

Jemena Northern Gas Pipeline Pty Ltd

Northern Gas Pipeline

Supplement to the Draft Environmental Impact Statement

APPENDIX D ECONOMIC & SOCIAL IMPACT ASSESSMENT

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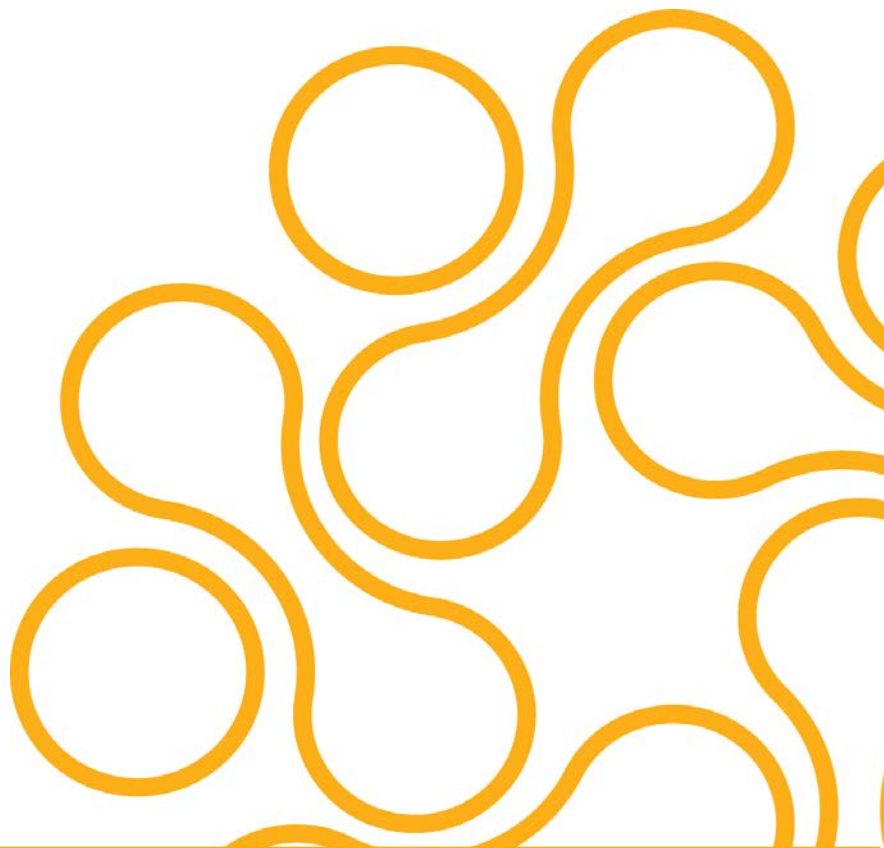


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Northern Gas Pipeline Project ECONOMIC AND SOCIAL IMPACT ASSESSMENT

PUBLIC

Circle Advisory Pty Ltd
PO Box 5428, Albany WA 6332
ACN 161 267 250 • ABN 36 161 267 250
T: +61 (0) 419 835 704
F: +61 (0) 9891 6102
E: admin@circleadvisory.com.au
www.circleadvisory.com.au



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Project Manager	James Kernaghan
Author(s)	Jane Munday, James Kernaghan, Martin Edwards, Fadzai Matambanadzo, Ben Garwood.
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Circle Advisory Pty Ltd.

ACN 161 267 250 | ABN 36 161 267 250

Address: PO Box 5428, Albany Western Australia 6332

Telephone: +61 (0) 419 835 704

Facsimile: +61 8 9891 6102

Email: james@circleadvisory.com.au

Web: www.circleadvisory.com.au

Preface

The authors would like to acknowledge the support of a wide range of people and organisations who contributed as they could to the overall effort in assessing the potential social and economic impacts of the Northern Gas Pipeline.

These include in particular, all of the community groups and organisations in Tennant Creek and Mount Isa and those in between; all of the Territory, State and Commonwealth Government agency organisations, and landowners and individuals across the project, who gave freely of their time to participate in our consultations and our follow up requests for information.

This Economic and Social Impact Assessment draws on the initial Economic Impact Study, the initial Social Impact Scoping Assessment Study, further desktop research, interviews with key stakeholders, data from other studies commissioned for Jemena's Northern Gas Pipeline Environmental Impact Statement, Jemena background documents and feedback from general consultation by Jemena.

While Circle Advisory has applied its best endeavours to produce a reliable and accurate study, limitations to this ESIA include:

- the subjective nature of many potential social impacts, which makes it difficult to assess and predict risks and opportunities with accuracy
- difficulties accessing up-to-date and relevant data on some issues, for example occupancy rates for commercial accommodation in the region
- difficulties arranging direct feedback from some stakeholders, including language barriers, availability of some stakeholders during field studies and the remoteness of the region under study
- the confidential nature of some material, including commercial data and negotiations with traditional owners
- the limited experience by some stakeholders of the environmental approvals process and social impact assessment
- time constraints and the constraints of the environmental approvals process. The consulting team has applied its professional expertise to the development of its observations and conclusions, however recommends continued and regular engagement with stakeholders to ensure a continued growth in Jemena's knowledge of the social and economic context, its involvement in the community to therefore maximise the chances of the success of its Economic and Social Impact Management Plan (ESIMP).

The achievement of Jemena's aims will be well supported by the proposed community reference groups and a full time on-the-ground presence of Jemena staff and contractors.

The potential social impacts identified in this ESIA should also be seen as being able to act as much as predictors of emerging impacts (and issues) to be managed, as they are the foundations of the mitigation and enhancement strategies suggested.

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EXECUTIVE SUMMARY

The Economic and Social Impact Assessment (ESIA) for the Northern Gas Pipeline (NGP) project describes the economic and social characteristics of the regions, communities and peoples potentially impacted by the project.

Sections 1 to 3 of the ESIA cover the project description, the regulatory framework and standards considered and the purpose and methodology used for the ESIA.

Section 4 describes the existing economic and social environment, in particular the Aboriginal, pastoral and mining context of the region, and key institutions influencing the region's governance.

Sections 5 to 8 provide baseline qualitative and quantitative data against indicators to measure change processes and potential impacts, both positive and negative, intended and unintended and against various stages of the projects. Impacts were determined through a scoping process and issues identification, refined in risk and opportunities matrices, registers and categorised as follows:

- community, health and wellbeing
- economic and education
- culture and heritage.

The impact assessment part of this report analyses groups of impacts under each of these categories, drawing on qualitative and quantitative data, a literature review and feedback from community engagement and ESIA interviews. After outlining baseline conditions, each section then contains assessment and prediction of the consequence, likelihood and significance ratings of each potential impact across the stages of the project.

Section 9 summarises recommended management strategies to avoid, mitigate or manage negative impacts (risk) or enhance positive impacts (opportunity).

Several categories of impact are cross-referenced to other sections of the Environmental Impact Statement (EIS) for the project, in particular the chapters relating to traffic management, human health and safety and the culture and heritage chapters.

Some of the key areas for study included:

- the likely economic opportunities (local jobs and business opportunities) associated with the project and also the risk of these not being realised, or expectations about them not being met;
- the potential impacts of in-migration of a large workforce in areas such as housing, health and policing services;
- potential community conflict over aspects of the project such higher disposable incomes circulating through the economy and the implications of this for community amenity, cohesion and resilience; and,
- at the time that the ESIA was being prepared, there was wider community debate on the topic of onshore gas exploration and the associated technique used for underground reservoir stimulation, hydraulic fracturing, or commonly known as 'fracking'. This aspect manifested in some SIA interviews as fears by some that the NGP would become an enabler of fracking by increasing demand for onshore gas;

- potential negative interactions between workers and existing residents; and,
- the potential displacement of other sectors, in particular tourism, the pastoral industry, government and local government services, through taking up commercial accommodation, inflationary pressures, incompatible land uses and loss of staff to the project.

The total value of the project is about \$800m. In terms of potential economic benefits from the project, the Economic Impact Assessment calculated the NGP could result in an increased economic output for Australia of \$1.379b, the Northern Territory of \$213m and the Mount Isa and Barkly local government areas by \$160m.

Jemena expects a workforce of about 900 throughout the project, i.e. during the planning, construction and commissioning phases over the period early 2016 through mid to late 2018. The construction workforce is expected to peak at about 725 during the northern dry season of 2017. This comprises both the pipeline construction workforce and the compressor stations workforces.

Workers constructing the Phillip Creek Compressor Station (PCCS), approximately 175, will be accommodated in a workers construction camp adjacent to the facility about 40km northwest of Tennant Creek. It is expected that between 30 and 65 workers associated with the pipe laydown yard and office administration will be accommodated in Tennant Creek in existing commercial accommodation during the period April 2017 to December 2018. The workforce (approx. 110) for the proposed Mica Creek Compressor Station (MICS) near Mount Isa will be accommodated in existing commercial accommodation in Mount Isa.

The pipeline construction work force will be accommodated in temporary construction camps along the construction Right of Way (ROW).

Jemena's main construction contractor is McConnell Dowell.

Jemena and its contractors will seek to maximise the use of goods, services and labour from the Barkly Region and Mount Isa regions, particularly from Indigenous businesses and people, and from the NT and western Queensland more broadly.

Based on a labour supply and demand study undertaken in 2015, Jemena predicted that about 567 (63%) of the 900 jobs could possibly be filled by people from the Territory and the regions and some 133 out of the estimated 200 supply contracts (or 67%) could be competitively tendered for by Northern Territory and regional companies, with an estimated value of \$112 million.

Drawing on these estimates, Jemena set various baseline targets for local participation, as follows:

- Contracts: a target of 100 contracts with an estimated value of \$84 million.
- Jobs: a target of 450 jobs (FTE equivalent of 309 jobs) over the planning, construction and commissioning phases.

Included in the above, Jemena has set a target of 42 contracts being awarded to Indigenous organisations and businesses and is aiming for at least 122 jobs to go to Indigenous workers.

Achieving these estimates will depend on the competitiveness of individual business, individual interest and aspiration.

During the operations phase, it is estimated that Territory, regional and Indigenous businesses could tender for about \$0.5m worth of contracts a year. There is expected to be some 10 full time positions with Jemena during the operations phase and an estimated further 30 contract positions, most of

which would be part time.

The following table shows the suggested areas of study in the NTEPA Terms of Reference for the NGP and where these issues are addressed in the ESIA.

Terms of reference	Reference
Key stakeholders	Ch 4 of EIS, 3.6.4
Community structures and vitality	6.3; 6.4; 6.5
A skills audit of affected communities	7.2; 7.4.3
Workforce characteristics	7.2
Housing accommodation type and quantity	6.4.8
Social amenity	6.5
Other land uses	7.4.5; 7.4.6; 7.4.7
Laws, customs and culture of Native Title Holders	4.2; Cultural and Heritage Assessment
A summary of the project's feasibility	7.3.1; Economic Impact Assessment (EIA)
Details of financial capacity to implement the project	7.3.2; EIA
Estimated total project revenue	7.3.3; EIA
Total contribution to GSP and GDP	7.3.4; EIA
Opportunities for regional centres	7.4.1; 7.4.3; EIA
Overall estimated tax	7.3.5; EIA
Estimated capital and annual operational expenditure	7.3.6; EIA
The value of any residual infrastructure	7.4.9; EIA
Other contributions to local communities	Section 9
Cumulative impacts	Section 10

Table 0-1 Summary of ESIA content against NTEPA Terms of Reference issued in December 2015

ABBREVIATIONS AND TERMINOLOGY

AAPA	Aboriginal Areas Protection Authority
ABS	Australian Bureau of Statistics
AEDI	Australian Early Development Index
AGP	Amadeus Gas Pipeline
ALRA	Aboriginal Land Rights (Northern Territory) Act 1976 (Cth)
APGA	Australian Gas and Pipelines Association
APPEA	Australian Petroleum Production and Exploration Association
NTTIP	Building NT Industry Participation
CGP	Carpentaria Gas Pipeline
CEMP	Construction Environment Management Plan
CHMP	Cultural Heritage Management Plan
CP	Cathodic Protection
CRG	Community Reference Group
CSRM	Centre for Social Responsibility in Mining
DIIS	Department of Industry, Innovation and Science
EA Act	<i>Environment Assessment Act (NT)</i>
EIA	Economic Impact Assessment
EIS	Environmental Impact Statement
EOL	End of line
EPBC	<i>Environment Protection and Biodiversity Conservation Act 1999 (Cth)</i>
ESIA	Economic and Social Impact Assessment
ESIMP	Economic and Social Impact Management Plan
GDP	Gross Domestic Product
GSP	Gross State Product
IAIA	International Association of Impact Assessment
IAP2	International Association for Public Participation
IFC	International Finance Corporation (World Bank Group)
ILUA	Indigenous Land Use Agreement
IPIECA	International Petroleum Industry Environmental Conservation Association

IPP	Industry Participation Plan
ISO	International Organisation of Standardisation
LGA	Local Government Area (ABS statistical area)
MCA	Minerals Council of Australia
MICS	Mount Isa Compressor Station
MLV	Main Line Valve
MNES	Matters of National Environmental Significance
NGP	Northern Gas Pipeline
NT	Northern Territory
NTA	<i>Native Title Act 1993</i> (Cth)
NTEPA	Northern Territory Environment Protection Authority
NTRB	Native Title Representative Body
P&G Act	Petroleum and Gas (Production and Safety) Act 2004 (Qld)
PBC	Prescribed Body Corporate
PCCS	Phillip Creek Compressor Station
PFES	Police, Fire and Emergency Services (NT)
Qld	Queensland
REDC	Regional Economic Development Committee (Barkly)
ROW	Right of Way (construction)
SIA	Social Impact Assessment
SOL	Start of line
ToR	Terms of Reference
UNEP	United Nations Environment Program
WBSCD	World Business Council for Sustainable Development

1. PROJECT DESCRIPTION

Jemena's Northern Gas Pipeline (NGP) project will involve the construction of a 622 km, 12-inch, buried natural gas pipeline connecting the existing Amadeus Gas Pipeline (AGP) at the proposed Phillip Creek Compressor Station (PCCS) 45km north-west of Tennant Creek in the Northern Territory to the existing Carpentaria Gas Pipeline (CGP) at Mount Isa in Queensland. At Mount Isa, the NGP will be connected to the CGP at the proposed Mount Isa Compressor Station (MICS) about 7 km south of Mount Isa.

The chosen route for the NGP will traverse (ref Fig. 1) mainly remote and sparsely populated cattle stations and Aboriginal land south of the Barkly Highway. Along the pipeline corridor there will be several above ground facilities.

The pipeline route and proposed locations for above-ground facilities have been refined through consultation with land owners, Aboriginal Traditional Owners and Land Councils, Native Title holders and other parties with interests in the land.

The Project is divided into three phases:

1. Planning: 2016.
2. Construction and Commissioning: early 2017 to 2018.
3. Operations: 2018+

Construction of the pipeline is scheduled to start early in the dry season of 2017, with the PCCS and MICS completed by the second quarter of 2018.

Typical pipeline construction activities involve clearing and grading, trenching, pipe-bending, welding and lowering in followed by testing, backfilling and land reinstatement.

The project will construct the following infrastructure and facilities described in order from west (NT) to east (Queensland):

- a 12-inch buried underground gas pipeline; about 457 km of which will traverse land in the Northern Territory and 165 km in Queensland;
- a start of line (SOL) receipt/compressor station at Warrego, the Phillip Creek Compressor Station (PCCS) 45 km north-west of Tennant Creek, covering about nine hectares (ha) of land (300 m by 300 m);
- three main line valve (MLV) facilities along the pipeline, two covering an area of about 0.12 ha (30m x 40m) each, with one covering 0.24 ha (30m x 80m);
- an end of line (EOL) delivery station to the south-west of the Mount Isa power station (Queensland), the Mount Isa Compressor Station (MICS), covering about 9 ha (300 m by 300 m) of land;
- five cathodic protection (CP) stations, spaced between PCCS, MICS and the MLV sites, each covering about 0.04 ha (20 m by 20 m). The CP sites will comprise buried anode beds, some distance from the pipeline (generally less than 500 m) and connected to the pipeline by buried cables.

The construction schedule is driven by the project objective to start gas transportation services in 2018. The project has a capital value in the order of \$800m.

The construction footprint will comprise a 30 m wide pipeline construction right of way (ROW). Temporary facilities required to support construction will include access tracks (new and upgraded existing tracks), additional works areas (turn-around points, additional workspace for crossings and temporary storage areas), water supply bores and dams for storing water required for dust suppression and hydrostatic testing (pressure testing) of the pipeline. The construction ROW and all temporary facilities, access tracks and works areas will be decommissioned and rehabilitated on completion of the construction phase. The only components to be retained are access tracks to the permanent above-ground facilities (i.e. compressor stations, MLV and CP stations), limited access along the easement and any access tracks or dams requested to be retained by land holders.

After construction of the pipeline, landholders will be able to resume their use of the land, except for deep excavation or permanent structures over the buried pipeline. Pipeline markers will be installed along the easement at line of sight. While Jemena will establish an operational easement there is limited ongoing requirement for vegetation clearance or access tracks for maintenance along the pipeline easement.

Gas drawn from the AGP will enter the PCCS and after removal of the nitrogen components the gas will be transported across the NGP to the MICS. At the MICS the gas will be transferred into the CGP.

Field staff working at the PCCS and MICS, either living in Tennant Creek and Mount Isa or commuting to and from, will perform day-to-day operation and maintenance of the compressor stations and above-ground facilities. Control room staff based in Melbourne will perform a range of remote management and monitoring functions. The control room staff will manage throughput of the pipeline, customer billing, daily gas accounting and planning for scheduled outages.

The NGP has a design life of 30 years, but with ongoing integrity management and subject to appropriate commercial drivers, the operational life is expected to be longer. If and when the pipeline is no longer required, it will be decommissioned and all above ground infrastructure will be disposed of appropriately in accordance with the legislative requirements applicable at the time.

The project is expected to provide a peak workforce of 725 people (602 FTEs) over the relatively short construction phase (less than 18 months), with Jemena aiming to recruit many of these workers from the Barkly and Mount Isa regions and the Territory and western Queensland more broadly. The estimated operational workforce of 41 is likely to include six full time Jemena positions in Tennant Creek, four in Mount Isa and the remainder will be contract employees located according to the maintenance and operational requirements of the project.

Most workers will live in temporary construction camps while on shift, in a 300 person capacity accommodation camp at the PCCS site, 110 in Mount Isa commercial accommodation and approximately 30 and 65 in commercial accommodation in Tennant Creek over the period mid 2017 to mid 2018. Several temporary construction camps will be installed adjacent to the pipeline construction ROW that can accommodate up to 300 workers. There will also be a number of portable camps along the pipeline ROW that will be used to accommodate smaller special crossing crews.

The temporary construction camps are expected to be on Tennant Creek Station, an area of vacant Crown land, the Arruwurra freehold land near Wonara community, on Austral Downs and then one in Queensland in vicinity of Barkly or May Downs.

The map below shows how the NGP connects the existing NT gas pipeline network into the east coast Australian gas pipeline network.



Figure 1-1 NGP and the gas pipeline network in Australia

2. STANDARDS, REGULATORY AND POLICY FRAMEWORK

This ESIA is guided by a range of international and Australian guidelines, policies and standards recommended by international organisations, relevant Australian Governments and industry best practice as these apply in the Australian context.

It relates to and informs the project approvals within the legislative framework of the NT and Australian Governments. In particular, the NT Environmental Protection Authority (NT EPA) requires an ESIA for projects assessed as requiring an Environmental Impact Statement (EIS) level of assessment, pursuant to the *Environmental Assessment Act (NT) (EA Act)* (NT EPA, 2013).

In Queensland projects assessed as requiring an EIS level of assessment must complete a Social Impact Assessment (SIA) (DSD, 2013). The NGP Project *does not* require an EIS level of assessment in Queensland as it falls under the threshold of impact due to the fact that there is only 165 km of pipeline in that state.

In the case of the NGP, environmental approvals in Queensland are obtained under the *Petroleum and Gas (Production and Safety) Act 2004* (QLD) and in this case an Environmental Authority was obtained in late 2015. A Pipeline Survey Licence was issued under the *P&G Act* and a Pipeline Licence is expected to be granted, subject to the submission of acceptable environmental management plans.

Matters of National Environmental Significance (MNES) pursuant to the *Environment Protection and Biodiversity Conservation Act 1999 (Cth)* in Queensland, if required, will be addressed through the NT EIS process.

Notwithstanding the Queensland regulatory context, Jemena is providing an ESIA across the whole NGP as a matter of best practice.

Existing Australian Government and some State and Territory legislation for environmental assessment has always included social and economic aspects in its definition of environment; however, the level of expectation and treatment of these aspects has often been overshadowed by matters associated with the biophysical aspects of the environment.

In the past decade or so, particularly as a result of the resources construction boom, both in minerals and onshore gas (CSG), there has been a greater focus by regulators on social and economic aspects of resource projects, including community and stakeholder concerns and aspirations.

Thus Australian, State and Territory governments have begun to move toward a more integrated impact assessment model, equally valuing environmental, economic and social impacts as they are increasingly seen as interconnected and equally significant. This has long been acknowledged in many global standards.

2.1. GLOBAL

At the global level, economic and social impact assessment is standard practice for resource development. The following sets out the key global level standards, guidelines and policies.

International Finance Corporation (IFC) - World Bank: The IFC's *Environmental and Social Performance Guidelines* (IFC, 2012) provide guidance on identifying and evaluating environmental and social risks and impacts of projects, adopting a mitigation hierarchy to anticipate, minimise or avoid residual impacts, manage grievances, promote improved environmental and social performance and promote the means for adequate engagement with affected communities.

International Association of Impact Assessment (IAIA): As a peak body for impact assessment globally, the IAIA plays a leading and proactive role in the improvement and dissemination of EIA and SIA concepts and practices. The IAIA's *Social Impact Assessment: Guidelines for assessing the social impact of projects* (Vanclay, et al., 2015) is intended to provide widely accepted and agreed guidance to practitioners involved in SIA and have been developed explicitly for the international context. IAIA also provides the *Respecting Indigenous Peoples and Traditional Knowledge Best Practice Principles* (Croal & Tetreault, 2012) which aims to promote integration of traditional knowledge and respectful incorporation of Indigenous Peoples in impact assessment.

International Petroleum Industry Environmental Conservation Association (IPIECA): The IPIECA was founded after the establishment of the United Nations Environment Programme (UNEP) and is the principal global oil and gas industry association for environmental and social issues. It is the petroleum industry's principal channel of communication with the United Nations. It develops, shares and promotes good practice and knowledge to help the industry improve its environmental and social performance. IPIECA provide reporting guidance targeted at organisations operating in the oil and gas sector to encourage consistent and high quality sustainability reporting as an enabler of stakeholder engagement, transparency and performance improvement. IPIECA provides a variety of publications to help guide the industry (IPIECA, 2013).

International Association for Public Participation (IAP2): IAP2 is an international association which seeks to promote and improve the practice of public participation (referred to as community engagement in Australia). As an international leader in public participation, IAP2 has developed Core Values, a Spectrum of Participation and *Quality Assurance Standard for Community Stakeholder Engagement* to underpin best practice approaches in this area (IAP2, 2015).

World Business Council for Sustainable Development (WBCSD): The WBCSD is a CEO-led organisation of forward-thinking companies that galvanises the global business community to create a sustainable future for business, society and the environment. Through its members, the Council applies its respected thought leadership and effective advocacy to generate constructive solutions and take shared action to drive business action on sustainability in the coming decade and beyond. The WBCSD provides a variety of publications to guide businesses in managing social impact (WBCSD, 2016), particularly in the area of local economic participation.

International Organisation of Standardisation (ISO): The ISO 31000:2009 provides principles and generic guidelines on risk management, not specific to any organisation type, industry or sector and is commonly used in environmental impact management. The ISO's *Risk Management: Principles and Guidelines* can also be used in the area of social impact management (ISO, 2009). In 2010, ISO released a set of guidelines on *Corporate Social Responsibility (ISO 26001)* (ISO, 2010) that provide guidance on how businesses can operate in a socially responsible way by translating principles into actions and sharing global best practice. As it provides guidance rather than specific requirements, this standard does not provide for certification for those businesses implementing it.

2.2. AUSTRALIA

Environment Protection and Biodiversity Conservation Act 1999 (Cth): Provides protection of the environment especially Matters of National Environmental Significance (MNES). The Act promotes a cooperative approach to the protection and management of the environment involving governments, the community, landholders and Indigenous peoples. The key approval required under this legislation is the Environmental Impact Statement (EIS), within which social and economic factors must be considered.

Aboriginal Land Rights (Northern Territory) Act 1976 (Cth) (ALRA): The ALRA was established to recognise existing land held by Aboriginal Traditional Owners based on Aboriginal tradition and to provide the basis upon which Aboriginal people in the NT could claim rights to land. The ALRA has a number of provisions relating to conditions for access to and use of Aboriginal Land, including mining developments and developments such as the NGP. Agreements can be reached with Traditional Owners through negotiation with Land Councils for, among other things, social and economic impact.

Native Title Act 1993 (Cth) (NTA): The NTA was established to recognise Aboriginal native title in Australia and to provide the basis for Aboriginal native title holders to claim native title to land, except where title has been validly extinguished. The NTA has a number of provisions relating to how developments can occur where native title exists. It affords various levels of rights to native title holders relating to the impacts that developments such as the NGP, might have on their native title rights. The NTA allows for a variety of agreements to be made between parties in relation to native title, e.g. Indigenous Land Use Agreements (ILUAs). ILUAs will often include provisions relating to social and economic impacts.

Australian Jobs Act 2013 (Cth): This Act aims to support the creation and retention of Australian jobs by requiring Australian Industry Participation plans for major projects to ensure that Australian entities and people have full, fair and reasonable opportunity to bid for the supply of goods or services for a projects.

Australian Government Department of Industry, Innovation and Science (DIIS): In conjunction with the mining industry and other interest groups, DIIS developed the Leading Practice Sustainable Development Program for the Mining Industry (LPSDP). This comprises workshops and a series of 15 free handbooks with practical advice for proponents on issues such as sustainable development, *Working with Indigenous Communities* (DISS 2007) and *Community Engagement and Development* (DIIS, 2006)

2.3. NORTHERN TERRITORY

Environmental Assessment Act: This Act ensures that matters that the NT Environment Protection Authority (NTEPA) considers likely to have a significant effect on the environment are fully examined and taken into account in project approvals.

Economic and Social Impact Guidelines: The ESIA will give due regard to the NT EPA's *Guidelines for the Preparation of Economic and Social Impact Assessment* (NT EPA, 2013), issued to provide advice to proponents and the public on the standards that the EPA expects to be applied to the environmental impact assessment process.

Northern Territory Aboriginal Sacred Sites Act: This Act ensures a practical balance between the recognised need to preserve and enhance Aboriginal cultural tradition in relation to certain land in the Territory and the aspirations of Aboriginal and all other peoples of the Territory for their economic, cultural and social advancement. The Act provides a procedure for the protection and registration of sacred sites, provides for entry onto sacred sites and the conditions to which such entry is subject and establishes a procedure for the avoidance of sacred sites in the development and use of land through the Aboriginal Areas Protection Authority (AAPA). For the NGP Project, Jemena will need to seek an AAPA Certificate to provide protection against inadvertent entry to or disturbance of a sacred site.

Heritage Act: The *Heritage Act 2011* protects declared heritage places. This includes European heritage places (eg buildings, shipwrecks, grave sites), Aboriginal (eg rock art sites, artefact scatters, stone carvings, or the remains of Macassan trepang processing sites). All Aboriginal or Macassan archaeological places have been declared to be heritage places and relate to the past occupation of the NT by Aboriginal or Macassan people. Other places are protected if the Minister for Lands, Planning and Environment declares them as heritage places. A place can be declared if it has heritage significance because of its historical, scientific, aesthetic or social significance. The Heritage Branch of the Department of Lands, Planning and Environment maintains a database of all known Aboriginal and Macassan archaeological places in the NT. For the NGP Project, Jemena will require Work Approvals for the management of any heritage sites located.

Building NT Industry Participation (BNTIP): Northern Territory Projects worth \$5m or more that are NT Government or government-assisted private sector projects must meet the BNTIP policy. Other projects are encouraged to adopt the policy, which includes measures to benefit small and medium sized enterprises, for the health and wellbeing of associated communities and for the economic and social advancement of Indigenous people by preparing and submitting an Industry Participation Plan (IPP) (DoB, 2015). An 'assisted private sector project' is defined as a project where the NT Government makes either a direct financial investment and/or an indirect quantifiable contribution beyond standard government provision of regulatory approvals.

2.4. QUEENSLAND

Social impact assessment guideline: The Queensland Department of State Development has published a set of guidelines for project proponents, to help guide the assessment of the social impact of projects under Terms of Reference for projects assessed under either the *State Development and Public Works Organisation Act 1971* ("the Coordinator General's Act"), or under the *Environmental Protection Act 1994*. The purpose of the guidelines is to ensure the identification of the social impacts directly related to the project and how these are to be avoided, managed, mitigated or offset. Similarly, the guidelines contemplate the proponent developing strategies to capitalise on social opportunities. Social impact assessment is required to cover community and stakeholder engagement; workforce management; housing and accommodation; local business and industry content and health and community wellbeing.

Aboriginal Cultural Heritage Act 2003 (Queensland): The aim of this Act is to provide effective recognition, protection and conservation of Aboriginal cultural heritage. The Act also provides for the negotiation and agreement of Cultural Heritage Management Plans (CHMP) with recognised Aboriginal parties for developments such as the NGP.

Queensland Heritage Act: The Act is established to provide for the conservation of Queensland's cultural heritage and establishes the Queensland Cultural Heritage Council and a register of places, the Queensland Heritage Register. The Act requires the reporting of the discovery of archaeological artefacts and provides for the management of places of local cultural heritage significance by local governments. The Act also allows for the regulation of development affecting Queensland heritage places, in conjunction with other legislation.

2.5. AUSTRALIAN INDUSTRY

Australian Gas and Pipelines Association (APGA): The APGA is the industry body associated with the gas pipeline industry in Australia. It has produced a set of guidelines for the development and maintenance of meaningful relationships with land tenement holders, communities, authorities and businesses around pipeline infrastructure (APGA, 2015).

The Australian Petroleum Production & Exploration Association (APPEA): APPEA is Australia's peak oil and gas exploration and production industry representative body. To support achieving APPEA's vision of being "recognised as the credible, respected and influential voice of the oil and gas exploration and production industry in Australia", APPEA and its members subscribe to a Principles of Conduct that includes a commitment to "use open and effective communication and engagement with communities, regulators, government, and other affected parties." (APPEA, 2016)

Minerals Council of Australia (MCA): The MCA is Australia's peak resources industry body that "represents Australia's exploration, mining and minerals processing industry, nationally and internationally, in its contribution to sustainable development and society". The MCA and its members operate under a sustainable development framework, Enduring Value, that comprises 10 Principles including engaging "... at the earliest practical stage with likely affected parties to discuss and respond to issues and conflicts concerning the management of social impacts" (MCA, 2015).

2.6. JEMENA

As a provider of energy to homes and businesses, Jemena's approach is to establish and maintain enduring relationships with its customers and the communities it works in and serves.

Jemena seeks to be a good neighbour and to enrich the welfare and amenity enjoyed by its customers and communities. Jemena strives to ensure that its operations meet the highest safety and environmental standards (Jemena, 2016).

3. INTRODUCTION

3.1. PURPOSE OF AN ECONOMIC AND SOCIAL IMPACT ASSESSMENT

The main purpose of an economic and social impact management in the context of resource development projects is to ensure that social and economic impacts are identified and mitigated to as low as reasonably practicable and that social and economic opportunities are optimised. In simple terms, in implementing a resource project, the project proponent should seek to avoid the bad things as much as possible and make the most of the good things that can arise from the project, for the communities and the local economy involved.

In doing so, proponents need to engage with and understand the communities and the local economy through desktop research, consultation and reflection. Consistent with the meaning of Jemena, that is, to listen or to hear¹ (Sydney University, 1999-2001). They also need to respond to the concerns and aspirations raised by the communities in a way that is practical and relevant and which is possible and reasonable within the particular capacities of the project.

These learnings must then be incorporated into project plans and implemented throughout the project, ensuring that there are clear responsibilities for plan implementation and that there is ongoing dialogue with the communities involved.

The following sub sections describe the practice of SIA in a broad sense as well as the detailing the methodology used for the management of the potential economic and social impact of the NGP Project.

3.2. SIA PRACTICE

The global, Australian, NT, Queensland and pipeline industry standards, policies and guidelines have been set out in Section 2 above. In addition, a myriad of guidelines, academic papers and documents provide information and direction to proponents in how to best manage the social and economic impacts of their projects.

The International Association for Impact Assessment (IAIA) plays a leadership role in setting principles and guiding best practice of social impact assessment globally. It has produced, in particular, the *Social Impact Assessment: Guidelines for assessing the social impact of projects* (2015), referred to above.

The IAIA's definition of impact assessment is:

“... the process of identifying the future consequences of a current or proposed action”.

IAIA is the leading global network on best practice in the use of impact assessment for informed decision making regarding policies, programs, plans and projects. Members of IAIA believe that impact assessment is a practical tool for helping meet today's needs without compromising the opportunities of future generations.” (IAIA, 2016)

¹ Jemena is a derivation of the Wagiman word “Jemen-na”, the literal translation of which is ‘to listen or to hear’.

ESIA includes the processes of analysing, monitoring and managing the intended and unintended social consequences, both positive and negative, of planned interventions (policies, programs, plans, projects) and any social change processes invoked by those interventions. Its primary purpose is to bring about a more sustainable and equitable biophysical and human environment. (Vanclay, 2003).

In the Australian context, there are significant differences between the approaches taken by the various States and Territories, although assessments are generally seen as part of the environmental assessment process.

In the context of the NGP Project the NT EPA's guidelines and those of the Queensland Department of State Development are most relevant.

SIA practice in Australia; however, remains an emerging and developing field.

In 2009, the Queensland Government, in partnership with the Queensland University's Centre for Social Responsibility in Mining (CSRSM) and the Queensland Resources Council undertook research to determine leading practice approaches for addressing the social impacts of resource development and looked at a number of jurisdictions, including South Africa, Canada, New South Wales and Western Australia and also a range of corporate policies, including the policies of the International Finance Corporation (IFC) (Franks, 2009).

SIA practice (concepts, frameworks, methodologies, approaches) must remain adaptable to remain globally and nationally relevant while allowing for plans that are tailored to local needs, and be both practical and fit for purpose.

Together with other aspects of environment impact assessment, SIAs and recommendations for management and mitigation of impacts should feed into Project Management Plans, particularly Construction Environment Management Plans (CEMPs) and operational management plans, to ensure that all project risks are managed over the life of the project.

Most importantly, the assessment process is not just a point in time study but informs long-term and mutually beneficial relationships with communities and stakeholders. It does not necessarily fit well with environmental approval processes as often, right up to the time that the project Environmental Impact Statements (EIS) is being published, detailed project descriptions are often still evolving yet at the same time are meant to be the basis of SIA stakeholder consultation (Kernaghan, 2008).

3.3. METHODOLOGY FOR THE NGP

The methodology being applied for the NGP Project draws on the range of guidelines and the discussion set out above.

The methodology is also designed to address the socio-economic aspects of the NT EPA's EIS Terms of Reference for the Project, the NT EPA's Guidelines for ESIA and the Terms of Reference Jemena prepared for the ESIA, based on the Guidelines during the NT Government competitive process for the project.

The overall approach will follow the ESIA management process identified in Figure 1 below.

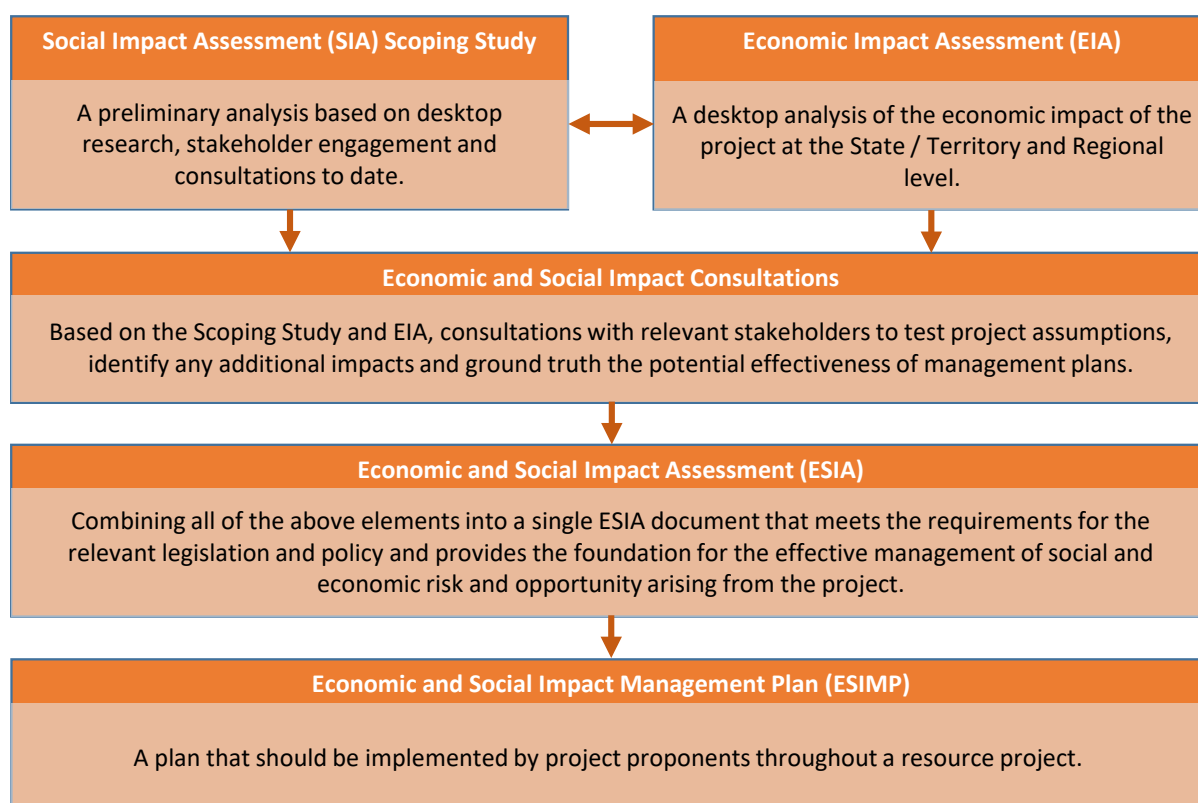


Figure 3-1 Methodology flow chart

3.4. OBJECTIVES OF THIS ESIA

The objectives of this ESIA are to:

- describe the current socioeconomic environment;
- predict and assess social and economic impacts of the project, positive and negative, intended and unintended, short and long-term on people's lives, lifestyles and livelihoods;
- use a risk-based approach to determine the key focus of studies;
- outline measures to avoid, mitigate or manage the negative impacts and enhance positive impacts of the project;
- produce a concise and relevant report that informs regulatory decision-making and good social performance by Jemena;
- incorporate good community engagement principles to capture qualitative insights into community perceptions and aspirations and demonstrates free, prior and informed consent;
- give the regulators confidence that Jemena has a comprehensive understanding of the socioeconomic environment in which it will be operating.

3.5. SOCIAL & ECONOMIC IMPACTS

The identification, assessment and management of social and economic impacts (risks and opportunities) for the NGP project has involved a planned and systematic approach to identify, evaluate and manage the range of project risks and opportunities facing the communities and the various other affected stakeholders within the geographical scope.

The approach has been based on the ISO Risk Management standard (AS/NZS ISO 3100:2009) adapted for this purpose and made consistent with Jemena's risk management approach. The approach is based on an adapted risk model for the Blacktip Gas Project (Kernaghan, 2008) for both risk and opportunity management (see Tables 3.1 and 3.2).

3.5.1 SOCIAL & ECONOMIC RISK

Social and economic risk can arise, broadly, in three ways:

1. Damage to culture, cultural sites, places and objects.
2. Negative impacts on local community social health and wellbeing.
3. Negative impacts on the local economy and its development.

Consequently, social and economic risk can be conveniently analysed in three corresponding categories:

1. Culture and Heritage
2. Social Health and Wellbeing
3. Economy and Development

Stakeholder and community concern about a project typically arises from the three risk category areas and is generally managed through good communication and the effective implementation of mitigation plans for each risk identified.

Implementation of the mitigation plans is best done through the incorporation of these plans within the core project plans, e.g. the Construction Management Plan and other subordinate plans, to ensure the requirements are binding on the project's major contractors.

For example, the risks associated with Culture and Heritage should be addressed in the Cultural Heritage Management Plan (CHMP) for the project, local traffic risks in the project Traffic Management Plan (TMP) and so on.

In addition, there may be overlap between the disciplines involved in the project and the identification and assessment of risks. This is common in the area of social health and wellbeing risks assessed through ESIA practice and the Human Health and Safety risks identified by Health and Safety practitioners.

The assessment of social and economic risk is based on a combination their likelihood and consequence.

Likelihood is ranked on the following descriptors:

1. Rare: the risk may occur only in exceptional circumstances and is not likely to occur in this location.

2. Unlikely: the risk would be an uncommon occurrence and would occur in remote circumstances and has occasionally occurred on pipeline developments.
3. Possible: the risk occurs on an irregular basis, but has occurred on pipeline developments.
4. Likely: the risk has a history of occurrence for pipeline development or is difficult to control due to external influences of the region.
5. Almost Certain: the risk has occurred recently and is likely to occur again. It is an expected occurrence on a pipeline development project in similar regions.

Consequence is ranked on the following basis:

- A. Insignificant: there are low-level or no negative impacts on the local economy and its development. The community can easily adapt or cope with the change and there is little or no stakeholder concern about the project.
- B. Minor: there are minor short-term negative impacts on social health and wellbeing that are easily manageable. There are minor short-term negative impacts on the local economy and its development that can be easily absorbed. The community has the capacity to adapt or cope with the change, but may need some support. Stakeholder concern can be managed through good communication.
- C. Moderate: there are severe medium-term negative impacts to social health and wellbeing that are not easily manageable and severe medium term negative impacts to the local economy and its development that are not easily absorbed. The community has some capacity to adapt and cope with changes, but requires a moderate amount of support. There are serious stakeholder concerns that cannot easily be managed even with good communication.
- D. Major: there are major medium to long-term negative impacts to social health and wellbeing that cannot be managed and major medium to long term negative impacts to the local economy and its development that cannot be absorbed. The community has some capacity to adapt to and cope with the changes but requires significant support. There is significant concern from broader stakeholders and the community and prolonged community annoyance.
- E. Extreme: there are significant and long-term negative impacts to social health and wellbeing and significant long-term impacts to the local economy and its development that cannot be reversed. The community has no capacity to adapt and cope with the changes even with significant support. There is significant and major stakeholder concern and community outrage.

Drawing on the above, the combination of both Likelihood and Consequence allows for the development of a social and economic risk matrix.

This matrix provides a guide to the project management as to how the risk should be approached within the context of a given project, e.g. where management focus and priority should be applied (see Fig. 3-1 below).

The initial risk assessment for the Scoping Study has been further refined through the SIA consultations and other further refining of the project definition (engineering and other refinements)

that has occurred during the period of time in which the ESIA and Supplementary EIS were being prepared.

		Minor - A	Serious - B	Severe - C	Major - D	Catastrophic - E
CONSEQUENCES	Social & Economic	Low or no negative impacts on the socio-economic environment	Minor short term negative impacts on the socio-economic environment	Serious medium term negative impacts on the socio-economic environment	Major medium to long term negative impacts on the socio-economic environment	Major and long term, potentially irreversible negative impacts on the socio-economic environment
		Moderate	High	Extreme	Extreme	Extreme
FREQUENCY	Almost Certain - 5	Event is expected to occur in most circumstances	High	Extreme	Extreme	Extreme
	Likely - 4	Event will probably occur in most circumstances	Significant	High	Extreme	Extreme
	Possible - 3	Event should occur at some time	Moderate	Significant	High	Extreme
	Unlikely - 2	Event could occur at some time	Low	Moderate	Significant	High
	Rare - 1	Event may occur only in exceptional circumstances	Low	Moderate	Moderate	Significant
			Low	Moderate	Moderate	
RISK SEVERITY LEVEL						
RISK MANAGEMENT ACTIONS						
EXTREME	Requires immediate action - highest priority to treat risk - senior level monitoring.					
HIGH	Requires immediate attention - must manage with senior level monitoring.					
SIGNIFICANT	Requires management attention with a degree of priority.					
MODERATE	Requires routine to periodic monitoring.					
LOW	"Business as usual" - should not require much attention but should be reviewed at least annually. Managed by routine policies and procedures.					

Figure 3-2 Socio-economic risk matrix

3.5.2 SOCIAL & ECONOMIC OPPORTUNITY

In a similar fashion to risk, the assessment of social and economic opportunity arising from the NGP Project is based on a standard risk assessment framework but in this case measures the Likelihood (of achievement of the opportunity within existing community capacity) vs Consequence (the extent of community benefit arising from the opportunity) which can then be used to help provide a measure of the level of positive Social and Economic Impact to the community as a whole. This approach draws on the Queensland *Social impact assessment guideline* (Dept. of State Development, 2013) and the Eni Blacktip Project (Kernaghan, 2008).

Social and economic opportunity is also analysed in the three categories of:

1. Culture and Heritage
2. Social Health and Well-being
3. Economy and Development

Likelihood is ranked on the following basis:

1. Highly Unlikely: it is highly unlikely that the local community could achieve the opportunity through its existing capacity.
2. Unlikely: it is unlikely that the local community could pursue and achieve the opportunity through its existing capacity.
3. Possible: it is possible that the local community could pursue and achieve the opportunity through its existing capacity.
4. Likely: it is likely that the local community could readily pursue and achieve the opportunity through its existing capacity.
5. Almost Certain: the local community will achieve the opportunity through existing capacity.

