from the northern Australian fields are sold at an LNG netback price the value added to the Australian economy becomes the LNG value (approximately A\$8.50/GJ based on spot LNG prices) less the cost of transport to Curtis Island. Assuming pipeline tariffs of \$3/GJ the value added is around \$180m a year at full capacity.

The value to Jemena of the pipeline is the potential pipeline tariff income while the value to the Australian economy may be the value of additional upstream production development, domestic gas market development and LNG exports made possible by the interconnection of the NT and Queensland gas pipeline networks.

3.8 Economic impact summary

Economic impacts have been assessed at the region, Territory and Australian economy levels.

The project will have a measurable and significant impact on the local employment market and measurable growth in the economy. The impact will be most evident in the 30 plus years of pipeline operations.

Local benefits will be through the expenditure at the construction and operating phases by the company on local contractors and local employees. Jemena estimates that 100 contracts with an estimated value of approximately \$84 million could be competitively tendered for and 309 FTE jobs could be filled at the regional level during the construction phase. During the operations phase, Jemena is targeting 11 contracts with an estimated value of \$500,000 a year and 30 jobs, equivalent to approximately 9.6 FTE jobs. The company hopes to provide 42 contracts and 122 jobs for Indigenous employees.

The project will provide employment opportunities for local workers and business opportunities for local companies. The area has workers with expertise in mining and agriculture operations, building trades and transport operations and will be able to provide employees and services from these sectors. The scale of equipment planned and the company focus on local recruitment will ensure opportunities for a locally based workforce.

At the Territory level, Jemena is targeting 67% of the 200 supply contracts for tender by Northern Territory businesses with an estimated value of \$112m in the construction phase and \$0.5m during the operations phase. The company is hopeful that 63% of the potential 900 jobs could be filled from the Northern Territory labour market meaning a potential 386 FTE jobs. During the operations phase an estimated 38 out of 41 positions could be filled from the Northern Territory labour market, resulting in a potential 12 FTE.

The outcome for the Australian economy will depend on the gas sale opportunities, Jemena will receive the benefit of gas pipeline tariff revenues while the national economy has the potential to see additional gas sold to Australian or export markets. The annual revenue potential is from about \$70m if tariffs alone are considered to as much as \$180m a year or \$5,400m over 30 years if gas is displaced from Queensland and SA producers and used for domestic manufacturing purposes or sent for export as LNG.

4. Other impacts

4.1 Introduction

The previous section assessed the importance of this mining operation to the economy of the local area and the region.

In addition, there are indirect benefits for the wider Northern Territory community. While these benefits are more general in nature, they are significant to the overall performance of the economy and the well-being of communities. These benefits include regional development, government revenues, and the deepening of industrial capacity across the Territory.

4.2 Regional development

This project is located in a lightly populated area. While parts of the region have seen growth linked to the mining sector expansion, the traditional grazing areas have seen a population decline.

With the terms of trade pressures and changes in long-term climate adversely affecting the agricultural sector, there is limited scope for any change in this long-term trend. The mining and oil and gas sectors provide real potential to reverse the population trends and provide substantial new investment in inland areas.

Such projects contribute to the decentralisation of industry away from metropolitan areas. Support for decentralisation is shown by the willingness of Governments in Australia to offer financial incentives to new industries and firms to move away from capital cities.

Benefits of decentralisation take two forms. The first arises from diverting growth away from capital cities where growth has the potential to create social and environmental costs. The second accrues to the area in which growth occurs, because such areas are often too small for the effective delivery of business and government services, and expansion creates new business opportunities in these support services.

Potential decentralising firms see difficulties in a regional location arising from the narrow range of skills available. That is, if one of its workers were to resign and move away, a thin local labour market would be unlikely to provide a suitably skilled replacement. The firm would have to provide its own skilling program for workers and this would raise its costs compared with a metropolitan location. Achievement of a critical mass of industries in a decentralised region overcomes this problem by adding depth to the local labour market. Such a development is likely to be self-sustaining and attract further industries.

Another feature of this development of labour market depth is the spillover effect that it has on industries already existing in the region. The larger labour market together with the improved skill base is likely to make existing regional firms more efficient because of their utilisation of the improved labour market.

The importance of demand-size argument – a variant of the critical-mass argument – also extends to infrastructure provision in the region. Infrastructure items such as roads, electricity and gas provision, water supply, ports, airports, education and training facilities, cultural and civic amenities, wholesale and retailing facilities, and specialised service providers are traditionally subject to economies of scale in the provision of services. These lower the cost of third parties that also use the infrastructure service.

