Australian Government | Infrastructure Australia

Assessment Framework

TEMPLATES AND CHECKLISTS

Template and checklist for Stage 1: Problem Identification and Prioritisation

1. Overview

1.1 Document control details

PROBLEM / OPPORTUNITY NAME	*Growing advanced manufacturing in the Northern Territory's Middle Arm Industrial Precinct*	PROPONENT	*Northern Territory Government*
VERSION	*1*	DATE COMPLETED	*07/09/2020*

CHANGES FROM PREVIOUS VERSION (IF APPLICABLE)

Not applicable

1.2 Prepared by

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DATE	*07/09/2020*				

Australian Government | Infrastructure Australia

1.3 Approved by

NAME	*Andrew Kirkman*	JOB TITLE	*Chief Executive, Department of Infrastructure, Planning and Logistics*	ORGANISATION	*Department of Infrastructure, Planning and Logistics*
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DATE	*07/09/2020*				

1.4 Introduction

This submission for Growing Advanced Manufacturing in the Northern Territory's Middle Arm Industrial Precinct is part of a program of works to deliver on the Northern Territory Government's vision: '**By 2030, the Northern Territory is a world class hub for gas production, manufacturing and services.**' This vision will see the Territory grow its economy through developing and diversifying its gas industry

Three projects that will deliver the necessary step-change to provide long term success and sustainability of an expanded Northern Territory gas industry are:

- **Darwin Regional Water Supply Infrastructure** – essential to secure and future proof growth of the city including industrial, residential and horticultural development and already on the Infrastructure Priority List 2020 as a priority initiative
- **Development of Beetaloo Sub-Basin** - onshore oil and gas resources present a significant National opportunity to generate economic activity and enhance energy security
- **Growing advanced manufacturing in the Northern Territory's Middle Arm Industrial Precinct** – development of an advanced manufacturing hub in Darwin at Middle Arm

Successful gas industry development in the Northern Territory will unlock private sector investment and cascade benefits throughout Northern Australia and the Territory's economy. These benefits - from direct jobs leading to population growth, expanding support industries that deliver indirect jobs and onshore manufacturing that reduces dependency on foreign manufacturing would be a substantial payoff for the long running commitment by Governments at all levels to **Develop Northern Australia**.

The submission uses information sourced through consultants s47B and use of the economic model REMPLAN.

Template for Stage 1: Problem Identification and Prioritisation (continued)

2. Problem/opportunity description

2.1 Nationally significant problem/opportunity statement

Opportunity

Australia's manufacturing sector has declined as a proportion of Australia's GDP from 19% in 1980 to just 6% in 2020. The COVID-19 pandemic has highlighted this decline as a significant logistical and supply chain issue. Australia needs a healthy and proportionate manufacturing sector as a matter of national economic security. The abundance of natural gas, derivatives, mineral deposits and renewable energy availability in the Northern Territory and nearby offshore gas fields provides an opportunity to reverse this trend through development of a value-adding manufacturing hub at Middle Arm in Darwin Harbour which will contribute significantly to Australia's economic growth and enhance the Northern Territory's economic and fiscal sustainability.

A manufacturing hub would deliver both construction and operational jobs, expand Australia's skill base and reduce dependence on imports while improving exports. Investment in enabling infrastructure will provide some of the necessary pre-conditions for the private sector to make final investment decisions to make the vision of a world class gas production, manufacturing and services hub by 2030 come to fruition.

The Northern Territory has competitive advantages for development of a new, advanced manufacturing sector including:

- proximity to globally significant gas and gas liquids resources
- proximity to Asian markets as well as other Australian localities
- world class mineral deposits, including minerals necessary for modern life
- access to water
- existing world class LNG processing facilities
- world class renewable energy resource in high levels of solar irradiance and further potential in geothermal and tidal energy.

Using the Northern Territory's competitive advantage, there are opportunities to develop low cost energy driven manufacturing such as:

- downstream gas processing that includes the production of methane-based products including ammonia and methanol, including from offshore gas, and gas and liquids from the Beetaloo Sub-basin
- high value minerals-processing and refining including vanadium, titanium and iron ore from mines in the Northern Territory
- "green hydrogen" supported by solar energy through the development of an energy superhighway in Central Australia.

Template for Stage 1: Problem Identification and Prioritisation (continued)

The Northern Territory has the opportunity to use these abundant resources to manufacture on an international scale, competing with other countries for both high volume and high value commodity markets, and its proximity to large Asian markets.

A number of gas manufacturing and mineral processing proponents have already invested significantly in pre-feasibility and front-end engineering as part of plans to develop manufacturing and refining projects in the Northern Territory.

Problem

Marine infrastructure and serviced land to support the development of a gas manufacturing and minerals refining hub in Darwin is deficient and investment in enabling common-user public infrastructure will be required to facilitate final investment decisions (FID) by gas manufacturing and minerals refining proponents. This infrastructure is critical to bringing in feedstock and exporting manufactured products to market.