Consequence is ranked on the following basis:

- A. Insignificant: there is limited or no local benefit accrual, the community obtains very few jobs and contracts and there is very little contribution to the local economy.
- B. Small: there is benefit accrual only to those with existing skill and capacity, a small number of jobs and a few small scale contracts are taken up by the community. There is a minor contribution to the local economy.
- C. Medium: there is benefit accrual to all those with existing capacity who choose to participate. Jobs are available to those who want them and there are a number of small to medium sized contracts let locally. There is a solid contribution to the local economy.
- D. Large: there is broad benefit accrual across the community, a significant number of local people are employed and a significant number of local contracts let locally. There is a significant contribution to the local economy.
- E. Major: there is significant scale positive benefit in the community through opportunities directly and indirectly associated with the project. There are many local people employed in the long term and many long term contracts let locally. There is significant legacy benefit.

Drawing on the above, the combination of both Likelihood and Consequence allows for the development of a social and economic opportunity matrix.

This matrix provides a guide to the project management as to how the opportunity should be approached within the context of a given project, e.g. where management focus on opportunity enhancement should be applied and where social investment might best be directed (see Fig. 3-2 below) and the further discussion below.

The initial opportunity assessment for the Scoping Study has been further refined through the SIA consultations and other further refining of the project definition (engineering and other refinements) that has occurred during the period of time in which the ESIA and Supplementary EIS were being prepared.

CONSEQUENCE		Likelihood					Major - E	Large - D	Medium - C	Small - B	Insignificant - A
		Almost Certain - 5	Likely - 4	Possible - 3	Unlikely - 2	Highly Unlikely - 1					
Social & Economic											
		Local community will achieve through existing capacity.	It is likely that the local community can readily pursue and achieve through existing capacity.	It is possible that the local community could pursue and achieve through existing capacity.	It is unlikely that the local community can pursue and achieve through existing capacity.	It is highly unlikely that the community could achieve the opportunity through existing capacity.	Significant scale positive change in the community through opportunities directly and indirectly associated with the project. Many local people employed in the long term. Many long term contracts let locally. Significant legacy benefit.	Broad benefit accrual across the community. Significant number of local people employed. Significant number of contracts let locally. Significant contribution to the local economy.	Benefit accrual to all those with existing capacity who choose to participate. Jobs to most of those who want them. A number of contracts let locally. A solid contribution to the local economy.	Benefit accrual only to those with existing skill capacity. Small number of jobs and few small scale contracts. Minor contribution to the local economy.	Limited or no local benefit accrual. Very few jobs and very little economic contribution.
		Low	Low	Low	Low	Low	Transformational	High	Significant	Moderate	Low
		Low	Low	Low	Low	Low	Transformational	High	Significant	Moderate	Low
		Low	Low	Low	Low	Low	Transformational	High	Significant	Moderate	Low
		Low	Low	Low	Low	Low	High	Significant	Moderate	Low	Low
		Low	Low	Low	Low	Low	High	Significant	Moderate	Low	Low

OPPORTUNITY IMPACT LEVEL	OPPORTUNITY MANAGEMENT ACTIONS
TRANSFORMATIONAL	Requires significant commitment and change leadership at the highest levels of the organisation over the life of the project. Suits major, long term projects with a high impact / proximity to local community.
HIGH	Requires a committed, focused and planned approach in a close and cooperative working relationship with the community.
SIGNIFICANT	Requires a committed, focused and planned approach in a close and cooperative working relationship with the community.
MODERATE	Positive social and economic outcomes are likely achievable through a reasonable level of commitment and planning.
LOW	"Business as usual" - should be achievable through implementing existing policies and procedures, would occur within existing market forces, but should be reviewed within regular project schedules.

Table 3-1-2: Socio-economic opportunity matrix

Opportunity Assessment, Enhancement and Social Investment

While there is a direct relationship between a community's capacity to respond to the opportunities on offer and the breadth and depth of community benefit, it does not necessarily follow that transformational change can be achieved through increasing the level of opportunities made available.

This is situational and project dependent. For example, the NGP is characterised by a short term, high demand construction phase with a long term low demand operational phase. Consequently, even if Jemena were to seek to procure that all opportunities were made available locally, the community could not respond in the time frames available.

Conversely, in the case of a major mining project with a high demand construction project with a long term, medium to high demand operational phase, community capacity to respond could grow over time to take up the opportunities made available, particularly where there are local opportunity enhancement initiatives being made by the company involved.

Opportunity enhancement initiatives can take several forms, e.g. through changing internal procedural initiatives like procurement policies or through direct monetary contributions in social and economic investment.

It therefore does not necessarily follow that greater positive social and economic impacts can be achieved through the employment of greater levels of opportunity enhancement initiatives.

Put simply, the amount of money and effort that is put into striving for social and economic outcomes in a community is situationally dependent – both driven by community capacity to respond and the nature of the development project in question.

The challenge therefore for Jemena, is to strike the right balance between what can occur from this particular project and the community capacity to respond and as a consequence of that understanding, arrive at the most sensible level of opportunity enhancement – time and money spent.

The opportunity matrix can help in this regard.

3.6. SOCIAL IMPACT CONSULTATION

Jemena has implemented an extensive stakeholder consultation program for the NGP, which was incorporated into its impact analysis for the ESIA.

In addition, a program of interviews was conducted to provide qualitative insights to this ESIA. Consultation covered stakeholders along the route of the pipeline, as indicated below, as well as some service providers outside the region such as government agencies.

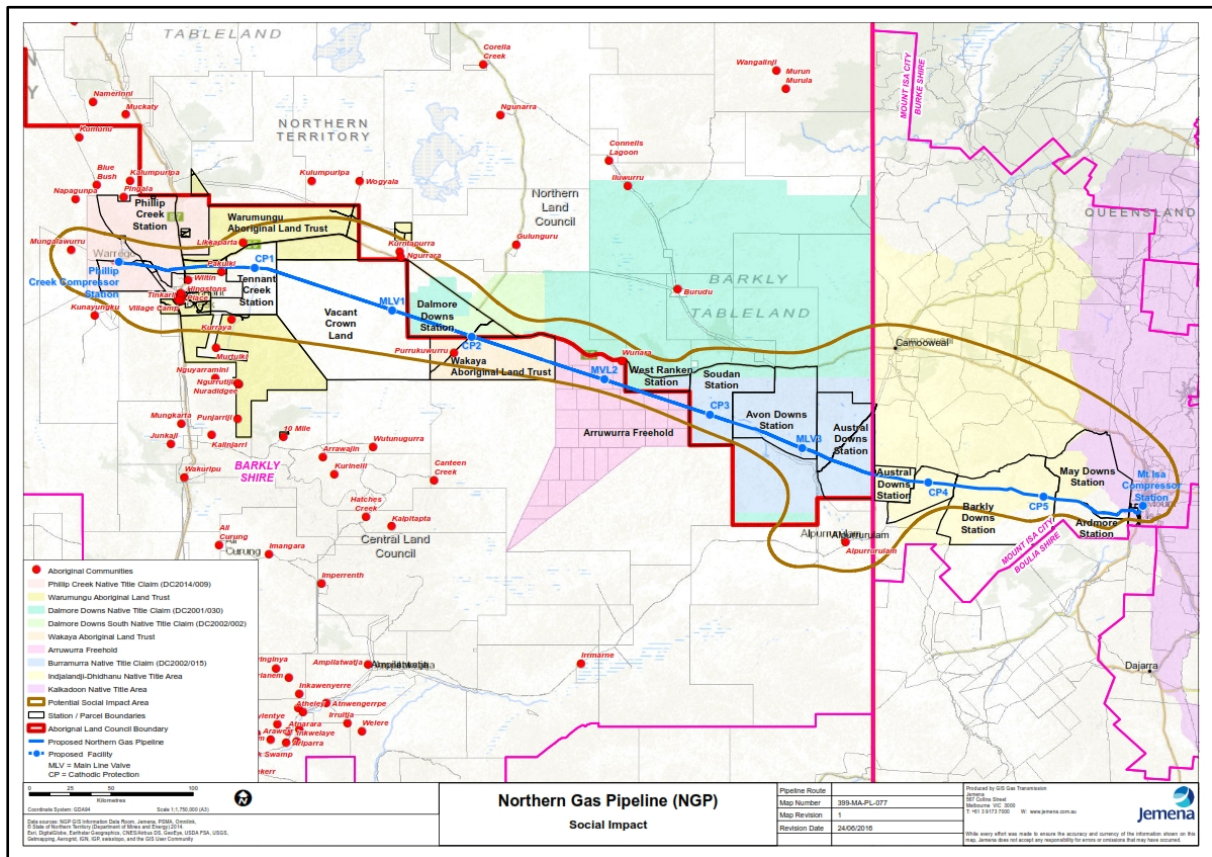


Figure 3-3 Projected socio-economic impact footprint

3.6.1 CONSULTATION METHODOLOGY

The NT EPA Guidelines recommend consultation with the community to gather people's perceptions of project impacts. The approach to SIA consultation varied according to the stakeholder group, but in general incorporated:

1. A project presentation – to provide up to date information about the project, including the NGP Community Information Booklet.
2. An explanation of the process for social and economic impact (risk and opportunity) assessment.
3. Reviewing the risk and opportunity models, including a review of Jemena's assessment of risks and opportunities.
4. Feedback from stakeholders on their key concerns and the implications of these.
5. Immediate feedback to reassure stakeholders that their concerns and aspirations had been

recorded and will be considered.

6. An opportunity for general comments, including hopes and aspirations for the project.

3.6.1 CONSULTATION PRINCIPLES

The consultation program incorporated the principles of the International Association for Public Participation (IAP2) for best practice community engagement and the Spectrum of Participation, which provides guidance for the appropriate level of engagement.

	Inform	Consult	Involve	Collaborate	Empower
Goals	To provide balanced, objective, accurate and consistent information to assist stakeholders to understand the problem, alternatives, opportunities and/or solutions.	To obtain feedback from stakeholders on analysis, alternatives and/or outcomes.	To work directly with stakeholders throughout the process to ensure that their concerns and needs are consistently understood and considered.	To partner with the stakeholder including the development of alternatives, making decisions and the identification of preferred solutions.	To place final decision-making in the hands of the stakeholder. Stakeholders are enabled/equipped to actively contribute to the achievement of outcomes.
Promise to Stakeholders	We will keep you informed.	We will keep you informed, listen to and acknowledge concerns and aspirations, and provide feedback on how stakeholder input influenced the outcome.	We will work with you to ensure that your concerns and aspirations are directly reflected in the alternatives developed and provide feedback on how stakeholder input influenced the outcome.	We will look to you for advice and innovation in formulating solutions and incorporate your advice and recommendations into the outcomes to the maximum extent possible.	We will implement what you decide. We will support and complement your actions.
Methods of Engagement	<ul style="list-style-type: none"> • Quarterly newsletter/Fact sheets • Open houses • Newsletters, bulletins, circulars • Websites, external and educate 	<ul style="list-style-type: none"> • Public comment • Focus groups • Surveys • Public meetings • Ultranet • Web 2.0 tools 	<ul style="list-style-type: none"> • Workshops • Deliberative polling • Web 2.0 tools • Forums 	<ul style="list-style-type: none"> • Web 2.0 tools • Reference groups • Facilitated consensus building forums for deliberation and decision-making • Experimental projects 	<ul style="list-style-type: none"> • Dialogue with Government • Local governance • Joint planning • Provision of data • Shared projects • Capacity building

Figure 3-4 IAP2 Public participation spectrum

Appropriate Methods of Communication

The consultation took account of the appropriate communication for different stakeholder groups, including Aboriginal people for whom English is often a second, third or fourth language.

Gender Equity Considerations

The consultation team, from Circle Advisory, comprised both male and female consultants to take account of cultural sensitivities with Aboriginal groups.

Vulnerable Groups

Particular effort was made to engage with hard to reach stakeholders, such as Aboriginal traditional owners, to ensure everyone with an interest in the project was given the chance to participate.

The consultation was designed to test project assumptions, gather insights and local knowledge, identify any additional impacts (risks and opportunities) and test the likely effectiveness of management plans.

3.6.2 STAKEHOLDERS

The key stakeholders for the project span the typical sectors of society, i.e. public (government), community (non-government) and private (business and industry).

While these sectors are useful in the identification of and engagement with stakeholders it is noted that there are often significant overlaps between them, such as collaboration on cross-sectoral committees. Examples include community safety committees and the Barkly Regional Economic Development Committee (REDC).

In several cases, individual outstations and pastoral properties were visited to ensure all stakeholders were given a chance to provide input. In some cases, this was followed up by phone calls.

Public Sector Stakeholders

These include the relevant Australian, NT and Queensland Government agencies with responsibility for and interest in education and training, business and industry development and the development of northern Australia, health and emergency services.

Local government entities, the Barkly Regional Council and the Mount Isa City Council, provide a range of municipal, community development and economic development services in the towns and communities. In the Northern Territory, the Barkly Regional Council has wide regional responsibilities that need to take into consideration the concerns and aspirations of smaller communities such as Alpururulam (Lake Nash).

Community Sector Stakeholders

In the community sector, key stakeholders include Aboriginal organisations with responsibility for Aboriginal Land and Native Title or who hold land directly. They include the NT Land Councils, the Arruwurra Aboriginal Corporation and the two Native Title Body Corporates in Queensland.

Other corporations provide services such as community health or the Australian Government's community development program (providing jobs for unemployed remote residents), or run art and sports programs.

Private Sector Stakeholders

Private sector stakeholders including business and industry groups, businesses and individuals in key sectors such as the pastoral, tourism and resource industries as well as potential suppliers to the project, from large multinational companies to local small businesses.

Residents

In addition, a number of individual residents provided input to the ESIA consultation, particularly Aboriginal stakeholders.

3.6.3 STAKEHOLDERS CONSULTED

Consultants spent two weeks in the field to conduct interviews for this ESIA. This was supplemented by some follow-up interviews by phone. The ESIA formal interviews have been supplemented by a number of informal conversations and incorporated feedback captured by Jemena's comprehensive stakeholder consultation, including many business, government, Aboriginal and community briefings. In addition, Circle Advisory liaised extensively with stakeholders on employment and business

outcomes, including the Industry Capability Network (ICN), Chamber of Commerce and Department of Business. A total of 33 formal interviews for this ESIA included:

Category	Stakeholders	Number of interviews
Queensland pastoralists	Glencoe and May Downs Stations.	2
Northern Territory pastoralists	Barkly Downs, Avon and Austral Downs Stations.	2
Northern Territory Government	Barkly Regional Coordination Committee, Barkly Regional Council, Department of the Chief Minister (Tennant Creek), Tennant Creek Police, Avon Downs & Alpururulam Local Emergency Committee, Tennant Creek Fire Station.	6
Queensland Government	Regional Manager Coordination Network, Camooweal Police, North West Local Ambulance Service Network (Mount Isa), Camooweal Primary Health Clinic, Mount Isa City Council (x2).	6
Northern Territory Business	Tennant Creek Regional Economic Development Committee, Emmerson Resources.	2
Queensland business	Camooweal Post Office, Commerce North West.	2
Other Northern Territory	Community Safety Action Committee, Barkly Regional Arts, Tennant Creek Liquor Accord	3
Northern Territory Aboriginal Traditional Owners and Aboriginal Corporations	Anyinginyi Health Aboriginal Corporation, Julalikari Council Aboriginal Corporation (x2), Pukalki community, Likkarpatta community, Wittin Community, Arruwurra Aboriginal Corporation.	7
Queensland Aboriginal	Kalkadoon Native Title Aboriginal	3

Traditional Owners and Aboriginal Corporations	Corporation, Rainbow Gateway Ltd (x2, in Alpurrurulam and Camooweal)	
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Table 3-2-1: Summary of SIA consultation

A number of other stakeholders were contacted for SIA interviews but did not respond or were not available, however this ESIA takes account of issues raised during extensive and continuing consultation by Jemena with government departments, businesses, Aboriginal representatives and the general public.

An outline of broader consultation by Jemena is contained in Chapter 4 of the EIS.

3.7 STRUCTURE OF THIS REPORT

The sections of this report provide:

- background information and methodology
- a description of the existing economic, social, environment and relevant baseline data
- an assessment and prediction of likely change from the project, risks to the proponent and positive and negative impacts from the community's perspective
- a summary of recommended measures to manage risks and enhance opportunities.

4. EXISTING SOCIAL AND ECONOMIC ENVIRONMENT

4.1 THE ABORIGINAL CONTEXT

Overview ** (see below for references)

The recent history of the peoples of the Barkly covers the inseparable stories of the lives of Aboriginal land owners and the European settlers who came seeking land, water and wealth, followed by miners with gold in their eyes. European settlement meant Aboriginal people in the project area were subjected to the significant impacts of the pastoral industry throughout all of the grassy plains and flatlands and the impacts of the mining industry in the mineralised hilly country, bookended by Tennant Creek and Mount Isa.

The scale of dispersion of Aboriginal people could be compared with the modern plight of refugees, lives, disrupted by protecting their homelands against invaders, then displaced by the war. As Justice Michael Maurice describes in his report on the Warumungu land claim (Maurice, 1996):

One has only to read the accounts and view the photographs and drawings of Spencer and Gillen to realise that in 1901 the Warumungu were a flourishing nation in the ordinary sense: a large number of people of mainly common descent, language and history, inhabiting a territory bounded by defined limits and forming a society under one government. They were once reputed to be the most numerous, most intelligent and physically the best tribe in Central Australia. Within a matter of years, the Warumungu had been almost completely disposed. They had fought vigorously to defend their inland state from the white invasion, but their spears and boomerangs were no match for men on horseback carrying firearms. (Foreword)

The post-contact history of the Warumungu people is an unvarnished tale of the subordination of an Aboriginal society and its welfare to European interests. As with Aboriginal people throughout Australia, European settlement meant forced dispossession. This was not a once and for all process, but has continued with the Warumungu being shunted around, right up to the 1960s, to accommodate various pastoral and mining interests. (Chapter 18)

In the 1800s, the fate of Aboriginal peoples was determined by the ambitions of a steady trickle of men riding in from the east and south in search of grazing land and permanent water. The country's original inhabitants were pushed off land regarded by the Crown as 'unoccupied'. The consequences reflect an inverse relationship between the social and economic fortunes of the two groups. The better the land and more permanent the soaks and waterholes, the greater the likelihood of dispossession for the Aboriginal peoples whose lives and culture depended on them.

The success of pastoral settlement was accompanied by the killing and dispersion of Aboriginal people who were hunted away from waterholes, often shot or left to eke out a meagre existence in pastoral and town camps. Traditional hunting was replaced by basic rations of tobacco, tea, sugar and flour in return for otherwise unpaid labour. As well as decimation from frontier violence, people died from drought, hunger and disease.

Groups such as the Bularnu, Wakaya, Ayerrenge and Alyawarre had long shared foraging areas and mythological ties. However, the traditional lifestyle of the Bularnu was severely disrupted as settlers arrived along their rivers, took their women and demanded their men work, while sheep and cattle trampled bush grains and fouled the waterholes.

The Bularnu moved east, towards Mount Isa, from their traditional country along the Georgina. The Alyawarre, who lived to the west, maintained a more traditional lifestyle, isolated by the Wakaya Desert until the 1920s when pastoralists started to encroach on their properties too. As described in Lyon & Parsons (1989) this era was known as “the cowboy time” or “the wild time” as Aboriginal people were randomly shot by pastoral workers, some of whom were renowned for being “illiterate and cruel” (Mounted Constable Thorpe, cited in Lyon & Parsons, 1989).

Many dispersed Alyawarre travelled across Wakaya country to settle at the Ilperrelhelame waterhole at Lake Nash which had always been an important permanent waterhole and ceremony place for the Bularnu and their neighbours: the Wakaya to the west and north-west, the Ayerrerenge to the south and the Alyawarre to the south-west. Known initially as “good boss country” (Lyon and Parsons, 1989), Lake Nash became a large settlement where Aboriginal people initially fared better than those pushed to the fringes of towns like Camooweal and Urandanji.

However, later pastoralists at Lake Nash were less accommodating. After years of struggling to be allowed to remain on an excision on Lake Nash, including strikes by Aboriginal pastoral workers and legal action on their behalf by the Central Land Council, a settlement was established in 1984 eight kilometres away at Alpururulam (an Anglicised version of Ilperrelhelame) after the Alyawarre won the right to a small living area on the cattle station (Lyon & Parsons, 1989).

Pastoralism displaced traditional Aboriginal people’s use of their land but early settlers also relied on the labour of these displaced peoples. Many worked as stockmen, drovers, butchers and gardeners, while women did domestic work in the station homesteads. Payment was generally in rations only and conditions were generally very poor (Anyinginyi, 2015). In the mid-1960s, the Pastoral Award was enacted. In the 1970s, when the award began to be implemented, the advent of equal wages saw many Aboriginal people forced from pastoral jobs to welfare. Many were moved onto excisions on pastoral properties and onto town camps in a second wave of disruption.

In the mid-nineteenth century, the Indjalandji-Dhidhanu people lived along the upper Georgina Basin and Barkly Tableland in far north-west Queensland (Memmott, 2012). Few Indjalandji-Dhidhanu families and neighbouring tribes survived the frontier violence and multiple infectious and contagious diseases spread by the new settlers. The Queensland Government’s *Aboriginal Protection and Restriction of the Sale of Opium Act 1897* forced survivors to work as labourers in the pastoral industry, while uncooperative workers were sent to penal settlements such as Cherbourg, Woorabinda and Palm Island.

Closer to Tennant Creek, European contact began in the mid-19th century with the passage of explorer John McDouall Stuart (Bailey, 2007) on six expeditions to the interior between 1858 and 1862 that saw him reach Central Australia, the area that is now Tennant Creek and, finally, Chambers Bay on the north coast. The Warumungu people clashed with Stuart at Attack Creek in 1860.

Stuart’s journey led to the movement north of both pastoralists and, in 1871, teamsters to support construction of the Overseas Telegraph Line at Tennant Creek (Alford, 2006). This began a period of conflict between telegraph staff and Aboriginal groups, culminating in a Kaytej attack on Barrow Creek Telegraph Station that killed two people. The ensuing punitive expedition led to the indiscriminate killing of Warumungu, Kaytej, Anmatyerre, Alyawarra and Warlpiri people. In 1872 a repeater station was built on the banks of Tennant’s Creek at one of the most sacred of Warumungu sites, Jurnkurakurr.

Gradually the land around Tennant Creek was taken up by pastoral leases, although many of the runs were not stocked until the 1880s and the last (Phillip Creek Station and Tennant Creek Station) were not issued with pastoral leases until the 1950s.

Following in the tracks of the teamsters and pastoralists, came miners in search of gold. Traces of gold has been found in the 1870s, however the first substantial find was by Aboriginal stockman Frank Juppurla in 1932. By 1935, the Town of Tennant Creek was established eight kilometres south of the telegraph station, there was a population of 500-600 and the town was off limits to Aboriginal people.

The Warumungu people, who were excluded from the town, were progressively moved on to reserves and town camps - that often lacked water and access to traditional hunting grounds - to make way for mining and pastoral leases.

In 1942, during World War II, the Barkly Highway was built to transport troops between Queensland and Darwin, south of the black clay country of the old Barkly stock route and on the higher red desert country of the Wakaya . By the 1950s, most of the Alyawarre land along the Sandover River had been taken by pastoralists but Aboriginal people, many of whom had experienced wages and better living conditions during the War, began to demand both award wages and their land. This led to an era of 'walk offs' by Aboriginal stockmen, most famously at Vestey's Station at Wave Hill but also at stations like Lake Nash, near the Queensland border, and Kurundi, near Tennant Creek.

The era of walk-offs was followed by a fight for land rights and equality and legislation that recognised the connections of Aboriginal people to their country.

The Wakaya-Alyawarre land claim was settled in 1992, with the Wakaya winning title to 1874 square kilometres and the Alyawarre to 2065 square kilometres.

The Warumungu Land Claim to the land in and around Tennant Creek was lodged by the Central Land Council in 1978. The government responded by changing the town's boundaries to 750 square kilometres in an attempt to defeat the claim. In 1991, 10 parcels of land over 3090 square kilometres were handed back. The claim was not finalised until 1994.

In Queensland, the Indjalandji-Dhidhanu families, based largely around Camooweal and led by traditional owners from the Saltmere family, in 2012 won native title to 19,730 kilometres of the eastern Barkly Tableland in the upper reaches of the Georgina River Basin. The Kalkadoon, around Mount Isa, in 2011 won native title to 40,000 sq km of north-west Queensland.

In 2014 the Bularnu, Waluwarra and Wangkayujuru (BWW) peoples won a long-running native title application over 24,000 square kilometres of country stretching from the south-west of Mount Isa to the Northern Territory border.

Consideration of this recent history begins to explain the disruption experienced by Aboriginal people in the project area over the past 150 years. Today's traditional owners are only a generation away from being dispersed from their land, discouraged from maintaining many traditional activities, having children removed, being encouraged to assimilate with non-Aboriginal society then fighting for land and civil rights.

**** Summary based on (Forrest, 1981) (Memmott, 2012), (Lyon & Lyon, 1989), (Central Land Council, 1992), Memmott (2012), (National Native Title Tribunal, 2006), (Maurice, 1996) and various native title records.**

4.1.2 ABORIGINAL LAND INTERESTS

The land across the whole project footprint is the traditional lands of a number of Aboriginal groups. Some is held under the *Aboriginal Land Rights (Northern Territory) Act 1976 (Cth)*. In other cases Native Title exists, is claimed or has been determined under the *Native Title Act 1993 (Cth)*.

For this ESIA, the term 'Aboriginal group' is used in a general sense, noting that no distinction has been made between language groups on the one hand, and land-owning (estate) groups on the other, except where indicated.

The Project will intersect the land interests of several Aboriginal language groups from Warrego in the west (the site of the Phillip Creek Compressor Station) and Tennant Creek through to Mount Isa in the east: in order, the Walmanpa, the Warumungu, the Wakaya, the Arruwurra (an estate group of Wakaya speakers), the people associated with the Dalmore Downs, Dalmore Downs South and Burrumurra native title claims, the Indjalandji-Dhidhanu, the Bularnu and the Kalkadoon people.

Jemena is negotiating land agreements with each of the Aboriginal parties, through their respective representative organisations, for easements across the land for the NGP Project. These agreements will take the form of section 19 agreements under the *Aboriginal Land Rights Act (NT)* (ALRA), Indigenous Land Use Agreements (ILUA) under the *Native Title Act* and option agreements under the *Lands Administration Act (NT)*. All agreements will contain consideration for impacts in the form of a range of benefits.

The area surrounding Tennant Creek is the traditional lands of the Warumungu people while the area associated with the proposed Phillip Creek Compressor Station at Warrego is the traditional country of the Walmanpa people, bounding the Central Desert Region – to the west is Warlpiri country. To the east of Warumungu country is Tennant Creek Station and the large area of Vacant Crown Land. The language group changes (as do the land-owning groups) to Wakaya, including the people associated with Native Title claims on the Dalmore Downs Station.

To the south of the pipeline route and skirting the desert region are the traditional lands of the Alyawarre people, whose dislocation through pastoral activities forced many to seek refuge around Alpururulam (Lyon & Parsons, 1989). To the north of Alyawarre and in the eastern portion of Wakaya country, a Wakaya land-owning group, the Arruwurra, hold a significant NT freehold land estate, on behalf of its members.

Further to the east, the traditional owners of the land around West Ranken, Avon Downs, Soudan, Austral Downs and Lake Nash Stations were originally the Bularnu people (Lyon & Parsons, 1989), all of whom were dispossessed and dislocated much further to the south and many of whom were murdered or died from introduced diseases. The area today is claimed by the people associated with the Burrumurra native title claim.

Nearby in the east is the traditional country of the Indjalandji-Dhidhanu around the Camooweal area. The hills surrounding Mount Isa are the traditional land of the Kalkadoon people. Between the determined native title areas of Indjalandji and Kalkadoon is an area, previously claimed by both, albeit unsuccessfully.

Jemena's investigations and consultations with surrounding groups, the Queensland Government, the National Native Title Tribunal (NNTT) and the Queensland South Native Title Services, have determined that people within the BWW native title holders to the south may hold native title to the area. The Indjalandji-Dhidhanu and Kalkadoon, while being the recognised Aboriginal Parties from a Queensland heritage law perspective, nevertheless have cultural heritage interests in the region, but the actual native title holders are unknown.

Consequently, from a pragmatic perspective, Jemena has sought to reach an Area type Indigenous Land Use Agreement (ILUA) with both the Kalkadoon people and the relevant parties within the BWW native title holders and for the unclaimed area.

The map below shows the Aboriginal land interests across the project.

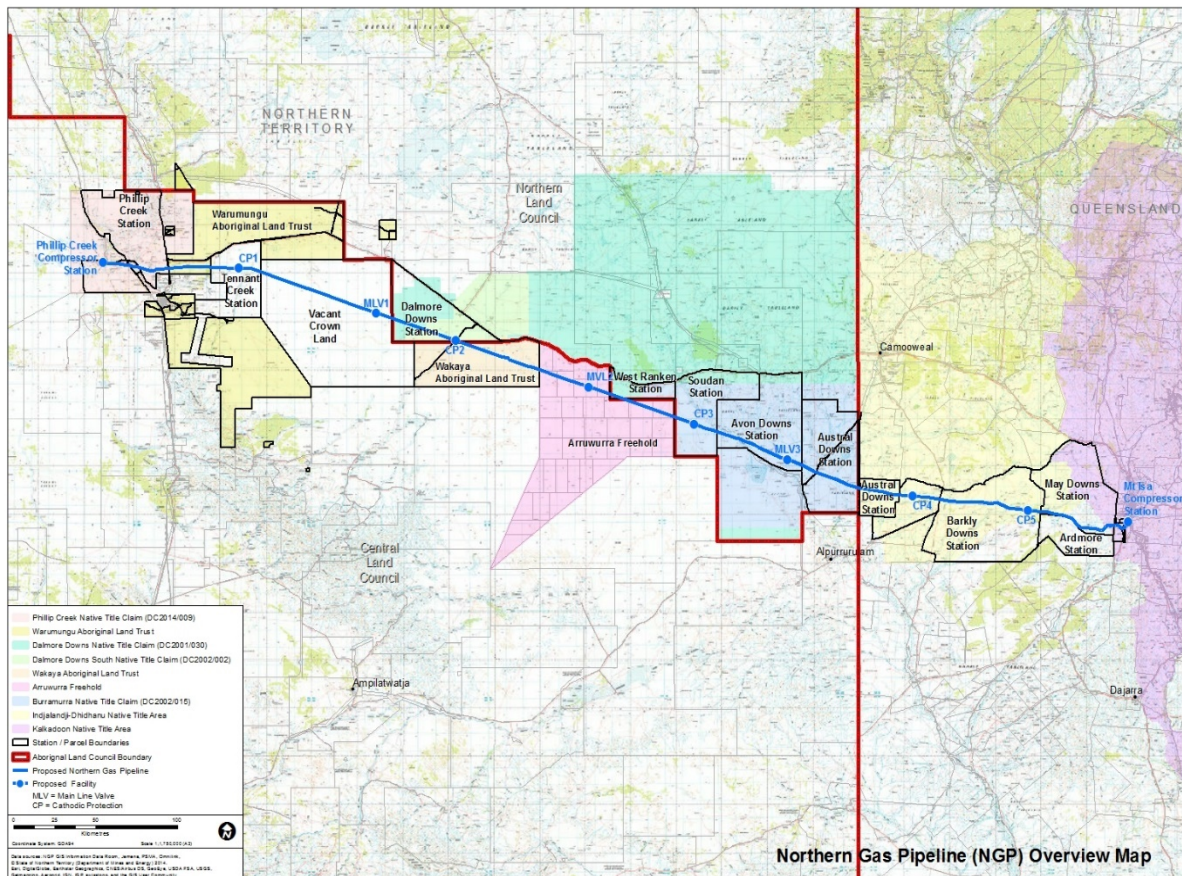


Figure 4-1 Location of Aboriginal Land and Native Title areas

In pre-colonial times, Aboriginal people in the project area lived a hunter gatherer lifestyle within their traditional lands and with customs and culture characterised by a belief system directly related to the land. Aboriginal peoples' world views and lives were shaped by stories of the 'dreamtime' when the world was formed by mythological beings, passed down through from generation to generation. Their existence was controlled by the availability of foods and other resources directly appropriated from the natural environment but also governed by laws relating to land ownership, trade, travel and relations between language groups, clans and land estate-owning groups. Social relations were governed by complex kinship and social behavioural systems between and among the sexes and generations that allowed for the continued existence of the people on the land. Spiritual life arose from the land and the stories of the dreamtime, carried within a framework of ceremonial and song cycles that mapped out the land and people's relationship with it.

Despite dispersal, dispossession and disadvantage over the 150 years since colonisation, the desire of Aboriginal peoples in the project footprint to maintain and revive their culture remains strong and the era of land rights has encouraged many to return to live on homelands and outstations.

Many Aboriginal people in the Mount Isa and Barkly regions still speak their own language, often as a first language, and maintain traditional customs and stories. In the Barkly region more than half the Aboriginal population over 15 speaks a language other than English at home (ABS 2011). Many are involved in efforts to preserve, maintain and pass on traditional cultural practices, while aspiring to take part in the local, regional and, occasionally, the national and international economy.

According to the Papulu Aparr-kari language centre in Tennant Creek, the Aboriginal languages in the Barkly region include Warumungu, Warlpiri, Alyawarr, Kayetye, Warlamanpa, Wakaya, Mudburra, Wambaya, Jingili, Kudanji, Ngarnga, Binbinga, Garrawa, Yanuwa, Waanyi and Mara (Papulu Aparr-kari, 2016).

4.1.4 GOVERNMENT POLICIES

Early government policy toward Aboriginal people since Australia's establishment and to contemporary times can be characterised by the following phases.

1. Early Years: the early years of Australia's settlement by Europeans significant was characterised by conflict between colonists and settlers and Aboriginal people. Violence, the introduction of exotic diseases and alcohol reduced the Aboriginal population significantly. In Queensland it has been estimated that at least 10,000 Aboriginal people died violently between the years 1824 and 1908, about the same time that European settlements in the Mount Isa and Barkly regions were being established.
2. Protection: pre-Federation and particularly post-Federation to the years after World War II, in response to the reductions in Aboriginal population arising from the above, policy moved to introduce the use of missionaries and protectors for the defence of Aboriginal people. In South Australia, which until 1911 include the land that is now the Northern Territory, protectors were appointed supposedly to protect Aboriginal people from abuses and provide remnant populations around towns with rations, blankets and medicines. Later in the 19th century, under legislative arrangements in Queensland in 1897 and in South Australia and the Northern Territory in 1910-11, the policies became more formal and extensive and were aimed at isolating and segregating 'full blood' Aboriginal people on reserves while removing and attempting to assimilate 'half-caste' Aboriginal people, including children, into the broader Australian society, restricting contact (including interbreeding). The civil rights of Aboriginal people were severely curtailed including the right to marry, freedom of movement, the consumption of alcohol and the regulation of employment. There were systematic efforts to take part Aboriginal children away from their parents and educate them in western ways, a particular and relevant example of which was the *Welfare Ordinance Act 1953 (NT)* which remained in place until the 1960s (National Archives, 2016).
3. Assimilation: post World War II, through to late 1960s, early 1970s. Overlapping with the Protection period and continued problems and criticism of the treatment of Aboriginal people, particularly in central and northern Australia, there were agreements in 1936 between the States and the Commonwealth that greater coordination should occur and that the policy objective "... should be the absorption at least of "the natives of Aboriginal origin but not of the full blood". In 1961 the policy was adopted by the Australian Government and all the States.

Expenditure on health, housing, education and training programs was increased in the NT and elsewhere and the decline in the Aboriginal population in northern and central Australia was stemmed and reversed in the 1950s. In 1967 a referendum was held and the Australian Constitution amended to enable the counting of Aboriginal people in the national census so the Commonwealth Parliament could pass legislation to benefit Aboriginal people.

4. Integration. Assimilation by definition is the process of incorporating or absorbing the customs and cultures of one group of people into another. As outlined above, in the context of Aboriginal Australia this meant Aboriginal people 'accepting the same customs and (being) influenced by the same beliefs as other (non-Aboriginal) Australians' thus implying a loss of their own cultures, languages and identity.

From about the mid 1960s opposition to notions of assimilation emerged across the country, perhaps in part by the successful vote 'Yes' campaign for the 1967 Referendum. This raised national awareness of the significant and confronting socioeconomic disadvantage facing Aboriginal Australians and the impact of assimilation on Aboriginal languages and cultures.

What ensued was a policy shift, albeit largely unofficial, toward Aboriginal 'integration' into Australian society to celebrate, recognise and support Aboriginal cultures, language, identity and Aboriginal socio-economic development. This shift was complemented by increased government investment in overcoming Aboriginal health, education and socioeconomic disadvantage.

5. Self Determination. The Australian national policy of 'self-determination' began in the early 1970s with then Prime Minister Gough Whitlam effectively dismantling the White Australia Policy in favour of policies supporting self-management and self-determination. While this relates to broader foreign policy shifts it does provide an important and useful insight into the national psyche and major governmental policy transitions during this period.

Also, during this period, the legal right of Aboriginal people to their land started to be recognised through the courts and legislation. Perhaps the most significant legislative reform was the advent of the *Northern Territory Land Rights Act* in 1976 and the *Racial Discrimination Act* in 1975.

6. Reconciliation. The era of reconciliation between Aboriginal and non-Aboriginal people in Australia started in the late 1980s and was perhaps first marked by Prime Minister Bob Hawke committing Australia to a treaty with its first peoples in 1988.

Institutionally the process of reconciliation between Aboriginal and non-Aboriginal people was marked by the establishment of the Australian Council for Aboriginal Reconciliation in 1991 after the passing of the *Council for Aboriginal Reconciliation Act 1991*. The purpose of the Council and of reconciliation was perhaps best summarised by Prime Minister Paul Keating in 1992.

In more recent times (former) Prime Minister Kevin Rudd's national apology to the Aboriginal Stolen Generations in 2008 is widely acknowledged as a profoundly important step toward reconciliation. The current debate concerning Aboriginal constitutional recognition and a treaty between Aboriginal and non-Aboriginal Australia symbolise a strong ongoing commitment in Australia to Aboriginal reconciliation.

7. 'Practical Reconciliation' and the Intervention. In 2007, the Howard (LNP) Government launched what was called an Emergency Response, or the NT Intervention to protect Aboriginal children in the Northern Territory from sexual abuse and family violence. The Intervention was in direct response to the Report of the Northern Territory Board of Inquiry into the Protection of Aboriginal Children from Sexual Abuse, *Ampe Akelyernemane Meke Mekarle: 'Little Children are Sacred'* (AHRC, 2007). The intervention saw a package of legislated measures that included, in summary:
 - widespread alcohol restrictions on Northern Territory Aboriginal land;
 - welfare reforms to stem the flow of cash going toward substance abuse and to ensure funds meant to be for children's welfare are used for that purpose;
 - enforcing school attendance by linking income support and family assistance payments to school attendance for all people living on Aboriginal land and providing meals for children at school at parents' cost;
 - compulsory health checks for all Aboriginal children to identify and treat health problems and any effects of abuse;
 - acquiring townships prescribed by the Australian Government through five year leases including payment of just terms compensation;
 - increasing policing levels in prescribed communities, including requesting secondments from other jurisdictions to supplement NT resources, funded by the Australian Government;
 - intensified on ground clean up and repair of communities to make them safer and healthier by marshalling local workforces through work-for-the-dole;
 - improving housing and reforming community living arrangements in prescribed communities including the introduction of market based rents and normal tenancy arrangements;
 - banning the possession of X-rated pornography and introducing audits of all publicly funded computers to identify illegal material;
 - scrapping the permit system for common areas, road corridors and airstrips for prescribed communities on Aboriginal land; and
 - improving governance by appointing managers of all government business in prescribed communities
8. Closing the Gap: Formal Commonwealth Government policy in the last decade or so is focused on efforts toward 'Closing the Gap', i.e. closing the gap of disadvantage between the socio-economic, health and educational outcomes still prevalent in Australia between Aboriginal and non-Aboriginal people. . This is underpinned by annual reporting against Australia's progress toward this objective, most recently set out in the Productivity Commission's report.
9. Rights vs Responsibilities: The current discourse in Aboriginal affairs is arguably dominated by a debate about rights versus responsibility. Commentary across the political divide in both Aboriginal and non-Aboriginal society continues to remain about how to help Aboriginal people help themselves out of the socio-economic conditions that they are in, through mutual responsibility and conditional welfare, particularly in remoter parts of Australia, alongside the necessary structural and political reforms. Aboriginal leaders such as Noel Pearson and Marsha Langton contribute significantly to the discourse. Pearson's recent Sir Keith Murdoch Oration at the State Library of Victoria is instructive in this regard (Pearson, 2016).

4.1.1 ABORIGINAL SOCIETY IN THE REGION TODAY

All of the above helps to paint a picture of Aboriginal society in the region today.

Aboriginal people, despite the history of suffering and dispossession and the very poor social and economic conditions in which they live, continue to strive to both maintain their culture and languages and at the same time participate successfully in broader Australian society.

Economically, Tennant Creek is the regional hub for the Barkly and Aboriginal people are a significant part of both the society and the economy.

Several Aboriginal organisations provide services such as health, housing maintenance, community infrastructure, training, employment, arts and language centres, environmental and catering services along with civil and logistics and media services. Some larger private Aboriginal enterprises operate successfully in the region, such as the Myuma Group at Camooweal.

Tennant Creek is also home to the Muru-warinyi Ankkul Rangers, coordinated by the Central Land Council.

New partnerships are emerging between Aboriginal and non-Aboriginal business to compete for work on NGP, which should help contribute to Aboriginal people taking a greater part in the broader local and regional economy.

Across the Barkly and Mount Isa regions, Aboriginal people have worked in the pastoral and mining industries since the 19th century and many today aspire to run their own cattle properties so they can live on their own land while participating in the broader economy.

As well as an interest in cattle, Aboriginal groups are diversifying into other sectors and growing their participation in the local and regional economy. For example the Indjalandji-Dhidhanu people (Myuma Group) have won large-scale contracts in highway construction, maintenance and associated infrastructure such as bridge construction. They run a successful education and training centre near Camooweal and operate an employment service out of Mount Isa.

In just one example of an entrepreneurial approach to economic development on their land, the Indjalandji-Dhidhanu are working to commercialise the production of nanocellulose found in spinifex grass that can be used as an additive to strengthen latex. This has the potential to revolutionise the production and application of latex products and bring significant economic stimulus to the Barkly and Mount Isa regions through cultivating and producing spinifex grass.

Participation in the NGP Project by Aboriginal people will leave a legacy skills benefit that will support the above.

4.2 THE PASTORAL CONTEXT

The Northern Territory's settlement was driven by the pastoral industry, which now covers 55% of the Territory's expansive land mass. The industry is represented by the Northern Territory Cattlemen's Association, established in 1984 after three cattle bodies were amalgamated to form a peak body that represented 90% of the Territory's pastoral properties (Northern Territory Cattlemen's Association, n.d.).

Pastoral expansion into the Barkly began with a journey by explorer William Landsborough searching for the ill-fated Burke and Wills in 1861. He described the Tablelands as having nutritious Flinders and Mitchell grass, suitable for sheep, but limited by a scarcity of natural water.

The first settlers were inspired to raise sheep by glowing reports from explorer William Landsborough who found and renamed three sacred waterholes on the Georgina River as Lakes Mary, Francis and Canellan. Landsborough's reports led to the stocking of the eastern edge of the Tablelands along the Herbert River with sheep from Queensland, forming an extension of the Queensland pastoral frontier. First to arrive was James Sutherland, who brought 8000 sheep to Lake Mary to establish Rocklands Station, driving away Aboriginal landowners.

However, the first wave of sheep farmers of the 1860s were forced off by drought, floods and isolation from markets. This included Lake Nash, first settled in 1865 at Stoney Plains in black soil country at the junction of the Georgina and Ranken Rivers.

Westward expansion to the Tablelands resumed in the 1870s when generous South Australian Government lease conditions stimulated stocking of stations such as Lake Nash. The first lease granted in the East Barkly was to Alexandria Station in 1877. Many Barkly properties were initially leased by individuals but most gradually passed into the hands of large cattle properties.

In 1879, Lake Nash was brought by John Costello of Rockhampton and his brother-in-law Patrick Durack. It remained in the family until Costello went broke and the property was bought by the Queensland National Bank in 1905, which operated the property as the Queensland Pastoral Company for the next 50 years.

In 1882, the South Australian Government auctioned leases over parcels of land along the Georgina, which resulted in the consolidation of Rocklands and Lake Nash, the establishment of Avon Downs, Austral Downs and Alexandria. Avon Downs persevered with wool-growing until 1919, but most of the capital investment of this era was in pastoral properties accompanied by the growth of towns in Borroloola and Camooweal in the 1880s, stock routes to Ranken and Alexandria then on to Newcastle Waters and further north, and several police stations at Wonardo (just across the border from Camooweal), Ranken, Anthony Lagoon and Borroloola.

The town of Camooweal was established beside Lake Francis in 1884 and flourished as a customs post, pastoral industry service town and droving stop for cattle barons bringing cattle from the Barkly Tableland and Kimberly to eastern cattle markets (Memmott, 2012).

The next phase of development came as the new settlers found permanent water. The first bores were sunk in the 1890s at Rocklands, Avon Downs, Lake Nash and Alexandria. More permanent bores were sunk after the Commonwealth took control of the Northern Territory from South Australia in 1911. Access to markets was hampered by distance and the condition of stock routes until the Queensland towns of Mount Isa and Dajarra were connected at the turn of the Century by the 1000-kilometre Great Northern Railway to Townsville and coastal Queensland meatworks.