Additional benefits to flow to the regions from location of gas plants include:

- Improved local tax base
- Additional range of job opportunities for young people who would otherwise shift to the metropolitan area
- Improved prospects for the growth of local industries servicing the plant

A prominent feature of Australian economic development has been the decline of non-metropolitan cities. Mining and mineral processing and oil and gas operations are important, therefore, in both a national and a regional sense because it goes against the trend of centralisation of industrial development in Australia. Reversing this trend has been an important component of the platforms of all political parties, and clearly must be valued highly by the Australian community.

The Commonwealth Department of Finance Handbook of Cost Benefit Analysis (Canberra: AGPS, 1991, p34) recommends that the “analysis assume that labour, as with other resources, is fully employed”. However, the reality is that, particularly in regional areas, unemployment can be high and persistent, and it seems likely that major projects will lead to a lower level of unemployment than would otherwise be the case. Moreover, it seems reasonable to assume that the larger the direct employment base of the project, the larger the benefit in reducing overall unemployment is likely to be. The forecasts for continuing population growth in Chittering assume the creation of significant job numbers and new mining projects can play a vital role in this regard.

4.3 Government revenues

Governments at all levels benefit from the investment and employment created by the project. Local Government benefits from a higher rate base through the establishment of industrial work sites and the additional housing associated with the operating workforce.

Payroll tax will be paid to the State government while the Commonwealth Government will receive custom duties on imported plant and equipment, PAYE tax on employees, and company tax on profits from the Project.

Assuming that some of the project workforce comes from the existing pool of unemployed people in the region there should also be annual savings in unemployment payments to the Federal Government.

Perhaps more important for this region is the employment opportunities created for youth who would otherwise shift out of the area.

Appendix 1: Multiplier Analysis

Multiplier analysis is used to assess the flow-on effects of a project in terms of income, investment and employment. The multiplier effect operates because the expenditure requires the purchase of labour, goods and other services and these purchases generate further flow-on expenditure. At each round of investment and expenditure the effect diminishes until a final total increase in the economy can be calculated. It is the ratio of the size of the initial expenditure to the resultant final increase across the economy that is termed the multiplier.

Multiplier ratios are derived from tables of the transactions in an economy which show the linkages between industries and the flows of goods and services used in producing their output. The size of the multiplier ratio depends on several factors including the ability of the economy to supply the goods needed. If a large proportion of goods are imported, the multiplier will be smaller. Consequently, the multiplier effect in a small regional economy will be less than for a larger regional or national economy, as there will be considerable imports from outside the area. A project will have relatively small multipliers for a local regional economy, larger multipliers for the State economy, and larger multipliers again for the national economy.

Input-output tables are a representation of the economic interactions within an economy - they demonstrate the trade relationships between industry sectors in the economy. Multipliers are used in this report to demonstrate the economic impacts in terms of the incomes generated, changes in economic output and changes in employment. The output multipliers represent the increase in goods and services produced by the economy, the income multipliers show the increase in wages and salaries, and, finally, the employment multipliers show employment growth.

If for example, a new project increases the value of production from an industry by \$100 million, this will produce an increase in the output of those industries supplying it such as fuel, transport, chemicals, equipment etc. This in turn increases the demand from those industries that supply their inputs. The initial effect is termed the first round effect or production-induced impact while the second round effect is termed the industrial support impact. The increase in job numbers will mean more wages and salaries paid as a consequence of the increased production. This generates the third round effects, or consumption induced impacts.

To illustrate, total output of \$100 million with a multiplier of 2.8 could thus produce:

- A first round or production impact of \$38 million;
- A second and subsequent supplier impact of \$28 million; and
- A consumption induced impact of \$42 million.

The total impact of \$208 million is a multiple of 2.08 times the initial increase in output (\$100 million). This report combines second and third round effects as indirect impacts. The output generated by a change in expenditure is measured in dollar terms, while employment impacts are in terms of the number of jobs.

The multipliers used in this study are developed from the ABS National Accounts Input Output Tables.¹ These tables are produced only at a national level. However, the National Tables can be used to derive State, Regional and Local Tables. The method, which is recognised in the literature and widely used across Australia and in other countries, involves the use of detailed data on the sizes of industries at a local and regional level based on the respective numbers of persons employed in each industry and in each area.

Detailed employment data are now available from the ABS Census and the raw data can be extracted using a program provided by the ABS. The employment data in the 2011 Census records are very detailed covering 721 industries for every Local Government Area. This report uses the 111 industry classification used in the standard Australian Input Output Tables with the data extracted for the Barkly and Mt Isa Shires.

The multiplier effects are examined by segregating project expenditure into the construction and operating phases. This is because quite different servicing companies and industry sectors are involved in each phase and the multiplier impacts are quite different.

Impacts of construction phase

Construction phase multipliers vary significantly between sectors and jurisdictions depending on the capacity of the area to provide follow on employment and business services (Table 26).

Table 26: Construction phase multipliers (Type 2A) *

Sector	Area	Production Multiplier	Direct Jobs / \$1 million production (No of Jobs)	Jobs multiplier	Direct Income / \$1 million production (\$'m)	Income multiplier
Civil Engineering and construction	Australia	2.221	2.217	2.931	0.350	2.436
	N.Territory	2.910	1.905	2.581	0.301	2.161
	Mt Isa	2.404	1.961	2.157	0.259	1.951
	Barkly Tb;	1.135	2.146	1.828	0.198	1.497
Construction services	Australia	2.246	4.111	2.009	0.344	2.717
	N.Territory	1.923	3.954	1.721	0.330	2.118
	Mt Isa	2.423	4.800	2.163	0.341	2.102
	Barkly Tb;	1.088	1.278	1.365	0.239	1.104
Professional and technical services	Australia	2.003	3.303	2.156	0.422	2.071
	N.Territory	1.781	3.338	1.917	0.420	1.814
	Mt Isa	2.380	4.451	2.061	0.368	1.652
	Barkly Tb;	1.080	1.216	1.161	0.310	1.070
Administration	Australia	1.814	4.606	1.467	0.542	1.625
	N.Territory	2.667	3.069	1.651	0.435	1.456
	Mt Isa	2.314	2.491	1.633	0.459	1.382
	Barkly Tb;	1.075	11.284	1.102	0.652	1.023

***Multiplier effects are cumulative – i.e. Estimate for NT includes the Shire**

The pipeline is being built across the two very large Local Government Areas and will draw services from the towns at both ends. The multipliers have thus been estimated for the combined Shires to produce a region estimate based on the population share of each Shire (Table 27). The dominance of Mt Isa in the region population means that the multiplier factor is more closely related to that Shire than to Barkly.

¹ Australian Bureau of Statistics, Australian National Accounts. Input Output Tables - Electronic Publication 2009 - 2010. Catalogue No 5209.0.55.001 November 2014

Table 27: Construction phase multipliers (Type 2A) *

Sector	Area	Output multiplier	Jobs multiplier	Income multiplier
Civil Engineering and construction	Australia	2.22	2.22	2.22
	NT	2.91	2.91	2.91
	Region	2.13	2.09	1.85
Construction services	Australia	2.25	2.25	2.25
	NT	1.92	1.92	1.92
	Region	2.14	1.99	1.89
Professional and technical services	Australia	2.00	2.00	2.00
	NT	1.78	1.78	1.78
	Region	2.10	1.87	1.53
Administration	Australia	1.81	1.81	1.81
	NT	2.76	2.76	2.76
	Region	2.05	1.52	1.31

The project will provide employment opportunities for local workers and business opportunities for local companies. The wider region has expertise in mining and building construction and will be able to provide employees and services from these sectors. Transport operations will also provide work opportunities. The labour requirement is estimated to involve 900 positions with the full time equivalent workforce estimated at 617 person years (Table 28). The positions in each geographical area range from 392 in the region to an estimated 876 positions in Australia as a whole.

Table 28: Construction phase positions

Activity	Positions	OS	Aus	NT	Region
Planning	163		163	54	22
Construction services	91		91	68	47
Pipeline contractor	72		72	33	15
Pipeline services	65		65		
Bags and skids	12		12	12	12
Installation	364	24	340	277	198
Compressor stations	126		126	119	98
Commissioning	7		7		
Total	900	24	876	563	392

The actual number of people engaged at any time will vary significantly from these levels given the seasonal pattern of construction and the fact that the project including planning will last for at least two years. The analysis in this report is based on the estimated full time equivalent job equivalent number and the categories simplified to match the categories in the input-output transaction tables (Table 29).

Table 29: Construction phase FTE jobs by industry

Sector	FTE	OS	Aus	NT	Region
Civil Engineering and construction	119	14	364	289	210
Construction services	379		119	52	38
Professional and technical services	119		119	39	16
Total	616	14	602	380	264

There will be a total of 602 FTE jobs in Australia of which an estimated 380 will come from the NT and 264 from the region. The 24 jobs for overseas workers will include specialist welders and technicians constructing the compression plants, gas plant and nitrogen removal plant.

Civil construction projects have larger multiplier factors than professional services given the demands for support services from numerous other sectors (Table 26). The consequence of this flow on multiplier impact is to create a total of 1,314 FTE positions in Australia which is more than double the direct workforce (Table 30).

Table 30: Construction phase FTE jobs economic impact

Sector	OS	Aus	NT	Region
Economy	24	1,314	1,009	545

The regional impact estimated at 545 jobs in total will be significant in that economy representing nearly 5% of the estimated 12,000 workforce in the 2011 census.