Southern settlers followed John McDouall Stuart's 1862 epic journey from Adelaide to Chambers Bay on the north coast of the Territory. Settlement gathered pace after South Australia granted pastoral leases under the *NT Lands Act 1872*, allowing people to apply for land outside settled areas, often sight unseen. The first pastoral property established near Tennant Creek was Banka Banka, established in 1885 by Tom Nugent (Alford, 2006).

Initially stocking sheep, the fortunes of these pioneers were, however, driven mainly by cattle. Their challenges included transport, access to markets, cyclical beef prices and access to water. These challenges were alleviated to a large extent by investments in road, rail and water bores.

For Queensland, this was driven by Mt Isa Mines (MIM) underwriting the extension of a railway from Cloncurry to link with the east coast and its Townsville refinery in 1929, six years after the establishment of MIM. Despite the reservations of the Queensland Government, this became one of Queensland's most successful railways.

In the case of South Australia, the arrival of a railway in Alice Springs in 1929 reduced the need to drive cattle to the former railhead of Oodnadatta in northern South Australia.

Water bores sunk along Barkly and Central Australian stock routes in the 1920s opened up both new stock routes and pastoral properties.

As a result of the military presence in the Northern Territory during World War II (1939 to 1945), new bitumen roads opened up new pastoral areas to the north and provided access to railheads at Mount Isa and Alice Springs, while surplus war materials were used to improve fences and yards.

Improved beef prices and water drilling stimulated pastoral developments until a prolonged drought from 1958 to 1966, the third serious drought since European settlement. Droughts meant natural water and wells dried up, which resulted in over-grazing as stock was moved to remaining permanent waters (Shaw K, May 1996)

Today, the pastoral industry of the Tablelands thrives on some of the Territory's best grazing country, renowned for its black soils and its Mitchell and Flinders grasses, and the Barkly is a thriving pastoral district the size of England or New Zealand. A study by the (Department of Primary Industry, 2010) found that the three regions of the Barkly (the Gulf, Barkly and Tennant Creek) included some of the biggest cattle stations in the world, averaging 6745 hectares. Half were owned by companies, with an average ownership of 22 years (and up to 135 years). Most Barkly cattle are sent to market in Queensland. Properties reported an average of 11 seasonal and 11 permanent staff, with access to staff cited as the main constraint to their operations.

While the pastoral industry is relatively small in terms of its contribution to GSP and jobs, it is an important economic sector in the Territory's regional areas (Department of Treasury & Finance, 2016) and in the Barkly was the fourth largest employer (and main private sector employer) in 2011 after public administration and safety, education and training and health care and social assistance (ABS 2011).

While still remote, today's pastoral properties can access markets along the sealed Stuart and Barkly Highways, children can attend School of the Air, many use helicopters and light planes for mustering and transport and there is an emerging trend to solar power for energy.

Modern pastoralists are a world away from the frontier days. Many property managers have tertiary degrees in agricultural and business. There is an increasing trend to organic farming and sustainable grazing practices, such as rotational grazing, and membership of Landcare groups.

Perhaps exemplifying this trend is pastoralist Sarah Hughes from Lake Nash Station, who was recently awarded a Nuffield Fellowship to study organic Wagyu beef production. A fifth generation grazier, Sarah and her husband Fred took over the management of Lake Nash in 2013

which is owned by the Georgina Pastoral Company. Typical of progressive young pastoralists, Fiona flies a Cessna 206 and occasionally a helicopter for mustering (Davy, 2016).

At May Downs in Queensland, James and Marjorie Lord, who purchased the property for their breeder herd in 1986, use rotational grazing. Their May Downs Property Development Plan includes the aim of developing an ecological and economically sustainable beef herd. They have adopted innovative practices to overcome erosion issues on the property (May Downs Station, n.d.).

Native Title claims have been lodged over several cattle stations in the project area to formally recognise Aboriginal peoples' connections to their traditional country, protect their sacred sites and provide rights to negotiate for benefits with mining and other companies working on pastoral properties and Crown land.

While there is greater acceptance these days of Aboriginal people's connections to country and rights to access their land, lingering tensions were evident in interviews for this ESIA.

The key pastoral properties in the project footprint are (from west to east):

1. **Phillip Creek**, which is also the site of the legacy Warrego mine site and processing plant as well as the location of the former Phillip Creek settlement, settled after Aboriginal people were moved from Banka Banka Station in 1947 and run by Australian Inland Mission. Phillip Creek Station was owned by the Cadzows from the 1960s for 20 years until they moved to Mt Riddock. It is now owned by Sandy and Katherine Warby.
2. **Tennant Creek Station** is a family owned pastoral property surrounding the township of Tennant Creek of nearly 3,700 square kilometres. The property is owned by the Ford family and mainly comprises Spinifex pastures over red sandy country and rocky hills and lightly timbered in large sections particularly to the east of Tennant Creek. The property is well improved with waters including bores, dams fed from overland flows and seasonal creeks networked with well maintained access tracks. The properties carries a maximum herd of 10,000 head of cattle.
3. **Dalmore Downs Station**. Owned and managed by Sterling Buntine as part of a larger holding which includes Alroy Downs, Alroy and Dalmore have a total land area of 9,000 square kilometres. Dalmore Downs straddles the Barkly Highway and is predominantly timbered land over sandy soils well watered to the north with less prevalent water to the south of the Barkly Highway.
4. **West Ranken Station**. West Ranken is a pastoral lease run as a single operation with Soudan Station, Gallipoli Station and Alexandria Station which together forms the second largest pastoral property in Australia behind Anna Creek of more than 16,000 square kilometres. West Ranken Station is today owned by North Australian Pastoral Company and straddles the Barkly Highway. West Ranken is located on the flanks of the rich black soil plains of the Barkly Tablelands
5. **Soudan Station**. Together with West Ranken, Gallipoli and Alexandria Stations, these properties are run as a single operation which together have an area of approximately 16,000 square kilometres. Soudan is located on the rich black soils of

the Barkly Tablelands and is well developed with waters including dams and bores and well maintained access tracks throughout.

6. **Avon and Austral Downs Station.** Operated as one entity Austral Downs and Avon Downs is a prime pastoral property of Mitchell and flinders grass pastures over black soils located on the Barkly Tablelands. This iconic property is owned by Australian Agricultural Company Ltd, one of Australia's premier pastoral companies. Avon and Austral Downs together have a total area of approximately 8,700 square kilometres and are well improved with almost more than 120 waters including bores and turkeys nests divided into 42 paddocks linked together by a network of well maintained access tracks. The property is managed by Matt and Tina Barrett.
7. **Barkly Downs Station:** This property, located south of Camooweal in north western Queensland was sold to Australian Cattle and Beef Company in July 2015 after being held by the Acton family for many years. ACBC is owned by the Lee family (Australian Country Choice) and is a strategic asset in the ACC supply chain comprising some 54 properties throughout Queensland including the Cannon Hill processing facility Barkly Downs is located on the rich black soil plains of the Barkly Tablelands and comprises predominantly mitchell and flinders grass pastures on approximately 8,500 square kilometres of land. Since 2007, it has been managed by John and Leanne Imeson.
8. **May Downs:** Purchased by James and Marjorie Lord in 1986 whose aim is to run and ecologically and environmentally sustainable beef herd. May Downs comprises more than 300,000 hectares of land west of Mount Isa comprising a herd of approximately 10,000 head of cattle. The land is improved with bores, large dams fed with overland flows over black soils to the west and rocky country to the east.
9. **Glencoe,** the station closest to the Mount Isa compressor station is run by the Argylla Mountains Pastoral Company and comprises rocky hills with spinifex pastures. The Campbell family have been running cattle and undertaking pastoral activities in the Mount Isa region since the early 1900's.
10. **Barkly Downs:** sold to Country Choice in July 2015 was previously owned by the Acton family. Since 2007, it has been managed by John and Leanne Imeson. The station has 25 staff, covers 1 million hectares and is 80 km south of Camooweal.
11. **May Downs:** Purchased by James and Marjorie Lord in 1986 whose aim is to run and ecologically and environmentally sustainable beef herd.
12. **Glencoe,** the station closest to the Mount Isa compressor station.

Lake Nash Station is immediately south of the pipeline route and includes the Aboriginal community of Alpururulam. One of the largest pastoral properties in the Territory, Lake Nash is owned by the Hughes Pastoral Group and Georgina Pastoral Company, it is bisected by the Georgina River and includes Argadargada Station. Lake Nash runs up to 70,000 head of cattle, including a Wagyu herd. Covering 1.7 million hectares, it has a staff of about 35. It has organic certification.

4.3 The Mining Context

The third significant land user and economic segment for both Tennant Creek and Mount Isa is the mining industry, which fostered the growth of both towns.

The first gold rush in Central Australia at Arltunga in 1888 was followed by exploration around the Granites, in the Tanami, and Tennant Creek in the 1930s (Alford, 2006). Gold was discovered on Kurundi Station, north of Tennant Creek, 1933, with the Rising Sun, Kimberly Kid, Weabers Find and Nobles Nob leases pegged that year. The historically significant high grade but generally short-lived gold and copper mines followed the gold rush of the 1930s. Gold, along with copper, bismuth and silver in Warrego and Tennant Creek, created a flourishing mining town with Peko Mines established in 1949 (Tuxworth, 1978) and within three years the town's population reached 700.

A Warrego gold mine and processing plant operated from the late 1950s. In addition to Warrego, ores from other mines were trucked to the Warrego site for processing including White Devil, Gecko, Eldorado and Orlando mines. (Mining News, 2016) (Emmerson Resources, n.d.). By 1975 Warrego was producing 95% of Australia's bismuth but later that year 550 men were retrenched (Sydney Morning Herald, 2004), although processing continued at Warrego until 1989.

Tennant Creek remains a significant mining region, with junior explorer Emmerson spending \$40 million on exploration for gold, copper, bismuth and silver in the Tennant Creek Mineral field (prospects include the Edna Beryl gold deposit, White Devil, Orlando and the historic Warrego mine). Emmerson is the only resource company with a permanent presence in Tennant Creek, however has only eight staff. Other significant explorers in the Tennant Creek Mineral Field and Wiso Basin include Metals X (searching for copper and gold at Rover 1), while the Bootu Creek manganese mine, 110 north of Tennant Creek, closed in 2016. Aard Metals was reworking the Warrego Tailings for gold and copper but went into administration in early 2016 (Aard Metals, n.d.).

Today the remnants of former gold mines and batteries are scattered around Tennant Creek, including the Battery Hill Mining Centre.

Mount Isa, on the other hand, has remained a significant mining town for nearly a century with mining and processing contributing substantially to employment, higher wages and infrastructure in the region.

The man credited with the foundation of Mount Isa Mines (MIM) was John Campbell Miles who in 1923 was travelling across the dry, hot Gulf Savannah on his way to the Northern Territory when he noticed mineralised outcrops by the banks of the Leichhardt River. Miles hacked off some of the heavy stone and sent it to the Government assayer in Cloncurry. The samples were found to contain as much as 78 % lead-silver. Over the next two months, Miles pegged out the Racecourse lease area surrounding the outcrops, the largest of which he dubbed Mount Isa, laying claim to 42 acres of land that would become one of the most productive single mines in world history.

MIM was established in 1924. It was Australia's most distant mine from a sea port or coal field. A major constraint to the growth of the mining town, however, was water until MIM dammed the Leichardt River and created Lake Moondarra.

In 1928, the Royal Flying Doctor Service was established after an urgent medical retrieval demonstrated the need for medical services to reach the remote regions of the west. The town's isolation was further reduced when a new railway reached Mount Isa in 1929.

Mount Isa weathered the 1930s Depression well, with the mine providing constant work for 1000 men in a period that saw a quarter of the male population in Australia's larger cities unemployed. The commodity expansion saw a major influx of workers settling in Mount Isa in the 1950s, many of them post-war immigrants.

MIM was acquired by Xstrata Mines then in 2013 by Glencore, which today provides jobs for more than 20% of the town's population. (This summary is based on a history of MIM on the Glencore website) (Mount Isa Mines, n.d.)

Today, mining and exploration remains an important sector for both Mount Isa and Tennant Creek. However, just as expansion of the pastoral industry caused discomfort for the Aboriginal owners of the land, some pastoralists interviewed for this ESIA expressed discomfort at disruption from mining exploration activities on their land in recent years (see section 5 for more discussion on this).

4.4 GOVERNANCE AND INSTITUTIONS

Key institutions covering governance in the region include the Northern Territory, Queensland and Australian Governments and Barkly and Mount Isa municipal areas.

Key Aboriginal institutions representing the interests of Aboriginal people in the region are the Central Land Council (CLC), the Northern Land Council (NLC), the Arruwurra Aboriginal Corporation (AAC), the Indjalandji-Dhidhanu Aboriginal Corporation (IDAC), the Bularnu, Waluwurra and Wangkayujuru (BWW) Aboriginal Corporation, the Kalkadoon Native Title Aboriginal Corporation (KNTAC) and the Queensland South Native Title Services (QSNTS).

4.4.1 Australian Government

The key relevant Australian Government policies for the project are to 'close the gap' of Indigenous disadvantage in Australia and the Develop the North agenda. The project area falls in the Federal seats of:

- **Lingiari**, which covers all of the NT except Darwin (or 99.98% of the Territory's land mass). It has been held by Labor Member of Parliament Warren Snowdon since 1998 and before that between 1987 and 1996. Before entering Parliament, Mr Snowdon was a teacher and researcher.
- The Queensland Federal seat of **Kennedy**, which takes in part of Cairns, Townsville and Mount Isa. Kennedy has been held since 1993 by Bob Katter, formerly of the Nationals Party, then an Independent and now of Katter's Australian Party. Mr Katter's father, Bob Senior, also held the seat from 1966 to 1993.

4.4.2 Northern Territory Government

The Northern Territory electorate of Barkly has been held since 2008 by Labor member Gerry McCarthy, a former teacher and Minister in the previous Labor Government that was ousted in 2012. The electorate stretches from Tennant Creek to Borroloola. The Labor Party won the Northern Territory election of August 2016.

A key policy issue relevant to the project is the new NT Government's moratorium on fracking (NT Labor, 2016). However, the party's election platform also says the economic sectors that Labor will focus on in its first term are agribusiness, gas and minerals, tourism, defence-related industries and international education. It has committed to a Territory Economic Summit on coming to office to finalise a plan to guide investment (Territory Labor, 2016b) and, despite the moratorium, has committed to support the North-East Gas Interconnector (now the Northern Gas Pipeline) as well as developing Tennant Creek as a major mining services centre (Territory Labor, 2016c)

The incoming government has also committed to retain the Northern Territory's 'Developing the North' structure and policy framework, albeit with a greater focus on Aboriginal engagement.

The new Government has also committed to abolishing the open speeds on parts of the Stuart Highway and has a focus on early childhood development, improving remote housing conditions and regional economic development to promote local jobs.

4.4.3 Queensland Government

The State seat of Mount Isa has been held since by Robbie Katter, son of Bob Katter, since 2012.

4.4.4. Barkly Regional Council

Barkly Regional Council covers an area of 323,514 square kilometres between Tennant Creek and the Queensland Border. It was created in 2008 as part of an amalgamation of local government areas in the NT to form 10 'super shires', making it the second largest local government area in Australia after the East Pilbara Shire in Western Australia. It is the same size as the United Kingdom or New Zealand and 42% larger than Victoria. After local government reforms by the CLP Government, in 2014 it became the Barkly Regional Council.

Apart from Alpururulam, key population centres are Elliot, on the Stuart Highway, and the Aboriginal communities of Ali Curung and Ampilatwatja, all of which previously had their own community government or town councils. The council also has responsibility for a number of urban living areas and outstations and 49 pastoral properties.

Barkly Council is divided into four wards, including Alpururulam, which has its own Regional Authority established as part of reforms designed to devolve local decision-making and replace previous Boards. Tennant Creek is represented by the Patta Ward, named after the Aboriginal estate group for Tennant Creek.

Council provides a range of municipal services such as waste management and community facilities to Tennant Creek and six communities across the Barkly. It provides and community and essential services, including power and water management, across some of the most remote places in Australia. Community facilities extend from aged care to sports and recreation.

Its key goals cover regional development, supporting community capacity building, providing quality services and infrastructure, community engagement, community wellbeing and good governance.

Of council's 231 staff as at 30 June, 2015, 159 of 230 staff - or 68.8% - were Aboriginal, a slight increase from 67.6% the previous financial year. Of these Aboriginal staff, 54 worked in municipal services, 35 in community care, 24 in night patrols, 14 in administration, 15 in sport and recreation, six as night patrol team leader, nine as supervisors and managers and two in animal care (Barkly Regional Council, 2015).

The Barkly Regional Council President is Barbara Shaw, who is also Chief Executive Officer of Anyinginyi Aboriginal Corporation. Alpururulam Ward has one Councillor, compared with five for the Patta Ward centred on Tennant Creek. (Barkly Regional Council, n.d.)

4.4.5 Mount Isa Regional Council

Until 1963, local government services in Mount Isa were administered by Cloncurry Shire Council. The shire covers 41,225 square kilometres and was created by a merger of the areas covered by the former Barkly Tableland Shire Council (covering Camooweal) and an excised part of Cloncurry Shire. Mount Isa was proclaimed a city in 1968. The current Mayor is Councillor Joyce McCulloch. (Mount Isa City Council, n.d.)

4.4.6 Northern Land Council

The Northern Land Council (NLC) is a Commonwealth statutory authority established to represent the land interests of the 30,000 Aboriginal people living in major towns and 200 communities in its region. It was established after the Australian Parliament passed the *Aboriginal Land Rights (Northern Territory) Act* in 1976. Under the *Native Title Act 1993*, the NLC is also the Native Title Representative Body for areas in the northern half of the NT not covered by the ALRA.

A key role of the NLC is to consult with traditional landowners and other Aboriginal peoples affected by activity on their land, including mining, infrastructure projects, national parks and pastoral activities (Northern Land Council).

The NLC represents a number of the Aboriginal traditional owners whose land interests would be affected by the project, namely those associated with the Dalmore Downs, Dalmore Downs South and the Burramurra native title claims.

4.4.7 Central Land Council

The Central Land Council (CLC) covers 771,747 square kilometres of some of Australia's most remote areas and 15 different Aboriginal language groups in Central Australia. This includes 417,318 square kilometres of Aboriginal freehold land. As with the NLC, it is a Commonwealth statutory authority under the *Aboriginal Land Rights Act* (ALRA) and has functions under the *Native Title Act 1993* (NTA) and *Pastoral Land Act 1992*. ALRA gave Aboriginal people title to most of the Aboriginal reserve lands in the NT and the opportunity to claim other land not already owned, leased or being used by other parties. The NTA gave rights to Aboriginal people to claim native title rights on land where native title has not been otherwise extinguished by an act of the Crown.

The CLC region is divided into nine regions, including Tennant Creek and the Eastern Sandover regions, with 90 elected members of its council. It has an office in Tennant Creek.

Some of the key services provided by the CLC are:

- providing a strong voice for the Aboriginal people of Central Australia
- helping Aboriginal people get back country
- helping Aboriginal people manage their land
- consulting with landowners on mining activity, employment, development and other land use proposals
- protecting Aboriginal culture and sacred sites

- helping with economic projects on Aboriginal land
- prompting community development and improving service delivery
- fighting for legal recognition of Aboriginal people's rights
- helping resolve land disputes, native title claims and compensation cases
- running the permit system for visitors to Aboriginal land (Central Land Council, n.d.).

5 IMPACT ASSESSMENT

5.1 Overview

Social and economic risks and opportunities associated with the Project's planning, construction and operational phases were identified and assessed based on a multi-disciplinary risk assessment. In accordance with the NT EPA *Guidelines for the preparation of an Economic and Social Impact Assessment* the impact assessment sought to identify potential positive and negative impacts (opportunities and risks) on local and regional residents and communities.

Many risks with social implications are discussed in greater depth in the respective Appendices of the EIS for the Project, such as Human Health and Safety, Traffic Management and Cultural Heritage.

The impact assessment that follows is based on the Project definition to date (refer Chapter 2 of the EIS), the risk and opportunity assessment, desktop research and qualitative insights gleaned from Jemena's stakeholder consultation and interviews for this ESIA. The risk assessment identified 85 potential social and economic risks for analysis and evaluation across the three phases of the Project. Often, risks are duplicated across the different phases of the project but vary in their likelihood and consequence.

With regard to opportunities, there were some 28 types of opportunities identified across the Project phases and again, these vary in their likelihood (of success) and consequence (positive impact) across the phases.

The risk and opportunity assessment process assessed the likelihood and consequences of each potential social and economic impact in relation to the following objective defined by Section 5.6.1 of the EIS ToR:

"To monitor and manage the intended and unintended social and economic consequences, both positive and negative, of the Project."

The inherent risk profile for socio-economic risks is summarised in Table 5-1 below, with 85 social and economic risks identified. Five of these had a **HIGH** level of inherent risk, i.e. before mitigation. While one related to the potential risk of unauthorised entry onto sacred sites during the Construction Phase, the rest related to the potential impact on the Tennant Creek community and economy and the flow-on effects of basing a workers' accommodation village at the Phillip Creek Compressor Station (PCCS). In addition there are a number of risks with a **SIGNIFICANT** inherent risk level, these relate to social health and wellbeing impacts associated with workforce management, local economic impacts and social cohesion. Table 5-2 shows the risk profile post mitigation.

In terms of opportunity, all of these were ranked as having a **LOW** to **MODERATE** impact without enhancement. Five of these, all relating to the economic benefits (jobs and contracts) that will arise during the Construction Phase of the Project have the potential to have **SIGNIFICANT** positive effect in the regions. Table 5-2 below shows the inherent opportunity profile

The following section provides a description of the socioeconomic environment of the region, its people, communities and institutions. It includes extensive baseline social and economic data against a number of indicators, with the greatest weight given to indicators most relevant to the project's risk and opportunity matrices.

PROJECT PHASE	PROFILE OF INHERENT RISKS				
	Low	Moderate	Significant	High	Extreme
Planning	3	2	7	0	0
Construction	18	25	16	5	0
Operations	5	4	0	0	0
TOTALS	26	31	23	5	0

Table 5-1: Inherent (pre-mitigation) socio-economic risk profile

PROJECT PHASE	PROFILE OF MITIGATED RISKS				
	Low	Moderate	Significant	High	Extreme
Planning	11	1	0	0	0
Construction	54	10	0	0	0
Operations	7	2	0	0	0
TOTALS	72	13	0	0	0

Table 5-2: Inherent (pre-mitigation) socio-economic risk profile

PROJECT PHASE	PROFILE OF INHERENT OPPORTUNITIES				
	Low	Moderate	Significant	High	Transform
Planning	5	4	0	0	0
Construction	6	8	0	0	0
Operations	4	1	0	0	0
TOTALS	15	13	0	0	0

Table 5-3: Inherent (pre-enhancement) socio-economic opportunity profile

PROJECT PHASE	PROFILE OF ENHANCED OPPORTUNITIES				
	Low	Moderate	Significant	High	Transform
Planning	0	8	0	0	0
Construction	0	10	5	0	0
Operations	3	2	0	0	0
TOTALS	3	20	5	0	0

Table 5-3: Possible (post-enhancement) socio-economic opportunity profile

6 COMMUNITY, HEALTH AND WELLBEING

6.1.2 OVERVIEW

This section looks at a range of potential impacts on communities, health and wellbeing flowing from the change processes that could be brought about by an influx of workers and increased higher disposable income. It includes potential conflicts as a result of aspects of the project, such changes to the demographic composition of the Mount Isa and Tennant Creek regions and family and community conflict over higher disposable incomes and distribution of project benefits. Given that the project is perceived by some as an enabler for onshore oil and gas exploration and production, some conflict was also evident in differing positions on this industry and continues to this day, reflecting the broader issue across the NT today.

The impacts with the highest residual risk ratings were:

- the risk of increased wages and benefits circulating in the economy may cause an increased use of drugs and alcohol and subsequent issues with antisocial behaviour, impacts which are difficult for Jemena to mitigate; and
- road safety risks associated with more traffic on the Barkly and Stuart Highways which retain a high residual rating because, even with traffic management plans, the consequence of any incident would be severe.

6.1.3 KEY EVENTS CAUSING POTENTIAL IMPACTS

- mobilisation of a large workforce, particularly the in-migration of large groups single, male FIFO workers;
- local workers living in accommodation camps away from the community and family;
- people moving back to the project towns to work on the project, taking up accommodation or expecting to live with family;
- increased disposable income through payment of wages and benefits;
- payment of benefits as part of land access agreements;
- jobs with the project;
- increased industrial traffic on local roads, access tracks and highways;
- trenching activities;
- access tracks and mobile camps;
- jobs with the project;
- land access agreements and distribution of benefits;
- establishment of laydown areas and storage of dangerous goods, including petrol;
- poor communication or rumours about the project; and,
- perceptions or fears by some that the project will become an enabler for onshore gas exploration.

6.1.4 KEY RISKS AND OPPORTUNITIES FOR COMMUNITY, HEALTH AND WELLBEING

The following is a summary of impacts, not an exhaustive list of risks and opportunities. Some are captured in other sections, e.g. culture and heritage, traffic management, human health and safety.

Some of these risks vary according to the phase of the project and between Mount Isa and Tennant Creek. See Appendix C for inherent risk and opportunity ratings and residual ratings after treatment.

Potential risks	Potential opportunities
<p>Reduced community cohesion through family and group conflict over distribution of benefits and wages</p> <p>Reduced community cohesion through conflict and differing views over whether the project will be an enabler for onshore oil and gas exploration and fracking.</p> <p>Reduced community cohesion and resilience through changes in community composition</p> <p>Reduced feels of safety and wellbeing due to worker misbehaviour, alcohol abuse, crime and antisocial behaviour (from increased disposable income, workers during time off)</p> <p>Reduced volunteering due people involved in sport, emergency response and community groups being away or working rosters</p> <p>Pressure on the cost and availability of public and private rental accommodation in Tennant Creek due to project personnel moving into local accommodation (no impact is envisaged on cost of houses or units given the short duration of the project)</p> <p>Pressure on local services, such as health, road maintenance, education, emergency services, municipal.</p> <p>Increased overcrowding and demand for public housing due to people returning to live with family, being displaced from rental properties due to higher rents or families moving to Tennant Creek to be with workers</p> <p>Prostitution, pregnancies and spread of sexually transmitted diseases</p>	<p>Increased training and awareness of work health and safety issues</p> <p>Improved socioeconomic status through jobs and training with the project</p> <p>Sponsorship benefits community events</p> <p>Increased community vitality (through more people in Tennant Creek, spending money in hospitality venues and contributing to community events)</p> <p>Improved worker health and wellbeing through workplace programs</p> <p>Positive impact on rental properties in Mount Isa due to project personnel moving into the town (although the impact may not be material given the small numbers of personnel involved).</p>

<p>Mental health issues and suicides amongst workers due to loneliness and isolation from families</p> <p>Increased alcohol abuse due to higher rates of disposable income amongst local workers, leading to increased violence.</p> <p>Reduced community amenity and feelings of safety through increased alcohol use or binge drinking by workers on the days off, leading to fights and crime.</p> <p>Reduced sense of place due to changes in community composition and reduced sense of wellbeing</p> <p>Increase in petrol sniffing and juvenile crime such as trespass, vandalism and thefts through access to inhalants</p> <p>Reduced amenity for pastoralists due to noise, dust, more traffic on station tracks, thefts and vandalism, use of right way for illicit traffic</p> <p>Increased road safety risks due to increased project traffic through towns and on the highway</p> <p>Injuries or property damage due to project activity (e.g. trespassing or unauthorised entry to the project footprint)</p>	
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Table 6-1 Summary of risks and opportunities for community, health and wellbeing

6.2 EXISTING SOCIAL ENVIRONMENT

The following table provides an overview of data against key indicators relevant to this section. This is followed by a profile of the communities and institutions in the project footprint, including demographic background and baseline data on issues such as crime, health, mental health and government services such as housing, followed by an assessment of likely impacts.

Indicator	Barkly	NT	Aboriginal (Barkly)	Mount Isa	QLD	Aboriginal (Mount Isa)
Population	8,124 (2014)	244,307 (June 2015)	Approx. 5,614	21,717	4,808,000 (end 2015)	Approx. 3,280
Life expectancy	N/A	77.5	N/A	76.5	81.5	N/A
Fertility rate	2.5	2.15	N/A	2.7	2.0	N/A
Median age	27	31.4	23	30	37	21
Unemployment rate	10.9%	5.3%	23.1%	4.3%	6.1%	17.7%
Labour force participation	44.7%	63.9%	29.5%	67%	63%	52.4%
Education (persons aged 15 years & over who have completed Y12 or equivalent as highest education level)	20%	40%	N/A	22.9%	19.9%	N/A
Child burden ratio	1.3	0.75	N/A	0.48	0.43	N/A
Economic burden ratio	6	19.7	N/A	23	15	N/A
Median income	\$1152	\$1,674	\$802	\$2064	\$1235	\$1363
Crime rates (crimes against the person per 100,000 of population)	7,859 (Tennant Creek)	3,281	N/A	3,162	629	N/A

Table 6-2 Social & Economic Comparison Summary

6.3 COMMUNITY PROFILE

6.3.1. NORTHERN TERRITORY

The Northern Territory covers one-sixth of Australia but as of June 2015 had only 244,307 people living in an area of 1.350 million square miles (Department of Treasury & Finance, 2016), making it the most sparsely populated region in Australia with a population density of 0.2 persons/km. As at June 2011, 79.7% of Aboriginal Territorians lived in remote or very remote areas, compared with 21.3% for other Australian jurisdictions. A key feature of the Territory is its relatively large Aboriginal population. According to the 2011 Census, the proportion of Aboriginal residents in the Territory was 30%, compared with the 3% national average.

Aboriginal people comprise a major proportion of the population in both the Barkly and Mount Isa regions representing about 64% of the population in the Barkly Region (compared with 30% in the NT) and 15% in Mount Isa (compared with 3.5% in Queensland). The Indigenous (Aboriginal and Torres Strait Islander) population of Australia is about 3% (ABS, 2011).

The NT's population is the youngest in Australia with 22.6% of residents being under 15 (compared with 18.8% nationally). It has the smallest proportion aged 65 and over of all Australian States and Territories. The median age in the territory is 31.4, compared with the national median age of 36.9 (ABS 2011).

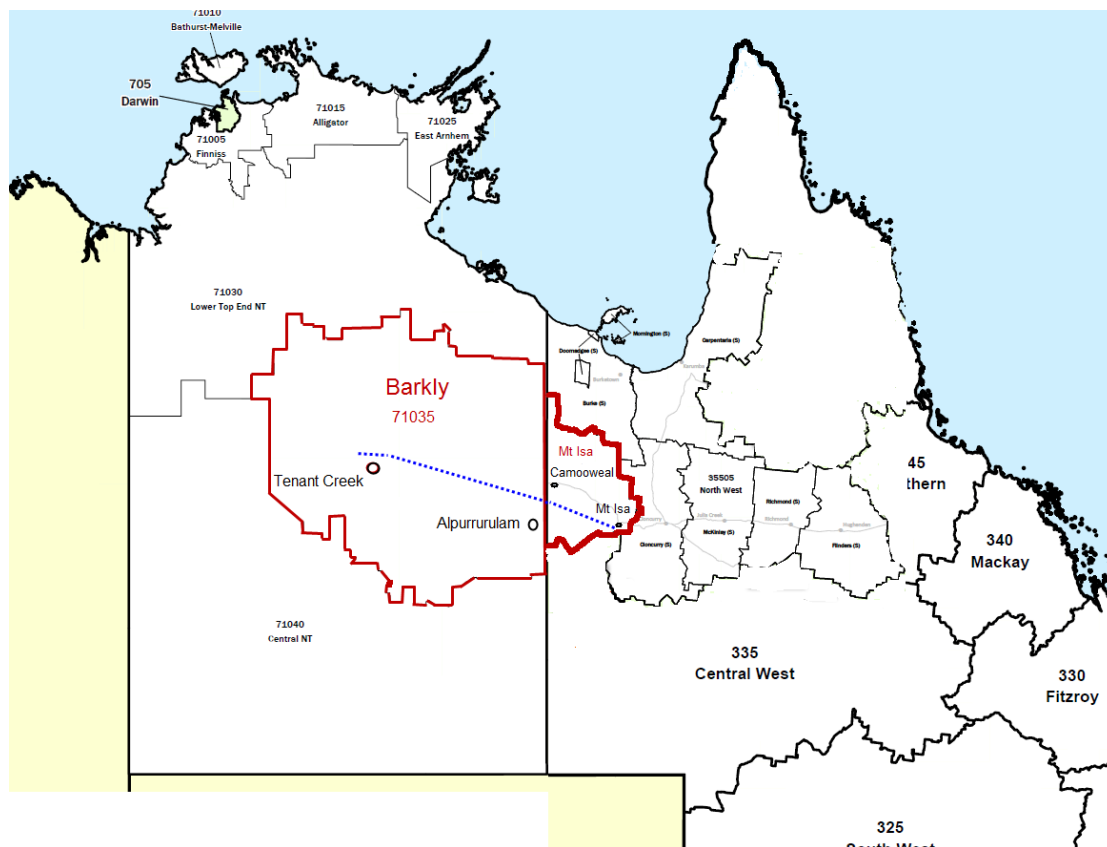


Figure 6-1 The Mount Isa and Barkly Regions showing the pipeline route and study footprint (Source ABS and Economics Consulting Service)

6.3.2. Barkly Region

The Barkly Region covers a large part of the central eastern NT, with the Barkly Regional Council the second largest local government area in Australia.

The largest town in the region is Tennant Creek, about 1000 km south of Darwin and 500 km north of Alice Springs on the Stuart Highway, just south of the intersection of the Stuart and Barkly Highways at Three Ways (also known as the Explorer and Overlander Ways respectively).

The only other significant population centre on the Territory side of the border between Mount Isa and Tennant Creek is Alpururulam, 550 km from Tennant Creek and 35 km south-west of the point where the pipeline is to cross the NT and Queensland border.

The Barkly region had a population of 8124 in 2014 (ABS, 2016). In 2011, 69% of these residents were Aboriginal (ABS, 2016).

More than half of Tennant Creek's population of 3636 (ABS 2015) are Aboriginal, including Warumungu, Katetj, Warlpiri and Alyawarre. There is a significant movement of Aboriginal people between Tennant Creek, Mount Isa and a number of homelands and outstations in between.

The median age in Tennant Creek and Alpururulam is 32 and 25 respectively, which is significantly lower than the national average of 37. The median age in the NT is 32 (ABS, 2014).

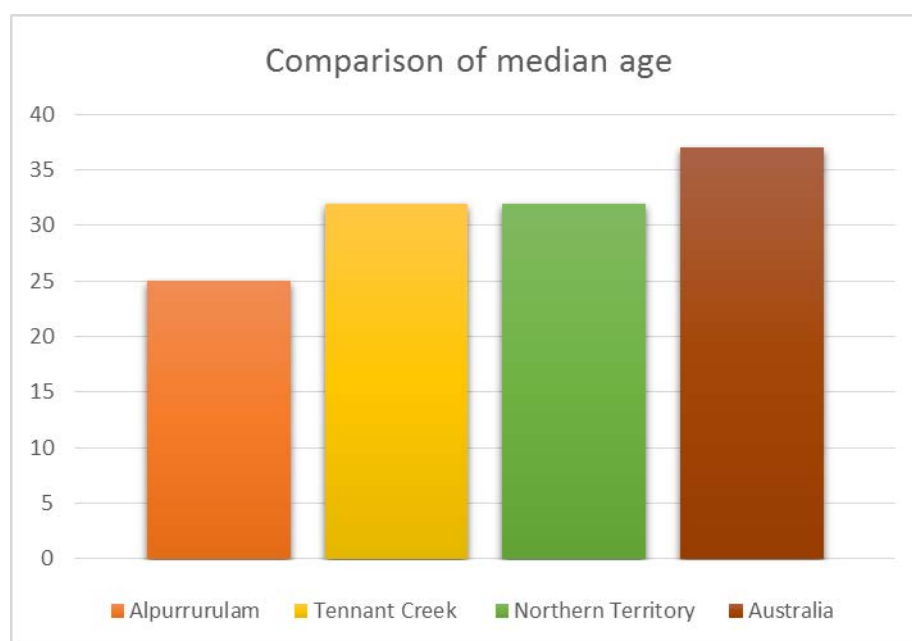


Figure 6-2 Comparison of median age for the Northern Territory and the Barkly

Tennant Creek contains a higher portion of working age residents (20-64) than Alpururulam, with 63% (1929) and almost 59% (250) respectively. At the last Census in Alpururulam 241 of the 268 working age residents were Aboriginal (ABS, 2011).

In addition to the major towns and major populations, the region includes eight minor communities, 70 family outstations, 49 pastoral stations, mining operations and commercial properties (NT EPA, 2013), with Tennant Creek serving as the region's key service centre.

The map below covers the Barkly Region Local Government Area, with the NGP route shown by the blue and white line.

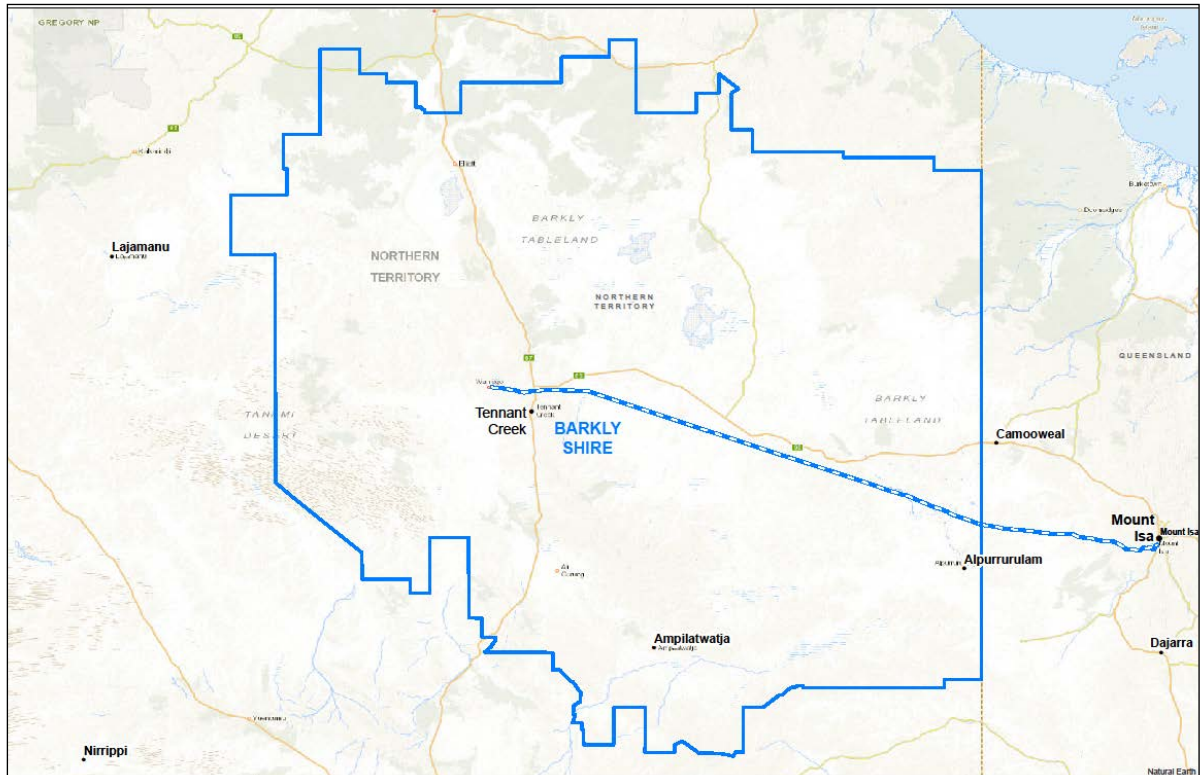


Figure 6-3 Map of Barkly Shire, NT Map of Barkly Shire, NT

6.3.3. *Tennant Creek*

Tennant Creek is the Northern Territory's fifth largest town with a population of 3636 as at June 2015 (Department of Treasury & Finance, 2016), with Aboriginal residents making up 52% of the population in 2011.

Explorer John McDouall Stuart passed through the area in the 1860 on the fourth of his six journeys to the interior (Bailey, 2007). Stuart named a slow-flowing Tennant Creek (about 10 kilometres north of the current town) after John Tennant, the Port Lincoln financial benefactor of his exploration voyages.

Water was initially a constraint for the town's growth but in 1935 a bore at Seven Mile Creek was sunk by Government which provided the town's water until 12 wells were commissioned south of Tennant Creek in 1962 (Tuxworth, 1978).

Mining and the pastoral industry are key economic sectors around Tennant Creek, with an estimated 40% of Tennant Creek businesses providing services to the pastoral industry in some form (Tennant Creek Regional Economic Development Committee, 2014). In addition, regional tourism is a key sector. Key drawcards are the Devils Marbles (Karlu Karlu), south of Tennant Creek, the Battery Hill Mining Centre and the Nyinkka Nyunyu cultural centre.

Early supplies were delivered to Tennant Creek by camel train, then by truck on the rough 'track' known as the North South Road from Alice Springs. The road to Darwin was sealed during World War II, with the Tennant Creek to Birdum section completed in 1940. The Barkly, despite being sealed on an alignment slightly south of the Barkly Stock Route, was still referred to as the "worst road" American troops had to travel during World War II (Alford, 2006). Both routes are now modern highways, with regular Greyhound bus services providing public and tourist transport. In 2001, Tennant Creek was linked to the new AustralAsia Railway between Adelaide and Darwin, with the Ghan tourist train starting operations in 2004. Air services have come and gone but Tennant Creek is currently part of a Darwin-Katherine-Tennant Creek-Alice Springs route serviced by Air North, in addition to charter services to the town.

According to the 2011 Census, the Aboriginal population of Tennant Creek is about 52% (ABS, 2011) while the Aboriginal population of the Barkly Region as a whole is about 64% (ABS, 2011).

A study by the Northern Institute based on ABS 2011 data (Yuhun & Taylor, 2013) found that the Tennant Creek population comprised largely young to middle-aged Aboriginal residents, consistent with a relatively high birth rates and low life expectancy, and working to older non-Aboriginal residents, consistent with a moderately high concentration of pre-retirement aged people. The Aboriginal population had increased from 49% in 2006 to 52% in 2011. Non-Aboriginal residents tended to migrate to and from the town to interstate destinations, while Aboriginal residents migrate in from the surrounding region and migrate out to Darwin and interstate.

The number of overseas born residents reached 10% of the population in 2011 due to increased immigration from the Philippines. The main source nations for overseas born residents in 2011 were the United Kingdom (21.8%), New Zealand (15.5%), the Philippines (14.9%), Germany (4.4%) and India (4.1%).

The main languages spoken in Tennant Creek are Warlpiri and Warumungu. The other main languages are Walmanpa, Alyawarre, Kaytej, Wambaya and Jingili. Others, like Wakaya, are less prevalent.

6.3.4. *Alpurrurulam*

The Aboriginal living area of Alpurrurulam on Lake Nash is an excision from the cattle property delivered after years of fraught relations between Aboriginal people and the property's earlier owners (see Section 4 above).

Alpurrurulam is about 35 km south-west of where the pipeline is to cross the NT and Queensland border. After Tennant Creek, it is the largest community in the Territory close to the NGP footprint.

Alpurrurulam is a derivation of the name Ilperrelhelame, the Aboriginal name of the nearby freshwater lake on the Georgina River. According to Memmott in Lyon and Parsons (1989), the original traditional owners of the area were the Bularnu people. The old name for the area is lost and the Bularnu people no longer inhabit the area. The Alyawarre, sought refuge at Ilperrelhelame after being displaced from their country by the spread of pastoralism. Eventually, they were given the responsibility and right to look after that country by the Bularnu people. In late 1988, after a long struggle, the Alyawarre were granted title to an excision of land on Lake Nash and moved from their original settlement (Lyon & Parsons, 1989).

Alpurrurulam is serviced by the Barkly Regional Council and has a church, school, police station, community shop, aged care centre and clinic.

The community is accessible from the Barkly Highway via the Austral Downs road, the Camooweal – Lake Urandangi Road or the Sandover Highway, however it is often cut off for several months during the wet season.

Alpurrurulam had a population of about 423 in 2011, which was 92% Aboriginal.

6.3.5 Aboriginal Communities

The NT Government classifies Aboriginal communities into four types (Northern Territory Government, 2015).

- Major community – A large community of mostly Aboriginal people (usually over 500) which has facilities generally expected in a town of a similar size (eg school, health centre, store) and provides resources to nearby smaller communities, homeland centres and outstations.
- Minor community – A community of mostly Aboriginal people (usually over 100) which may have a school, health centre, store etc. and provides resources to nearby outstations.
- Family outstation – A small community of mostly Aboriginal people, usually fewer than 100, in permanent or semi-permanent residence with a water supply and permanent accommodation.
- Town camp – A community of mostly Aboriginal people in or next to an urban area.

There are 18 Aboriginal communities within the Barkly Region that may be directly or indirectly impacted by the NGP. These are shown in Figure 4 above.

Those communities directly associated with the project, e.g. on Warumungu and Wakaya Aboriginal Land Trust lands (Pukalki and Purrukuwurra) and the Arruwurra Freehold land (Wonara) will be directly affected by project construction, whereas communities such as Likkaparta, Kurntapurra, Burudu and Ngurrara may impacted indirectly, e.g. through increased traffic on the Barkly Highway. Other communities in and around Tennant Creek may be generally affected by the project and its effects on the town.

While Jemena is negotiating land agreements with the traditional Aboriginal owners it was considered important to consult with these communities regarding social impacts (risks and opportunities), unrelated to matters that would be dealt with in land agreement negotiations (see also section 5.1 below).

6.3.6 Pastoral Stations

A number of pastoral properties will be traversed by the NGP Project, from Phillip Creek and Tennant Creek Stations, close to Tennant Creek, through the Barkly tableland (Dalmore, West Ranken, Soudan, Avon Downs and Austral Stations) and then into Queensland (Austral, Barkly Downs, May Downs and Glencoe Stations).

Jemena is negotiating compensation packages with each of the owners of the pastoral leases, however other station residents such as station managers, their families and workers may also be affected by the project. While impacts are likely to be short-term, due to the short pipeline construction program, a number of social risks and opportunities will be considered in this ESIA.

6.3.7 Other

Other remote settlements near the project footprint include the Barkly Homestead roadhouse, the Avon Downs Police Station and the Three Ways roadhouse.

6.3.8 Mount Isa Region

Map of the Mount Isa region

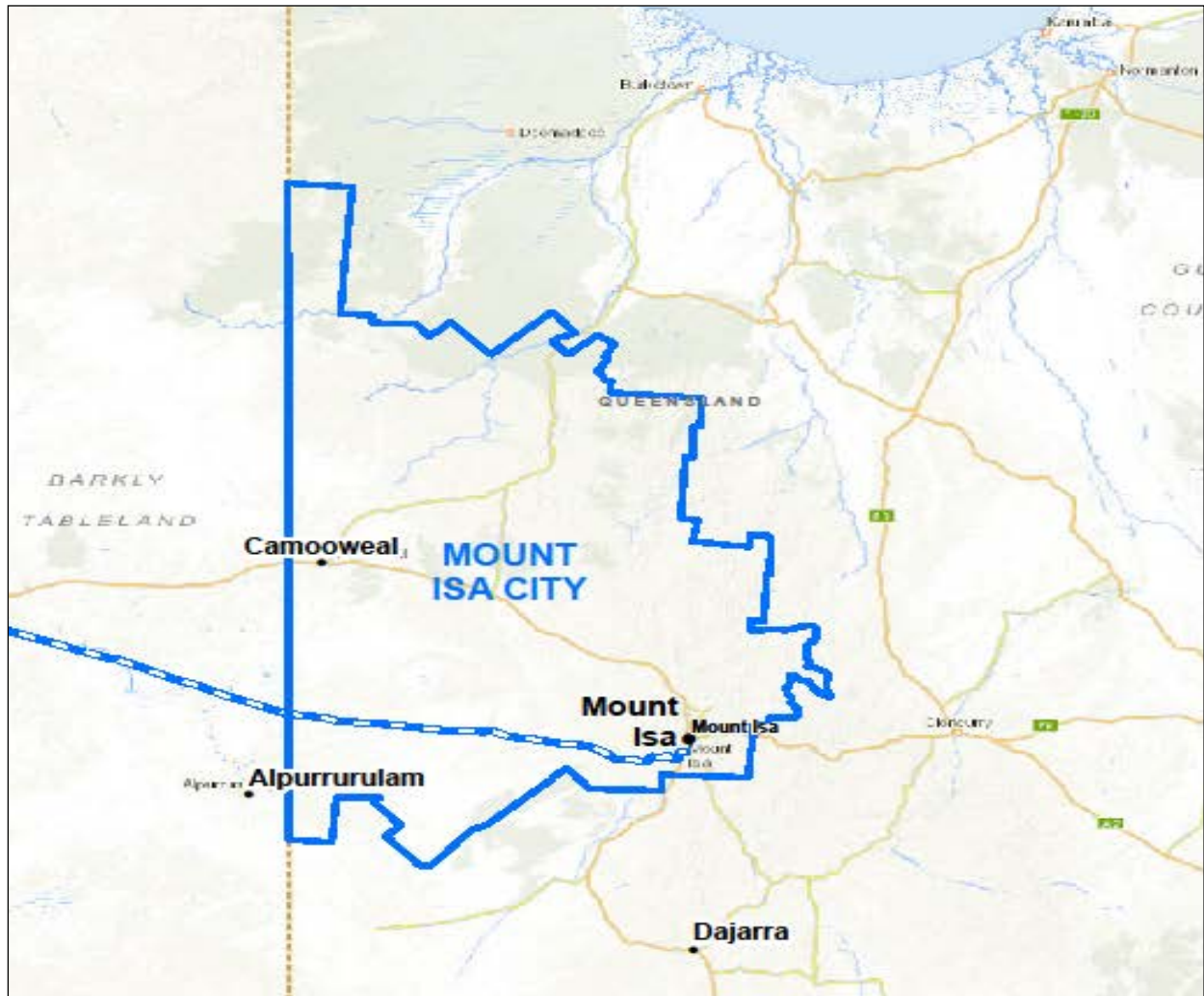


Figure 6-4 Map of the Mount Isa region

The Mount Isa Region (Mount Isa City Council) covers an area of 43,310 km² and has a population of about 22,717 people (ABS, 2014). The Council area includes the city of Mount Isa and the town of Camooweal and extends from the NT border to just east of Mount Isa. The map in figure 6.4 above illustrates the boundaries of the Mount Isa Region, with the NGP route shown by the blue and white line.

The primary economic activities in the Mount Isa City Council area are mining and health care along with public administration.

The median age in Mount Isa and Camooweal is 30 and 31 respectively, which is significantly lower than the Queensland and national average of 37 (ABS, 2014).

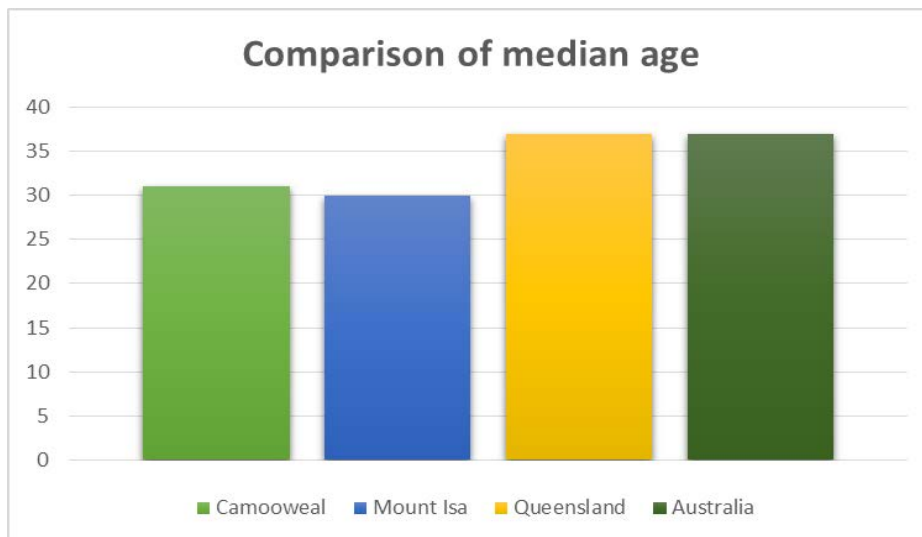


Figure 6-5 Comparison of median age - Queensland/Mount Isa

There are some pastoral homesteads near the project footprint, between the NT and Queensland border and the point where the pipeline route crosses the Selwyn Ranges in the last sections of the pipeline before it reaches the MICS.

6.3.9. Mount Isa

Located on the Barkly Highway about 120 km west of Cloncurry and 900 km west of Townsville, Mount Isa is the administrative, commercial and industrial centre for Queensland's north-west region, with a population of 22,717 (ABS, 2014).

European history of Mount Isa began in 1923 when a prospector, John Campbell Miles, identified rock samples on the banks of the Leichhardt River that were heavily mineralised. As a result of his discovery and an influx of settlers, a post office was opened in 1924 and a hospital in 1930.

Mount Isa was proclaimed a city in 1968. Today the mines surrounding the city are significant operations, producing copper, lead, silver and zinc.

According to the 2011 Census, about 15% of the population of Mount Isa is Aboriginal. The town contains a higher proportion of working age residents (aged 20 to 64) - who comprise 63% of the population of 13,000 - than Camooweal where 48%, or 90, people are of working age.

The Kalkadoon are traditional owners of land in the Mount Isa region.

6.3.10 Camooweal

Camooweal is a small town on the Barkly Highway 12 km east of the Queensland and NT border and 191 km from Mount Isa. The explorer William Landsborough was the first European to pass through the area while searching for the explorers Burke and Wills in 1862. The town was gazetted in 1864 and grew as a service centre for the surrounding farming properties. A police station opened in 1886, a provisional school in 1893, and a town bore was drilled in 1897. Electricity was connected to the town in 1952 (Mount Isa City, 2016).

The 2011 Census recorded a population of 187 and 50 of the 90 working age residents were Aboriginal.

Camooweal is a service centre for the local pastoral stations and provides a base for tourists to visit the surrounding region.

The Indjalandji people are the original inhabitants of the land surrounding Camooweal, with Aboriginal people comprising about 56% of the town's population.

6.4 SOCIOECONOMIC STATUS AND LEVELS OF DISADVANTAGE

Aboriginal people in the Mount Isa and Barkly regions face significant disadvantage relative to the broader community. For example in the Barkly Region, the Northern Territory Medicare Local Health Atlas of 2014 (NTML, 2014) reported that:

- The socio economic index for the Barkly region is amongst the worst in Australia. This index is “the relative social and economic advantage and disadvantage of a region, by measuring a community's access to material and social resources and their ability to participate in society”.
- The Barkly region (northern Barkly) was the only area with a significant decline in the Australian Early Development Index (AEDI) in the NT between 2009 and 2012. The AEDI is a measure of how children have developed by the time they start school in terms of physical health and wellbeing, social competence, emotional maturity, language and cognitive skills, communication skills and general knowledge.

Further social and economic indicators include:

- The unemployment rate for Aboriginal people is 23.1% in the Barkly region. This is almost four times the NT unemployment rate, five times the Mount Isa unemployment rate and three and a half times the unemployment rate of Queensland (ABS, 2011).
- The overall unemployment rate of 8.9% for the Tennant Creek Region was the highest in the NT in 2015, although it was down from 9.6% in 2014 (Department of Employment, cited in the 2016 Budget papers (Department of Treasury & Finance, 2016)).
- Aboriginal people in the Barkly region have a median total household income of \$811 a week, 30% less than the median total household weekly income in the Barkly region, 50% less than in the NT, 60% less than in the Mount Isa region and 35% less than in Queensland (ABS, 2011).
- In the Barkly region, 42 Aboriginal people compared with 149 non-Aboriginal people completed year 12 or equivalent as their highest level of schooling (28%) (ABS, 2011).
- When considering the high proportion of Aboriginal people in the Barkly region, post-secondary education levels of attainment are similarly low. For example, 69 Aboriginal people compared with 229 non-Aboriginal people were recorded in the 2011 Census as having a Certificate level III and IV, seven Aboriginal people compared with 67 non-Aboriginal had a diploma or Advanced Diploma qualification, and 11 Aboriginal people compared with 92 non-Aboriginal people had a Bachelor's degree (ABS, 2011).
- No Aboriginal people in the Barkly region were recorded in Census data as having attained a post graduate level university qualification (ABS, 2011).
- The child burden ratio measures the ratio of children (between the ages of 0 and 14) to employed adults to provide an insight into the number of dependent children for each economically active adult. In the Barkly Region, the child burden ratio is 1.3 children for

every employed person. When compared with the NT ratio of 0.75, the Barkly region has more children per employed adult, indicating a greater reliance on those employed adults to provide for a larger number of children.

- The economic burden ratio measures the ratio of employed people in relation to the unemployed. In the Barkly region, the economic burden is 6, indicating that for every 6 employed people, one person is unemployed. When compared with the NT ratio of 19.7, the Barkly region has a higher density of unemployed people per employed adult, with a greater reliance (or burden) on a smaller number of employed people to provide for a higher number of unemployed residents.
- The child burden ratio in the Mount Isa Region is 0.48 children per employed person, compared with 0.43 for Queensland indicating that Mount Isa has a similar number of employed adults providing for children.
- The economic burden in the Mount Isa region is nearly 23 employed people per unemployed person, compared with 15 for Queensland. This illustrates that, relative to Queensland, Mount Isa has a smaller burden on the employed people.
- The fertility rate (average number of births per woman through her reproductive lifetime) of the NT is 2.15 compared with the national average of 1.84. The NT life expectancy was 77.5 years. The median age at death in the NT was 61.9 years, compared with the national median age of 81.5 years.
- The mortality ratio for the Barkly region, i.e. the number of deaths per 1000 people over a given period, is about 13.3, against the NT ratio of 7.6. The fertility rate is also higher than the Territory average of 2.5 compared with 2.15 respectively (ABS, 2014).
- Life expectancy in Mount Isa is 76.5 (ABS, 2006) compared with the national average of Queensland which is 81.5 (Queensland Health, 2009). In Mount Isa the mortality ratio is 10 per 1000, against a whole of Queensland ratio of 4.6. These figures can be contrasted with the national standardised death rate of 5.7.

6.4.1 Health and wellbeing

The (World Health Organisation, 2008) outlines 10 key determinants of health as being:

- **social gradient:** a person's social and economic circumstances
- **stressful economic and social circumstances** mean people are less likely to be healthy and have a long life
- **early years of life:** babies born with low birth weight have a much greater likelihood of developing coronary health disease in adulthood
- **social exclusion**
- **stress at work:** having little control over jobs, limited opportunities to use their skills or in high demand jobs with few rewards
- **unemployment, job and income insecurity** can lead to chronic stress
- **social support**
- **addiction:** misuse of alcohol, drugs and tobacco is harmful to health but is often a response to stressful situations and social breakdown

- **food security**, including good quality and affordable food
- **transport** is vitally important to accessing health and other services and, for Aboriginal people, a means to find traditional bush foods and hunting.

Remote Territory communities continue to reflect poorly against these factors, which impact on school attendance and employment. The NT Department of Health's 2013/14 annual report (Department of Health, 2014) outlines some of the risk factors contributing to poor health outcomes as:

- the prevalence of smoking, which is reported as being 56% for Aboriginal people aged 18 or more and 24.1% for non-Aboriginal people compared with 18.2% nationally;
- while Aboriginal adults are less likely to consume alcohol (50.3% in the previous year) compared with non-Aboriginal adults (90.2%), nearly 40% of Aboriginal people who reported drinking alcohol in the previous week had done so at risky or high risk levels;
- alcohol consumption during pregnancy (and the prevalence of foetal alcohol syndrome) is of particular concern, with one in eight Aboriginal and one in 16 non-Aboriginal women reporting at their first antenatal visit to have consumed alcohol during pregnancy;
- for admissions to hospital for circulatory disease, cancer and injury, there is a link to low socioeconomic status;
- recent research by the Department suggests the Territory's Aboriginal population has a much higher prevalence of dementia and younger onset of the disease compared with non-Aboriginal people.

The report shows that Aboriginal people (who make up 29.5% of the Territory's population) comprise:

- 70% of the Territory's hospital patients
- 93% of renal dialysis patients
- 34% of mothers giving birth in public health services
- 72% of government-managed remote health centre patients.

6.4.2 Health services

Health services across the Barkly are provided from Tennant Creek, which is in the NT Government's Central Australian Health Services region. These include:

- **Tennant Creek Hospital:** a 20-bed acute care hospital providing accident and emergency and outpatient facilities, a range of hospital services, clinics, allied health services, aged care and visiting specialist services. The hospital sees 14,000 patients a year (NT Department of Health, 2016).
- **Aero Medical Services** provides medical evacuation services including inter-hospital transfers, evacuations, and retrievals (NT PFES, 2016).

- **St John Ambulance** has a centre co-located with the Tennant Creek hospital and provides a single ambulance crew available 24/7 within a 150 km radius of Tennant Creek (St John Ambulance, 2016).
- **Royal Flying Doctor Services (RFDS):** From a medical evacuation perspective Avon Downs and Alpururulam are serviced by the RFDS and the Mount Isa Community Rescue Helicopter.
- **Anyinginyi Health Aboriginal Corporation** is an Aboriginal controlled multidisciplinary health service established in 1984 that achieved general practice accreditation in 2000. It provides primary health care and dental services to Aboriginal people in Tennant Creek and the surrounding region in addition to services such as community development, sport, alcohol after care and education. More than 2500 people access Anyinginyi's health clinic each year, with 90% of services and 80% of patients being Aboriginal. Anyinginyi is a Warumungu word meaning "belonging to us" (Remote Aboriginal Health Corps, 2010).
- **Alpururulam Community Health Clinic** is staffed by two nurses (NT Police, Fire and Emergency Services, 2016).

The services available in the Mount Isa Region include:

- **Mount Isa Base Hospital** has 24-hour emergency response and a broad range of medical services including surgery, intensive care, paediatric, allied health, mental health and visiting specialists (Queensland Department of Health, 2012).
- **General Practitioner** services including the Barkly Medical Centre.
- **Camooweal Primary Health Care Clinic**, a nurse led facility with 24/7 emergency support and hospital based ambulance coverage, telehealth services, visiting medical, community and allied health professionals (Queensland Department of Health, 2012).
- **North Queensland Helicopter Rescue Service** operates from a base at the Mount Isa airport.
- **Mount Isa Royal Flying Doctors Base** provides remote medical consultation, aeromedical retrievals and primary health care clinics incorporating general practice, child and family health, Aboriginal health, mental health and health promotion services (Royal Flying Doctor Service, 2016).

6.4.3 Mental health

There are several ways in which mental health is relevant to projects in remote areas, both in terms of the mental health challenges facing a remote workforce and its prevalence in regional areas with high levels of unemployment and disadvantage.

This issue was raised in SIA interviews by Mount Isa Council, with concerns expressed that youth suicide in the region was partly linked to drug use. A segment on the ABC *Lateline* program in 2011 (Timms, n.d.) found a high incidence of youth suicide in Mount Isa, particularly amongst the town's Aboriginal population.

Several studies have suggested links between suicide rates and youth unemployment. While

unemployment in Mount Isa in 2011 was 4.3% compared with 5.3% in the Northern Territory, the overall numbers are higher because of the region's larger population. A Brotherhood of St Laurence report in 2016 (Brotherhood of St Laurence, n.d.) found that unemployment rates of 28.4% for the Queensland Outback - including the Mount Isa postcode of 4825 - were the highest in the country.

Similarly, a report by the NT Select Committee on Youth Suicides in the Northern Territory in March 2012 (Select Committee on Youth Suicides in the NT, n.d.) found that youth suicide rates in the NT are 3.5 times the national average. The suicide rate for Aboriginal Territorians was particularly disturbing, with 75% of suicides of children from 2007 to 2011 being Aboriginal and about 50% of all suicides. Factors identified by the committee include mental health problems, drug and alcohol misuse, sexual and physical abuse, lack of employment, social and economic disadvantage, educational disadvantage and family issues.

The Australian Institute of Health and Welfare (2015) reports that:

- from 2008 to 2012 the suicide rate for Aboriginal Australians was twice the rate for non-Aboriginal Australians
- for 15-19 year olds, the rate was five times as high as for non-Aboriginal Australians
- the rate of community mental health service contacts for Aboriginal people was 3.2 times the rate for non-Aboriginal people.

Studies (Hoath & Haslam-McKenzie, 2013) found the main incentive for workers to commute long-distance to work are higher incomes and that most workers cope well with the lifestyle. However, there is a high level of uncertainty in managing workers' mental health, as many of the causes of depression may be family or other issues that occur away from the workplace. Likely worker issues to be managed include:

- loneliness and mental health issues for workers spending long periods away from their families
- mental health issues from alcohol and drug abuse and binge-drinking on days off particularly for cashed-up workers
- impacts on family wellbeing
- negative interactions with the local community.

6.4.4 Sexually transmitted diseases

The *Aboriginal and Torres Strait Islander Health Performance Framework NT 2014* reports high rates of sexually transmitted infections, with syphilis reported at 2.5 times the rate of other Territorians and gonorrhoea notifications 18 times higher. The Territory's Centre for Disease Control has expressed alarm at the rise in syphilis cases in Central Australia, the Barkly and Katherine, with 134 cases reported in 2015 compared with 15 the year before. Most cases had been found in young Aboriginal people aged between 15 and 35, but sexually transmitted diseases had been found in children as young as 12 (Hope, 2015, 7 July).

A Government health promotion website, carries the message: "There is a lot of syphilis getting about in the NT and most of the people who have it are Indigenous people aged 14-30 who live out bush in communities" (www.safesexnoregrets.nt.gov.au, viewed 28 August 2016).

The poster at the right is part of the campaign and was displayed in Territory health clinics during the period of research for this ESIA.

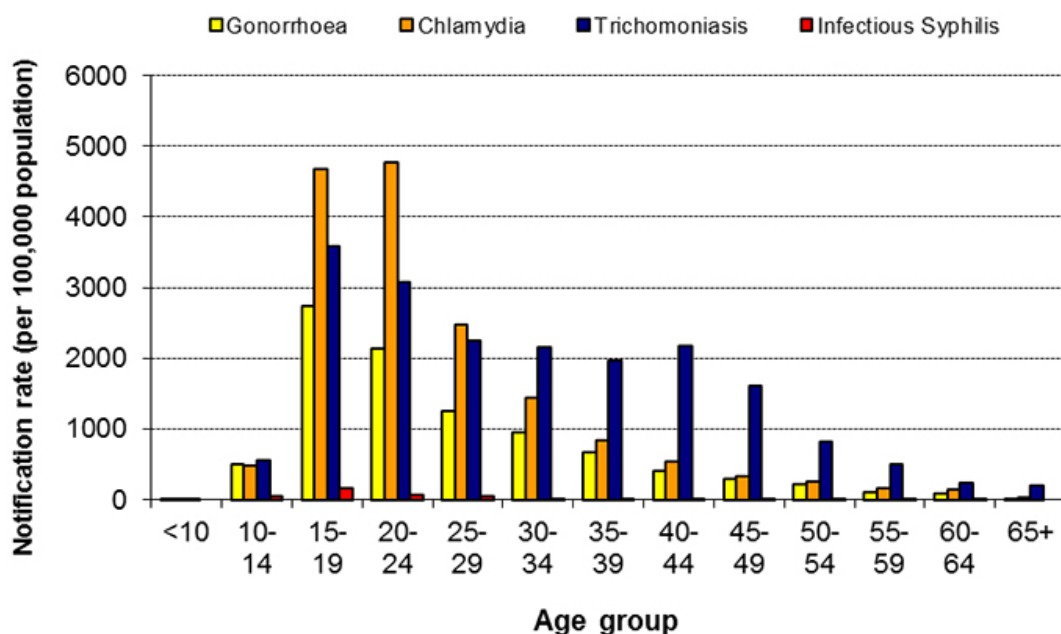
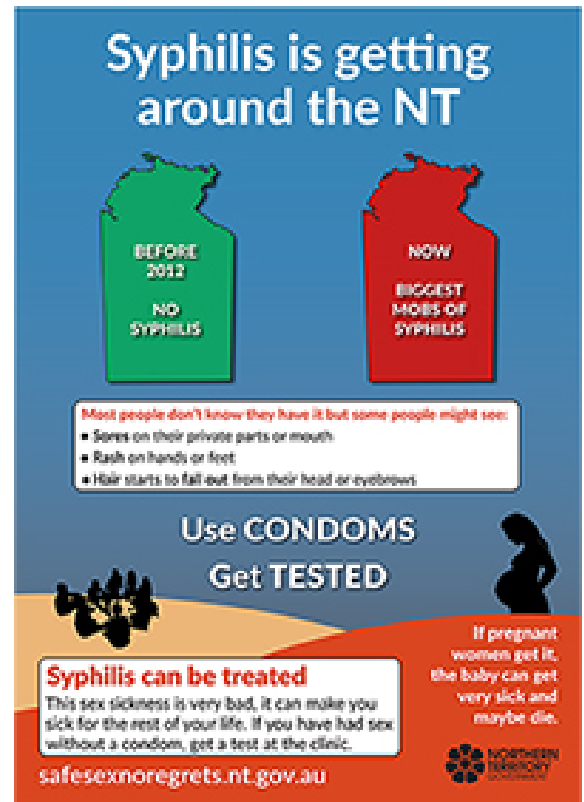


Figure 6-6 Notification Rates by Age Group 2014 (Data source: Northern Territory Sexual Health and Blood Borne Virus Unit Surveillance Update, Vol. 15 No. 2)

6.4.5 Crime and anti-social behaviour

Crime statistics are measured by the rate of offending per 100,000 of the population. Crime is reported in two forms: crime against the person and crime against property. In general, Tennant Creek recorded double the rate of the Northern Territory.

Tennant Creek recorded 7859 crimes per 100,000 for crimes against the person and 13,905 per 100,000 for crimes against property between 1 May 2016 and 30 April 2016. During this period, Tennant Creek showed an increase respectively of 1.2% and 56.6% in both categories, with a significant jump in property crime from the previous year. Most of the increase in property crime came from house break-ins (156% increase), commercial break-ins (90.2% increase) and property damage (64.8% increase) from the previous year. In terms of crimes against the person, there was a notable drop in sexual assault crimes of 84.8% from the previous year (Northern Territory Police, 2016).

Crime	Tennant Creek	Northern Territory
Crime against the person	7,859	3,281
Crime against property	13,905	7,742

Table 6-3 Comparison of crime rates per 100,000 population in Tennant Creek and NT

Compared with Tennant Creek, Mount Isa has a significantly lower per capita crime rate, with a rate per 100,000 population of 3162 crimes against the person and 6903 crimes against property. These rates are 1.6 times higher for property crime and five times higher for crimes against the person when compared with Queensland as a whole (Queensland Police Service, 2016).

6.4.6 Alcohol

A Tennant Creek Alcohol Management Plan (Tennant Creek Alcohol Reference Group, 2014) was produced by a Tennant Creek Alcohol Reference Group established under Barkly Regional Council President Barb Shaw to address alcohol-related harm in the town.

According to the plan, there are 10 retailers in Tennant Creek licensed to sell alcohol, including hotels, takeaway outlets, clubs and accommodation services, in addition to licensed social clubs. It found that alcohol consumption in the town was high, with the equivalent of 70,000 full-strength cans of beer sold each week in the town. Under the *Stronger Futures in the Northern Territory Act 2012*, areas such as parks and town camps are declared 'dry' areas.

The plan refers to concerns at the high rate of alcohol-related assault offences, harms from Foetal Alcohol Spectrum Disorder, normalisation of excessive drinking behaviours, negative economic impacts on the town and a reduced available workforce.

It reports a steady increase in alcohol-related crime in the 10 years from 2013 (police reported assaults tripling in that time to 539 in January 2014). The introduction of a range of measures saw a significant reduction.

Measures under the Alcohol Management Plan cover supply reduction, demand reduction and harm reduction.

One key measure introduced by the CLP Government in 2012 to replace the former Labor Government's 'banned drinkers register' was Police Temporary Beat Locations (now known as Point of Sale Interventions of POSI), where police are stationed outside all takeaway alcohol premises to deter people buying alcohol if it is likely to be consumed in declared 'dry' areas.

6.4.7 Emergency Services

Tennant Creek Police Station provides police services in the immediate Tennant Creek area, supported by police stations at Avon Downs and Alpururulam.

The Tennant Creek Fire Station is staffed by career, auxiliary and volunteer fire fighters. It operates under the Northern Territory Fire and Rescue Service Southern Command. It has one fully-equipped fire and emergency response truck, two light vehicles for fire-fighting and access to aerial support as required. It services Tennant Creek and the Barkly region and works closely with Bushfires NT and pastoral stations. Tennant Creek has 10 trained members in its Emergency Service Volunteer Unit (NT Police, Fire and Emergency Services, 2016).

There is a permanently manned and operational urban fire service in Mount Isa with two fire-fighting trucks that can operate concurrently. There is a rural fire service volunteer brigade in Mount Isa with a dedicated fire truck and large number of volunteers (Pers.com, 2016).

The rural fire service in Camooweal maintains a dedicated fire truck and has about 12 volunteers, three or four of whom can be available at any one time. There is additional firefighting capability from brigades on some of the pastoral stations surrounding Camooweal and Mount Isa (Pers.com, 2016).

6.4.8 Housing and accommodation

Tennant Creek

The existing housing stock in Tennant Creek comprises houses and semi-detached dwellings, flats and apartments. There were 1061 dwellings as of the 2011 census. Of these, 148 were being rented through public housing authorities and 54 through housing cooperatives. This is likely reflective of the large Aboriginal population and predominance of jobs in public administration in Tennant Creek which is an administrative centre for the Barkly region.

Of the dwellings recorded in the 2011 Census, 215 were classified as unoccupied private dwellings (unknown type), leaving a stock of 644 private dwellings. Of this 644, only 33 were rented through real estate agents indicating a very small pool of accessible private rentals.

This information is presented in the chart below.

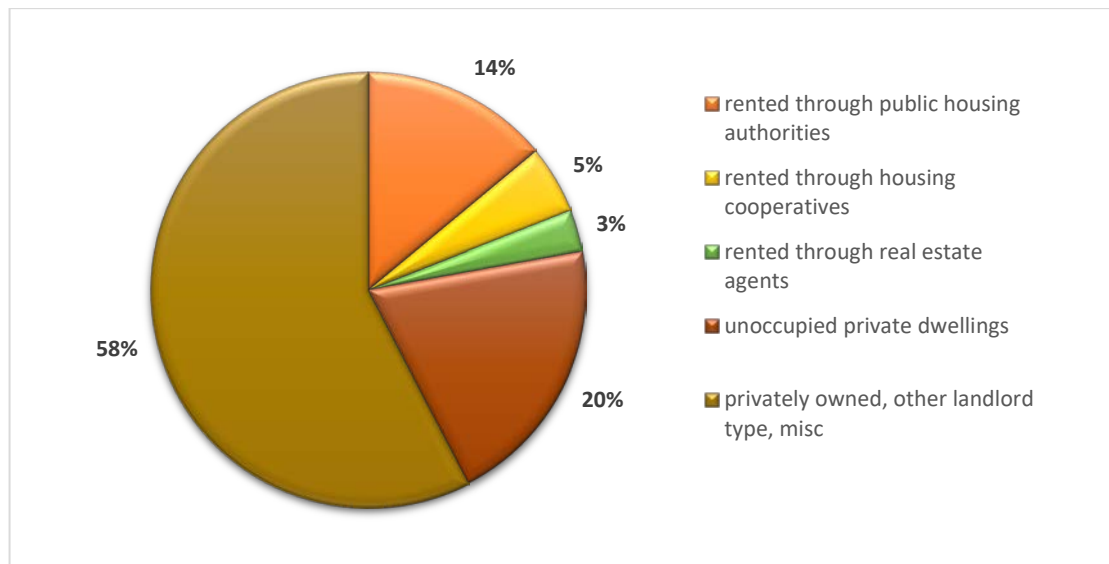


Figure 6-7 Tennant Creek housing stock by ownership type

Excluding housing rented through public housing or cooperatives, the stock of the 644 dwellings comprises:

- 482 houses.
- 36 semi-detached/townhouse style.
- 78 flats, units, apartments.
- 48 other dwellings.

Other dwellings include caravans, cabins, improvised homes, or house/flat attached to a shop.

Housing in Tennant Creek is relatively affordable in terms of mortgage repayments and rental costs, despite rising 13.2% a year over the past decade, the highest rate in the Territory. Despite this, house prices in Tennant Creek remain the lowest of the Territory's regional centres with a median price of \$365,000 in the March quarter of 2016 (Department of Treasury & Finance, 2016).

Discussions held with local real estate agents indicate a tight residential rental market but an ample supply of houses for sale.

In Tennant Creek the existing short term, commercial accommodation comprises an estimated:

- hotel/motel beds: 182
- caravan park cabins: 69
- hostel type rooms: 9

The caravan park and hostel type rooms are considered unsuitable for project accommodation without full messing facilities. So the 182 hotel/motel rooms reflects the current capacity of Tennant Creek to cater for a construction workforce, noting that these rooms will be of varying standards and further analysis is required to assess suitability.

Public housing in Tennant Creek

One of the key issues confronting Tennant Creek is overcrowded public housing, long waiting lists, ageing stock and insufficient funding for repairs and maintenance. This is a challenge across the Northern Territory with threats of legal challenges against the NT Government's failure to maintain public housing stock at the standard required by the *Residential Tenancies Act* (see media releases at alrar.org.au/media-releases/ sighted 25 August 2016) (Australian Lawyers for Remote Aboriginal Rights, n.d.).

In April, the then Housing Minister Bess Price announced a review into the Territory's town camps, covering housing, maintenance, lease arrangements, economic opportunities and governance. (Garrick, 2016)

Public Housing in Northern Territory urban areas is managed by the Department of Housing, including town camps in Tennant Creek and Alice Springs. Public housing in remote areas, homelands and town camps in urban areas other than Tennant Creek and Alice Springs is managed by the Department of Community Services. Both departments (merged under the new Labor Government) sub-contract property and tenancy management to a range of organisations.

In Tennant Creek, the Julalikari Aboriginal Corporation lost control of public housing to the Department of Housing in 2008 but held the contract to provide services to Tennant Creek town camps (or community living areas) until 2015, when the contracts were transferred to private sector organisations.

Various reports have expressed concern at the standard of public housing in Tennant Creek. A report by the Australian Housing and Urban Research Institute (AHURI) released in March 2016 (Nash & Memmott, 2016) found that government had not built a new house in Tennant Creek for 30 years, waiting times for social housing ranged from five to eight years, cultural obligations often conflict with tenancy rules and the housing crisis was compounded by other factors of Indigenous disadvantage that characterise the region such as the high level of alcohol abuse and family violence in Tennant Creek.

The AHURI report referred favourably to a staff housing model adopted by Anyinginyi Health and special tenancy programs run by Anyinginyi and the Barkly Regional Alcohol and Drug Abuse Advisory Committee (BRADAAG). It found the demise of the Council of Elders and Respected Persons (CERP) and the reduced role of Julalikari in tenancy management had 'destabilised the effectiveness of Indigenous governance in Tennant Creek'. The report referred to tensions between Aboriginal organisations in Tennant Creek influencing decision-making processes and expressed disappointment at Julalikari not taking part in the study.

The report's authors were told of a high demand for relatively few private rental properties in Tennant Creek, particularly for more affordable dwellings. Many of these properties were beyond the reach of Aboriginal people whose income often derives from social welfare payments. In addition, Aboriginal people were less likely to have strong rental histories or sufficient money for a bond.

While houses in community living areas (town camps) had been rebuilt or refurbished under the Strategic Indigenous Housing and Infrastructure Program (SIHIP), the report found resentment from other social housing tenants that their houses had not been included. It found that just over 70% of all rental households in Tennant Creek are Aboriginal and 68% of Aboriginal renters are social housing tenants.

A ten-year housing affordability report card produced in July 2016 by non-government organisation NT Shelter (NT Shelter, 2016) found that the NT is the second least affordable jurisdiction in Australia in which to rent a property. In relation to Tennant Creek, it found that public housing wait times have increased by between 250 and 387% over the past 10 years and by between 53 and 92% in the past three years. There was an 87-month waiting time in Tennant Creek for a one-bedroom unit, 71-month waiting time for a one-bed pensioner unit, 65-month waiting time for a two-bed unit and 70-month waiting time for a three-bed unit.

Similarly, a report by the NT Public Accounts Committee released in May 2016 (Public Accounts Committee, 2016) outlines the complex leasing, tenancy and property management situation applying to 78 houses in seven community living areas (town camps) in Tennant Creek and was critical of the standard of repairs and maintenance carried out on all public housing in the Territory's town camps.

During the recent NT election campaign, both major parties vowed to commit substantial funds to addressing these issues. Territory Labor, which won a landslide victory in the August 2016 election, released a housing policy (Territory Labor, 2016) that commits to providing "appropriate housing with appropriate design to ensure that housing addresses the real needs of people". Labor committed to spending \$1.1 billion to lift the amount of housing, living space and rooms in remote communities including a HomeBuild NT program, in addition to funds from the Australian Government.

Mount Isa

Mount Isa's private housing stock comprises a broad range of houses, semi-detached dwellings, and flats and apartments. Relative to the whole of Queensland current house sales prices are lower in Mount Isa, renting a unit is cheaper but renting a house is slightly more expensive.

There were 6960 private dwellings recorded in the 2011 census. Of these, 553 were public housing rentals, 29 of them rented through housing cooperatives, while 674 were classified as unoccupied private dwellings, leaving a private stock of 5704 (ABS, 2013). Of these, 931 were rented through real estate agents, indicating a ready supply of private rentals.

The annual median sale price in Mount Isa was \$325,000 (Queensland, 2016). Over 10 years to December 2015, the median house price in the Mount Isa Local Government Area rose from slightly above \$150,000 to about \$320,000 (Queensland Government Statistician's Office, 2016).

Conversations with local real estate agents in Mount Isa suggest the rental market is adequately supplied, with sales of residential houses and units slowing and prices softening.

Commercial Accommodation

In Mount Isa the existing short-term commercial accommodation comprises an estimated:

- 561 hotel/motel rooms
- 189 budget rooms
- five caravan parks with an unknown number of cabins (Mount Isa City Council, 2016).

The budget category includes one accommodation provider of rooms and messing that is used by resources workforces. Similarly, the caravan parks noted above includes providers who maintain workforce type accommodation and services. This reflects the dominance of the resource industry in the town.

6.4.9 Community and social infrastructure, human services

Given the short-term nature of the NGP project, limited impact and demand is likely for community services and infrastructure (aged and youth, community halls, libraries, recreational, entertainment and cultural facilities). There may be some additional demand for social infrastructure (housing, education, healthcare, corrections, transport, utilities) and potential additional demand on human services (such as crisis support, social workers, child welfare and counselling). Key services have been covered above. Based on a risk and opportunity assessment, the remainder are covered only in general terms in this ESIA.

Most relevant to this project is the capacity of existing social infrastructure such as health, police and housing; potential demand from the project; and the capacity of existing services to absorb additional demand.

Social infrastructure is defined as “the community facilities, services and networks which help individuals, families, groups and communities meet their social needs, maximise their potential for development and enhance community wellbeing”. It is essential for the health, wellbeing and economic prosperity of communities, playing “an important role in bringing people together, developing social capital, maintaining quality of life and developing the skills and resilience essential to strong communities” (Office of Urban Management, 2007).

Services include Barkly Youth Service, which plays a key role in providing services to youth people, such as the Equine Assisted Therapy program. Anyinginyi Aboriginal Corporation runs a number of services in addition to its primary health care services. These include a Stronger Families program, Women’s Centre, Men’s Centre, Better Choices program for Aboriginal students, Aboriginal Young Men’s Positive Engagement Program, family support services and an Alcohol and Mums program (Anyinginyi Aboriginal Corporation, 2016)

The Barkly Region Alcohol and Drug Abuse Advisory Group (BRADAAG) was established in 1982 as a community-based group to address alcohol and other drug issues in the Barkly region. It provides a range of rehabilitation and education programs, including a sobering up shelter and rehabilitation program in Tennant Creek.

Other community infrastructure in Tennant Creek includes childcare and a women’s refuge.

6.4.10 Community cohesion and resilience

Community cohesion and resilience can be impacted by a major project, particularly for a small community and particularly if existing cohesion (strength of community networks and relationships) is weak and the scale of impact overwhelms a community’s resilience, or ability to bounce back.

A key issue when referring to a community’s resilience is the strength of its social ties and community organisations. For a small town of its size, Tennant Creek has a large number of community and cultural groups (see below under Culture and Heritage in Section 8), many of them Aboriginal controlled; however, some fractures in community cohesion were evident during interviews.

A 'community' like Tennant Creek, of course, is not homogenous. The term 'community' can range from a broad group that shares a common interest or sense of identity to a small group where everyone is known to each other (Australian Bureau of Statistics, 2004). For this ESIA 'community' will be referred to as a place designated by geographical or administrative boundaries that functions under the jurisdiction of a governance structure, such as a town. It will describe people who have affiliations as a result of shared interests or a shared identity based on culture, location, history, population or employment. Successful communities provide their members with the means to meet essential needs and to pursue their interests and aspirations.

Community cohesion may be described as a state of harmony and shared sense of belonging and shared vision between people living in a defined community based on the strength of networks and relationships. Jemena wants to ensure that the project does not negatively impact on community cohesion.

The term resilience is defined as the ability to persist (i.e. to absorb shocks and stresses and still maintain the functioning of society and the integrity of ecological systems) and the ability to adapt to change in the face of unforeseen circumstances and risks (Adgar, 2003). Given that the impacts deriving from the Project may be both negative and positive, the definition of resilience must reflect not only the community's ability to resist and withstand negative impacts, but also the community's ability to adapt to positive change and emerge in a better state as a result.

Given the short duration of this project, the focus on community cohesion and resilience is designed to understand how it might be materially affected by the NGP. However, longer-term, a good understanding of the Mount Isa and Barkly Regions will contribute to Jemena's social performance for the duration of the project.

Change events that could lead to impacts on community cohesion and resilience include the potential influx of young, single workers with no ties to the community changing the composition of populations and interacting negatively with the community, such as binge drinking or taking drugs on days off, which was a concern raised in particular by Queensland and Northern Territory Police and other government stakeholders during SIA interviews. Other impacts may flow from higher disposable incomes circulating in the community, conflict over aspects of the project (such as fears the project will be an enabler for onshore gas exploration and production), perceived inequitable distribution of benefits and impacts on amenity, such as noise, dust and worker behaviour.

The Scanlon Foundation Scanlon-Monash Index of Social Cohesion (SMI) was used to broadly measure the social cohesion of Tennant Creek and Mount Isa. Results from the SMI index are a tentative indicator of the community's level of resilience, given the complexity of assessment and subjective measurement of these issues.

Of the five indices used to identify social cohesion in the SMI Index, the first three can be likened to the foundation elements of Maslow's hierarchy of needs (Scanlon Foundation, 2016). Community members must feel a sense of worth, acceptance and social justice in order to have a good foundation of social cohesion.

Scope and methodology

The use of the SMI index as a measurement of social cohesion in Tennant Creek and Mount Isa is intended to broadly highlight key areas of concern, which may call for either closer attention or analysis. The survey was conducted during social impact consultation and was done face-to-face and

over the telephone. The survey comprised of five questions, one for each of the indices. A selection of two to three questions was prepared for each index, and the appropriate question was picked that best related to the stakeholder and their context.

SMI 1: sense of worth

‘Sense of worth’ measured the extent to which the individual, organisation or community was generally happy with their financial situation in the past 12 months. In Tennant Creek, some individuals, all organisations, government departments and businesses interviewed expressed unhappiness with their financial situation. This has been affected by cuts to government funding across all services. The town is largely welfare dependent, and relies on the functioning of government departments and non-government organisations. Due to funding constraints, local organisations interviewed were sensitive to increased pressure on services such as housing and healthcare and possible prolonged financial constraints.

Similarly, in Mount Isa, organisations, government departments, businesses and individuals indicated unhappiness with their financial situation. This is due to a mixture of decreased government funding and the mining downturn, which has negatively impacted on local employment and businesses. This has caused a general decline in the socioeconomic health of the community. Because Mount Isa is heavily dependent on government funding and mining, the general quality of services has diminished and local business (including the real estate market) has suffered. Interviewees reported an issue with youth unemployment, particularly with Aboriginal people and referred to the town’s high rates of youth unemployment (see 6.4.3)

SMI 2: social justice and equity

‘Social Justice and equity’ measures the extent to which stakeholders believe there is a small gap between low and high incomes, as well as the level of economic opportunity that exists for these groups. It also measures the extent to which people feel strong trust for the government. Tennant Creek is a service town with a high dependence on welfare, giving a pre-indicator of a significant gap in incomes. There are high levels of unemployment, mostly among the Aboriginal population, meaning the income gap is likely to correlate with the number of people in jobs.

The level of economic opportunity in Tennant Creek is low and most jobs are with local NGOs, government departments and the Australian Government’s JobActive and Community Development Program. This means the local economy is driven by government spending, so reduced funding combined with the town’s dependence on it results in low trust in government. Interviewees expressed strong concern that the government falls short of its commitments. There was a general lack of trust in the Australian Government’s job programs, other local government funded programs and government departments. A general view was expressed that government engages in “box ticking” exercises and there is wastage in the provision of services. There was little hope that this would improve with a new NT Government.

Mount Isa interviewees expressed slightly more optimistic sentiments on social justice and equity. Stakeholders felt Mount Isa has a large incomes gap. The dominance and history of mining in the town has created extremes. The mining industry generally pays much higher incomes than local businesses, government and the welfare system, which in turn increases the disparities. As with Tennant Creek, the disparities occur mostly between Aboriginal and non-Aboriginal people, arising from lower Aboriginal participation in the job market.

SMI 3: acceptance and rejection, legitimacy

This measures if new members of the community (e.g. an influx of workers) would feel accepted and legitimate in the town. It looks at the extent to which community members feel that the influx of workers would not be an issue. It also measures the extent to which they feel the community's customs and traditions will continue and whether life in the next three or four years will be better for the community.

In Tennant Creek, based on interviews, acceptance and legitimacy measured low. There was concern that the influx of workers would threaten community wellbeing. A large and uncontrolled influx of workers would exacerbate existing tensions and put pressure on government and NGO services. There was a strong belief that deliberate management of the influx of workers and contractors, was needed to ensure the community benefitted from the project. Furthermore, stakeholders were concerned about increased antisocial behaviour arising from misuse of alcohol and drugs and the consequences of sexual activity between workers and local people. Stakeholders were dubious about the town's ability to support workers who choose to stay after the project is finished as this may put further pressure on services if people don't have work. Interviewees suggested the town's social and economic wellbeing has declined over recent years and they had little hope the town will be better in the next three to four years.