Wages and salaries have been estimated from the capital expenditure on the basis of other industry benchmarks (Table 31).

Table 31: Construction phase wages and salary estimate

Sector	Expenditure (\$m)	Wage share	Aust wages (\$m)
Materials procurement	275	0%	0
Civil engineering and construction	30	65%	20
Construction services	338	50%	169
Professional and technical services	30	75%	23
Planning and administration	102	75%	77
Total	775		288

The estimated \$288m in wages and salaries broken down into the study areas suggests expenditure on people engaged from the region at \$126m and \$181m in the NT as a whole (the NT estimate includes the region).

With the multiplier flow-on impact, the project increases household income in Australia by an estimated \$678m. NT incomes are increased by \$348m and the region by \$215m (Table 32).

Table 32: Construction phase wages and salary estimate by area and flow on

Sector	Area	Income multiplier	Aust income (\$m)	NT income (\$m)	Region income (\$m)	Aust impact (\$m)	NT impact (\$m)	Region impact (\$m)
Civil Engineering	Australia	2.44	20			48		
	NT	2.16		12			27	
	Region	1.85			9			16
Construction services	Australia	2.72	169			459		
	NT	2.12		107			226	
	Region	1.89			74			140
Professional and technical services	Australia	2.07	23			47		
	NT	1.81		14			26	
	Region	1.53			10			15
Administration	Australia	1.63	77			125		
	NT	1.46		48			70	
	Region	1.31			34			44
Total			288	181	126	678	348	215

The project will have a small economic ripple effect in the region but the NT impact will again be small in that larger economy.

Economic output will be increased by the direct investment of an estimated \$775m in the project with the expenditure dominated by two industry sectors – construction activities associated with the pipeline and gas plant and the purchase of the equipment for this infrastructure (Table 33).

Table 33: Construction phase investment

Sector	Expenditure (\$m)	Share
Materials procurement	272	35%
Civil engineering	29	4%
Construction services	334	44%
Professional and technical services	29	4%
Planning and administration	102	13%
Total	766	100%

The flow on effect is to increase the economic output of Australia by \$1,379m with the NT impact a total of \$213m and the region \$160m (Table 34).

Table 34: Construction phase economic impact

Sector	Area	Income multiplier	Aust income (\$m)	NT income (\$m)	Region income (\$m)	Aust impact (\$m)	NT impact (\$m)	Region impact (\$m)
Civil Engineering	Australia	2.44	20			48		
	NT	2.16		12			27	
	Region	1.85			9			16
Construction services	Australia	2.72	169			459		
	NT	2.12		107			226	
	Region	1.89			74			140
Professional and technical services	Australia	2.07	23			47		
	NT	1.81		14			26	
	Region	1.53			10			15
Administration	Australia	1.63	77			125		
	NT	1.46		48			70	
	Region	1.31			34			44
Total			288	181	126	678	348	215

Impacts of operations phase

The 30 year operating phase of the project is far longer than the two year construction phase and will have longer term consequences although operating costs are relatively low.

The operating workforce includes financial and management staff and technical staff engaged in daily pipeline operations and management. Most of these employees will be located in Jemena capital city offices. Pipeline operations are highly sophisticated and electronic monitoring systems mean that daily operations can be done remotely with a small number of people. There will be some local jobs largely involved with maintenance of the gas plant, pipeline and pipeline corridor.

Around 40 positions are expected to be involved in operations activities with the estimated full time equivalent being 18 jobs. Thirteen of these are estimated to be in the NT with 13 based in the region almost entirely in Tennant Creek and Mt Isa.

The same industry sectors are involved in pipeline operations as the construction phase with expenditure in plant and pipeline maintenance, land management and administration services. However, the ABS statistics include a gas supply sector for this region and hence the multiplier factors are used for this sector (Table 35). As with construction, a population weighted multiplier factor was calculated for the region from the multipliers for the Mt Isa and Barkly Local Government Areas. For the operations phase of the projects, the employment multipliers range from 1.09 to 1.25 in the Shires with a weighted average of 1.21 and 1.63 for the NT.

The flow on impact is to create 36 jobs in Australia with 16 of these in the region and potentially 21 in the NT (Table 35). Household income will increase in the region by \$1.9m and by \$3.7m in Australia. The expenditure on operations will see Australian economic output increase by \$18m.

Table 35: Operations phase impacts

Sector	OS	Aust	NT	Region
Jobs (FTE)	0	18	13	13
Job impact (FTE)	0	36	21	16
Household income (\$m)	0	\$1.7	\$1.2	\$1.2
Income impact (\$m)	0	\$3.7	\$1.9	\$1.9
Expenditure (\$m)	\$0.3	\$8.9	\$0.7	\$0.5
Economic impact (\$m)	na	\$18.2	\$1.8	\$1.0