In Mount Isa acceptance and legitimacy was moderate. While an influx of workers would negatively affect the wellbeing of the community in areas such as employment and contract opportunities and increases in drug abuse, the NGP is generally seen as contributing to the local economy. It was also believed that an influx in workers would dramatically increase the cost of airfares, resulting in a decrease in tourism and increased cost for residents who frequently fly to other cities for medical treatment. However, due to the long mining history of the town, residents are accustomed to the regular influx of workers. They believe more people in the town will boost a struggling real estate market, local events, local businesses and tourism which have all been built around the mining industry. It is also seen as a way to keep local people from leaving the town to seek better opportunities elsewhere. While there is a general sentiment that the town has declined over the past few years, there is hope that things will improve once the commodity prices recover. Community leaders are committed to making Mount Isa a liveable town in the next two to three years.

SMI 4: sense of belonging

This measured the extent to which community members feel proud to be part of their community, and how important it is for them to maintain their way of life, culture and traditions.

In Tennant Creek, a 'sense of belonging' measured highly. Despite some tensions, it is a close community and strong cultural ties remain, particularly among Aboriginal people. Culture was a recurring theme in interviews, indicating the importance of maintaining the town's way of life, culture and traditions. This was particularly conveyed by the community's desire for cultural awareness and cultural protocols to be recognised and respected by both residents and visitors.

Many stakeholders emphasised the need to have Aboriginal liaison officers and/or consultants to advise on cultural protocols and respect. Some interviewees felt that culture was being threatened by individualism and that Aboriginal people have to find a balance between traditional and western cultures. Despite some evidence of tensions between some community leaders, there were strong aspirations to build on the town's culture, pride and community events.

In Mount Isa, 'sense of belonging' rated moderately. The value of culture is not as evident as in Tennant Creek, therefore the need to uphold community culture and traditions does not rate highly; however, interviewees still expressed the view that the town's lifestyle should be respected through a worker code of conduct. The sense of pride in Mount Isa is generally less evident, as people are usually in the town for a specific purpose in the short to medium term (e.g. employment, family or healthcare) then they leave. Residents reportedly find it difficult to retire in the town due to a lack of support services for the elderly, consequently there is a lower proportion of older residents and higher turnover of working age residents. This mobility is likely to mean a lower investment in the community's long-term wellbeing, providing a weaker sense of belonging. However, a small core group of people consider themselves permanent residents of Mount Isa, creating a strong sense of belonging and belief in the importance of greater community cohesion, for example interviewees from key institutions such as Mount Isa City Council and the Chamber of Commerce North West. Another negative factor is Mount Isa's high youth suicide rate (see 6.4.3), which may indicate a lower level of a sense of belonging by the town's (particularly Aboriginal) youth. Furthermore, due to the long history of mining, residents are accustomed to large projects, which makes residents adaptable when it comes to maintaining their way of life. This is evidenced by the way that the city has grown up right next to the mine and lead and zinc smelter.

SMI 5: participation (political)

This measured the extent to which community members feel it is important to participate in voting, protests or speak to a Member of Parliament on issues of concern.

In Tennant Creek, residents are highly engaged on issues that matter to them, probably influenced by the large sector of government and non-government service providers. This is demonstrated by the participation of community members on issues relating to the unconventional gas industry, as well as speaking out about the decrease in funding and inadequacy of services in the town. This drives residents to be highly engaged with politicians through forums, newspapers, petitioning local members, voting in elections and supporting local movements around matters of community concern.

In Mount Isa, participation is moderate. A core group of residents is vocal on issues that matter to them; however, political participation is relatively lower than Tennant Creek and fewer tensions were expressed in interviews. This may be due to the large transient population of Mount Isa and smaller public administration sector.

6.5 IMPACT ASSESSMENT FOR COMMUNITY, HEALTH AND WELLBEING

6.5.1 Community cohesion and resilience

A number of project activities are predicted to have direct or indirect impacts on community cohesion and resilience, some of which are short-term and out of Jemena's control, making it difficult to provide definitive predictions.

These include the risk of inter and intra-family conflict in Aboriginal communities over land access negotiations and whether the distribution of benefits is equitable, including jobs with the project (risk references #7, 23 and 26). The experience of other Territory projects suggests this type of conflict can lead to reduced social cohesion beyond the life of a project. Accordingly the inherent risk (without mitigation) is assessed as **SIGNIFICANT**.

To help manage this risk, Jemena is following a statutory process and working through Land Councils, Native Title representative bodies and prescribed body corporates and other relevant Aboriginal corporations. The distribution of benefits will be managed by these organisations in accordance with their established practices. These processes should reduce the residual risk of conflict under risk #7, 23 and 26 to **LOW**.

During SIA interviews, it was apparent that there is substantial community division and concern over issues related to onshore oil and gas exploration, in particular the practice of fracking (risk # 82). While the proponent is responsible only for infrastructure that carries gas, it was clear that some people see the NGP as increasing the likelihood of fracking in the Territory. There are also tensions between some groups as to whether the economic benefits outweigh perceived environment risks. The inherent risk of conflict over this issue is assessed as **SIGNIFICANT**.

The new Labor Government has committed to a moratorium on fracking, pending a scientific review of the issues and community consultation. Jemena will continue to engage with the broader Tennant Creek community and directly with Traditional Owner groups and other Aboriginal people to explain the nature of the project, such as sources of foundation and future gas, and that the NGP is a transporter of gas and not a producer. Jemena will explain that approval of any onshore gas projects would be made separately to any regulatory approvals of the NGP. The proposed community reference group (CRG) would also be a vehicle for communicating on this issue.

Jemena will engage directly with special interest groups concerned about fracking to understand and respond to any concerns as much as is reasonably practicable.

The expected effectiveness of the above communication program would result in a far greater understanding of the nature and purpose of the NGP and how it relates to the onshore (conventional and unconventional) gas industry. While community concern about the issue may not be completely addressed it would certainly be alleviated, so the residual risk is expected to be **MODERATE**.

The higher disposable incomes of workers may lead to higher rates of alcohol and drug consumption, leading to anti-social behaviour, crimes against people and property, and consequent negative interactions with the criminal justice system. Police in Mount Isa, Camooweal and Tennant Creek all expressed concern at this potential risk and referred to binge drinking by workers on rostered breaks from other projects (see also 6.5.3). This can in turn place greater pressure on health and other community services (risk #24 for Tennant Creek and #25 for Mount Isa). Support from Community Liaison Officers (both from Jemena and the Aboriginal organisations), relevant training modules in the Project Ready Training Program and a code of conduct for workers will help mitigate the risk of workers causing problems in towns on their rostered days off. The inherent risk rating for these risks was **SIGNIFICANT** and while reduced to **MODERATE** after the above mitigation measures, indicates the need for this risk to be continually managed throughout the Project.

6.5.2 Community amenity

Mobilising a large workforce and accommodating largely single, male workers with no ties to Tennant Creek in the town was predicted as highly likely to change the demographic composition of towns in the region, particularly Tennant Creek, with implications for community amenity. This had an untreated risk rating for risk (#36) of **SIGNIFICANT**. The key mitigation strategy will be the temporary construction camp at the PCCS, combined with a code of behaviour, particularly for the workers using commercial accommodation in town, which reduces this risk to **LOW**.

Other amenity impacts include issues that impact on people's enjoyment of their surroundings, whether home, work or leisure. Given that the project is planned for a remote, sparsely populated region, where 97% of the population lives in Mount Isa or Tennant Creek, these impacts are most likely to affect the homelands and pastoral properties nearest the project footprint. For example, Pukalki Outstation is about 3 km south of the pipeline route and Austral Downs homestead is about 3.5 km north of it. Pastoral properties interviewed for this ESIA expressed concerns that additional traffic, noise, dust, vandalism and the presence of workers in construction camps could affect the amenity of their properties or lifestyle.

Other potential amenity impacts include #83, which refers to the visual impact of construction activities along the ROW, e.g. ROW clearing activities and during the operations phase, from the visual impact of the compressor station flare stack. Both of these had inherent and residual risk ratings of **LOW**, given the short term nature of construction and the remoteness of the activities including the PCCS.

6.5.3 Crime and antisocial behaviour

In addition to impacts on community cohesion, associated impacts would be (risk #25) workers from remote communities gravitating to centres such as Mount Isa and Tennant Creek during rostered work breaks to spend their income on drugs and alcohol, leading to increased antisocial behaviour, fights and domestic violence. Feedback during ESIA interviews suggested that, based on past experience, some of these people may not return home or may abandon their jobs. Interviewees referred to alcohol-related violence around major regional events such as the Tennant Creek and Mount Isa annual shows and rodeo circuits or financial windfalls such as land agreement payments. Due to the potential consequences for community cohesion, the inherent risk was assessed as **HIGH** for Tennant Creek (#37) and **MODERATE** for Mount Isa where the scale of change will be less given the larger population (risk #43). Nonetheless, this indicates the need for this risk to be continually managed throughout the Project

Given that this is a significant issue that already occurs frequently, Jemena's ability to influence community behaviour around these events will be limited. Jemena will incorporate appropriate modules in its Project Ready Training Programs (see section 9.11.5), to provide support in the workplace (for example through the Local and Indigenous Participation staff and Community Liaison Officers) and to establish clear codes of behaviour for workers. It will work with agencies in Tennant Creek and Mount Isa to develop strategies that support healthy worker behaviour on rostered breaks.

The residual risk for this factor will depend to an extent on the level of local employment and how benefits payments are used, however the residual risk rating remains **MODERATE** for both, again indicating the need for this risk to be continually managed throughout the Project.

Another potential risk (#30) is break-ins at the Tennant Creek pipe laydown yard, located at the old abattoir site on the Stuart Highway north of Tennant Creek. A concern was that people who engage in petrol sniffing might seek to obtain this from the yard. Mitigation measures, such as a good security plan, reduce this risk from **SIGNIFICANT** to **LOW**.

6.5.4 Road safety

The relatively large amount of construction traffic and pipeline transport (#28, 28, 31) increases the likelihood of industrial traffic coming into contact with local and tourism traffic, resulting in road accidents and trauma, particularly in higher speed zones. This traffic could also increase road safety risks in Tennant Creek due to the presence of school children crossing roads or with people wandering on the road, particularly at night. Consideration was also given to the risk of drive-in drive-out workers commuting to workplaces such as the PCCS or the ROW construction camps adding to the number of vehicles on the road, which is particularly risky if they drive while tired after long shifts (#32).

Emergency services and pastoralists expressed a concern that community members living near Alpururulam often travel to Mount and Camooweal for bulk purchases of alcohol, either making use of project access tracks or crossing them. It was suggested this be addressed through a road safety education campaign specifically with Alpururulam community.

These risk are addressed in traffic management plans and by limiting the use of private vehicles to commute to workplaces. Jemena will adopt suggestions from interviewees on issues such as the timing of heavy vehicles through the centre of Tennant Creek.

The ratings of **MODERATE** remained for industrial traffic risks because, while a traffic management plan might reduce the likelihood, the severity of any crash could be extreme. The rating for workers (#32) reduced from **SIGNIFANT** to **MODERATE** given the proposed controls, indicating the need for this risk to be continually managed throughout the Project.

6.5.5 Housing and accommodation

Housing and accommodation impacts are likely to reflect the vastly different accommodation availability in Tennant Creek and Mount Isa. For example, there are an estimated 182 commercial accommodation beds in Tennant Creek compared with 561 in Mount Isa. There are an estimated 33 private properties available for rent in Tennant Creek compared with 931 in Mount Isa, reflecting the downturn in mining in that town. Compounding the difference, there will be a greater demand for accommodation in Tennant Creek, which has less capacity to cater for it.

Jemena plans to build a temporary workers' accommodation camp at the PCCS, potentially for up to 300 workers, both local and FIFO. It is expected that 50 workers will need to be accommodated in April 2017, rising to a peak of 275 in the second and third quarters of 2017.

Given the estimated 182 beds available in Tennant Creek's hotels and motels, accommodating all workers in Tennant Creek was seen as likely to saturate available commercial accommodation and displace other activities, such as tourism, government services, other industry and major community events. So the aim will be to find a balance between generating economic benefits, by spending money on accommodation and having increased local wages circulating through the economy, while quarantining Tennant Creek from detrimental impacts such as inundating the town with young, single male workers and taking up all available beds.

Using construction camps to cater for a short-term, large transient workforce for projects near towns is standard practice in the resource industry. Examples include the Howard Springs workers' village used for INPEX's LNG plant in Darwin and iron ore mining areas of the Pilbara in Western Australia.

Workers at the pipe laydown yard and in management and administration positions will be accommodated in Tennant Creek in existing commercial accommodation, or if local residents, in their existing homes. The demand for Tennant Creek is expected to be between 30 and 65, over the period April 2017 through April 2018.

These measures are expected to reduce risk #61 in Tennant Creek from **HIGH** to **LOW**. In Mount Isa, where pressures on accommodation are likely to be more easily absorbed, risk #67 remains **LOW**.

As well as impacts on commercial accommodation, Jemena is conscious of the potential of a large project to distort the housing market in a small community, impacting on the affordability and availability of housing. A large number of workers seeking private accommodation in Tennant Creek could have an inflationary impact which needs to be managed (risk #63 for Tennant Creek and #64 for Mount Isa). Given the experience of other projects, where an influx of workers can push prices up in the private market, these risks were assessed as **MODERATE** before mitigation. The residual risk ranking of **LOW** was based on the mitigation strategy of using a work camp to accommodate the compressor station construction workforce, while the small operational workforce of six is expected to be readily absorbed in the Tennant Creek market.

These workers may be local residents, capitalising on the new job opportunities in town. Should they be recruited from elsewhere, these workers and their families would boost economic activity in Tennant Creek by living and spending wages in the town.

Pipeline construction crews will live in camps along the pipeline route for the duration of their rosters and will be flown out on charter flights at the conclusion of rosters, so will have little or no impact on town accommodation.

Figure 10 below shows the expected demand and where workers will be accommodated.

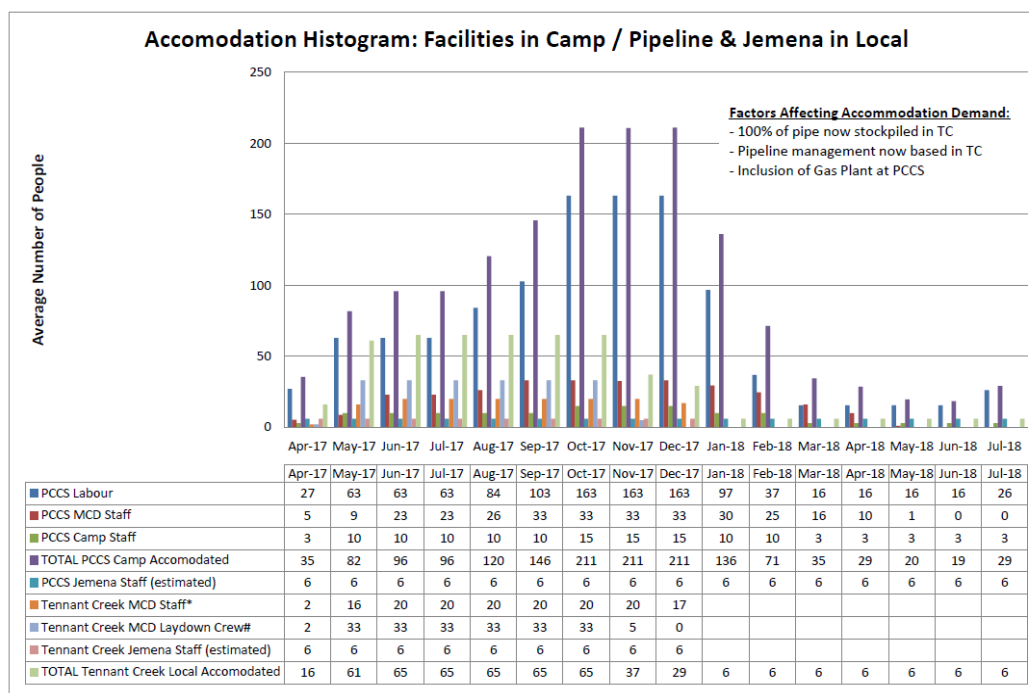


Figure 6-8 Accommodation histogram (Source: McConnell Dowell)

Mount Isa

The NGP construction accommodation demand for Mount Isa is likely to be about half that for Tennant Creek, due to the differing designs of the two compressor stations. At peak, the construction crew at Mount Isa is expected to have 110 workers. Given the bigger labour pool in Mount Isa (see 7.2.4), the proportion of FIFO workers requiring commercial accommodation is also likely to be lower than for Tennant Creek. The existing commercial accommodation in Mount Isa will be more than sufficient to absorb the demand.

It is expected that about four people will live in Mount Isa for the operations phase of the project who may well be existing residents. Even if these staff come from elsewhere and need to rent or buy existing houses, semi-detached dwellings or flats/apartments, any impact is likely to be indiscernible.

For further discussion on economic opportunities and risks relating to accommodation see Sections 7.4.2 (opportunities), 7.4.5 (displacement impacts for other sectors) and 7.4.8 (inflationary pressures).

6.5.6 Public housing and overcrowding

The key risks to public housing lie in the high level of overcrowding and low vacancy rates, particularly in Tennant Creek (risk #85). There is no capacity to absorb any increased demand, which could happen

if people return to the town or seek to live with families in public housing while applying for jobs. Given the family links and mobility of Aboriginal people in the region (including Dajarra, Mount Isa, Borroloola, Camooweal, Alpurrurulam, Wonara, Burudu, Elliot and further afield) the workforce is likely to include people returning with their families to live in Tennant Creek because of the project. Even if these workers live in workers' accommodation or the mobile work camps while on roster, they may expect to live in Tennant Creek on days off, putting pressure on the housing market.

Interviewees in ESIA interviews were particularly sensitive to this issue given the poor standard of public housing in Tennant Creek and the high level of need.

The extent to which this is a problem depends largely on the source of workers for the project and for many the expectations of people who might move in anticipation of work.

Mitigation is problematic given the fluid nature of people's movements to seek work and where they wish to return to during rostered breaks and so Jemena's ability to influence this is limited. Nonetheless, with a focus on employing locals who are ordinarily resident in the towns and implementing the practice of returning workers to their normal place of residence for rostered breaks, will assist in this regard. Given the expected number of workers, the construction phase rosters (23 days on and 9 days off) and the short term nature of the project, i.e. less than 18 months, the potential impact will be reasonably limited.

The inherent risk here was ranked as **MODERATE**, and with mitigation, **LOW**.

Other pressures could come from higher rental prices causing a displacement of private tenants into public housing because of inflationary pressures on the private market. The aforementioned accommodation of workers in construction camps will obviate this risk significantly.

6.5.7 Health services

Health services in Tennant Creek, Camooweal, Alpurrurulam and Mount Isa are provided by a mix of government and non-government agencies, including health clinics, hospitals and aeromedical services.

Key increases in demand could come from additional families moving to the towns, seeking primary health care support, an increase in demand for workplace medicals, pressure from any increase in crime and substance abuse and any incidents requiring an emergency response.

Jemena will provide its own workplace medical services, including pre-employment health checks, and implement safety management and general medical protocols, with a **MODERATE** risk rating (#34) for Tennant Creek, however some increased demand is still likely, leading to a residual rating of **LOW**. For Mount Isa both inherent and residual risk ratings (#40) is **LOW**.

6.5.8 Emergency services

Key issues for emergency services would be additional bushfires, crime and road trauma because of the project. Interviews for the ESIA outlined current emergency response capability as being limited and not likely to cope with significant demand for increased workloads. This is exacerbated by the remoteness of the region, relatively small staff numbers and the time it takes to respond to any emergency. It was pointed out in interviews that it would be particularly difficult accessing parts of the project areas because of boggy soils after heavy rain.

Emergency services suggested Jemena liaise with them during days of high fire danger and suggested sufficient fire breaks be built around mobile workers' camps for better protection of workers in the event of a bushfire.

Jemena will liaise with emergency services to develop an Emergency Response Plan and manage emergency response on the project to the extent of its capacity and will rely on local emergency services for events beyond its capacity. It is predicted that the inherent and residual risk ratings of this will be **MODERATE** for Tennant Creek (#35) and **LOW** for Mount Isa.

See Section 6.5.4 for road safety implications.

6.5.10 Municipal services

In general, the project is unlikely to have an impact on demand for municipal services due to its short-term nature and accommodation of most workers in construction camps, where all services will be managed by Jemena and its contractors. The inherent and residual risk rating for Mount Isa (#45) was **LOW** while for Tennant Creek (#39) it reduced from **MODERATE** to **LOW** by implementing an accommodation plan that minimises impacts on municipal services.

The key way in which municipal services could be impacted would be from loss of staff to the project, particularly if it is difficult to backfill the positions, making it harder for Barkly Regional Council and Mount Isa Councils to provide services. Competition with project recruitment could also put pressure on wages, thus increasing costs. In the Barkly region, ESIA interviewees referred to difficulties recruiting staff now. It is not a risk that Jemena will have much control over but is considered both likely and detrimental so Jemena will keep organisations informed of its recruitment schedule to help them plan for short-term pressures on staffing.

The inherent and residual risk ratings for losing workers in the Barkly (#56) and impacts of higher wages (#57) were assessed as reducing from **SIGNIFICANT** to **LOW** through controls such as good communication with councils. The risk for Mount Isa was considered immaterial given the town's bigger labour force and already higher wages.

6.5.11 Other community and social infrastructure, human services

Apart from potential impacts on social infrastructure such as housing and health, the project's short duration and focus on accommodating workers in construction camps reduces the likelihood of increased demand for social and community infrastructure.

6.5.12 Prostitution, pregnancies, sexually transmitted diseases

Accommodating most workers in a construction camp at the PCCS should reduce a number of risks raised in the ESIA interviews. These include increased prostitution and sexual interaction between workers and local women, with consequences such as increased pregnancies and incidence of sexually transmitted diseases.

Anecdotal evidence from other projects and the level of concern raised in interviews led to this risk being assessed as **MODERATE** prior to mitigation (#38). The key mitigation is to house workers in accommodation villages, reducing their interaction with the local community, therefore the residual risk rating is considered **LOW** in Tennant Creek and **MODERATE** in Mount Isa (#44), where workers will be living in commercial accommodation.

6.5.13 Health and mental health

The poor health status of many Aboriginal people in the project area reflects the overall low socioeconomic status of many people in the region however any correlation with project activities is unlikely. The health status of people living in the community is mainly relevant as a factor in the work-readiness of prospective staff, while chronic diseases may impact on participation rates and work attendance.

Health status may have implications for workplace management and health clinics stress the importance of workers bringing any prescription medicine with them.

Recruitment and selection practices, including health testing, should mitigate the above.

From a more positive perspective, workplace standards (such as drug and alcohol testing), better wages and workplace health programs may improve the socio-economic and health status of some workers. This said, any measurable improvement against broader health indicators would seem unlikely given the short duration of the project.

Of greater significance may be mental health (risk #87), arising from isolation and separation from families, e.g. expressed through anxiety and depression incidences (including in the worst case scenario, suicide incidents) among workers on the project.

Major project workforce management generally includes support for workers in this regard. This, including good supervision of workers and access to Liaison Officers will help mitigate this risk. The inherent risk ranking is therefore **MODERATE** and the mitigated risk ranking is **LOW**.

6.5.14 Volunteering and community participation

Being away in work camps may reduce local workers' participation in community activities and volunteering, such as sporting, emergency response and community events, with flow-on impacts on social amenity and cohesion (risk #27). For example, football is popular in all communities within the project footprint and rosters would not cater for evening training and games. While the duration of this impact is likely to be short, given the project timeframes, there may be opportunities for the workforce to take part in voluntary activities in the community and contribute to emergency response capabilities.

Consultation with stakeholders relevant to this risk ascertained that they did not believe that this risk would have a significant impact at all.

It will be difficult to mitigate against this risk, however Jemena will work with local organisations to determine if any measures can be put in place. The inherent and residual risk ratings are **LOW**.

6.5.15 Safety

There is a **MODERATE** risk that the public inadvertently enter the Project area and stray into hazardous areas that results in incidents causing injuries or property damage (#33).

Security plans are designed to manage project staff and equipment as well as community safety by communicating the presence of hazardous or high risk areas and establishing physical barriers to those areas, where relevant, bringing residual risk rating to **LOW**.

During the operations phase there is a risk that people might use the easement and any temporary and permanent access tracks for improper access (#79). This could include hunting, a short-cut to locations such as Mount Isa and Alpururulam and illicit activities such as unlicensed driving and grog running. Mount Isa stakeholders pointed out that the town does not have the NT's alcohol restrictions, which provides an incentive for cross-border grog runs. As the pipeline is in a remote region with a variety of scattered communities along it, the pre-mitigation risk level is assessed as **MODERATE**.

Jemena will implement controls to reduce this risk to **LOW** including minimising access tracks along the easement except in agreement with landowners, not putting signage on permanent access tracks and communicating with landholders. In essence this would limit physical access and create an informal 'rural watch'. These measures standard industry practice for mitigating this risk therefore the residual risk ranking.

7 ECONOMY AND DEVELOPMENT

7.1 OVERVIEW

The NGP is expected to deliver significant benefits in terms of jobs, business contracts and regional economic development, particularly given the number of proactive measures put in place by Jemena to maximise these benefits. This extends to broader regional economic development aspirations, including providing gas to Incitec Pivot in Mount Isa and contributing to the aspirations of Tennant Creek to be an 'inland port' based on industrial decentralisation.

However, key risks identified and sought to be addressed in the risk and opportunity matrix was that people in the region would not realise the envisaged social and economic benefits of the project. These are discussed in detail below, drawing on the Economic Impact Assessment for the EIS.

7.1.1 KEY EVENTS CAUSING IMPACTS

- local people win jobs on the project or with contractors
- contracts awarded for services and supply
- local companies miss out on tenders due to lack of capacity, not meeting the necessary standards or not being competitive
- benefits package negotiated with traditional owners
- construction of compressor stations and trenching along the pipeline route
- mobilisation of workforce
- clearing, trenching and construction activity on properties
- delays or reconfiguration of the project (or rumours of this)

7.1.2 SUMMARY OF KEY EMPLOYMENT AND ECONOMIC RISKS AND OPPORTUNITIES

Potential negative impacts	Potential opportunities
<p>Expectations of local employment not met or poor retention rates</p> <p>Expectations of local contracts not met, including aspirations to provide worker accommodation</p> <p>Jealousies between families, Aboriginal groups and Mount Isa and Tennant Creek if jobs and contracts are seen as inequitably spread</p> <p>Displacement of tourism through taking up hotel beds and seats on flights or causing price rises</p> <p>Crowding out of local events through project workers taking up accommodation</p> <p>Disruption to pastoral activities as a result of the project (disturbance to mustering, disruption to access, traffic, dust, loss of staff, bushfires, spread of weeds, vandalism and thefts from illicit use of ROW, degradation of access tracks, erosion)</p> <p>Disruption to pastoral activities from reduced quality and availability of water</p> <p>Reduced productivity or negative impacts on service delivery by government or local government due to staff seeking or being obtaining jobs with the project.</p> <p>Inflationary impact of higher wages, e.g. scarcity of trades, more expensive goods and services, higher cost of living, higher public and private rentals</p> <p>Costs to government from increased infrastructure demand, e.g. utilities</p> <p>Leakage of potential economic development to other cities and regions</p> <p>Financial losses by local businesses e.g. through over-committing in expectation of work, not winning contracts or over-dependency based on false expectations of the project's size and duration</p>	<p>Good take up of jobs and training with the project in Mount Isa and the Barkly</p> <p>Growth and increased business capacity through winning contracts</p> <p>Aboriginal enterprises set up either individually or as joint ventures</p> <p>Regional economic development</p> <p>Native Title holders get benefits from land agreements</p> <p>Benefits from any residual infrastructure such as upgraded bores and dams</p> <p>Enhanced skills helps local workers transition to other projects</p> <p>Upgraded tracks and other infrastructure from the project</p> <p>Provision of gas to Mount Isa and the Carpentaria Gas Pipeline</p>

False expectations that the project will deliver gas to remote communities	
Loss of economic benefits from workers moving away from towns to accommodation villages and mobile camps	

Figure 7-1 Economic and employment risks and opportunities

7.2 EXISTING ECONOMIC AND DEVELOPMENT ENVIRONMENT

7.2.1 Economy

Northern Territory

The structure of the Territory's economy is markedly different to other Australian jurisdictions. This reflects the Territory's unique population characteristics and its large land mass, abundant natural resources, relatively large public sector and a small open economy that is significantly influenced by major projects (Department of Treasury & Finance, 2016). As outlined in the 2016 Budget Papers, the NT's Gross State Product (GSP) has grown from \$15b in 2004-05 to more than \$22b in 2014-15, an increase of nearly 50%, while the population has increased by 40,000 to just under 245,000 and the labour force has expanded by 35,000 to nearly 140,000 over this time.

In recent years, construction has overtaken mining as the largest single industry in the Northern Territory in terms of share of economic output. Construction, mining and manufacturing and government and community services, combined, account for about half the Territory's GSP.

Government and community services, construction and retail and wholesale trade were the Territory's largest employing industries in 2014-15.

While agriculture, forestry and fishing made a contribution of only 1.5% to the Territory's GSP in 2014-15, the pastoral industry is vital in terms of generating economic activity and employment in regional areas (Department of Treasury & Finance, 2016). This is borne out by more localised data from the 2011 Census that shows the biggest contributors to GSP in the Barkly Region were mining (\$127m), agriculture, forestry and fisheries (\$45m) and construction (\$35m).

In terms of employment, the pastoral industry was the Barkly Region's biggest private sector employer (providing 223 jobs in 2011) and the fourth largest employer after public administration and safety, education and training and health care and social assistance respectively (Department of Regional Development, nd).

Budget Papers suggest the contribution of mining to the NT's GSP has dropped due to the closure or reduced production of most of the Territory's major mines. However, the sector is still significant, with mining and manufacturing accounting for 14.9% of the Territory's GSP in 2014-15, compared with 13.1% nationally. In terms of employment, the mining and manufacturing industries accounted for 6.6% of the resident population in 2014-15, compared with 9.8% nationally. However, Treasury notes that this under-estimates mining jobs in the Territory as the figure excludes FIFO workers.

Tourism is another key economic sector, particularly in regional areas. The number of international tourists has been subdued in recent years but increased by 3.1% in 2015, with an estimated 288,000

visitors to the Territory. Overnight domestic visitors to the Territory increased by 20% to 1.3 million visitors in 2015, the strongest annual growth rate for a decade.

The NT Government has a growth target to reach a \$2.2b visitor economy by 2020, supported by increased funding for leisure tourism marketing and infrastructure developments (such as a proposed six-star hotel in Darwin) to enhance the number of inbound holiday visitors (Department of Treasury & Finance, 2016).

The significance of tourism to the Barkly region is outlined in a Tourism NT Regional Profile produced for the year ending December 2015 (Tourism NT, 2016 b). Over the three years from 2013 to 2015, visitors spent an average 2.8 nights in the Barkly, with expenditure of an average \$37m per year. It is useful to note the large proportion of business visitors, which is relevant when considering the potential displacement of other sectors should Jemena take up too much of the town's commercial accommodation (see below).

Origin	Intra-Territory	Interstate	Domestic (intra-Territory and interstate)	International	Total
Visitors	33,000	44,000	77,000	15,000	92,000
- holiday	7000	34,000	41,000	14,000	55,000
- visiting friends and relatives	1000	2000	4000	0	4000
- business	20,000	5000	26,000	0	26,000
Visitor nights	100,000	128,000	228,000	34,000	262,000
Average length of stay	3.0	2.9	3.0	2.3	2.8
Expenditure (average per year over 3 years)	-	-	\$33m	\$4m	\$37m

Table 7-1 Barkly overnight visitor numbers, three year average 2013-2015

The Tourism NT report finds that September is peak season, as interstate tourists escape the southern winter, while Territorians tend to visit in the cooler months. International visitors are more likely to arrive between September and December.

Not surprisingly, given the lack of flights to Tennant Creek, most tourists arrive by car or bus. Although the *Ghan* passenger train stops at Tennant Creek (albeit at midnight), it appears rail contributes little to the region's tourism. Most holiday visitors driving themselves to the region were domestic travellers, about 42% were over the age of 50 and a quarter (28%) were aged between 35 and 49. A third of those domestic visitors driving to the region were from New South Wales (32%) followed by South Australia (28%). Most were visiting other destinations along the Stuart Highway.

	Fly only	Fly/drive	Drive only	Coach/bus	Train	Other
Interstate	0%	11%	37%	11%	0%	0%
Intra-Territory	2%	8%	85%	0%	0%	2%
International	3%	47%	22%	28%	0%	0%

Table 7-2 Transport used by holiday visitors, three-year average 2013-2015

7.2.2 Business capability

There were 201 businesses recorded by the ABS in the Barkly Local Government Area in June 2015 with the five dominant sectors being construction, retail trade, agriculture, property services and hospitality accounting for 63% of the total (Table 7.4). There were no businesses recorded in the electricity and utilities sector, the information, media and telecommunications sector or the arts and recreation sector (NB: Census data may not accurately capture all businesses depending on how they are registered).

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

The ABS recorded 1280 businesses in the Mount Isa Council in June 2015 with construction making up 17% followed by 13% in agriculture (pastoral properties) (Table 7.4). Again more than half (57%) were one person businesses but there were 12 with more than 20 employees (large stations made up half). There were no businesses recorded as operating in the electricity, gas or water utility sectors in the Barkly or the Mount Isa region, presumably as these are government services (Australian Bureau of Statistics, 2016).

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 fewer than five employees may have expertise in a “niche” area but may struggle to become suppliers to large projects and some services may have to be sourced from outside the region.

This, however, depends to some extent on how contracts are packaged and whether local companies are able to joint venture for some work.

For a short-duration project such as the NGP, there is a lower likelihood that local companies can scale up and build new capabilities for more specialised packages of work; however, in the broader Northern Territory and Queensland economies, there are many companies with experience of working on major resource projects.

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	

Table 7-3 Northern Territory and Local businesses by industry and employee number, 2015 (red signifies major sectors). (ABS 2011).

7.2.3 Education and training

Education and training indicators provide useful information about the ability of a population to support a construction workforce.

- In the Barkly 11% of people aged 15 have a post-secondary school Certificate, compared with 19% in the NT as a whole. For Mount Isa, the proportion is about 23%, compared with Queensland as a whole.

- In the Barkly about 20% of people aged 15 reported that their highest year of schooling completed was Year 12 (or equivalent), compared with nearly 40% for the Northern Territory as a whole. The compares with 40% in Mount Isa, against Queensland with 48% as a whole as shown in Figure 7-1.

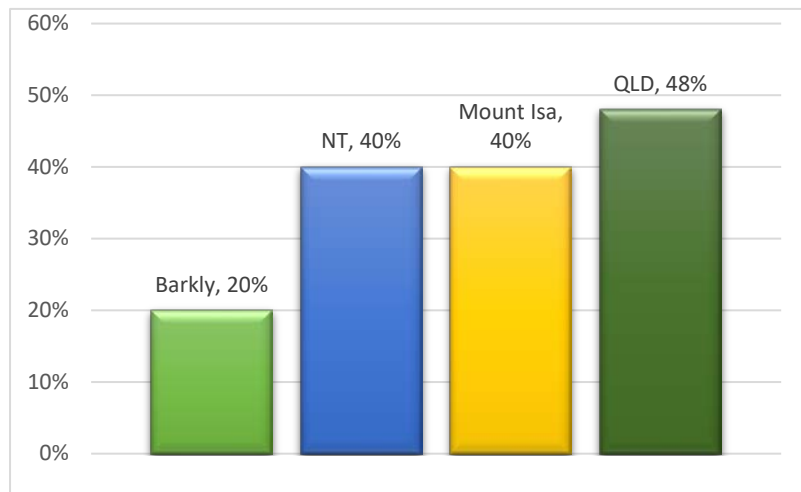


Figure 7-2 Comparison of people aged 15 and over whose highest year of schooling completed was Y12 (or equivalent) Source: ABS 2011

- In contrast, the proportion of people aged 15 and over in Barkly whose highest year of schooling completed was Year 8 (and who are no longer attending school) is about 20%, compared with about 8% for the Northern Territory as a whole. Equivalent figures for Mount Isa and Queensland are 5% and 6% respectively.
- The proportion of people in the Barkly aged 15 and over who hold post-secondary school qualifications is about 44% against 56% for the Northern Territory as a whole. In Mount Isa about 57% of the population aged 15 and over hold post-secondary school qualifications, against a Queensland total of about 54%.
- These figures suggest a significantly higher capacity for Mount Isa to support a construction and operations workforce for the NGP than the Barkly.

Further analysis of the statistics of the Barkly looking at the contrast between Aboriginal and non-Aboriginal people reveals:

- of the 149 people in the Barkly who have year 12 or equivalent as their highest level of schooling, 42 (28%) are Aboriginal;
- 69 Aboriginal people compared with 229 non-Aboriginal people have a certificate level III and IV. Seven Aboriginal people compared with 67 non-Aboriginal people have a Diploma or Advanced Diploma qualification and 11 Aboriginal people compared with 92 non-Aboriginal people have a Bachelor's degree; and,
- no Aboriginal people in the Barkly region are captured by Census data as having attained a post-graduate level university qualification.

7.2.4 Employment, labour force participation and income

It is estimated that 98,916 people work in NT. The Territory's labour market is characterised by low unemployment, high labour force participation and a young mobile workforce. This reflects the tendency of many people, particularly those in younger age groups, to come to the Territory for jobs.

Current labour market conditions in the Territory are strong, as highlighted by robust employment growth. The NT has one of the lowest unemployment rates in Australia, an unemployment rate of 5.3% and a 63.9% labour force participation rate. The median weekly household income in the NT is \$1,674.

The labour force participation rate, i.e. the proportion of the population aged 15 years and over who are employed or who are actively looking for work in Mount Isa is 67%, compared with 63% for Queensland.

The unemployment rate of 4.3% in Mount Isa is lower than the Queensland rate of 6.1% and high employment for the population as a whole. This, however, is likely to mask the unemployment rate of Aboriginal people (see section 5 below).

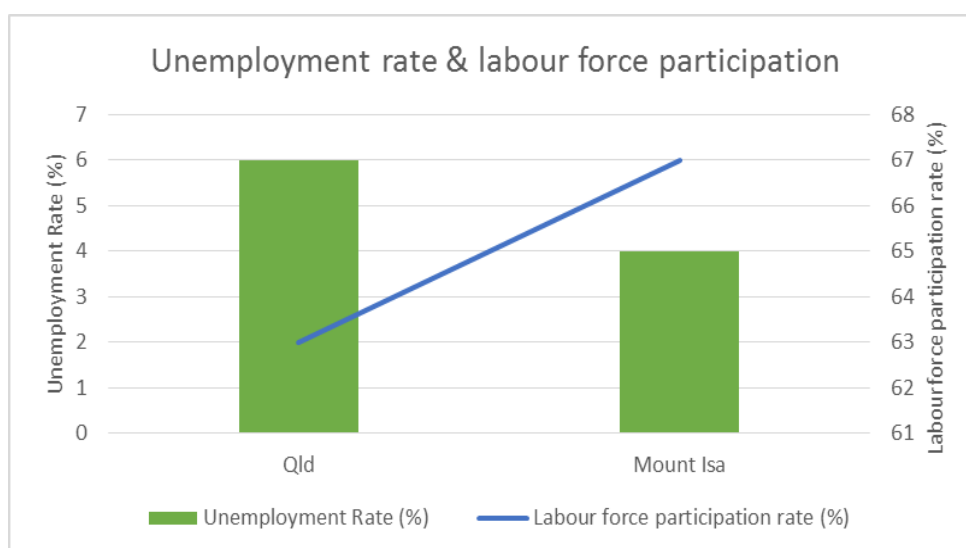


Figure 7-3 Unemployment rate & Labour force participation - Queensland/Mount Isa Source ABS 2011.

While the unemployment rate in Mount Isa is low, the town contains 13,000 working age residents (20-64 years) and Camooweal has 90.

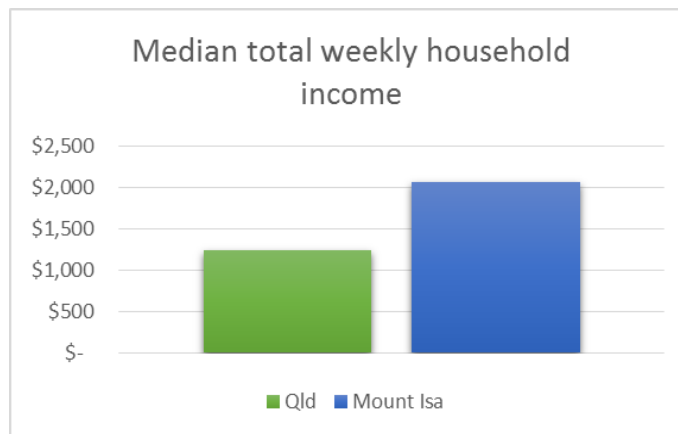


Figure 7-4 Median total weekly household income – Queensland/Mount Isa: Source ABS 2011

Based on 2011 Census data, the median total weekly household income in Mount Isa is \$2064, compared with the Queensland median household income of \$1235. This high level of income is likely due to higher wages in the industry which is the dominant employer in the region, accounting for over 30% of jobs.

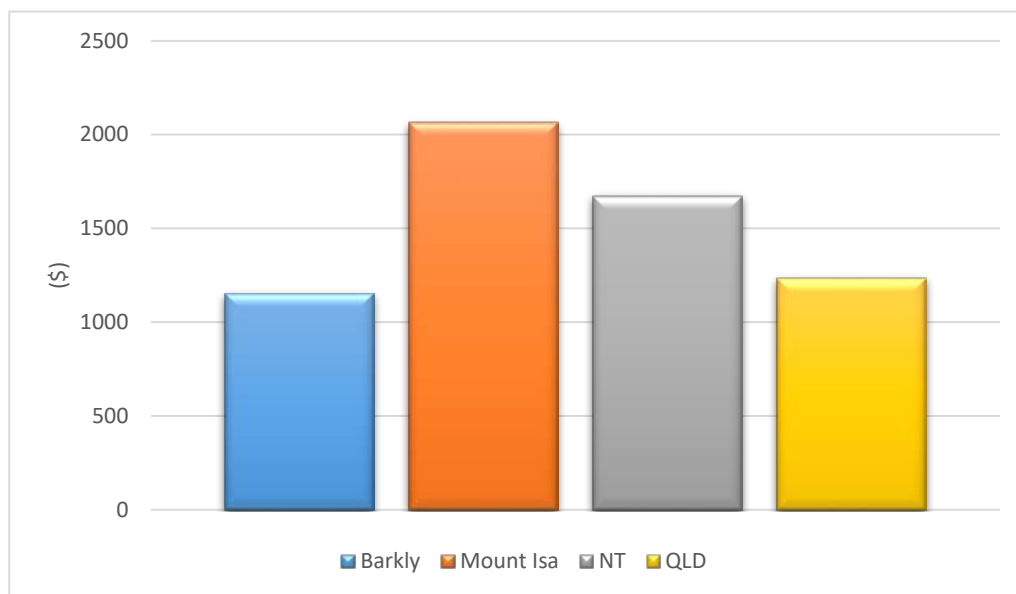


Figure 7-5 Median total weekly household income comparison: Source ABS 2011

High income levels in Mount Isa reflect the predominance of resources industry employment (mainly mining and processing) (over 30% of jobs), as distinct from the Barkly where the bulk of employment is in the human services sectors of public administration and safety, education and training, health care and social assistance (over 50% of jobs).

Participation rates

Employment and labour force participation data (ABS 2011) provide useful information about the ability of a population to support a construction workforce.

- The labour force participation rate, i.e. the proportion of the population aged 15 and over who are employed or actively looking for work, is about 45% in the Barkly, as against about

64% for the Northern Territory as a whole. In Mount Isa the rate is 67% as against 63% for Queensland.

- The unemployment rate in the Barkly is about 11% against a Northern Territory unemployment rate of 5%. Mount Isa on the other hand has an unemployment rate of 4% against 6% for Queensland as illustrated in Figure 9-2.

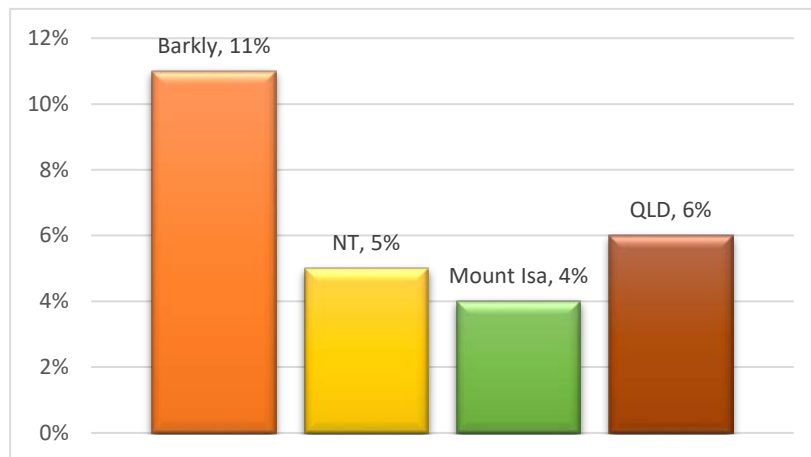


Figure 7-6 comparison of unemployment rate: Source ABS 2011

- The unemployment rate in the Barkly region is nearly double that of the Northern Territory, about 2.4 times that of Mount Isa and 70% higher than the Queensland and Australian unemployment rates.
- The unemployment rate for Aboriginal people in the Barkly is about 23% compared with an unemployment rate for non-Aboriginal people of about 2%.

Aboriginal unemployment rates should be considered with caution as ABS Census data includes participants in the Community Development Program (remote) or Job Active (urban) programs, previously known as Community Development Employment Programs (CDEP), 'work for the dole' and then Remote Jobs and Communities Program (RJCP).

Data obtained from service providers indicates a much higher unemployment rate that ABS figures suggest. For example, consultation with local employment service providers reveals there are 1200 people seeking work in the Barkly region of whom the majority are Aboriginal (more than 95%) and unskilled. Job service providers estimate that only about 50 job seekers are likely to be work ready in the Barkly region.

These figures suggest few work-ready people in the Barkly region, with most possessing only entry level skills. Service providers did note that skilled workers currently in employment may seek to join the Project if wages on the NGP are higher than for the current jobs.

7.3 CONTRIBUTION OF THE PROJECT

This section sets out the expected potential economic contribution of the NGP to the Northern Territory and more specifically to the Barkly and Mount Isa regions.

The EIS Terms of Reference notes that in providing economic information in relation to the Project, the proponent is not required to disclose commercially confidential information. Jemena notes that the Project is a privately owned and unregulated pipeline and therefore the information in the following sections is constrained by commercial confidentiality.

Jemena has sought to provide an accurate picture through the use of industry benchmarking of the project capital and operating costs. At the regional level the economic benefits are based on Jemena's estimates arising from the studies and stakeholder consultation to date.

Detailed information about the economic contribution is set out in the Economic Impact Assessment at Appendix S of the EIS.

7.3.1 Project feasibility

The Project's economic feasibility was determined through a competitive process by the Northern Territory Government between November 2014 and November 2015. The process comprised three distinct phases:

- Expressions of Interest (EoI) Phase – which attracted 14 bidders from which 11 were selected to progress to the second phase
- Request for Initial Proposal (RFIP) Phase – with four bidders selected to progress to the third phase
- Request for Final Proposal (RFFP) Phase – with Jemena selected as the preferred bidder to build, own and operate the NGP.

The level of interest in the project demonstrated the economic feasibility of the Project. Many of the bidders were substantial industry players in Australia or companies associated with large financiers.

7.3.2 Financial capacity

As set out in Chapter 1 of the EIS Jemena is owned 60% by the China State Grid Corporation and 40% by Singapore Power. Jemena owns and operates \$8.5 b of assets on the east coast of Australia, including the Queensland Gas Pipeline and the Eastern Gas Pipeline. Information about Jemena's assets and operations can be found at www.jemena.com.au.

7.3.3 Estimated project 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 reduction from the natural gas is essential and adds about \$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 about \$70 m a year at full capacity. At the time of writing, the pipeline is one-third contracted. 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 Gas Market. 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 which 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 (about 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 about \$180 m 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 Northern Territory and Eastern Gas Market.

7.3.4 Contribution to GDP and GSP

The Project's contribution to the economy can be described in three phases – construction, operations and broader economic impact.

The construction phase over two years involves an estimated total investment of \$775m of which \$637m will be spent in Australia. The flow on effect of this investment is to increase the economic output of Australia by \$1.379b, with the Northern Territory impact a total of \$213m and the region \$160m.

The operations phase of at least 30 years involves an estimated 40 positions with an equivalent 18 FTE jobs. The economic impact of the annual expenditure is to create an additional \$1.0m in economic output in the region, \$1.8m in the Northern Territory and \$18m in Australia. Over 30 years, this expenditure can be scaled up to \$30m in the region, \$54m in the Northern Territory and \$540m in Australia.

In terms of broader economic impact and depending on the volume of gas that may be displaced from the CGP pipeline to the Mount Isa market and subsequently sold into domestic or LNG (or equivalent value sales), the value to the Australian economy might be as high as \$180 m a year or \$5.4b over 30 years.

7.3.5 Taxes

Jemena is an income tax-paying company in Australia and the project will contribute to this tax-paying position over its economic life. Jemena will effectively pay income tax at the corporate tax rate on its taxable income, which includes any contributions from the project. Jemena will also pay state-based taxes such as payroll tax and stamp duty in relation to the project.

7.3.6 Capital and operating expenditure

Final financial data is not provided specific to the project due to commercial sensitivity and confidentiality matters, but benchmarks from other gas transmission pipelines and feasibility study data provide an indicative capital cost of \$1.24m 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 compressor stations and pipeline. The largest cost category will be the actual construction at about \$338m, representing 44% of the total cost (Table 7-5). In this breakdown, civil engineering represents the design and supervision while construction and services are transport and installation activities.

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

Table 7-7 Northern Territory and Local businesses by industry and employee number, 2015 (red signifies major sectors). (ABS 2011).

Construction costs by nature of expenditure

An estimated \$138m will be spent on coated steel pipe, compressor packages and other equipment imported from overseas leaving \$637m invested in Australia.

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 Northern Territory is about \$111m with \$75m of this in the region (Table 7-6).

			Australia sub-component	
			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

Table 7-4 Construction cost by location (\$m) Source: Economic Impact Assessment

Local expenditure will include compensation and other 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 Northern Territory 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 Northern Territory impact a total of \$213 m and the region \$160m (Table 7.7).

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 and construction	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

Table 7-5 Construction phase economic impact (source Economic Impact Assessment)

The 30-year operating phase of the Project is far longer than the 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 processing plant, pipeline and pipeline corridor.

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 industry sector statistics include a gas supply sector for this region and hence the multiplier factors are used for this sector (Table 7).

As with construction, a population weighted multiplier factor was calculated for the region from the multipliers for the Mount Isa and Barkly Local Government Areas. For the operations phase of the Project, the employment multipliers range from 1.09 to 1.25 in the LGAs with a weighted average of 1.21 and 1.63 for the Northern Territory.

The flow on impact is to create 36 jobs in Australia with 16 of these in the region and potentially 21 in the Northern Territory. 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.

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	\$1.8	\$1.9
Expenditure (\$m)	\$0.3	\$8.9	\$0.7	\$0.5
Economic impact (\$m)	na	\$18.2	\$1.8	\$1.0

Table 7-6 Operations phase impacts. Source: Economic Impact Assessment

7.4 IMPACT ASSESSMENT

This section sets discusses the potential risks and opportunities associated with the NGP particularly in relation to the Barkly and Mount Isa regions and the risk ranking and mitigation measures contemplated by Jemena.

The Economic & Social Impact Assessment (ESIMP) for which a framework plan was prepared and included in the SIA Scoping Study and submitted with the draft EIS, contained the various opportunity enhancement initiatives and programs, identified at that time. These are discussed where relevant below. The ESIMP will be finalised in 4th quarter 2016, early 2017, in discussion with stakeholders and once all land agreements are completed and the participation and contributions of others involved in social and economic development in the region are settled.

7.4.1 Opportunities for contracts with the project

Jemena has been liaising closely with communities and businesses along the proposed route since May 2015 and more intensely since award of the Project in November 2015, to harness as much local and Indigenous participation as possible during construction and operations. Based on a business capacity and a labour supply and demand study undertaken in 2015:

- about 67% (133) of the estimated 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 per annum during the operations phase; and,
- of the above, Jemena identified about 42 contracts that could be undertaken by Aboriginal businesses and organisations.

Achieving these estimates will depend on the competitiveness of individual business, individual interest and aspiration.

Recognising this, Jemena set a baseline target of 100 contracts with an estimated value of \$84 million.

To ensure Mount Isa and Barkly communities benefit as much as possible from the project in the long-term, Jemena has developed an approach to local content that seeks to maximise the use of goods, services and labour from the Barkly and Mount Isa regions, the Territory more broadly and western Queensland, while providing full, fair and reasonable opportunity to all Australian suppliers.

It is working closely with the ICN to identify suitable businesses, package works to suit local businesses where possible and use communication tactics such as regional briefings and newsletters. In addition, Jemena will invest in a variety of capacity building initiatives as set out in section 9 below.

The opportunity matrix provides inherent ratings of **MODERATE** for local contracting at the planning phase, construction and operational phases of the project (opportunities #8, 15, 16 and 21). With measures to enhance these opportunities, the residual opportunity ratings remained **MODERATE** at the planning phase and **SIGNIFICANT** for some activities in the construction phase and **MODERATE** in the operations phase. The rating for Tennant Creek accommodation providers (opportunity #22) was **MODERATE**, given the need to balance benefits with potential detrimental impacts on the latter.

7.4.2 Economic benefits not realised

It was identified early in Jemena's considerations that local businesses may miss out on contract opportunities, through (a) a lack of information about the opportunities available, or (b) a lack of capacity to competitively tender for works (risk #48 and 80).

Early risks include businesses incurring financial losses due to the project not going ahead, either because of market factors causing the proponent to withdraw from the NPG (#10) or failing to get government approval (#11).

Another risk is that some businesses may over-invest in expectation of winning contracts on the Project but are then unsuccessful (#50). This potential for over investment has occurred in the past. During operation of the Ravensthorpe mine in Western Australia local businesses in the nearby towns of Hopetoun and Ravensthorpe invested substantially in the expectation of securing contracts with the mine. When the work did not eventuate many local businesses were negatively impacted.

There is also a risk that people may embark on new business ventures based on contracts with the Project but then see the business fail early, as many small businesses do, particularly once NGP contracts have been completed (#51). There are many examples of this, particularly in regional areas, where locally based companies working on large projects have faced difficulties as major contracts ended. This can happen because of poor cash flow management, false expectations of winning other work or contractual disputes with contractors.

Based on mitigation strategies, such as Jemena's Small to Medium Enterprise Business Investment Fund (SMEBIF), good communication and local content strategies, the residual risk for risks #10, 11, 50 and 51 is assessed as **LOW**. The residual risk level for risks # 48, 49 and 80 is assessed as **MODERATE** (for more discussion on opportunity enhancement strategies, see Section 9).

Commercial accommodation

It is expected that for the period May – December 2017 there will be a constant demand for between 30 and 65 rooms per night in commercial accommodation in Tennant Creek, which is expected to provide economic benefits for accommodation providers.

Jemena has adopted this approach to strike the right balance between ensuring commercial benefits to the Tennant Creek local economy while avoiding negative social impacts on the health and safety of the community.

In Mount Isa, there is greater capacity to absorb Jemena's accommodation demand in commercial premises so Jemena will not have a construction camp at this location.

The risk of Tennant Creek accommodation providers missing out through a workers camp at either the PCCS or Tennant Creek is assessed as reducing from **HIGH** to **LOW** through a workforce accommodation plan that includes use of some commercial accommodation (risks #59 and 62). In Mount Isa, where there is greater capacity to absorb the need for commercial accommodation, the risk (#64) of providers missing out is reduced from **MODERATE** to **LOW**.

7.4.3 Jobs and training opportunities

A key opportunity with the NGP is the prospect of jobs in regions with high Aboriginal unemployment. While some jobs are unlikely to suit the local workforce, such as specialist welding, there should be many opportunities for unskilled and semi-skilled labour.

Jemena's employment plan is aimed at:

- the existing regional market, or people who have the capacity to effectively compete for jobs with the project;
- identifying those who may be able to compete effectively through existing skills augmentation and learning new skills, who will be referred to the PRTP; and,
- providing opportunities for those who are unlikely to be able to work on the project through the Tennant Creek Social Employment Project.

Based on the labour market supply and demand study, examination of the labour market and determination of likely jobs that could be filled locally, Jemena estimated that:

- about 563 or 63% of the potential 900 jobs during planning, construction and commissioning could potentially be filled from the Northern Territory labour market; and,
- during the operations phase an estimated 29 out of 41 jobs could be filled from the Northern Territory and Queensland labour market.

As with contract opportunities, success is dependent on the competitiveness of individual interest, capacity and aspiration.

In recognising this, Jemena set a baseline target of 450 jobs (FTE equivalent of 309 jobs) over the planning, construction and commissioning phases.

Included in this, Jemena has set a target of at least 122 jobs to go to Local Aboriginal people.

There will no doubt be educational, cultural and family barriers to working long rosters in isolated work camps. However, even for those not wanting to live away from home, there may be jobs throughout the supply chain providing services to the project, for example with small Aboriginal enterprises providing civil works, catering or camp support. In addition, there may be jobs with land management and rehabilitation that are suited to local skills and aspirations.

The residual rating for job opportunities at various stages of the project are, therefore, **SIGNIFICANT** for the employment of Mount Isa and Tennant Creek people in unskilled and semi-skilled jobs (opportunities #6, 17 and 18) and **MODERATE** for employment in skilled jobs (opportunities #19 and 20).

Longer-term, the smaller number of operational jobs (#opportunities 25 and 26) mean opportunities will be fewer for local employment therefore the ranking for the operational phase jobs in terms of positive impact to the local economy is **MODERATE** for Tennant Creek and **LOW** for Mount Isa.

7.4.4 Employment benefits not realised

In a similar vein to contracting opportunities it was identified that there were risks associated with local and Aboriginal people missing out on employment opportunities.

There are many barriers to local workforce participation, particularly for long-term unemployed workers who may lack skills, education and work-readiness. Based on data from the Australian Government's Department of Employment:

- The most common reason given by employers in the NT Outback (includes the Barkly region) for not interviewing job seekers for an employment vacancy was that job seekers lacked experience relevant to the job vacancy. The second highest reason given was that job seekers had insufficient qualifications or training.
- Completing year 12 increases labour market outcomes with more people in this cohort being employed as opposed to people finishing school at a lower year level (Department of Employment, 2015).

Jemena will address this risk to some extent through its Regional Employment Plan (see Section 9), which includes the following:

- NGP Jobs & Training Portal
- Project Ready Training Program
- Tennant Creek 'social procurement' opportunity
- Gas Operator Training Program

There are many examples nationally, including in the Northern Territory, of local and Aboriginal communities conveying their strong dissatisfaction of perceived poor local employment outcomes on major projects or conflict if certain groups or families are seen as dominating opportunities. Communities are highly attuned to issues concerning local content and closely monitor the performance of proponents in this regard. This is especially true of small towns such as Tennant Creek where local content outcomes are clearly visible and where small levels of local content can have real impacts on individuals and the local community and economy.

A recurring theme during consultation in Mount Isa and Tennant Creek has been a strong sense of disappointment that the operation, completion and closure of large projects in the region have delivered (or are seen to have delivered) minimal benefits for local people in terms of jobs and contracts.

Risks associated with failing to win jobs with the Project could arise from missing out on survey work opportunities (#9), if the project doesn't proceed (#10) or approvals are delayed (#11). These three risks were reduced from **MODERATE**, **LOW** and **SIGNIFICANT** respectively, to **LOW** with mitigation strategies such as local content policies, good engagement through community reference groups and regional employment initiatives (see Section 9).

Risks #54 (mobilisation) and 81 (operations) were assessed as **SIGNIFICANT** and **MODERATE**, with residual ratings of **MODERATE**.

There is also the potential for conflict arising over perceptions of unfair employment processes (risk #26), which was reduced from **SIGNIFICANT** to **LOW** after mitigation.

It is possible that one community with a more sophisticated labour market benefits more than a community with less experience of working on large projects, particularly short-term. For example the north-west Western Australian town of Karratha possesses a substantially more developed workforce than the nearby community of Roebourne which has long-term socioeconomic challenges. As a result, Karratha residents have greater employment capacity from the nearby resource sector projects than Roebourne.

The socio-economic data, particularly in relation to the labour market indicates that the Mount Isa labour market, due to its size and depth, will overshadow the Tennant Creek labour market. The possible result could be limited employment outcomes for the Barkly, particularly from Tennant Creek and Alpururulam (risk #58). This risk was reduced from **SIGNIFICANT** to **MODERATE** through Jemena's employment strategies.

7.4.5 Benefits from land access agreement

Traditional owners will receive a range of benefits from land agreements negotiated with Jemena. Jemena will liaise with community organisations to help manage these benefits to boost the inherent rating (opportunity #14) from **MODERATE** to **SIGNIFICANT**.

7.4.6 Displacement of other economic sectors

There is a risk that the project could displace other economic sectors, particularly tourism, the pastoral industry and government services, by taking up commercial accommodation, booking out seats on the commercial airline servicing Tennant Creek and through inflationary impacts on wages, trades and services (see also 7.2.7). Taking up commercial accommodation could also inhibit attendance at significant annual events that bring revenue to the town, e.g. the Tennant Creek Annual Show or the Harmony Festival (risk #61). This risk was assessed as **HIGH** before mitigation, with a post-mitigation rating of **LOW** and is not predicted to be a major issue in Mount Isa, which is larger and likely to be able to accommodate and benefit from project activities.

A typical risk that arises with projects being implemented near small populations is that local government, the pastoral industry, the tourism and hospitality industry, businesses and community organisations lose workers to the Project (risk #56). A related risk is pressure on government, local government and private sector employers to increase wages and conditions to retain staff (risk #57). This has been seen across a number of resource sector areas of Australia, for example in the Bowen Basin in Queensland, Darwin in Northern Territory and the Pilbara in Western Australia. During SIA interviews pastoralists in particular expressed concern at losing staff to the project, with many saying their reliance on seasonal and permanent staff impacts on the productivity of their properties. Loss of staff could also impact on government and local government services (see 6.5.10 above).

Jemena will seek to mitigate this risk through its accommodation plan and transparent implementation of its Regional Employment Plan but, ultimately, the movement of staff is largely out of Jemena's control and the impact is likely to be short-term. Accordingly, these activities are expected to see risk #56 reduce to a **MODERATE** level after mitigations; risk #57 remains at a **MODERATE** level following mitigation.

Other risks include the potential of other economic sectors being crowded out if flights are taken by project workers (#55). In Tennant Creek, this could occur as the town is serviced only by Air North jets that travel from Darwin to Katherine, Tennant Creek and Alice Springs where demand would easily be saturated. Jemena will use charter flights to mitigate this risk, which consequently is assessed as reducing from **SIGNIFICANT** to **LOW**. The risk in Mount Isa was considered **LOW**.

The risk of a reduced level of goods and services available to the local community because of project demand (#53) was assessed as **LOW**.

7.4.7 Competing land uses

Another displacement impact is competing pressures for land use. This was raised primarily by pastoralists concerned at incursions on pastoral leases by resource exploration. Some recounted negative experiences of mining companies exploring on their properties, but appeared reassured that Jemena took its responsibilities seriously.

In general, pastoralists saw the NGP as potentially affecting productivity and amenity short-term, rather than leading to longer-term disruption to existing land uses.

7.4.8 Disruption to pastoral activities

Jemena has talked regularly to pastoralists while planning the pipeline route. In addition, all pastoral properties along the alignment were contacted to arrange ESIA interviews face to face or by phone. About half responded, with interviews providing rich feedback on the perceptions of pastoralists on potential impacts and how they could be managed.

Key concerns were potential disruption from trenching and project traffic on station roads (#69, 70) and additional access tracks during pipeline installation. Pastoralists asked Jemena to take into account peak mustering periods and some expressed concern at potential reduced productivity from loss of staff (#56, 57) and loss of grazing areas to bushfires started by workers (#35, 41). With mitigation, these were reduced from **MODERATE** or **LOW** to **LOW**.

Mitigation of these risks includes specific Property Management Plans for each property that are designed to suit the particular operations of each property owner.

Environmental and amenity impacts included fears of noise and dust on station activities and homestead living areas, impacts on visual amenity through clearing and construction (#83), and degradation of access tracks and erosion, which had a residual risk rating of **LOW**.

As reflected in the broader society, there were divisions among the views of pastoralists over how the pipeline might encourage onshore oil and gas exploration, in turn enabling fracking in the region.

Some pastoralists expressed concern that, during drought conditions, construction of the pipeline may compete for scarce groundwater (#71, 72), with negative impacts on both pastoralists and communities along the pipeline route. These risks were reduced from **MODERATE** and **LOW** respectively to **LOW** through measures such as assessing water availability and likely demand for the project (see Chapter 7 of the EIS for discussion on this).

Another risk identified during risk assessment was the potential for pasture reduction from weed spread and the associated cost of remediation (risk #68), although this wasn't raised in interviews. This risk was reduced from an inherent rating of **MODERATE** to **LOW** by implementing a Biosecurity Management Plan to reduce the spread of weeds from project activities. See Chapter 6 of the EIS.

It is noted that many pastoral properties in the Barkly are part of a trend to organic farming and sustainable farming practices such as rotational cropping and local pastoralists have strong awareness of conservation and modern land care practices.

7.4.9 Inflationary pressures

Discussions with stakeholders revealed a concern at the potential for inflationary pressures from higher wages and the cost of goods and services creating economic hardship for locals not involved in the Project (risk #52 and 53). This is a common issue with large projects, where increased buying power by proponents raises prices, creating a negative impact on the local community which cannot match the resultant increases. Darwin has seen such impacts in the past decade with the construction of two LNG plants. As discussed above, it is predicted these impacts will be minimal and short-term. Jemena will communicate with suppliers to ensure inventory levels are managed.

An associated risk identified by stakeholders was that the project's fly-in, fly-out workforce component might take up available capacity on regional flights, resulting in displacement of other travellers and pushing up fares, particularly in Tennant Creek (risk #55). Jemena will obviate this risk to the extent reasonably practicable by ensuring that the bulk of workers are flown in and out on charter aircraft (see 7.4.6).

As the construction phase of the Project is relatively short and these initiatives have been successfully implemented in other projects, the post mitigation risk level for risks #52, 53 and 55 is **LOW**.

7.4.9 Residual infrastructure

There will be very little open access to the pipeline alignment and most access tracks will be rehabilitated, although those on pastoral or Aboriginal land may be maintained by the landholders. It was clear in interviews, however, that some stakeholders have unrealistic expectations about legacy infrastructure from the project, such as elements of work camps, or aspirations to buy equipment. Given that all camps and equipment will be leased or belong to contractors, this is not likely. Legacy infrastructure could include bores, dams and access tracks and new and upgraded existing tracks.

7.4.10 Impact on utilities

A risk associated with the establishment of a workers' camp in Tennant Creek and Mount Isa (if established by the project) would be an increased pressure on municipal services such as sewerage systems, waste management, power and water supply (#39 and 65). The establishment of the PCCS construction camp removes this risk, initially rated as **MODERATE** for Tennant Creek and **LOW** in Mount Isa, with a residual rating of **LOW** for both. In Mount Isa the existing commercial accommodation will be sufficient to handle the increased demand.

7.4.11 Unrealised expectations of access to gas

The installation of a gas pipeline in the region may create expectations of access to cheaper energy for both industrial and domestic use (risk #73). Remote parts of the Northern Territory often depend on expensive diesel-powered energy and cheaper sources of energy have been cited as a major enabler for regional economic development. Indeed, early in the tender process, the Northern Territory Government asked bidders to consider supplying gas to remote communities. It is a common perception that gas from a high pressure pipeline such as the NGP can be diverted to potential customers en route, whereas the cost and technical issues associated with providing gas from the project an unrealistic scenario. The inherent risk of dashed expectations on this issue was assessed as **MODERATE**.

A key mitigation strategy will be clear communication about the technical and cost barriers to providing gas to communities, pastoralists or potential mines along the pipeline's route.

In the Northern Territory, responsibility for providing power to remote communities rests with the Power and Water Corporation (PWC) so, in any event, providing reticulated gas supplies would be a capital investment decision to be made by PWC. The largest Aboriginal community close to the Project is Alpururulam which, with a population of just over 400, would not have the demand to justify such a decision.

On the assumption that communities are provided with and understand explanations about the technical barriers to gas supply, the residual risk after such mitigation is assessed as **LOW**.

8 CULTURE AND HERITAGE

8.1 OVERVIEW

Most of the potential impacts on culture and heritage, in particular relating to Sacred Sites and Aboriginal Archaeological Heritage Places, are covered in the Historic and Cultural Heritage section (Chapter 8) of the EIS and Appendix Q, the framework Cultural Heritage Management Plan (CHMP).

This section covers those impacts that are not covered in the CHMP but are nonetheless related and equally important.

8.1.1 KEY EVENTS CAUSING IMPACTS

- mobilisation of workforce
- planning phase surveys
- land negotiations

8.1.2 SUMMARY: CULTURE AND HERITAGE RISKS AND OPPORTUNITIES

Potential negative impacts	Potential opportunities
Anxiety and distress to traditional owners due to trespass, damage or reduced spiritual connections. Perceptions that traditional owners have not afforded free, prior and informed consent in the land negotiations.	Increased knowledge and respect for Aboriginal culture by project staff through cultural awareness inductions and training including with the participation of local Aboriginal people. Enhancement of traditional knowledge among local Aboriginal people through participation in sacred site and archaeological surveys.

Table 8-1 risks and opportunities for cultural heritage

8.2 BACKGROUND

The background for the culture and heritage section is covered above and in significant detail in the CHMP submitted with the draft EIS.

It is noteworthy that, along with land claims, Aboriginal people have shown a key interest in reconnecting to their homelands and culture as evidenced by both the movement back to homelands and by the large number of organisations in Tennant Creek dedicated to arts, music, language and culture.

Apart from key Aboriginal corporations, such as Julalikari Aboriginal Corporation and Anyinginyi, which are driven strongly by Aboriginal ownership, there is a large and active group of arts organisations for a town as small as Tennant Creek, with many well-known artists and musicians emanating from the region. This includes:

- **Nyinkka Nyunyu cultural centre**, which serves as both a retail centre, gallery and museum of Warumungu culture. Nyinkka is a spiky-tailed goanna and the cultural centre is built around a sacred site.

- **Papulu Apparr-Kari Aboriginal Corporation**, an Aboriginal language centre which attempts to preserve and revive the 16 Aboriginal languages of the Barkly region through various forms of media.
- **Winanjikari** (meaning “belonging for singing”) Music Centre, which recently celebrated its 10th anniversary. The centre teaches Barkly musicians new skills in music production and has worked with MusicNT to deliver programs such as Bush Bands and Barkly Divas.
- **Barkly Regional Arts** is a regional hub for arts in the Barkly and provides more than 50 programs to 800 artists in the Barkly, including visual artists, musicians, gospel choirs, singers, traditional dancers and writers. Barkly Regional Arts runs the annual Harmony Festival.
- **Media Mob** is a training program run by Barkly Arts digital media including: film, photography, sound recording, audio editing, social media, web design, vision mixing, live web streaming and lighting. Media Mob has produced a number of short films on aspects of Aboriginal culture.

As Barkly Regional Arts says on its website (www.barklyarts.com.au, sighted 2 September 2016):

The Barkly regional demographic also reveals high levels of unemployment, social disadvantage and cultural erosion. BRA adopts the regional role of developing resilient community development and cultural maintenance arts programs.

8.3 IMPACT ASSESSMENT

The risk of unauthorised entry onto Aboriginal land causing a breach of the *Aboriginal Land Act* and offence to traditional owners can occur in the planning, construction and operations phases (risk#2, 15, 75). In the planning phase this risk (#2) is assessed as **SIGNIFICANT** given the project is still refining its processes, understanding the local and regional context, and developing relationships with regulators and Traditional Owners.

Previous projects have shown that it is usually during the planning phase that these issues arise. In the construction phase it is assessed as **MODERATE** as the project will be further matured in its management systems, and during the operations phase when the project footprint is small and work activities are well planned the risk is assessed as **LOW** for the operations phase. The mitigations are based on established processes, which are already working effectively during the planning phase, as such the residual risk is assessed as **LOW**.

Similar to the above, the second risk spans the three project phases and refers to the potential risk of uninvited entry into Aboriginal living areas (e.g. family outstations) by project personnel which can be of concern to those residents. During the planning phase this risk (#5) prior to mitigation was assessed as **MODERATE**, while during the construction (risk#13) and operations (risk#75) phases it was assessed as **LOW**. The difference in assessment was based on the knowledge that this risk is usually higher as the project is still refining its management systems, understanding the local and regional context, and developing relationships with regulators and Traditional Owners. while during construction and operations these have been refined and matured.

Other risks include the potential of damage to sites (#4, 16, 76) and discovery of previously unknown sites (#17, 21) and skeletal remains (#18, 22), all of which are covered off in the CHMP.

The measures to mitigate the potential risks include clear identification of communities and sensitive areas, worker Codes of Behaviour that includes clear restrictions on where workers can go and appropriate signage. Other measures suggested in interviews were to include cross-cultural presentations or awareness during workforce inductions, employing a heritage officer and contracts for local traditional owners as workforce mentors and cultural guides. Given this and that the identification process is already well underway for the Project the post-mitigation residual risk ratings were all assessed as **LOW**.

8.3.1 Culture and way of life

Large projects can impact on culture and way of life if there is significant and permanent disruption to traditional governance structures and cultural activities, which is unlikely to occur on this project.

Other impacts considered unlikely would be disruption to cultural activities such as hunting, gathering bush medicine, impacts on significant soaks and water courses and a curtailment of traditional ceremonies. None of these are considered to present a material risk. In fact, the existence of the cleared pipeline ROW, after construction and vegetation is restored, may present greater opportunities for access to country for traditional owners, for example for hunting and other cultural maintenance purposes.

Ways in which Jemena can contribute positively to local cultural activities include the employment of local Aboriginal people to provide cross-cultural or induction courses, jobs with ranger groups and rehabilitation teams or as cross-cultural advisers. Jemena may find opportunities to encourage employees to learn more about local Aboriginal cultures, attend concerts and festivals and visit cultural centres such as Nyinkka Nyunyu which would enhance cross-cultural understanding and pride in Warumungu and other cultures.

Jemena could also make a positive contribution to these cultural activities through any sponsorship to groups and community festivals.

8.3.2 Free, prior and informed consent

Vanclay et al. (2015) outline the importance of the concept of free, prior and informed consent when imposing large and disruptive projects on people who may be disadvantaged, marginalised and missed by mainstream engagement activities.

In the case of the NGP, Land Councils have a statutory responsibility to ensure that Aboriginal Traditional Owners for ALRA land understand and, as a group, consent to the project. Similarly, that Native Title groups are appropriately identified, well-informed, understand and are able to exercise the various and relevant rights they may have under the *Native Title Act*. This risk (#8) is therefore considered to be **LOW**.

Traditional knowledge

There may be some opportunities for the project to enhance traditional knowledge, particularly through local Aboriginal people working on survey teams (opportunities #1-3, 10, 11).

9. MITIGATION AND MANAGEMENT

9.1 SUMMARY OF RECOMMENDATIONS

This section summarises key management and mitigation strategies Jemena will employ to avoid, minimise or mitigate risks and to enhance beneficial opportunities from the project. The final approach will be set out in the project's Economic and Social Impact Management Plan (ESIMP) which will be completed in 4th quarter 2016 or early 2017.

Risks and opportunities associated with culture and heritage are mainly dealt with in Chapter 8 of the EIS and managed through the Cultural Heritage Management Plan (CHMP) (Appendix Q).

Some of the key measures are:

- implementation of a Workers Accommodation Plan in Tennant Creek that minimises potential negative risks (e.g. displacing other accommodation users, impact to community amenity) while optimising the use of established providers;
- implementing a Regional Employment Plan to maximise jobs opportunities on the Project for local and Indigenous people;
- Aboriginal participation measures to support employment outcomes;
- implementing a Small to Medium Enterprise Business Growth Program to minimise the risk that local businesses miss out on contracts;
- developing a social investment program during the construction phase (consultation will focus on what communities need);
- ongoing communication and stakeholder engagement to convey Project information and understand and respond to community concerns;
- developing and delivering Aboriginal cultural awareness training for Project staff during the planning and construction phases;
- investment in community social investment programs during the operations phase.

9.2 PROJECT COMMUNICATION

Many of the risks in both the planning and construction phases relate to communication about the Project by Jemena and its Construction Contractor. From the planning phase, individual concern and anxiety may arise in the community from rumours or uncertainties about the project timing and scope.

Some of these risks can be addressed by timely, accurate and relevant communication that considers the needs of all stakeholders, including face to face communication to build relationships and trust. Jemena intends to establish Community Reference Groups (CRG) in Tennant Creek and Mount Isa that include representatives from the relevant stakeholder organisations in those towns, as well as working through existing groups such as the Tennant Creek Regional Economic Development Committee and government regional coordination committees.

This will help Jemena disseminate accurate and relevant information about the project, provide two-way communication so the community can readily raise issues and receive early warning that management and mitigation measures are not achieving the outcomes and benefits desired. The CRGs will meet monthly throughout the construction phase and for the first three months after start of operations.

In addition, Jemena has established a Free Call number – 1300 578 515 – so people can register complaints or make inquiries. Any complaints or inquiries received will be referred to the responsible person and logged in monthly project reporting to senior management. Advice will be provided to the CRGs about any complaints or inquiries received and how they were managed.

In addition Jemena will provide communication materials at places such as government and local government offices and at roadhouses and tourist information centres.

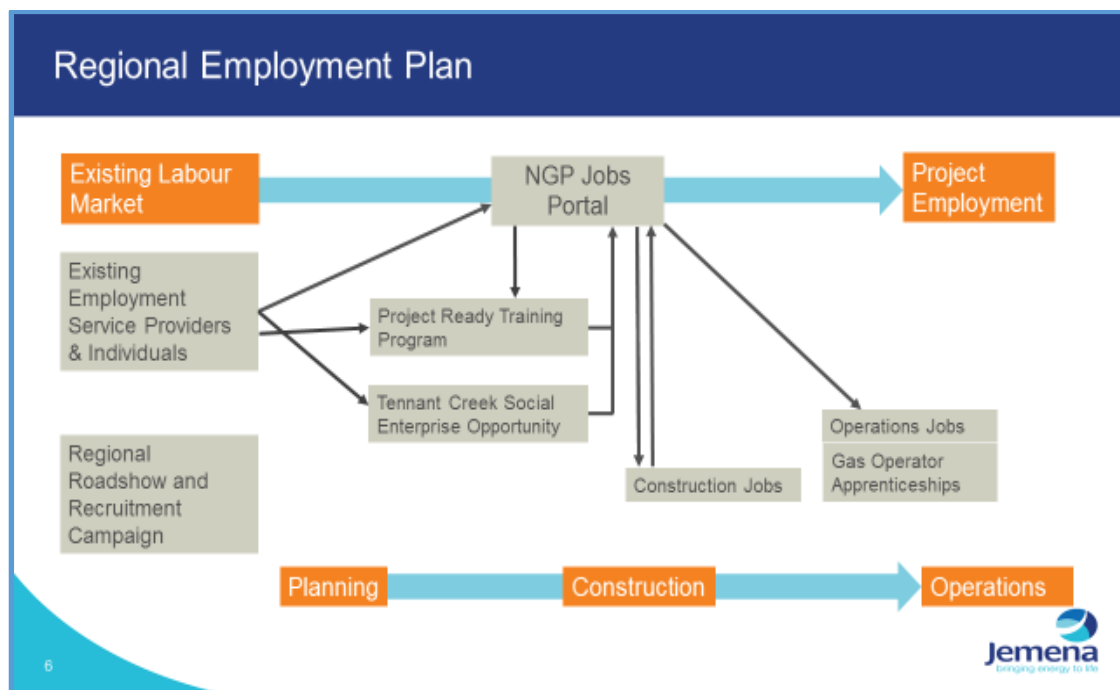
The activities above are designed to address risks # 6, 10, 11, 27, 36, 47, 50, 51, 52, 53, 70, 78 and any other risks or opportunities that emerge as the project is implemented.

9.3 EMPLOYMENT AND TRAINING

There are employment and training opportunities throughout all phases of the Project for local and Aboriginal people from the Barkly and Mount Isa regions, the Territory more broadly and western Queensland. Jemena will adopt a model that provides for employment and training opportunities at several levels. This covers people who would like to work on the Project and who:

- **would be able to be employed directly from the existing labour market** as they would be competitive based on their existing skill set;
- **would not quite be able to be employed directly from the existing labour market** as their skill set is lacking in one or more areas, but who could be competitive with an intensive period of pre-employment training, i.e. through a Project Ready Training Program (see further below); and,
- **would be unlikely to be able to be employed directly from the existing labour market** as they would not be competitive based on their existing skill set, as they face significant barriers to employment generally. They may be able to be employed in a less demanding environment such as the proposed Tennant Creek Social Enterprise Opportunity.

The employment and training model that caters for each of the above is shown in Figure 9-1 below.



NGP employment and training model

9.3.1 Regional employment plan

The Regional Employment Plan model shows how different candidates can access employment and/or training opportunities on the Project:

1. Direct employment through existing service providers and by individuals registering on the NGP Jobs Portal. This is targeted at workers who would be competitive based on their existing skill set, both Aboriginal and non-Aboriginal from the Barkly and Mount Isa regions, the Territory more broadly and western Queensland.
2. Access to the Project Ready Training Program is targeted at Aboriginal people from the Barkly and Mount Isa regions who could become competitive candidates if skill sets are improved.
3. The Tennant Creek social procurement opportunity is targeted specifically at Aboriginal people in Tennant Creek who would be unlikely to be able to secure employment on the project as they face significant barriers to employment.

The following sections describe the initiatives that comprise the Regional Employment Plan in more detail.

9.3.2 Regional recruitment strategy

The NGP Jobs and Training Portal will be the main mechanism for people from the Barkly and Mount Isa regions, the Territory and western Queensland to seek employment on the Project.

The web-based portal will be a centralised mechanism to advertise all vacancies by Jemena, the main construction contractor and other contractors and receive applications. The portal has been advertised in the media and through project communication.

Jemena and its Construction Contractor has held briefing sessions in Tennant Creek and Mount Isa, in conjunction with relevant community organisations, to explain to what job opportunities will be available and how to apply for them.

The NGP Jobs and Training Portal will bring together labour market supply and demand in the following ways:

Labour market supply:

- the registration of job seekers will include contact details (including place of residence), skills, work experience, qualifications, licences, resume, Aboriginality and associated language group, referees and, if applicable, the employment service provider representing the job seeker;
- automatic notification from the NGP Jobs & Training Portal to Jemena and NGP contractors or job seeker registration on the portal.

Labour market demand:

- posting NGP employment vacancies on the Jobs & Training Portal by Jemena and Project contractors;
- automatic notification from the NGP Jobs & Training Portal of employment vacancies to nominated employment service providers and labour hire companies in Tennant Creek, Mount Isa and the regions in which the pipeline will be constructed and operate;
- automatic notification from the NGP Jobs Portal of employment vacancies to job seekers registered on the portal, particularly those with the skills and experience required for the advertised vacancy.

The NGP Jobs and Training Portal will interface with existing NGP Project employer online recruitment portals, such as the McConnell Dowell pipeline jobs portal:

www.mcconnelldowell.com/pipelinejobs

and provide links to external websites that can provide both job seekers and employers with information about employment subsidies, government support programs and other useful information.

9.3.3 Project Ready Training Program

The Project Ready Training Program (PRTTP) will prepare local Aboriginal people living in the Barkly and Mount Isa regions who are strongly motivated to apply for unskilled and semi-skilled construction jobs, particularly the long-term unemployed.

Overall two training programs are expected to be run, each catering for 30 trainees, meaning a total of 60 people across the two regions. The programs are expected to be run in each region in the first quarter of 2017.

The PRTP will give candidates the essential and desirable skills needed to be considered for employment. It will include modules such as the Construction Industry White Card (CPCCOHS1001A) or equivalent following work health and safety policies and procedures, basic first aid, workplace communication, literacy and numeracy, income management, driver's licences, using power tools and dogging and rigging skills.

Contracts for the provision of the PRTP are expected to be let in the 4th quarter 2016.

9.3.4 Gas operator apprenticeships

In the second half of 2018 Jemena will select a group of workers who have demonstrated the capability, aptitude and attitude to benefit from the Jemena Gas Operator Traineeship Program.

There will be two phases to the program:

- **Phase I:** The group selected will complete a Certificate II in Gas Operations over a five to six-week period including a mix of classroom and field work, based on the availability of suitable practice areas. The program will include a period at Jemena's gas learning and operations centre at Greystanes in Sydney or another suitable facility. It will include further vocational based literacy and numeracy training and life skills coaching. Successful participants will receive a Certificate II in Gas Operations.
- **Phase II:** Jemena will then select two candidates for employment in the operations phase to complete a Certificate III in Gas Operations. Graduates from this phase will acquire the skills to operate and maintain a pipeline. While the operations requirements for the NGP will require few staff, graduates from Phase I will make strong candidates for further training and employment opportunities in the industry.

9.3.5 Tennant Creek social employment opportunity

During the initial development of its approach to local content Jemena proposed to establish a social enterprise in Tennant Creek that would produce and supply wooden pipe skids and sand or saw dust bags in Tennant Creek.

The purpose of the enterprise was to ensure jobs for people in Tennant Creek who may otherwise not find work on the project. It is often the case that people face significant barriers to getting work, such as through long-term unemployment, cultural and family responsibilities and other social and health issues.

The concept was that a small social enterprise could be established to manufacture and supply the pipe skids and sand and sawdust bags. The resulting profits could then be used to fund a smaller enterprise that might then compete successfully for longer-term, non-critical maintenance opportunities on the project.

After consultation with key stakeholders in the community, Jemena determined that the establishment of a new entity in Tennant Creek was not an optimal solution. It was felt there was existing capacity within Tennant Creek to provide the products required while achieving the intended social outcomes. Consequently, Jemena and construction contractor McConnell Dowell determined that the best approach would be through a 'social procurement' model. In other words, the supply could be sourced through local suppliers, either community sector organisations, private enterprises or joint ventures, still achieving the same social outcomes.

Therefore, in the second quarter of 2016, Jemena sought expressions of interest from Tennant Creek businesses and the broader community for the supply of 50,000 timber pipe skids and 80,000 sand or sawdust bags.

The contract for the award of the Tennant Creek Social Employment Project is expected to be made in 4th quarter 2016 with supply needing to be started by 31 January 2017.

9.3.6 BUSINESS OPPORTUNITIES

There are business opportunities throughout all phases of the Project for Aboriginal and other local people from the Barkly and Mount Isa regions, the Northern Territory more broadly and western Queensland.

The ESIMP will seek to maximise these opportunities through a number of strategies and initiatives described below.

1. Jemena has devoted a significant effort to business community engagement and briefings, as set out in Chapter 4 of the EIS and referred to further below. This activity will continue through the ICN network, Jemena's own networks and the CRG referred to above. In addressing the lack of capacity Jemena has established the SME Business Investment Fund, which allocates up to \$500,000 for this purpose (see 9.3.9). In addition, Jemena will discuss the risk of failure and importance of strategic business planning with any new start-ups awarded contracts.
2. In implementing its approach to local content, Jemena has from the start of the project ensured that all first and second tier contracts have local content requirements in their contracts. This will encourage contractors to maximise the use of local goods and services from the regions so local businesses do not miss out on opportunities (risk #49). Local content requirements in project contracts is a common way for resource projects to achieve local content outcomes.
3. The risk of businesses missing out on opportunities will also be addressed by effective communication and implementing Jemena's approach to local content. A stakeholder engagement program will provide ongoing communication with stakeholders. This is also considered standard industry practice to manage risks associated with people not having enough information about a Project (risks #50, 51).

9.3.7 Local content

Jemena and the construction contractor have incorporated local content provisions in contracts (where applicable) to ensure that subcontractors maximise opportunities for local business and people. These conditions include requirements for sub-contractors to implement and report on Local Content Plans which detail employment, sub-contracting and training commitments in the Barkly and Mount Isa regions, the Northern Territory more broadly and western Queensland, including Aboriginal business and employment opportunities.

Both Jemena and the Construction Contractor have engaged the Industry Capability Network (ICN) to support local vendor screening, communicate tendering opportunities and other relevant Project information. This includes posting tender opportunities on the ICN Gateway and providing information such as a summary of the scope of work, expectations for delivery, pre-qualification requirements and other relevant information. Jemena will also post selected opportunities to the Tenderlink system.

The dedicated Jemena ICN Gateway pages are at:

Jemena www.northerngaspipeline.icn.org.au

McConnell Dowell www.northerngaspipelineconstruction.icn.org.au

Jemena has looked at ways to break work packages into smaller components to facilitate local content outcomes. Known as ‘package splitting’ this means breaking larger packages of work into smaller packages more suited to local business capabilities.

Through these initiatives and by engaging with key stakeholders, Jemena will do its best to ensure that local business, particularly those in the Barkly and Mount Isa region, can be competitive in tendering for work on the Project and can expand their capabilities and potentially grow by working on the Project.

Jemena has appointed staff dedicated to implementing the ESIMP and established a project office in Darwin to support stakeholder engagement and ESIMP implementation.

At the time of writing, Jemena is in the process of opening a project office in Tennant Creek to more closely engage with local businesses and people.

9.3.8 Small to medium enterprise (SME) Business Briefings

Since Jemena was awarded the Project it has spoken with more than 400 businesses in Darwin, Katherine, Tennant Creek, Alice Springs and Mount Isa to provide information on the Project.

These briefings have given local businesses the opportunity to talk with Project personnel, ICN and Territory and Australian Government staff to better understand contracting and procurement timelines and processes and pre-qualification requirements.

Direct and indirect engagement with SMEs will continue, with the goal of delivering good local business and employment outcomes. This will also facilitate communication with business people and the broader community in the event of forced or unpredicted Project delays.

9.3.9 SME Business Investment Fund

This initiative, which has begun, will help eligible SMEs access government business development programs relevant to their needs through Jemena providing co-contribution funding.

A Memorandum of Understanding (MoU) was signed with the Northern Territory Government in June 2016 to deliver Northern Territory funded business programs and arrangements. Jemena is also collaborating with the Australian and Queensland Governments.

It is envisaged that Jemena's co-contribution will increase the capability of local businesses to competitively tender for work on the project which may then be applied to other projects in the Barkly and Mount Isa regions.

Jemena is working with key business and government stakeholders to implement this initiative and reporting regularly to the Northern Territory Government on the implementation of these employment and business initiatives.

9.3.10 Social Investment Program

During the fourth quarter of 2016 and the first quarter of 2017 Jemena will develop a Remote Community Social Investment Program.

The program will be designed after the SIA consultation program is complete and Project approvals are in place and will be the subject of further consultation with the relevant community organisations. There are opportunities for social investment to include technology that would support community development or social infrastructure, such as supporting local clinics with telehealth technology or local schools or to help resolve existing community needs.

Jemena's Remote Community Social Investment Program will start in the construction phase and continue throughout NGP operations.

9.3.11 Economic development

In the fourth quarter of 2016 or early 2017, Jemena will do a high level study on economic opportunities for remote communities to contribute towards its understanding for the social investment program.

9.4. SUMMARY

NGP Project activities are likely to affect the socio-economic profile of the region, although many impacts will be short-term, given the relatively short project duration.

This includes positive impacts – or opportunities - that will be welcomed by the community. However, inevitably, some impacts are negative to varying degrees, which will need ongoing mitigation, management and monitoring. Each identified risk has been reduced to As Low As Reasonably Practicable (ALARP) by applying management and mitigation measures. The mitigation measures where possible will reduce most risks to low, however, some risks still have Moderate residual risk rating.

Equally, without enhancement initiatives some opportunities are unlikely to be realised.

9.4.1 Planning phase residual risks and current opportunities

Some planning stage risks have been prompted by business engagement and local people working on early survey activities. Potential negative impacts related to land access negotiations are being managed carefully through established processes.

Social impact consultation began in August 2016 and gathered qualitative insights into perceived impacts, local knowledge and suggestions for managing positive and negative impacts.

Post-mitigation, planning phase residual risks are assessed as low, however, as noted above, careful ongoing management and mitigation will be important in ensuring these risks continue to be effectively managed.

9.4.2 Construction phase residual risks and opportunities.

The construction phase will lead to increased activity throughout the Barkly and Tennant Creek regions. After mitigation, the risks that remain moderate during the construction phase relate to three particular areas.

First, the impact of increased wages and benefits circulating in the community causing increased abuse of alcohol and drugs, which in turn can result in anti-social behaviour and negative interaction with the health and criminal justice system. Much of this is outside Jemena's control as the company cannot dictate how wages are spent and benefits distributed. However, where possible, Jemena will work with the community to manage negative behaviours, for example through Codes of Behaviour for workers.

Second, the risk of increased traffic incidents in Tennant Creek and along the Barkly and Stuart highways, through the interaction between the Project transport, local and tourist traffic. This risk is further discussed in Chapter 10 Human Health and Safety.

Third, from an economic perspective, a key risk is unrealistic expectations or the failure to gain jobs and contracts by not having the required skills or by not meeting the required competitiveness and business standards required of contracts. This includes a risk that the Barkly labour market and business capacity is overshadowed by larger Mount Isa market which has a greater pool of potential workers and more established industrial capacity. The project may drain other sectors of skilled workers during the construction phase, thereby reducing their productivity or their ability to deliver services.

Again, these impacts are largely outside Jemena's control although some measures may cushion the extent of these impacts such as various capacity building programs, transparent implementation of its Regional Employment Plan, promotion of the SME Business Investment Fund and clear communication of labour demand and tendering standards.

Fundamentally, however, Jemena controls neither the market nor the choices of individual people and businesses.

9.4.3 Operation phase residual risks and opportunities

During the operations phase there will be considerably reduced Project activity and consequently social and economic risks during this phase are all low.

A small suite of long-term business and employment opportunities will be available during the 30+ year operating phase. Jemena will seek to maximise the use of local goods, services and labour during this period.

For the reader's convenience the inherent and residual / resulting impact (risk and opportunity) profiles set in section 5, are repeated below.

PROJECT PHASE	PROFILE OF INHERENT RISKS				
	Low	Moderate	Significant	High	Extreme
Planning	3	2	7	0	0
Construction	18	25	16	5	0
Operations	5	4	0	0	0
TOTALS	26	31	23	5	0

Inherent (pre-mitigation) socio-economic risk profile

PROJECT PHASE	PROFILE OF MITIGATED RISKS				
	Low	Moderate	Significant	High	Extreme
Planning	11	1	0	0	0
Construction	54	10	0	0	0
Operations	7	2	0	0	0
TOTALS	72	13	0	0	0

Residual (post-mitigation) socio-economic risk profile

PROJECT PHASE	PROFILE OF INHERENT OPPORTUNITIES				
	Low	Moderate	Significant	High	Transform

Planning	5	4	0	0	0
Construction	6	8	0	0	0
Operations	4	1	0	0	0
TOTALS	15	13	0	0	0

Inherent (pre-enhancement) socio-economic opportunity profile

PROJECT PHASE	PROFILE OF ENHANCED OPPORTUNITIES				
	Low	Moderate	Significant	High	Transform
Planning	0	8	0	0	0
Construction	0	10	5	0	0
Operations	3	2	0	0	0
TOTALS	3	20	5	0	0

Possible (post-enhancement) socio-economic opportunity profile

10 CUMULATIVE IMPACTS

Cumulative impacts are those where multiple projects compound the economic and social risks and opportunities. Of itself, Jemena may have an imperceptible impact on government services, for example. However, should several major projects start at the same time, the combined risk rating would be more severe.

Many cumulative risks would be positive, for example a pipeline of projects, properly sequenced, would allow employees to move from one project to the next and increase the likelihood of completing apprenticeships, for example.

Predicting cumulative impacts with any certainty is difficult given the uncertain timelines of potential projects. However, it is more likely that any other projects follow rather than coincide with the NGP. The only immediate major project would be the re-opening of the Bootu Creek manganese mine 110 north of Tennant Creek, which may draw on some of the same workers as for the NGP. The mine suspended operations in December 2015 and 140 workers were made redundant, however most of these were engaged as FIFO workers (Tennant Creek and District Times, 2016).

Other potential projects include Avenira Limited, formerly Minemakers Limited, an Australia-based company engaged in exploration and development of the Wonarah Project south of the Barkly Highway; Rum Jungle's proposed phosphate mines east of Tennant Creek and south of the project footprint; the proposed Mount Peake titanium and vanadium mine site near Barrow Creek and Arafura Resources' Nolans rare earths project near Ti Tree.

Tennant Creek businesses are hoping to see a railway built from Tennant Creek to the east coast. Should this project go ahead, it would take many years of planning, land acquisition and finance-raising so is not considered to be relevant to consideration of cumulative impacts for the NGP.

Other potential cumulative impacts would include pastoralists' concerned at the number of mining and exploration companies working on their properties and concerns that the NGP will increase oil and gas exploration activity to provide onshore gas to the pipeline.

11 REFERENCES

Department of Treasury and Finance, 2014. *Northern Territory Treasury*. [Online]

Available at: www.budget.nt.gov.au

[Accessed 18 June 2016].

Aard Metals, n.d. *Warrego Tailings (NT) Project*. [Online]

Available at: <https://aardmetals.wordpress.com/warrego-tailings/>

[Accessed 6 September 2016].

ABS, 2006. *Australian Bureau of Statistics*. [Online]

Available at: <http://www.abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/3302.02007?OpenDocument>

[Accessed 20 June 2016].

ABS, 2008. *Australian Bureau of Statistics*. [Online]

Available at:

<http://www.abs.gov.au/ausstats/abs@.nsf/781eb7868cee03e9ca2571800082bece/652b545537397df2ca2574020010c6a4!OpenDocument>

[Accessed 20 June 2016].

ABS, 2011. *2011 Census - Community Profile - Barkly Local Government Area - Aboriginal and Torres Strait Islander Peoples (Indigenous) Profil*. [Online]

Available at:

http://www.censusdata.abs.gov.au/census_services/getproduct/census/2011/communityprofile/LGA70420

[Accessed 2 August 2016].

ABS, 2011. *2011 Census - Community Profile - Barkly Local Government Area - Aboriginal and Torres Strait Islander Peoples (Indigenous) Profil*. [Online]

Available at:

http://www.censusdata.abs.gov.au/census_services/getproduct/census/2011/communityprofile/LGA70420?opendocument&navpos=220

[Accessed 2016 August 2016].

ABS, 2011. *2011 Census - Community Profile - Barkly Local Government Area - Aboriginal and Torres Strait Islander Peoples (Indigenous) Profile*. [Online]

Available at:

http://www.censusdata.abs.gov.au/census_services/getproduct/census/2011/communityprofile/LGA70420?opendocument&navpos=220

[Accessed 2 August 2016].

ABS, 2011. *2011 Census - Community Profiles - Barkly Region - Aboriginal and Torres Strait Islander Peoples (Indigenous) Profile*. [Online]

Available at:

http://www.censusdata.abs.gov.au/census_services/getproduct/census/2011/communityprofile/LGA70420

[Accessed 2 August 2016].

ABS, 2011. *2011 Census Community Profile - Working Population Profile - Mount Isa Local Government Area*. [Online]
Available at:
http://www.censusdata.abs.gov.au/census_services/getproduct/census/2011/communityprofile/LGA35300
[Accessed 2 August 2016].

ABS, 2011. *2011 Census Community Profiles- Urban Centres and Localities - Alpururulam Basic Community Profile*. [Online]
Available at:
http://www.censusdata.abs.gov.au/census_services/getproduct/census/2011/communityprofile/UC L722002
[Accessed 2 August 2016].

ABS, 2011. *ABS Quickstats*. [Online]
Available at:
http://www.censusdata.abs.gov.au/census_services/getproduct/census/2011/quickstat/SSC30303?opendocument&navpos=220
[Accessed 30 June 2016].

ABS, 2011. *Australian Bureau of Statistics, 2011 Census Edition - Preliminary*. [Online]
Available at:
<http://www.abs.gov.au/AUSSTATS/abs@.nsf/allprimarymainfeatures/81C5AE743DDCF8F0CA257A850013DF4C?opendocument>
[Accessed 1 July 2016].

ABS, 2011. *Australian Bureau of Statistics, 3238.0.55.001 - Estimates of Aboriginal and Torres Strait Islander Australians*. [Online]
Available at: <http://www.abs.gov.au/ausstats/abs@.nsf/mf/3238.0.55.001>
[Accessed 1 July 2016].

ABS, 2011. *Barkly (SA3)*. [Online]
Available at:
http://stat.abs.gov.au/itt/r.jsp?RegionSummary®ion=70202&dataset=ABS_REGIONAL_ASGS&geoconcept=REGION&measure=MEASURE&datasetASGS=ABS_REGIONAL_ASGS&datasetLGA=ABS_REGIONAL_LGA®ionLGA=REGION®ionASGS=REGION
[Accessed 30 June 2016].

ABS, 2011. *Mount Isa (C) (LGA)*. [Online]
Available at:
http://stat.abs.gov.au/itt/r.jsp?RegionSummary®ion=35300&dataset=ABS_REGIONAL_LGA&geoconcept=REGION&maplayerid=LGA2012&measure=MEASURE&datasetASGS=ABS_REGIONAL_ASGS&datasetLGA=ABS_REGIONAL_LGA®ionLGA=REGION®ionASGS=REGION
[Accessed 30 June 2016].

ABS, 2011. *Tennant Creek (SA2)*. [Online]
Available at:
http://stat.abs.gov.au/itt/r.jsp?RegionSummary®ion=702021056&dataset=ABS_REGIONAL_ASGS&geoconcept=REGION&measure=MEASURE&datasetASGS=ABS_REGIONAL_ASGS&datasetLGA=ABS

REGIONAL LGA®ionLGA=REGION®ionASGS=REGION

[Accessed 30 June 2016].

ABS, 2013. *2011 Census: Tennant Creek (Urban Centre/Locality)*. [Online]

Available at:

http://www.censusdata.abs.gov.au/census_services/getproduct/census/2011/quickstat/UCL715007

[Accessed 27 June 2016].

ABS, 2013. *ABS 2011 Census of Population and Housing - Mount Isa SA2 - basic community profile*.

[Online]

Available at:

http://www.censusdata.abs.gov.au/census_services/getproduct/census/2011/communityprofile/315021405?opendocument&navpos=230

[Accessed 23 June 2016].

ABS, 2014. *Mount Isa (C) LGA*. [Online]

Available at:

http://stat.abs.gov.au/itt/r.jsp?RegionSummary®ion=35300&dataset=ABS_REGIONAL_LGA&geoc oncept=REGION&maplayerid=LGA2012&measure=MEASURE&datasetASGS=ABS_REGIONAL_ASGS& datasetLGA=ABS_REGIONAL_LGA®ionLGA=REGION®ionASGS=REGION

[Accessed 30 June 2016].

ABS, 2014. *Mount Isa (C) LGA*. [Online]

Available at:

http://stat.abs.gov.au/itt/r.jsp?RegionSummary®ion=35300&dataset=ABS_REGIONAL_LGA&geoc oncept=REGION&maplayerid=LGA2012&measure=MEASURE&datasetASGS=ABS_REGIONAL_ASGS& datasetLGA=ABS_REGIONAL_LGA®ionLGA=REGION®ionASGS=REGION

[Accessed 30 June 2016].

ABS, 2014. *Mount Isa Local Government Area*. [Online]

Available at: <http://www.abs.gov.au/AUSSTATS/abs@.nsf/mf/3101.0>

[Accessed 13 July 2016].

ABS, 2014. *Northern Territory*. [Online]

Available at:

http://stat.abs.gov.au/itt/r.jsp?RegionSummary®ion=7&dataset=ABS_REGIONAL_ASGS&geoconc ept=REGION&measure=MEASURE&datasetASGS=ABS_REGIONAL_ASGS&datasetLGA=ABS_REGIONA L_LGA®ionLGA=REGION®ionASGS=REGION

[Accessed 22 July 2016].

ABS, 2014. *Queensland (S/T)*. [Online]

Available at:

http://stat.abs.gov.au/itt/r.jsp?RegionSummary®ion=3&dataset=ABS_REGIONAL_ASGS&geoconc ept=REGION&measure=MEASURE&datasetASGS=ABS_REGIONAL_ASGS&datasetLGA=ABS_REGIONA L_LGA®ionLGA=REGION®ionASGS=REGION

[Accessed 22 July 2016].

ABS, 2014. *Tennant Creek*. [Online]

Available at:

http://stat.abs.gov.au/itt/r.jsp?RegionSummary®ion=702021056&dataset=ABS_REGIONAL_ASGS

&geoconcept=REGION&datasetASGS=ABS_REGIONAL_ASGS&datasetLGA=ABS_REGIONAL_LGA®ionLGA=REGION®ionASGS=REGION

[Accessed 30 July 2016].

ABS, 2014. *Tennant Creek (SA2)*. [Online]

Available at:

http://stat.abs.gov.au/itt/r.jsp?RegionSummary®ion=702021056&dataset=ABS_REGIONAL_ASGS&geoconcept=REGION&datasetASGS=ABS_REGIONAL_ASGS&datasetLGA=ABS_REGIONAL_LGA®ionLGA=REGION®ionASGS=REGION

[Accessed 22 July 2016].

ABS, 2016. *Australian Bureau of Statistics, Australian demographic statistics, Dec 2015*. [Online]

Available at: <http://www.abs.gov.au/AUSSTATS/abs@.nsf/mf/3101.0>

[Accessed 13 July 2016].

ABS, 2016. *Barkly (R) Local Government Area*. [Online]

Available at:

http://stat.abs.gov.au/itt/r.jsp?RegionSummary®ion=70420&dataset=ABS_REGIONAL_LGA&geoconcept=REGION&maplayerid=LGA2014&measure=MEASURE&datasetASGS=ABS_REGIONAL_ASGS&datasetLGA=ABS_REGIONAL_LGA®ionLGA=REGION®ionASGS=REGION

[Accessed 22 July 2016].

ABS, 2016. *Barkly Local Government Area*. [Online]

Available at:

http://stat.abs.gov.au/itt/r.jsp?RegionSummary®ion=70420&dataset=ABS_REGIONAL_LGA&geoconcept=REGION&maplayerid=LGA2014&measure=MEASURE&datasetASGS=ABS_REGIONAL_ASGS&datasetLGA=ABS_REGIONAL_LGA®ionLGA=REGION®ionASGS=REGION

[Accessed 13 July 2016].

ABS, 2., 2011. *2011 Census*, Canberra: Australian Bureau of Statistics.

ABS, 2., 2013. *ABS 2011 Census of Population and Housing Tennant Creek SA2 - basic community profile*. [Online]

Available at:

http://www.censusdata.abs.gov.au/census_services/getproduct/census/2011/communityprofile/702021056?opendocument&navpos=220

[Accessed 22 June 2016].

Adgar, W. N., 2003. Social capital, Collective Action and Adaptation to Climate Change. *Economic Geography*, Volume 79, p. 387–404.

Agreements, Treaties and Negotiated Settlements Project, 2011. *Samardín on behalf of the Ilperrelhelam, Malarrarr, Nwerrarr, Meyt, Itnwerrengayt and Ampwertety Landholding Groups v Northern Territory of Australia [2012] FCA 845*. [Online]

Available at: <http://www.atns.net.au/agreement.asp?EntityID=5850>

[Accessed 12 July 2016].

AHRC, 2007. *Australian Human Rights Commission, Social Justice Report 2007 - Chapter 3: The Northern Territory 'Emergency Response' intervention*. [Online]

Available at: <https://www.humanrights.gov.au/publications/social-justice-report-2007-chapter-3->

[northern-territory-emergency-response-intervention](#)

[Accessed 5 November 2016].

Alford, H. P. a. B., 2006. *A Wartime Journey: Stuart Highway Heritage Guide*. Darwin: Northern Territory Government.

ALRC, 2016. *Australian Law reform Commission: Aboriginal Societies: The Experience of Contact - Changing Policies Towards Aboriginal People*. [Online]

Available at:

http://www.alrc.gov.au/publications/3.%20Aboriginal%20Societies%3A%20The%20Experience%20of%20Contact/changing-policies-towards-aboriginal#_ftn8

[Accessed 3 August 2016].

Anyinginyi Aboriginal Corporation, 2016. *2014/2015 Anyinginyi Annual Report*, Tennant Creek: Anyinginyi Aboriginal Corporation.

Anyinginyi, 2015. *Anyinginyi Health Aboriginal Corporation*. [Online]

Available at: <http://anyinginyi.org.au/about/tennant-creek-and-the-barkly-region>

[Accessed 30 June 2016].

APGA, 2015. *Australian Pipelines & Gas Association, Guidelines and Publications*. [Online]

Available at: <http://www.apga.org.au/wp-content/uploads/2009/10/Stakeholder-Engagement-Guidelines.pdf>

[Accessed 30 June 2016].

APPEA, 2016. *Australian Petroleum Production & Exploration Association*. [Online]

Available at: [http://www.appea.com.au/wp-content/uploads/2016/03/APPEA Principles-of-Conduct-2016_signed.pdf](http://www.appea.com.au/wp-content/uploads/2016/03/APPEA_Principles-of-Conduct-2016_signed.pdf)

[Accessed 27 July 2016].

Australian Bureau of Statistics, 2004. *Measuring Social Capital, An Australian Framework And Indicators*. [Online]

Available at:

[http://www.ausstats.abs.gov.au/Ausstats/free.nsf/Lookup/13C0688F6B98DD45CA256E360077D526/\\$File/13780_2004.pdf](http://www.ausstats.abs.gov.au/Ausstats/free.nsf/Lookup/13C0688F6B98DD45CA256E360077D526/$File/13780_2004.pdf)

[Accessed 2016].

Australian Bureau of Statistics, 2011. *2011 Census Community Profile Barkly*. [Online]

Available at:

http://www.censusdata.abs.gov.au/census_services/getproduct/census/2011/communityprofile/LGA70420?opendocument&navpos=220

[Accessed 2016].

Australian Bureau of Statistics, 2011. *Barkly Community Profile*. [Online]

Available at:

http://www.censusdata.abs.gov.au/census_services/getproduct/census/2011/communityprofile/LGA70420?opendocument&navpos=220

[Accessed 25 June 2016].

Australian Bureau of Statistics, 2011. *Deaths Summary Statistics*. [Online]

Available at: <http://www.abs.gov.au/ausstats/abs@.nsf/lookup/3302.0Media%20Release12012>

Australian Bureau of Statistics, 2011. *Northern Territory Profile*. [Online]

Available at:

http://www.censusdata.abs.gov.au/census_services/getproduct/census/2011/communityprofile/7?opendocument&navpos=220

Australian Bureau of Statistics, 2013. *Barkly (S) LGA - 2013*. [Online]

Available at:

http://stat.abs.gov.au/itt/r.jsp?RegionSummary®ion=70420&dataset=ABS_REGIONAL_LGA&geoconcept=REGION&maplayerid=LGA2013&measure=MEASURE&datasetASGS=ABS_REGIONAL_ASGS&datasetLGA=ABS_REGIONAL_LGA®ionLGA=REGION®ionASGS=REGION

[Accessed 28 June 2016].

Australian Bureau of Statistics, 2013. *Mount Isa (C) 2013*. [Online]

Available at:

http://stat.abs.gov.au/itt/r.jsp?RegionSummary®ion=35300&dataset=ABS_REGIONAL_LGA&geoconcept=REGION&maplayerid=LGA2013&measure=MEASURE&datasetASGS=ABS_REGIONAL_ASGS&datasetLGA=ABS_REGIONAL_LGA®ionLGA=REGION®ionASGS=REGION

[Accessed 28 June 2016].

Australian Bureau of Statistics, 2013. *Tennant Creek*. [Online]

Available at:

http://stat.abs.gov.au/itt/r.jsp?RegionSummary®ion=702021056&dataset=ABS_REGIONAL_ASGS&geoconcept=REGION&measure=MEASURE&datasetASGS=ABS_REGIONAL_ASGS&datasetLGA=ABS_REGIONAL_LGA®ionLGA=REGION®ionASGS=REGION

[Accessed 28 June 2016].

Australian Bureau of Statistics, 2014. *Australian Bureau of Statistics*. [Online]

Available at:

<http://www.abs.gov.au/AUSSTATS/abs@.nsf/Lookup/3302.0Main+Features12014?OpenDocument>

[Accessed 18 June 2016].

Australian Bureau of Statistics, 2016. *Counts of Australian Businesses, including entries and exits Cat No 8165.0*, s.l.: ABS.

Australian Indigenous Health Information Net, 2016. *Anyinginyi Health Aboriginal Corporation*. [Online]

Available at: <http://www.healthinfonet.ecu.edu.au/key-resources/organisations?oid=1041>

[Accessed 31 July 2016].

Australian Lawyers for Remote Aboriginal Rights, n.d. [Online]

Available at: www.alrar.org.au

Bailey, J., 2007. *Mr Stuart's Track*. Sydney: Pan Macmillan.

Barkly Regional Council, 2015. *Annual Report 2014/15*, Tennant Creek: Barkly Regional Council.

Barkly Regional Council, 2016. *Barkly Regional Council*. [Online]

Available at: <http://barkly.nt.gov.au/region/demographics>

Barkly Regional Council, 2016. *Chronological Events within the Barkly Region*. [Online]

Available at: <http://barkly.nt.gov.au/uploads/pdfs/Chronological-Events-within-the-Barkly->

Region.pdf

[Accessed 27 June 2016].

Barkly Regional Council, n.d. *Our Story*. [Online]

Available at: <http://barkly.nt.gov.au/council/our-story>

[Accessed 6 September 2016].

Brotherhood of St Laurence, n.d. *Australia's Youth Unemployment Hotspots Snapshot*. [Online]

Available at:

http://library.bsl.org.au/jspui/bitstream/1/9004/1/BSL_Aust_youth_unemployment_hotspots_Mar2016.pdf

[Accessed 10 September 2016].

Central Land Council, 1992. From the days of whips and guns we now have our land back. *Land Rights News*, October.

Central Land Council, n.d. [Online]

Available at: www.clc.org.au

[Accessed 6 September 2016].

Central Land Council, n.d. *Central Land Council*. [Online]

Available at: www.clc.org.au

[Accessed 8 September 2016].

Croal, P. & Tetreault, C., 2012. *International Association for Impact Assessment, Best Practices*. [Online]

Available at: http://www.iaia.org/uploads/pdf/SP9_Indigenous_Peoples_Traditional_Knowledge.pdf

[Accessed 30 June 2016].

Davy, A., 2016. *Pushing for better beef opportunities*. s.l.:s.n.

Department of Employment, 2015. *Survey of Employers' Experiences in the NT Outback*, Canberra: Dept of Employment.

Department of Health, 2014. *Annual Report 2013-14*, Darwin: Northern Territory Government.

Department of Primary Industry, F. a. M., 2010. *Pastoral Industry Survey 2004 (updated 2010) Tennant Creek*. [Online]

Available at: http://www.nt.gov.au/d/Content/File/p/pi/PastoralSurvey/PIS_Barkly.pdf

Department of Regional Development, nd. *Tennant Creek Region Economic Profile At a Glance*, s.l.: Northern Territory Government.

Department of Regional Development, P. I. F. a. R., 2008. *Barkly Region Snapshot 2008*. [Online]

Available at: http://www.nt.gov.au/d/Content/File/p/rd/TennantCreek/snapshot_barkly.pdf

[Accessed 19 June 2016].

Department of Treasury & Finance, 2016. *Budget 2016-17: Northern Territory Economy*, Darwin: Northern Territory Government.

Dept. of State Development, 2013. [Online]

Available at: www.dsdiq.qld.gov.au

[Accessed 28 July 2016].

- DIIS, 2006. *Department of Industry, Innovation and Science*. [Online]
Available at: <http://www.industry.gov.au/resource/Programs/LPSD/Pages/default.aspx>
[Accessed 27 July 2016].
- DIIS, 2016. *Department of Industry, Innovation and Science*. [Online]
Available at: <http://www.industry.gov.au/resource/Programs/LPSD/Pages/default.aspx>
[Accessed 27 July 2016].
- DoB, 2015. *NT Department of Business, Building NT Industry Participation Policy*. [Online]
Available at: <https://business.nt.gov.au/publications/policies/building-northern-territory-industry-participation-policy>
[Accessed 30 June 2016].
- DSD, 2013. *Queensland Government, Dept of State Development, "Social impact assessment guideline"*. [Online]
Available at: <http://www.statedevelopment.qld.gov.au/resources/guideline/social-impact-assessment-guideline.pdf>
[Accessed 30 June 2016].
- Emmerson Resources, n.d. [Online]
Available at: www.emmersonresources.com.au/
- Emmerson Resources, n.d. *Emmerson Resources*. [Online]
Available at: <http://www.emmersonresources.com.au/>
[Accessed 5 September 2016].
- Federal Court of Australia, 2012. *Samardin on behalf of the Ilperrelhelam, Malarrarr, Nwerrarr, Meyt, Itnwerrengayt and Ampwertety Landholding Groups v Northern Territory of Australia [2012] FCA 845*. [Online].
- Forrest, P., 1981. *An outline of the pastoral history of the Barkly Tablelands*, Darwin: Department of Primary Production.
- FPIC, n.d. *Free Prior and Informed Consent*. [Online].
- Franks, D. F. C. B. D. V. F. a. C. P., 2009. *Leading Practice Strategies for Addressing the Social Impacts of Resource Developments*, Brisbane: The University of Queensland & The Queensland Government.
- Garrick, M., 2016. *NT Government to head review into Territory town camps*. [Online]
Available at: <http://www.ntnews.com.au/news/northern-territory/nt-government-to-head-review-into-territory-town-camps/news-story/76040d5887e6248a7e6a793c2b0efc27>
- Government, Q., 2009. *Department of Health*. [Online]
Available at: https://www.health.qld.gov.au/publications/research-reports/population-health/c5_series2.pdf
[Accessed June 2016].
- Hoath, A. & Haslam-McKenzie, F., 2013. *The socioeconomic impacts of long-distance community on source communities*, Perth: s.n.
- Hope, Z., 2015, 7 July. Cases of STD rise. *Centralian Advocate*.

- IAIA, 2016. *International Association for Impact Assessment*. [Online]
Available at: <http://www.iaia.org/>
[Accessed 30 June 2016].
- IAP2, 2015. *International Association for Public Participation, Resources, Quality Assurance Standard*. [Online]
Available at: <https://www.iap2.org.au/documents/item/391>
[Accessed 30 June 2016].
- IFC, 2012. *Sustainability at IFC*. [Online]
Available at:
http://www.ifc.org/wps/wcm/connect/3be1a68049a78dc8b7e4f7a8c6a8312a/PS1_English_2012.pdf?MOD=AJPERES
[Accessed 2016 June 2016].
- IPIECA, 2013. *IPIECA Guidelines on Social Performance*. [Online]
Available at: http://www.ipieca.org/library?tid%5B%5D=7&tid_1%5B%5D=12
[Accessed 30 June 2016].
- ISO, 2009. *International Standards Organisation*. [Online]
Available at: http://www.iso.org/iso/catalogue_detail?csnumber=43170
[Accessed 11 July 2015].
- ISO, 2010. *ISO 26000:2010 Guidance on social responsibility*. [Online]
Available at: http://www.iso.org/iso/catalogue_detail?csnumber=42546
[Accessed 3 August 2015].
- ISO, 2016. *International Organisation for Standardisation, ISO 31000 - Risk management*. [Online]
Available at: <http://www.iso.org/iso/home/standards/iso31000.htm>
[Accessed 27 June 2016].
- Jemena, 2016. *Jemena, Our Community*. [Online]
Available at: <http://jemena.com.au/about/about-us/our-community>
[Accessed 30 June 2016].
- K Shaw, G. B. & A. W., 1996. *A Background to the Southern Alice Springs Pastoral District Agnote No H5*, Darwin: Northern Territory Government.
- Kernaghan, J. S. D., 2008. Early Social Impact Management in a NT Oil and Gas Project. *APPEA Journal*, pp. 271 - 286.
- Lyon, P. & Lyon, M., 1989. *We are staying: The Alywarre struggle for land at Lake Nash*. Alice Springs: IAD Press.
- Lyon, P. & Parsons, M., 1989. The Alywarre and Early Lake Nash History. In: C. L. Council, ed. *We Are Staying: The Alywarre Struggle for Land at Lake Nash*. Alice Springs: I.A.D. Press, p. 3.
- Markus, A., 2015. *Mapping Social Cohesion The Scanlon Foundation Surveys 2015*, Melbourne: Monash University .
- Maurice, J. M., 1996. *Report No 31 by the Aboriginal Land Commissioner into the Warumungu Land Claim*, Canberra: Australian Government Printing Service.

- May Downs Station, n.d. *May Downs Station*. [Online]
Available at: <http://www.lordcattle.com.au/>
[Accessed September 2016].
- MCA, 2015. *Minerals Council of Australia*. [Online]
Available at: http://www.minerals.org.au/leading_practice/enduring_value
[Accessed 27 July 2016].
- Memmott, P., 2012. On generating culturally sustainable enterprises and demand-responsive services in remote Aboriginal settings: A case study from north-west Queensland. In: *Indigenous Participation in Australian Economies II*. Canberra: ANU Press.
- Mining News, 2016. *Hopes build for Tennant Creek Success*. [Online]
Available at: <http://www.miningnews.net/resourcestocks-top-stories/hopes-build-for-tennant-creek-success/>
- MITEZ, 2016. *Mount Isa to Townsville Economic Development Zone*. [Online]
Available at: <http://www.mitez.com.au>
[Accessed 23 June 2016].
- Mount Isa City Council, 2016. *Accommodation*. [Online]
Available at: <http://www.mountisa.qld.gov.au/visitor-information>
[Accessed 23 June 2016].
- Mount Isa City Council, n.d. [Online]
Available at: www.mountisa.qld.gov.au
[Accessed 6 September 2016].
- Mount Isa City, 2016. *Mount Isa City Council, Camooweal History*. [Online]
Available at: <http://www.mountisa.qld.gov.au/camooweal-history>
[Accessed 27 June 2016].
- Mount Isa Council, n.d. *Mount Isa Council*. [Online]
Available at: www.mountisa.qld.gov.au
[Accessed 6 September 2016].
- Mount Isa Mines, n.d. *Mount Isa Mines*. [Online]
Available at: www.mountisamines.com.au
[Accessed 1 September 2016].
- Nash, D. & Memmott, P., 2016. *Housing conditionality, Indigenous lifeworlds and policy outcomes*, Brisbane: Australian Housing and Urban Research Institute.
- National Archives, 2016. *National Archives of Australia: Research Guides*. [Online]
Available at: <http://guides.naa.gov.au/records-about-northern-territory/part2/chapter8/8.5.aspx>
[Accessed 3 August 2016].
- National Native Title Tribunal, 2006. *Bularnu People*, Perth: National Native Title Tribunal.
- Northern Land Council, n.d. [Online]
Available at: www.nlc.org.au
[Accessed 6 September 2016].

Northern Land Council, n.d. *Northern Land Council*. [Online]

Available at: www.nlc.org.au

[Accessed 8 September 2016].

Northern Territory Cattlemen's Association, n.d. *Northern Territory Cattlemen's Association*. [Online]

Available at: www.ntca.org.au

Northern Territory Government, 2015. *Northern Territory Aboriginal Communities*, Darwin: Northern Territory of Australia.

Northern Territory Police, 2016. *Northern Territory Police*. [Online]

Available at: <http://www.pfes.nt.gov.au/Police/Community-safety/Northern-Territory-crime-statistics.aspx>

NT Department of Health, 2016. *Tennant Creek Hospital*. [Online]

Available at: http://www.health.nt.gov.au/Hospitals/Tennant_Creek_Hospital/index.aspx

[Accessed 31 July 2016].

NT Department of the Chief Minister, 2016. *Tennant Creek Region Economic Profile At A Glance*.

[Online]

Available at: https://dcm.nt.gov.au/_data/assets/pdf_file/0005/260168/Tennant_Creek_EP.pdf

[Accessed 1 August 2016].

NT EPA, 2013. *Northern Territory Environmental Protection Authority "Guidelines for the preparation of an economic and social risk assessment"*. [Online]

Available at:

http://www.ntepa.nt.gov.au/_data/assets/pdf_file/0007/349936/guideline_assessment_economic_social_impact.pdf

[Accessed 27 June 2016].

NT EPA, 2013. *NT Environmental Protection Authority*. [Online]

Available at:

http://www.ntepa.nt.gov.au/_data/assets/pdf_file/0007/349936/guideline_assessment_economic_social_impact.pdf

[Accessed 30 June 2016].

NT EPA, 2013. *NT EPA Guidelines*. [Online]

Available at: <http://www.ntepa.nt.gov.au/environmental-assessments/guidelines>

[Accessed 30 June 2016].

NT Government, 2016. *Northern Territory Government, Onshore oil and gas*. [Online]

Available at: <https://onshoregas.nt.gov.au/new-gas-pipeline>

[Accessed 29 June 2016].

NT Labor, 2016. *Fracking*. [Online]

Available at: <http://territorylabor.com.au/Labors-Plan/Fracking>

NT PFES, 2016. *Northern Territory Police Fire and Emergency, Tennant Creek*. [Online]

Available at: <http://www.pfes.nt.gov.au/Police/NT-Police-station-profiles/Regional-remote-police-stations/Tennant-Creek.aspx>

[Accessed 23 June 2016].

NT Police, Fire and Emergency Services, 2016. *Alpurrurulam*. [Online]
Available at: <http://www.pfes.nt.gov.au/Police/NT-Police-station-profiles/Regional-remote-police-stations/Alpurrurulam.aspx>
[Accessed 25 June 2016].

NT Police, Fire and Emergency Services, 2016. *Northern Territory Fire and Rescue Service*. [Online]
Available at: <http://www.pfes.nt.gov.au/Fire-and-Rescue.aspx>
[Accessed 25 June 2016].

NT Police, Fire and Emergency Services, 2016. *Tennant Creek Volunteer Unit*. [Online]
Available at: <http://www.pfes.nt.gov.au/Emergency-Service/Your-local-volunteers/Volunteer-location-profiles/Tennant-Creek-Volunteer-Unit.aspx>
[Accessed 25 June 2016].

NT Shelter, 2016. *Ten Year Housing Affordability Report Card*. [Online]
Available at: <https://ntshelter.org.au/2016/07/27/hot-off-the-press-ten-year-housing-affordability-report-card/>

NTML, 2014. *NT Medicare Local, Northern Territory Population Health Commissioning Atlas*, Darwin: Healthfirst Network TM Publication.

Office of Urban Management, 2007. *South-East Queensland Regional Plan 2005-26: Social infrastructure guidelines*. [Online]
Available at: <http://www.dilgp.qld.gov.au/resources/guideline/ImplementationGuideline5.pdf>

Pamela Lyon, M. P., 1989. *We Are Staying - the Alyawarre struggle for land at Lake Nash*. Alice Springs: I.A.D. Press.

Pamela Lyon, M. P., 1989. *We Are Staying - the Alyawarre struggle for land at Lake Nash*. Alice Springs: I.A.D. Press.

Papulu Aparr-kari, 2016. *Papulu Aparr-kari Aboriginal Corporation*. [Online]
Available at: <http://www.papak.com.au/>
[Accessed 28 June 2016].

Pearson, N., 2016. *Cape York Partnership*. [Online]
Available at: <http://capeyorkpartnership.org.au/wp-content/uploads/2016/10/Still-Hunting-the-Radical-Centre-Sir-Kelth-Murdoch-Oration-2016-Noel-Pearson.pdf>
[Accessed 5 November 2016].

Pers.com, 2016. *Rural Fire Service Officer* [Interview] (28 June 2016).

Pers.com, 2016. *Rural Fire Service Officer* [Interview] (28 June 2016).

P, N. D. & M., 2016. *Housing conditionality, Indigenous Lifeworlds and policy outcomes*, Brisbane: Australian Housing and Urban Research Institute.

Public Accounts Committee, 2016. *Report on Repairs and Maintenance of Housing on Town Camps*, Darwin: Legislative Assembly of the Northern Territory.

Queensland Department of Health, 2012. *Camooweal Primary Health Care Clinic*. [Online]
Available at: https://www.health.qld.gov.au/services/northwest/nwest_camoo_hc.asp
[Accessed 31 July 2016].

- Queensland Department of Health, 2012. *Mount Isa Base Hospital*. [Online]
Available at: https://www.health.qld.gov.au/services/northwest/nwest_mtisa_hosp.asp
[Accessed 31 July 2016].
- Queensland Government Statistician's Office, Q. T., 2016. *Queensland Regional Profiles: Resident Profile for Mount Isa City Statistical Area Level 2*. [Online]
Available at: <http://statistics.qgso.qld.gov.au/qld-regional-profiles>
[Accessed 23 June 2016].
- Queensland Health, 2009. *Queensland Health Department*. [Online]
Available at: https://www.health.qld.gov.au/services/northwest/nwest_mtisa_hosp.asp
[Accessed 24 June 2016].
- Queensland Police Service, 2016. *Queensland Crime Statistics*. [Online]
Available at: <http://mypolice.qld.gov.au/queensland-crime-statistics/>
[Accessed 27 June 2016].
- Queensland, T. R. E. I. o., 2016. *Queensland Market Monitor March Quarter 2016*, Brisbane: The Real Estate Institute of Queensland.
- REINT, 2015 and 2016. *Real Estate Institute of Northern Territory - Real Estate Local Market Reports June quarter 2015 to March quarter 2016*. [Online]
Available at: <https://www.reint.com.au/>
[Accessed 23 June 2016].
- REINT, 2016. *Real Estate Institute of Northern Territory - Real Estate Local Market Report - March quarter 2016*. [Online]
Available at: https://www.reint.com.au/images/doc/2016/reim_mar2016_finalv5.pdf
[Accessed 27 June 2016].
- Remote Aboriginal Health Corps, 2010. *Barkly Region Community Profile*. [Online]
Available at: rahc.com.au
- Rights, A. L. f. R. A., n.d. *Australian Lawyers for Remote Aboriginal Rights*. [Online]
Available at: alrar.org.au
- Royal Flying Doctor Service, 2016. *The RFDS in QLD*. [Online]
Available at: <https://www.flyingdoctor.org.au/qld/>
[Accessed 27 June 2016].
- Scanlon Foundation, 2016. *What do we mean by social cohesion in Australia?*. [Online]
Available at: <http://scanlonfoundation.org.au/wp-content/uploads/2016/07/Red-Cross-Presentation-2016.pdf>
[Accessed September 2016].
- Scott, K., 2010. *Community Vitality*. [Online]
Available at: https://uwaterloo.ca/canadian-index-wellbeing/sites/ca.canadian-index-wellbeing/files/uploads/files/communityvitality-a_report_of_the_canadian_index_of_wellbeing.pdf
[Accessed June 2016].
- Scott, K., 2010. *Community Vitality: A Report of the Canadian Wellbeing Index*, Waterloo: University of Waterloo.

Select Committee on Youth Suicides in the NT, n.d. *Gone Too Soon: A Report into Youth Suicide in the Northern Territory*. [Online]

Available at: www.nt.gov.au/lant/parliamentary-business/committees/ctc/youth-suicides/Final_Report_on_Youth_Suicides.pdf

[Accessed 10 September 2016].

Service, R. F. D., 2016. [Online]

Available at: <https://www.flyingdoctor.org.au/qld/>

Shaw K, B. G. & W. A., May 1996. *A Background to the Southern Alice Springs Pastoral District, Agnote No G5*, Darwin: Northern Territory Government.

St John Ambulance, 2016. *Tennant Creek*. [Online]

Available at: <http://www.stjohnnt.org.au/about-us/11-ambulance/135-tennantcreek-ambulance-centre>

[Accessed 31 July 2016].

Sydney Morning Herald, 2004. *Tennant Creek*. [Online]

Available at: www.smh.com.au/news/northern-territory/tennant-creek/2005/02/17/1108500201

Sydney University, 1999-2001. *Wagiman Dictionary, Australian Institute for Aboriginal and Torres Strait Islander Studies (AIATSIS)*. [Online]

Available at: <http://sydney.edu.au/arts/linguistics/research/wagiman/dict/dict.html>

[Accessed 9 July 2016].

Tennant Creek Alcohol Reference Group, 2014. *Tennant Creek Alcohol Management Plan and Action Plan 2014-2017*, s.l.: Northern Territory Government.

Tennant Creek and District Times, 2016. *Deal struck over Bootu Creek debts*. [Online]

Available at: www.tdtimes.com.au/#folio=2

Tennant Creek Regional Economic Development Committee, 2014. *Tennant Creek and Barkly Region Strategic and Action Plan 2014-2016*. [Online]

Available at: https://nt.gov.au/_data/assets/pdf_file/0007/198340/barkly-tennant-creek-redc-strategic-plan-endorsed-28-october-2014.pdf

Territory Labor, 2016b. *Territory Labor*. [Online]

Available at: <http://territorylabor.com.au/Labors-Plan/Jobs>

Territory Labor, 2016c. *Infrastructure to enable growth: Building a stronger Territory*. [Online]

Available at: <http://territorylabor.com.au/Portals/territorylabor-staging/InfrastructurePlan.pdf>

Territory Labor, 2016. *Tackling the Housing Deficit in Remote Communities*, Darwin: Territory Labor.

The Berkeley Group, n.d. *Creating Strong Communities*. [Online]

Available at: <http://www.berkeleygroup.co.uk/media/pdf/7/8/berkeley-reports-and-opinions-social-sustainability-reports-creating-strong-communities-part-one.pdf>

Timms, P., n.d. *Rural mining town battles mental health issues*. [Online]

Available at: <http://www.abc.net.au/lateline/content/2011/s3340543.htm?site=northwest>

[Accessed 10 September 2016].

Tourism NT, 2016 b. *Tourism NT Barkly Regional Profile*, s.l.: Tourism NT.

- Tourism Research Australia, 2016. *Barkly, NT..* [Online]
Available at: http://tra.gov.au/Tourism_Region_Profiles/Region_profiles/index.html#Barkly-NT
[Accessed 1 August 2016].
- Tuxworth, H., 1978. *Tennant Creek Yesterday and Today*. Darwin: Self published.
- UK Local Government Association, 2002. *Guidance on Community Cohesion*, London: LGA Publications.
- Vanclay, F., 2003. *International Principles For Social Impact Assessment*. [Online]
Available at: <http://www.iaia.org/uploads/pdf/IAIA-SIA-International-Principles.pdf>
[Accessed 2016].
- Vanclay, F., 2015. *Social Impact Assessment: Guidance for assessing and managing the social impacts of projects*, s.l.: International Association for Impact Assessment.
- Vanclay, F., Esteves, M., Aucamp, E. & Franks, D., 2015. *International Association for Impact Assessment*. [Online]
Available at: http://www.iaia.org/uploads/pdf/SIA_Guidance_Document_IAIA.pdf
[Accessed 30 June 2016].
- WBCSD, 2016. *World Business Council for Sustainable Development*. [Online]
Available at: <http://wbcsdpublications.org/project/social-impact/>
[Accessed 30 June 2016].
- World Health Organisation, 2008. *Closing the Gap in a Generation*, Geneva: World Health Organisation Commission for the Social Determinants of Health.
- Yuhun, P. & Taylor, A., 2013. *The Demography of the Territory's 'Midtowns': Tennant Creek*, Darwin: Northern Institute.

Appendix A: ESIA Terms of Reference

Overview

Jemena Northern Gas Pipeline Pty Ltd (the Proponent) is a wholly owned subsidiary of SGSP (Australia) Assets Pty Ltd, an energy infrastructure company that builds, owns and operates a large portfolio of major gas, electricity and water assets across Australia.

The Proponent participated in the North East Gas Interconnector (NEGI) competitive bid process, which was proposed by the Northern Territory Government as a strategy to stimulate exploration and production of the Territory's gas fields, promote economic and infrastructure development in Northern Australia, and provide employment opportunities in regional and remote areas of Northern Australia. The NT EPA decided that the Project requires assessment under the Environmental Assessment NT (EA Act) at the level of an Environmental Impact Statement (EIS). The Jemena Northern Gas Pipeline (the Project) has been granted Major Project status.

This document sets out the preliminary Terms of Reference for the Economic and Social Impact Assessment (ESIA) of the Northern Gas Pipeline (NGP) Project. As a part of the NEGI Project Planning Phase Jemena will undertake an Economic and Social Impact Assessment (ESIA) for the purposes of:

1. Documenting the economic and social impacts of the project on the region
2. Mitigating negative economic and social impacts on the locality and the region arising from NEGI Project activities;
3. Encouraging the development of new business and the expansion of existing businesses in the locality and the region, and,
4. Fostering sustainable development and community wellbeing.

The ESIA will be used to support the approval for the NEGI Project under the *Environmental Assessment Act (NT)* (EA Act), the *Environmental Protection Act 1994 (Qld)* (EP Act) and the *Environmental Protection and Biodiversity Conservation Act 1999 (Cth)* (EPBC Act). The ESIA and ESIMP will be prepared in accordance with the Northern Territory Environment Protection Authority (NTEPA) Guidelines for Economic and Social Impact Assessment (the Guidelines). The NT EPA has prepared Guidelines to assist in the preparation of EIS documents. The guidelines relating to the ESIA are the Guidelines for the Preparation of an Economic and Social Impact Assessment.

Economic and Social Impact Management

The EIS should include a balanced summary of the social and economic value (positive and negative) of the Project on a regional, state, national and international scale. The objective of ESIA within the EIS is to monitor and manage the intended and unintended social and economic consequences, both positive and negative, of the Project.

Assessment of Risks

The ESIA should:

- Document the economic and social impacts of the Project on the region and more broadly
- Assess the risks of the Project not realising its projected economic and social benefits
- Encourage development of new and/or expansion of existing businesses in the locality

- Foster sustainable development and community health and wellbeing
- Provide for appropriate contingencies to protect the community, local business owners and residents in the event of forced or unpredicted delays
- Discuss the risks of the Project, related infrastructure and associated workforce negatively impacting on identified economic and social issues in the region. Further information on the development of an ESIA is available in the NT EPA's Guidelines for the Preparation of an Economic and Social Impact Assessment

In terms of mitigation and monitoring, the EIS should include an Economic and Social Impact Management Plan that addresses any risks identified in the ESIA and should:

- Describe how the Proponent proposes to manage any identified economic, social, or relevant cultural risks
- Describe how potential local and regional business and employment opportunities related to the Project will be identified and managed
- Include a mechanism for monitoring and reporting any identified potential socio-economic and cultural impacts
- Include measures to mitigate negative economic and social impacts
- Provide outcome and assessment criteria that will give early warning that management and mitigation measures are not achieving the outcomes and benefits expected and identified
- Provide a stakeholder communications strategy including identification of, and ongoing consultation and negotiations with, all relevant stakeholders, ensuring the full range of community viewpoints are sought and included in the EIS. Proposed mitigation and monitoring measures must be incorporated in relevant sections of the EMP (Section 5).

The NT EPA recommends the use of processes for risk management that are formalised in Standards Australia / Standards New Zealand (eg AS/NZS ISO 31000:2009; HB 436:2004; HB 203:2006; HB 158:2010).

Economic and Social Impact Assessment

The ESIA should:

- Document the economic and social impacts of the Project on the region and more broadly, where relevant
- Assess the risks of the Project not realising its projected economic and social benefits
- Encourage development of new and/or expansion of existing businesses in the locality
- Foster sustainable development and community health and wellbeing
- Provide for appropriate contingencies to protect the community, local business owners and residents in the event of forced or unpredicted delays
- Discuss the risks of the Project, related infrastructure and associated workforce negatively impacting on identified economic and social issues in the region.

Economic and Social Impact Management Plan

With the benefit of the results of both the EIA and SIA analyses Jemena will prepare an Economic and Social Impact Management Plan (ESIMP) that will be implemented throughout the NEGI Project.

The Economic and Social Impact Management Plan (ESIMP) will establish the roles and responsibilities of Jemena, the NT and Queensland Governments, the Barkly Regional Council and the Mount Isa City Council, other stakeholders and the community in mitigating and managing economic and social impacts, and making the best of opportunities throughout the life of the NEGI Project.

A framework ESIMP will be lodged with the EIS. The framework will address the specific requirements of the EIS ToR section 5.8.3 and will include:

1. An overall summary of the ESIMP;
2. The stakeholder engagement that has occurred and that will continue throughout the life of the NEGI Project;
3. The partners in the ESIMP implementation;
4. The prioritisation of potential economic and social impacts predicted in the ESIA
5. The mitigation and management strategies for the identified risks including a register
6. Monitoring, reporting and review mechanisms;
7. Mechanisms to resolve issues, including grievance and complaints mechanisms; and,
8. The communications strategy for the ESIMP including reporting.

Appendix B: Circle Advisory Pty Ltd

The assessment and management of the economic and social impacts arising from the NGP Project is being led by Circle Advisory Pty Ltd (Circle).

Circle was established in 2014 with the vision of contributing to social and economic development through natural resource management and development, particularly in remote, rural and developing communities and economies.

James Kernaghan, Managing Director of Circle, is coordinating the economic and social impact assessment (ESIA) and management for the NGP Project. James has in excess of 29 years of experience in resources development in Australia, including mining, oil and gas, including gas infrastructure experience in the Northern Territory.

Projects that James has worked on include Pluto LNG, Kitan and Sunrise Projects in Timor-Leste and the JPDA, the Blacktip Project and the Trans Territory Pipeline, the Otways Gas Project and the North West Shelf Venture. In particular to social and economic impacts, James coordinated the development of the social impact assessment and management plan for the Blacktip Project.

James holds a post graduate qualification in Social Impact from the University of Western Australia.

In addition to James the following Circle Associate Consultants are working on the NGP Project economic and social impact assessment and management.

Jane Munday

Jane Munday's qualifications include a Bachelor of Arts (Psychology and Indonesian) and a Master of Business Administration. She is a Graduate of the Australian Institute of Company Directors, has a Certificate of Public Participation from the International Association for Public Participation (IAP2) and is completing her Advanced Certificate.

Jane is a member of the International Association of Impact Assessments, has attended three international conferences and completed two-day courses in Social Impact Assessment (Canada 2013) and Human Rights and Social Impact Assessment (Italy 2015). She has lived in the Northern Territory for 22 years, working for Northern Territory Police and the Department of the Chief Minister.

In 2004 she established Michels Warren Munday, which specialises in social research, community engagement and strategic communication. She sold the business in 2015, but remains in the business as Senior Advisor. Jane has worked on many resource and other major projects during the regulatory approvals phase and won several national community engagement and communication awards.

Ben Garwood

Ben is a senior external relations and Indigenous affairs professional with over 15 years' experience working across government, non-government and industry.

Ben has highly developed skills in stakeholder engagement, cross cultural consultation and negotiation, land access agreement negotiation and implementation, cultural heritage management and approvals, Indigenous employment, training and business participation, corporate social investment and community development project management.

Ben has a Bachelor of Arts Degree in Aboriginal and Torres Strait Islander Studies.

Fadzai Matambanadzo

Fadzai is an experienced social impact consultant and social entrepreneur passionate about helping organisations achieve impactful social outcomes in the business, Not for Profit and government sectors. Fadzai has almost eight years' experience in social impact, social innovation, philanthropy, social entrepreneurship and social sustainability.

Most recently Fadzai worked on a community development project for an ASX listed resources company in Mozambique, which included stakeholder engagement, social impact investment policy and social impact management plan.

Fadzai has a Bachelor Degree in Commerce majoring in Management and Marketing from Murdoch University, an MBA from the University of Western Australia, and is currently enrolled in a Graduate Certificate in Social Impact at the University of Western Australia.

Martin Edwards

Martin has over a decade of professional involvement in Australia's petroleum industry with experience spanning both the private sector and Commonwealth Government.

For over five years Martin worked in a variety of external and community affairs roles for major Australian oil and gas producer that saw him regularly engage with a wide range of external stakeholders, including community members, the Not for Profit sector and all levels of government.

The roles Martin has worked in include offshore oil assets, the Sunrise Liquid Natural Gas (LNG) Project, the Browse Floating Liquid Natural Gas (FLNG) Development, as well as in corporate community relations area. As part of working on the Browse FLNG Development, Martin coordinated the Development's ESIA study and ESI Management Plan.

Martin holds a Bachelor's Degree in Marketing and International Business, and a Masters of Environmental Law.

Appendix C: SOCIAL AND ECONOMIC RISK AND OPPORTUNITY ASSESSMENT

RISK ASSESSMENT

ID #	Project activity	Cause	Impacts	Likelihood	Consequence	Risk with no mitigation in place	Proposed mitigation measures	Effectiveness of mitigation	Likelihood	Consequence	Residual risk after mitigation measures	Indicators	Sources of data and information
PLANNING PHASE													
Culture & Heritage													
1	Early survey works.	Field access for non-ground disturbing works.	Unauthorised entry onto and / or damage to sacred sites that results in anxiety or distress to Traditional Owners / site custodians.	4	B	Significant	Sacred Site surveys undertaken by Land Councils and reports received setting out Restricted Work Areas and Exclusion Zones. Cultural heritage survey agreements in place with all other Aboriginal Parties, to identify Restricted Work Areas and Exclusion Zones.	Complete control of access and establishment of Restricted Work Areas and Exclusion Zones.	1	B	Low	Perceptions and level of concern about damage or unauthorised entry. Actual no. of incidents on this project.	1. SIA Consultations 2. Cultural Heritage Management Plan 3. Community Reference Groups
2			Unauthorised entry onto Aboriginal land, causes breach of the Aboriginal Land Act (ALA) and offence to Traditional Owners.	4	B	Significant	Compliance with the ALA and issue of individual permits through the CLC permit system.	Complete control of access to Aboriginal land by CLC.	1	B	Low	Breaches of permit conditions, incidents of unauthorised access.	Jemena & CLC Land Access Permit System Central Land Council

3		Field access for low impact ground disturbing works.	Unauthorised entry onto and / or damage to sacred sites that results in anxiety or distress to Traditional Owners / site custodians.	4	B	Significant	No low impact ground disturbing works to be undertaken without Sacred Site clearance by Aboriginal Parties.	Complete control of access and establishment of Restricted Work Areas and Exclusion Zones.	1	B	Low	Actual no. of incidents on this project.	
4			Damage to cultural heritage sites, places or objects in breach of the Heritage Act and that results in anxiety or distress to Traditional Owners.	3	B	Moderate	No low impact ground disturbing works to be undertaken without cultural heritage sites survey by archaeologist.	Low impact activities are undertaken in areas where no cultural heritage sites exist.	1	B	Low		
5			Uninvited entry into Aboriginal living areas, e.g. family outstations and so causes anxiety and concern among residents.	3	A	Low	Identification of family outstations and inclusion of access restrictions in Project land access line list.	All early works personnel comply with land access rules.	1	A	Low		
Community, Health and Wellbeing													
6	Mobilisation of Planning Phase workforce.	Communications and level of available information about the Project.	Community and individual concern and anxiety arising from uncertainties about the Project.	4	B	Significant	Implementation of communications strategy and plan, including regular updates through local media and a community reference group, established in 2016 and implemented throughout the Project Construction Phase.	Community understands how the Project will be implemented and feels assured of a channel of communication with Jemena.	2	B	Low	Level of knowledge about the project. Extent of fears, attitudes or negative perceptions about the project.	SIA consultations Community engagement events Newspapers, social media.

7	Land negotiations.	Concern among Aboriginal and other land interests about benefits being paid or perceived to have been paid.	Inter/intra family conflict and reduced community cohesion, consequent increases in interaction with the criminal justice system and health and other community services.	3	C	Significant	Land negotiations held through well established and proponent funded Land Council and Aboriginal representative body processes. Land negotiations with other landowners held through established and transparent, proponent funded processes.	Aboriginal and other landowners accept the land negotiation processes as being fair and reasonable.	2	B	Low	Changes in levels of crime and anti-social behaviour.	SIA consultations Tennant Creek Community Safety Committee Community Reference Groups Night patrol statistics Mount Isa ATSI Community Reference Groups Aboriginal health services Other community service organisations
8		Proponent does not negotiate land agreements in good faith, or avoids responsibilities under ALRA and NTA.	Traditional owners and native title holders are not able to exercise Free, Prior and Informed Consent and so are not appropriately protected or afforded appropriate compensation for land use.	1	B	Low	Land negotiations held through well established and proponent funded Land Council and Aboriginal representative body processes and in accordance with the ALRA and NTA.	Land agreements with Aboriginal interests successfully negotiated and registered through the relevant legislation with the support of Aboriginal Parties.	1	A	Low		

82	Land negotiations and community engagement and consultation.	<p>Broader community and special interest group concerns regarding hydraulic fracturing (fracking) in the onshore gas industry cause concern, anxiety and division in the community (loss of social cohesion) about the enabling impact of the NGP for the onshore gas industry and consequent increase in fracking in NT sedimentary basins.</p>	<p>It is assumed that the risk is likely to occur given the broader debate in the NT regarding the onshore gas industry, recent activities in Tennant Creek by special interest groups and the political debate about the industry associated with the NT election. It is assumed that without mitigation that the consequence could be that there is serious stakeholder concern that is not easily manageable through good communication.</p>	3	C	Significant	<p>In managing the risk Jemena will continue to engage with the broader Tennant Creek community and directly with Traditional Owner groups and other Aboriginal people through direct briefings and meetings about the project to explain the nature of the project, i.e. sources of foundation and future gas, that the NGP is a transporter of gas and not a producer.</p> <p>Also that approval decisions regarding any onshore gas projects would be made separately to any approval decisions about the NGP. These communications would also occur through the proposed CRG.</p> <p>Jemena will also engage directly with the special interest groups concerned to understand and respond to their concerns as much as is reasonably practicable.</p>	3	<p>The expected effectiveness of the above communications program would result in a far greater understanding of the nature and purpose of the NGP and how it relates to the onshore (conventional and unconventional) gas industry. While community concern about the issue may not be completely addressed it would certainly be alleviated.</p>	<p>Incidence of community concern through:</p> <ul style="list-style-type: none"> - communications received through the CRG, the 1300 contact number, or directly by other communication; and - community protest e4vents about the project. 	Moderate	B
Economy & Development												

9	Early survey works.	Field survey employment opportunities.	Local people miss out on employment opportunities.	3	B	Moderate	Proponent actively pursues local employment.	Local people are employed on field survey work.	1	A	Low	
10	Project does not proceed.	Approvals not obtained or market changes cause proponent to withdraw from commitments.	No economic development arising from the Project. Local businesses and individuals incur financial loss or loss in goodwill.	2	B	Low	Proponent uses best endeavours to obtain all approvals within the current market conditions. Keep local business and community regularly briefed on Project progress.	Local stakeholders remain fully informed and make business and personal choices in accordance with the best information available to them.	1	A	Low	
11	Project is delayed.	Approvals delayed.	Local businesses and individuals incur financial loss or loss in goodwill.	3	C	Significant	Proponent uses best endeavours to obtain all approvals within the current market conditions. Keep local business and community regularly briefed on Project progress.	Local stakeholders remain fully informed and make business and personal choices in accordance with the best information available to them.	1	A	Low	
CONSTRUCTION PHASE												
Culture & Heritage												
12	Mobilisation of construction workforce.	Increased traffic on remote roads.	Unauthorised entry onto and / or damage to sacred sites that results in anxiety or distress to Traditional Owners / site custodians.	3	D	High	Inclusion of access restrictions for workers in Project area in accordance with Sacred Site Authority Certificate.	Complete control of access and establishment of Restricted Work Areas and Exclusion Zones	1	B	Low	
13			Uninvited entry into Aboriginal living areas, e.g.	3	A	Low	Identification of family outstations and inclusion of access	Complete control of access and establishment of Restricted Work	1	A	Low	

			family outstations.			restrictions in Project land access line list.	Areas and Exclusion Zones					
14	Clearance and disturbance activities along the alignment, access roads, camps and other areas.	Ground disturbance within approved areas.	Unauthorised entry onto and / or damage to sacred sites that results in anxiety or distress to Traditional Owners / site custodians.	3	C	Significant	<p>All clearance activities undertaken in accordance with Authority Certificates from Aboriginal Areas Protection Authority (AAPA). Authority Certificate conditions incorporated into Project Construction Management Plans and incorporated into all subcontracts.</p> <p>Specific conditions set out in Project Cultural Heritage Management Plan (CHMP), including all clearance areas defined by line of site pegs prior to clearance activities.</p> <p>Traditional Owner participation in clear and grade team ahead of construction in Restricted Work Areas.</p>	All clear and grade activities carried out in accordance with approvals and CHMP. Sacred sites avoided and protected.	1	B	Low	
15			Unauthorised entry onto Aboriginal Land.	2	B	Low	<p>Agreement with the Central Land Council regarding the issue of Project permits to access the Warumungu and Wakaya Aboriginal Land Trust lands.</p>	Project workforce access controlled.	1	B	Low	

16							Damage to known cultural heritage sites, places or objects.	3	C	Significant	Implement Construction Phase CHMP including: - Incorporating site management conditions in Work Approvals under the Heritage Act. - Archaeological Heritage Field hands working alongside Traditional Owners during clear and grade in Restricted Work Areas. - Archaeological Field hands working during clear and grade in areas of high archaeological potential. - Marking out and fencing off of heritage site areas in close proximity to construction activities.	All known cultural heritage sites avoided or managed in accordance with relevant approvals. Control of all risk elements in CHMP through incorporation of controls in project management plans and contractual provisions.	1	B	Low		
17						Discovery and disturbance of previously undiscovered cultural heritage sites, places or objects.	3	B	Moderate	Inclusion of procedures in CHMP for management of further site discovery during clear and grade activities.	Procedures for site mitigation approved under legislation and agreements with Aboriginal Parties.	Procedures for site mitigation approved under legislation and agreements with Aboriginal Parties.	1	B	Low		
18						Skeletal remains discovery and disturbance.	2	B	Low	Monitoring of initial clearance of treed areas through Traditional Owner participation in clear and grade team ahead of construction. Inclusion of procedures in CHMP for skeletal remains discovery and management.	Procedures in place for the management of skeletal remains in accordance with legal requirements, approved under legislation and agreements with Aboriginal Parties.	Procedures in place for the management of skeletal remains in accordance with legal requirements, approved under legislation and agreements with Aboriginal Parties.	1	B	Low		

19	Transportation of personnel, machinery and materials during construction and installation of the pipeline.	Unauthorised entry onto sacred sites.	2	C	Moderate	Inclusion of access restrictions for workers in Project area in accordance with Sacred Site Authority Certificate implementation.	Complete control of access and establishment of Restricted Work Areas and Exclusion Zones.	1	B	Low		
20		Uninvited entry into Aboriginal living areas, e.g. family outstations.	3	A	Low	Identification of family outstations and inclusion of access restrictions in Project land access line list.	All construction personnel to comply with land access rules.	1	A	Low		
21	Trenching activities and installation of the pipeline.	Discovery and disturbance of previously undiscovered cultural heritage sites, places or objects.	3	B	Moderate	Inclusion of procedures in CHMP for management of further site discovery during trenching activities.	Procedures for site mitigation approved under legislation and agreements with Aboriginal Parties.	1	B	Low		
22		Skeletal remains discovery and disturbance.	2	B	Low	Inclusion of procedures for skeletal remains discovery and management.	Procedures in place for the management of skeletal remains in accordance with legal requirements, approved under legislation and agreements with Aboriginal Parties.	1	B	Low		
Community, Health & Wellbeing												
23	Land Agreement Implementation.	Distribution of Land Agreement benefits.	4	B	Significant	Land agreement benefits are managed through well established Land Council and Aboriginal representative body processes.	Land agreement beneficiaries understand and accept the land negotiation benefit distributions and processes as being fair and reasonable.	3	B	Moderate		

24	Mobilisation of construction workforce.	Increased wages and benefits circulating in the community.	Members of the workforce unskilled in money management engage in increased alcohol and drug consumption, resulting in increased anti-social behaviours including inter / intra family violence causing consequent increases in negative interaction with the criminal justice system and health and other community services.	4	Significant	Money management and associated education of local workforce through Jemena's Project Ready Training Program and liaison with community support agencies.	Local workforce manages increased incomes in ways that avoid negative impact in the community.	3	B	Moderate		
25			Remote community members working on the project gravitate to centres such as Tennant Creek and Mount Isa during rostered break and engage in increased alcohol and drug consumption, resulting in increased anti-social behaviours including inter / intra family violence causing consequent increases in negative interaction with	4	Significant	Develop strategies in consultation with remote community workers and community organisations that support and coordinate workers during rostered breaks including town based support for workers returning to the project.	Remote community workers don't engage in significant alcohol and drug consumption on roster breaks and return to work on time.	3	B	Moderate		

						key points, e.g. roadhouses in Tennant Creek and along the Barkly Highway.						
32		Drive in and Drive Out Workers	Increased risk of road trauma caused by workers using own vehicles traveling between towns and Project site.	3	C	Significant	Project provides transport for the large majority of workers and restricts and minimises use of private vehicles traveling to and from site.	No traffic incidents and resultant road trauma arising.	2	C	Moderate	
33	Clearance and disturbance activities along the alignment, access roads, camps and other areas.	Local residents and/or tourists inadvertently enter the Project footprint in hazardous areas.	Injuries to local people and property damage.	2	C	Moderate	Security plan established for the Project activities including and Project communications about risks.	Local residents and tourists aware of Project and avoid Project areas.	1	B	Low	
34	Establishment and operation of construction workers camps.	Phillip Creek Compressor Station (PCCS) workforce based in Tennant Creek Town - in either established and operated workers' camp or existing commercial accommodation.	Increased demand on existing community services and infrastructure, e.g. GP, hospital and emergency services, leading to loss of service for Tennant Creek community.	3	B	Moderate	Levels of demand for use of local medical and emergency facilities controlled through: - pre-employment fitness-for-duty drug/alcohol/medical assessments. - appropriate medical facilities and support at PCCS camp - Safety Management Systems minimise workplace injury; - established medical and evacuation protocols in consultation with Tennant Creek Hospital and other emergency services. Refer Project Human Health & Safety Plan.	Community service levels maintained emergency medical responses agreed with local services. Ability to plan ahead for eventualities.	2	B	Low	

35			Increased demand on emergency / medical services and insufficient resources to adequately cover local response to remote locations: bushfire, vehicle incidents, emergency evacuation, police incident.	3	B	Moderate	Develop Emergency Response Plan in consultation with NT PFES including integrating emergency communications procedures. Ensure ER capacity at temporary camps and with crews. Established medical and evacuation protocols. Pre-employment fitness-for-duty drug/alcohol/medical assessments.	Agreed ERP in place with NT PFES and so plans in place for potential eventualities.	2	B	Low		
36			Construction workforce (>200 people) resident in Tennant Creek for 12 months results in a changed demographic profile and impacts on Tennant Creek sense of place, community amenity, safety etc.	4	B	Significant	Establishment of a construction workers camp at the PCCS and limit the number of workers accommodated in Tennant Creek	Majority of the risk is removed.	3	A	Low		
37			Anti-social behaviour of PCCS construction workers in Tennant Creek causes community disruption and increased pressure on local health and emergency services.	4	C	High	Controls include Project Drug and Alcohol Policy, Codes of Conduct. FIFO workers directly transported to and from landing point to construction accommodation. Establishment of a Workers Accommodation Plan for the project that	Workers Accommodation Plan established and little or no negative impact occurs to community amenity.	3	A	Low		

	existing commercial accommodation.	to loss of service for Mount Isa community.				other local emergency services.	to plan ahead for eventualities.				
41		Increased demand on emergency / medical services and insufficient resources to adequately cover local response to remote locations: bushfire, vehicle incidents, emergency evacuation, police incident.	2	A	Low	Develop Emergency Response Plan in consultation with Mount Isa emergency services including integrating emergency communications procedures. Ensure Emergency Response capacity at temporary camps and with crews.	Agreed ERP in place with Mount Isa emergency services and so plans in place for potential eventualities.	2	A	Low	
42		Construction workforce (>100 people) resident in Mount Isa over a 12 month period results in a changed demographic profile and impacts on Mount Isa sense of place, community amenity, safety etc.	2	B	Low	Establish a Workers' Accommodation Plan for Mount Isa that manages the interaction between the community and the workforce in a way that minimises the potential for these risks to occur.	Workers Accommodation Plan established and results in no negative impact of this nature.	1	B	Low	
43		Anti-social behaviour of MICS construction workers in Mount Isa including increased drug and alcohol abuse and potential	3	B	Moderate	Establish a Workers' Accommodation Plan for Mount Isa that manages the interaction between the community and the workforce in a way that minimises the potential for these risks to occur.	Workers Accommodation Plan established and results in no negative impact of this nature.	2	A	Low	

[illegible]

52	Increased local demand for goods and services to support Project construction activities.	Inflationary pressures occur resulting in increased prices and economic hardship for locals not involved in the Project.	3	B	Moderate	Implementation of Communications Strategy & Plan, including regular updates through a Community Reference Group, established in 2016 and implemented throughout the Project Construction Phase. Understanding of Project demand impact lessens possibility of false demand signals and unnecessary price increases.	Community well informed about Project demand and false expectations minimised.	2	B	Low		
53		Reduced level of goods and services to support existing community requirements.	2	B	Low	Implementation of Communications Strategy & Plan, including regular updates through a Community Reference Group, established in 2016 and implemented throughout the Project Construction Phase. Understanding of Project demand impact lessens possibility of false demand signals and unnecessary price increases.	Community well informed about Project demand and false expectations minimised.	1	B	Low		
54	Mobilisation of construction workforce.	People miss out on jobs and expectations of the provision of local jobs are not met.	4	B	Significant	Transparent implementation of Jemena's Regional Employment Plan, including selection processes for the Project Ready Training Program	Local workforce optimises participation in the Project to the extent reasonably possible.	2	C	Moderate		

55								and transparent communication of employment recruitment processes by contractors through the NGP Jobs & Training portal.					
								Construction contractor to organise charter flights to and from Tennant Creek.	No, or low impact on flight seat availability.	2	B	Low	
								Fly in, fly out component of the workforce takes up available spaces on regional flights resulting in displacement of other travellers, e.g. tourists, government service workers and other industry workers, i.e. particularly in Tennant Creek.		4	B	Significant	
								Regional flight congestion.					
56								Local government, pastoral industry, tourism and hospitality industry, businesses and community organisations lose workers to the Project.	Transparent implementation of Jemena's Regional Employment Plan, including selection processes for the Project Ready Training Program and transparent communication of employment recruitment processes by contractors through the NGP Jobs online portal. Briefing of local government, pastoral industry and community organisations regarding the timing	3	A	Low	
								Local government, pastoral industry, tourism and hospitality industry, businesses and community organisations lose workers to the Project.	Local government, businesses, the pastoral industry and community organisations are able to plan well ahead to manage any staff changes as a result of the Project.	3			

58		Mount Isa labour market stronger than Barkly.	4	B	Significant	Implementation of Jemena's Regional Employment Plan, including: - the Project Ready Training Program - the NGP Jobs Portal - the Tennant Creek Social Enterprise opportunity - contractual provisions for subcontractors to maximise the use of labour from the Barkly and Mount Isa.	Employment of people from the Barkly maximised to the extent possible.	3	B	Moderate		
59	Establishment and operation of construction workers camps.	Phillip Creek Compressor Station workforce based in Tennant Creek Town in a Jemena established and operated workers' camp.	5	B	High	Establish a Workers' Accommodation Plan for Tennant Creek that provides the broadest possible benefits for local accommodation providers.	Tennant Creek accommodation providers benefit to the broadest extent.	2	A	Low		
60		Significant spike in demand for local utilities occurs outside of existing capacity resulting in requirement for short term utilities infrastructure investment.	3	B	Moderate	Establish a Workers' Accommodation Plan for Tennant Creek that does not result in utilities demand outside of existing capacity.	No additional short term investment required and utilities demand kept within existing capacity.	2	A	Low		
61		Phillip Creek Compressor Station workforce based in Tennant Creek Town in existing commercial accommodation.	5	B	High	Establish a Workers' Accommodation Plan for Tennant Creek that provides the broadest possible benefits for local accommodation providers but does not have a negative impact on other	The right balance is struck between providing economic benefits to Tennant Creek without negatively impacting on	2	A	Low		

			services in the town, e.g. tourism, government services, other industry, particularly at time of significant annual events that bring revenue to the town, e.g. the Tennant Creek Annual Show.				industries and services.	other industries and services.				
62		Phillip Creek Compressor Station workforce based at Warrego in a Jemena established and operating workers' camp.	Existing accommodation providers miss out on commercial benefits from the Project.	5	B	High	Establish a Workers' Accommodation Plan for Tennant Creek that provides the broadest possible benefits for local accommodation providers but does not have a negative impact on other industries and services.	The right balance is struck between providing economic benefits to Tennant Creek without negatively impacting on other industries and services.	2	A	Low	
63		Workers seek private accommodation in Tennant Creek.	Price and availability of private accommodation pressures increase cost of living in Tennant Creek and crowds out accommodation for other employers.	3	B	Moderate	Establish a Workers' Accommodation Plan for Tennant Creek that does not have an overly negative impact on the price and availability of private accommodation.	The right balance is struck between providing economic benefits to Tennant Creek without negatively impacting on the price and availability of private accommodation.	2	A	Low	
64		Mount Isa Compressor Station workforce based in Mount Isa in a Jemena established and operated workers' camp.	Existing accommodation providers miss out on commercial benefits from the Project.	5	A	Moderate	Establish a Workers' Accommodation Plan for Mount Isa that provides the broadest possible benefits for local accommodation providers.	Mount Isa accommodation providers benefit to the broadest extent.	2	A	Low	

65		Significant spike in demand for local utilities occurs outside of existing capacity resulting in requirement for short term utilities infrastructure investment capacity.	2	A	Low	Establish a Workers' Accommodation Plan for Mount Isa that does not result in utilities demand outside of existing capacity.	No additional short term investment required and utilities demand kept within existing capacity.	2	A	Low		
66	Mount Isa Compressor Station workforce based in Mount Isa in existing commercial accommodation.	Accommodation demand from the Project displaces other accommodation demand and results in a negative impact on other industries and services in the town, e.g. tourism, government services, other industry.	2	B	Low	Establish a Workers' Accommodation Plan for Mount Isa that provides the broadest possible benefits for local accommodation providers but does not have a negative impact on other industries and services.	The right balance is struck between providing economic benefits to Mount Isa without negatively impacting on other industries and services.	2	A	Low		
67	Workers seek private accommodation in Mount Isa.	Price and availability of private accommodation pressures increase cost of living in Mount Isa.	1	A	Low	Establish a Workers' Accommodation Plan for Mount Isa that does not have an overly negative impact on the price and availability of private accommodation.	The right balance is struck between providing economic benefits to Mount Isa Creek without negatively impacting on the price and availability of private accommodation.	1	A	Low		
68	Clearance and disturbance activities along the alignment, access roads, camps and other areas.	Loss of agricultural productivity and costs incurred to redress pest weed spread.	3	B	Moderate	Implementation of Biosecurity (Weed) Management Plan in accordance with arrangements agreed with individual pastoral stations.	Reduced incidence of spread of weeds and weed seeds.	2	B	Low		

69	Trenching activities and installation of the pipeline.	Pipeline installation across station and community access tracks.	Trenching across existing tracks causes delays to access on pastoral leases and to Aboriginal communities.	2	A	Low	Access track crossing discussed with landowners and coordinated plan put in place to minimise disruption.	No or few delays in access.	1	A	Low		
70		Increased traffic on remote station roads.	Interruptions / disruptions to mustering and other station activities.	3	B	Moderate	Project liaison with pastoralists to coordinate project construction activities with mustering.	No unplanned disruption to mustering and other activities.	1	B	Low		
71		Damage or disturbance to existing infrastructure such as electricity, water etc.	Loss of access to critical services.	2	B	Low	Conduct pre-construction survey of known infrastructure locations and clearing delineate on ground prior to commencement of works. Close liaison with land occupants and service infrastructure noted in construction Land Line List.	No or short term interruptions to critical services. Station and community occupants fully appraised of works.	1	A	Low		
72		Dry conditions and limited water available for Project construction.	Project water demand from existing sources causes water shortage for existing land users.	2	C	Moderate	Undertake water demand and supply study and determine sources that do not cause water shortages for existing land users.	No water shortages.	1	A	Low		
73		Installation of gas pipeline in proximity to remote communities, e.g. Alpururulam.	Communities under false impression of the feasibility of gas supply to small communities results in disappointment about a possible	4	A	Low	Feasibility question to be addressed during ESIA consultations and in general community consultations and communications. Discussion with NT	Remote communities understand the infeasibility of the concept.	2	A	Low		

			foregone benefit from the project.				Power and Water Corporation required.						
83		Project activities will be visible to other users in the area where they are occurring, e.g. vegetation clearing and earthworks, pipeline stockpiles, equipment, visibility of people, vehicles and other equipment.	Negative impact on visual amenity for people driving through the area(s).	4	A	Low	Communications with the local community through the Tennant Creek CRG, newsletters and project updates and to other stakeholders, through other communication points, e.g. roadhouses, about the Project.	Local stakeholders and travellers understand the Project and the short term nature of the disturbance to visual amenity.	2	A	Low		
OPERATIONS PHASE													
Culture & Heritage													
74	Operation and maintenance of pipeline.	Access to above ground facilities in remote areas.	Unauthorised entry onto sacred sites.	1	B	Low	Inclusion of access restrictions for operations workers in Project area in accordance with Sacred Site Authority Certificate implementation.	Complete control of access and establishment of Restricted Work Areas and Exclusion Zones.	1	B	Low		
75			Unauthorised entry onto Aboriginal Land.	1	B	Low	Individual permit access in accordance with Aboriginal Land Rights Act and Land Agreement conditions and local relationship development.	Complete control of access and regular communication.	1	B	Low		

76			Damage to cultural heritage sites, places or objects.	1	B	Low	Workers restricted to approved access tracks public roads and pipeline easement and respect of Authority Certificate conditions. No ground disturbing activities outside approved areas.	Complete control of access and regular communication.	1	B	Low		
77			Uninvited entry into Aboriginal living areas, e.g. family outstations.	1	B	Low	Individual permit access in accordance with Aboriginal Land Act and Land Agreement conditions and local relationship development.	Complete control of access and regular communication.	1	B	Low		
Community, Health and Wellbeing													
78	Operation and maintenance of pipeline.	Community concern at lack of information about Project operations.	Community anxiety / negative perceptions and concern about safety and environmental management of NGP Operations facilities.	3	B	Moderate	Consult community and explain operations safety and environmental management practices.	Community understands how Jemena will safely operate the Project and manage any environmental risk.	2	B	Low		
79		Use of easement and temporary and permanent access tracks for improper access.	Easement and permanent access tracks used as alternative route for people in remote areas, e.g. for personal reasons, hunting, discreet travel, illegal activities etc. - causes negative impacts on existing land users.	3	B	Moderate	Controls include: - no access track to be left along easement; - no signage on permanent access tracks; - temporary access tracks to be progressively rehabilitated, unless agreed with landowner; - ongoing communication with landowners.	Access ability limited and landowner engagement in rural watch.	2	B	Low		

84	Plant Operations	The PCCS flare stack (pilot flare) will be visible to surrounding communities, particularly at night.	If the PCCS flare stack is 40 m in height, using a distance to horizon calculation, it may be visible up to approximately 23km away. The nearest receptors are in excess of this distance and so the likelihood assessment is the lowest. Consequently, the impact is minor and the overall risk assessment is low.	1	A	Low	As the flare stack will not be seen at any populated place or Stuart Highway no mitigation is proposed apart from explaining to local stakeholders what the flare does and how safety at the PCCS is managed.	As the distance/height relationship determines the stack is not visible at any populated place or the Stuart Highway effectiveness is assumed.	1	A	Low		
Economy & Development													
80	Project procurement and contracting.	Award of contracts.	Local businesses miss out on contract opportunities with the Project through a lack of capacity to competitively tender and supply.	3	B	Moderate	Implementation of Jemena's Industry Participation Plan (IPP) including the SME Business Growth Program.	Local suppliers are better positioned to successfully complete for business contracts with the Project.	3	B	Moderate		
81	Mobilisation of operations workforce.	Project operations recruitment.	People miss out on jobs and expectations of the provision of local jobs are not met.	3	B	Moderate	Implementation of Jemena's Regional Employment Plan, including: - the Project Ready Training Program; - the NGP Jobs Portal; - the Tennant Creek Social Enterprise opportunity; - Jemena Gas Operator Training Program; - contractual	Local workforce optimises participation in the Project to the extent reasonably possible.	2	C	Moderate		

OPPORTUNITY ASSESSMENT

ID	Project activity	Cause	Opportunity	Likelihood	Impact	Opportunity with enhancement in place	Proposed enhancement measures	Effectiveness of enhancement	Likelihood	Impact	Residual likelihood of success after measures
PLANNING PHASE											
Culture & Heritage											
1	Early survey works.	Field access for non-ground and low impact ground disturbing works.	Discovery of previously unknown cultural heritage site, artefact or objects adding to the body of knowledge in the Territory Heritage Register.	5	A	Low	Where possible, ensure that Traditional Owners are involved in field archaeological surveys.	TOs also gain further detailed insight into cultural heritage on the land.	5	B	Moderate
2			Passing on of knowledge between generations through cultural heritage field surveys.	2	A	Low	Ensure the employment of Aboriginal Field Hands on archaeological surveys.	Aboriginal people working as field hands learn about the cultural heritage on their land.	4	B	Moderate
3			Aboriginal Field Hands learn how to undertake site recording of archaeological sites.	2	A	Low	Ensure the employment of Aboriginal Field Hands on archaeological surveys and that they are provided on the job training in site recognition and recording.	Greater employability of Aboriginal people on archaeological surveys and in field work generally.	4	B	Moderate
Community Health & Wellbeing											
4		Field access for non-ground and low impact ground disturbing works.	Traditional Owners and Aboriginal field hands learn about health, safety & environment practices in the work place.	3	B	Moderate	Support individuals with relevant additional training throughout the planning phase.	Individuals take on HSE values in their private lives, adding to general community health and safety.	4	B	Moderate

5		Project design	Project logistics design provides an opportunity for arrangements to be established between Jemena and local PFES that capture synergies between the project for the benefit of the relevant community.	3	B	Moderate	Ensure that worthwhile synergies are implemented between the project and the community.	Incremental benefit to community in areas of emergency response	3	B	Moderate
Economy & Development											
6	Early survey works.	Field access for non-ground and low impact ground disturbing works.	Local people get employment opportunities	3	B	Moderate	Continued focus on local and Aboriginal employment in all aspects of field surveys and build on the cohort of people employed to feed into recruitment for the project construction opportunities.	Local people are more aware of and prepared for project employment.	3	B	Moderate
7			Traditional Owners and Aboriginal field hands learn about health, safety & environment practices in the work place.	3	A	Low	Assess TOs and Aboriginal field hands performance throughout the planning phase for potential selection for direct employment or on the Project Ready Training Program (P RTP). Support individuals with relevant additional training throughout the planning phase.	TOs and Aboriginal field hands gain skills to obtain work directly on the project or the experience facilitates selection onto the P RTP.	3	B	Moderate
8	Project procurement and contracting.	Award of contracts	Local businesses win contracts through competitive supply.	3	B	Moderate	Implementation of SME Business Growth Program including regional business briefings.	Local businesses aware of Project and better prepared for procurement opportunities and prequalification requirements; Jemena gains valuable insight into existing regional capacity to supply goods, services and labour to Project.	4	B	Moderate

CONSTRUCTION PHASE									
Culture & Heritage									
9	Clearance and disturbance activities along the alignment, access roads, camps and other areas.	CHIMP Implementation	Practical management of known cultural heritage sites and discovery of previously unknown cultural heritage sites, artefacts or objects adding to the body of knowledge in the Territory Heritage Register.	3	B	Moderate	Where possible, ensure that Traditional Owners are involved in CHMP implementation.	TOs also gain further detailed insight into cultural heritage on the land and how this can be successfully protected in resource infrastructure development.	3 B Moderate
10			Passing on of knowledge between generations through CHMP implementation.	3	B	Moderate	Ensure the employment of Aboriginal Field Hands on archaeological surveys.	Aboriginal people working as field hands learn about the cultural heritage on their land.	4 B Moderate
11			Aboriginal field hands learn how to undertake site recording of cultural heritage sites.	3	B	Moderate	Ensure the employment of Aboriginal field hands on archaeological surveys and that they are provided on the job training in site recognition and recording.	Greater employability of Aboriginal people on archaeological surveys and in field work generally.	4 B Moderate
12			Project non-Aboriginal staff gain greater awareness and respect for Aboriginal cultural knowledge resulting in greater acceptance of Aboriginal people working on the project.	3	A	Low	Design and deliver Indigenous Aboriginal cultural awareness training course for senior management / supervisors and all workers involved in the project. Involve project engineering staff in community engagement early in the Project.	Support of successful Aboriginal employment on the project and enhanced understanding and respect for Aboriginal culture and history.	5 B Moderate

Community, Health & Wellbeing									
13	Clearance and disturbance activities along the alignment, access roads, camps and other areas.	CHMP Implementation	Traditional Owners and Aboriginal field hands learn about Health, Safety & Environment practices in the work place.	3	A	Low	Assess TOs and Aboriginal field hands performance throughout the planning phase for potential selection for direct employment or on the Project Ready Training Program (P RTP). Support individuals with relevant additional training throughout the planning phase.	4	B Moderate
Economy & Development									
14	Land Agreement Implementation.	Distribution of Land Agreement benefits.	Traditional Owners and Native Title Holders / Claimants receive a range of benefits from the land agreements.	5	B	Moderate	Liaison with community organisations to support beneficiaries in managing benefits received.	5	C Significant
15	Project procurement and contracting.	Award of contracts.	Local businesses have the opportunity to compete for business contracts with the project.	3	B	Moderate	Implementation of SME Business Growth Program, including regional business briefings and workshops, the SME Business Investment Fund and contractual provisions for subcontractors to maximise the use of goods and services from the Barkly and Mount Isa...	4	C Significant
16			Increased local demand for goods and services to support Project construction activities.	3	B	Moderate	Implementation of SME Business Growth Program, including regional business briefings and workshops and the SME Business Investment Fund.	4	C Significant

								contract opportunities on other projects in the region			
17	Mobilisation of Construction Phase workforce.	Local workforce employment.	Employment of people from Tennant Creek in unskilled and semi-skilled project jobs.	2	A	Low	Implementation of Jemena's Regional Employment Plan, including: - the Project Ready Training Program - the NGP Jobs & Training Portal - the Tennant Creek Social Enterprise Employment opportunity - contractual provisions for subcontractors to maximise the use of labour from the Barkly and Mount Isa.	Maximisation of the use of local labour from Tennant Creek. Better able to compete for employment opportunities on other projects in the region.	4	C	Significant
18			Employment of people from Mount Isa in unskilled and semi-skilled project jobs.	3	A	Low	Implementation of Jemena's Regional Employment Plan, including: - the Project Ready Training Program - the NGP Jobs Portal - contractual provisions for subcontractors to maximise the use of labour from the Barkly and Mount Isa.	Maximisation of the use of local labour from Mount Isa.	4	C	Significant
19			Employment of people from Tennant Creek in skilled and highly skilled project jobs.	1	A	Low	Promotion of recruitment of skilled and highly skilled workers from the existing workforce via the NGP Jobs Portal.	Existing capacity in skilled and highly skilled workers from the local labour market. Better able to compete for contract opportunities on other projects in the region.	3	B	Moderate

20			Employment of people from Mount Isa in skilled and highly skilled project jobs.	3	A	Low	Promotion of recruitment of skilled and highly skilled workers from the existing workforce via the NGP Jobs Portal.	Existing capacity in skilled and highly skilled workers from the local labour market. Better able to compete for contract opportunities on other projects in the region.	3	B	Moderate
21	Establishment and operation of construction workers camps.	Camps on pipeline construction ROW and at Phillip Creek Compressor Station	Local businesses have the opportunity to compete for business contracts with the project.	3	B	Moderate	Implementation of SME Business Growth Program, including regional business briefings and workshops, the SME Business Investment Fund and contractual provisions for subcontractors to maximise the use of goods and services from the Barkly and Mount Isa..	Maximisation of the use of local goods and services, the fostering of new businesses and the development of existing businesses in the region.	4	B	Moderate
22		Use of commercial accommodation in Tennant Creek and Mount Isa./	Local accommodation providers gain business from the project.	4	B	Moderate	Early identification and establishment of arrangements with service providers.	Optimisation of the use of local accommodation.	4	B	Moderate
23	Pipeline construction.	Project requirements for access to the ROW, extractives (e.g. sand, gravel etc.) and water.	Installation of new access tracks, upgrade of existing tracks and installation of new water bores and dams.	4	B	Moderate	Close liaison with landowners to optimise location and design.	Increased agricultural and community infrastructure with long term benefits.	4	B	Moderate
OPERATIONS PHASE											
Economy & Development											

24	Operation and maintenance of pipeline.	Award of contracts.	Local businesses have the opportunity to compete for business contracts with the project.	3	B	Moderate	Implementation of SME Business Growth Program, including regional business briefings and workshops, the SME Business Investment Fund and contractual provisions for subcontractors to maximise the use of goods and services from the Barkly and Mount Isa.	Maximisation of the use of local goods and services, the fostering of new businesses and the development of existing businesses in the region.	4	B	Moderate
25	Mobilisation of operations workforce.	Local workforce employment.	Local long term employment in skilled pipeline and compressor station operations jobs in Tennant Creek.	2	B	Low	Invest in training for local workforce, e.g. Gas Operator Apprenticeship Program.	Long term local employment achieved in skilled jobs.	3	B	Moderate
26			Local long term employment in pipeline and compressor station operations jobs in Mount Isa.	4	A	Low	Invest in training for local workforce, e.g. Gas Operator Apprenticeship Program.	Long term local employment achieved in skilled jobs.	4	A	Low
27		Long-term accommodation required in Tennant Creek.	Incremental but sustained contribution to the local economy.	3	A	Low	Maximise the recruitment of local workforce to avoid need for FIFO.	Maximisation of long term sustained contribution to the local economy.	4	A	Low
28		Long-term accommodation required in Mount Isa.	Incremental but sustained contribution to the local economy.	4	A	Low	Maximise the recruitment of local workforce to avoid need for FIFO.	Maximisation of long term sustained contribution to the local economy.	4	A	Low

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