While the Territory does have some enabling public infrastructure such as the transcontinental railway, arterial road and port infrastructure, there are limitations in existing enabling public infrastructure. There is insufficient serviced land available adjacent to the existing Darwin port which is a barrier to gas manufacturing and minerals processing on East Arm as these projects require relatively close proximity to a loading wharf with capability to berth vessels up to 80,000DWT and potentially larger in the future. It is impractical and costly to pipe product from Middle Arm to Darwin Port as the only practical route for undersea pipelines to Darwin Port is approximately 15km and conflicts with existing shipping channels and as such cannot support the number of product lines involved with manufacturing which represents a significant barrier to the viability of projects.

The existing marine infrastructure (loading wharves and modular off-loading facilities) on Middle Arm is private infrastructure and the location/configuration of this infrastructure prevents its conversion to common-user public infrastructure.

2.2 Problem/opportunity location

Darwin is an existing globally significant liquid natural gas (LNG) hub, with Darwin LNG (Santos) and Ichthys LNG (INPEX) processing facilities located south of Darwin on the Middle Arm Peninsula. Middle Arm Peninsula is adjacent to deep-water, the Marine Supply Base, East Arm Port and the future ship lift facility which is cementing Darwin's role as a service and supply hub for Ichthys LNG, the Prelude FLNG (Shell) and the Darwin LNG (Santos) projects.

The Northern Territory is supported logistically, with regional infrastructure connecting it to adjacent states through transcontinental road and rail networks, and by access to the Eastern states gas distribution network through the Northern Gas Pipeline to Mount Isa.

Darwin has an experienced local workforce that can support the construction of manufacturing facilities, and with the amenities of a capital city.

The Middle Arm Peninsula (Figure 1) has potential to deliver up to 1650 hectares of land for gas and strategic minerals industrial development, with a further 550 hectares of available land for support industries. Master planning and environmental approvals are well advanced.

Template for Stage 1: Problem Identification and Prioritisation (continued)

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Template for Stage 1: Problem Identification and Prioritisation (continued)

2.3 Problem/opportunity root causes and time period

Outlined in the table below is a summary of the root cause for Growing advanced manufacturing in the Northern Territory's Middle Arm Industrial Precinct. Each of the Root causes are subsequently discussed in more detail.

Root cause	Time period
1. Lack of enabling infrastructure for manufacturing industry Although suitable land exists proximate to existing gas processing operations and with existing networks (road and rail) connecting the area to onshore gas resources there is a lack of common user infrastructure (marine, logistics, essential services) to enable a multi user processing and manufacturing feed-in and feed-out businesses. *Unlocking suitable land and providing common user facilities will include:* Common user wharf: for export of liquid and solid products, expandable as marine traffic increases Common user land side facilities (CUF): to support port operations Modular offloading facility (MOF): transport of large pre-assembled modules (PAMS) to be imported for construction of the plants. Headworks: including roads, product corridors, earthworks and trunk services for the backbone infrastructure to support a new industrial development Subdivision works: roads, drainage, earthworks, power, water and other services	Now
2. Access to long term, low cost gas and hydrocarbon liquids Darwin is established as a globally significant liquefied natural gas export hub. The potential recoverable natural gas liquids onshore (Beetaloo and Amadeus basins) and offshore means there is an opportunity for growth of future gas processing and an opportunity to enable downstream gas manufacturing activities.	Start 2025
3. World class mineral deposits, including minerals necessary for modern life The Territory is an established mining jurisdiction but is also relatively underexplored and sparsely populated, which provides opportunities for new significant discoveries. **A number of major projects are progressing through feasibility and to FID which have a potential to process ore within Australia and contribute to a manufacturing industry in Australia**	Now
4. World class renewable resource in high levels of solar irradiance Large scale solar installations are already producing power in Katherine and Batchelor (46.2 MWp) with more planned throughout the Territory to connect to the Darwin/Katherine power grid. This is further enhanced by the Territory Government's decision to install a battery to support the existing and planned renewables. s47B [redacted]	Now
5. Access to regional markets The Territory is physically situated in close proximity to international export markets and offers the shortest and quickest route from Australia to potential product markets containing over 50% of the world population throughout Asia.	Now

Template for Stage 1: Problem Identification and Prioritisation (continued)

Root Cause 1 – Lack of Enabling Infrastructure for Manufacturing Industry

At Middle Arm, 1650 Ha of industrial land is available for a manufacturing industry supported by offshore and onshore gas but requires significant common-user and headworks infrastructure to support a multi user hub. If the headwork infrastructure is not developed to the required capacity there is a real risk that development of a manufacturing industry will be constrained and fragmented. There is a high risk of adhoc, uncoordinated industry development that may jeopardise efficient development of the Peninsula.

Middle Arm although ideally located, is not sufficiently developed to support the proposed intensity of future manufacturing development and requires significant additional common user infrastructure.

A high-level assessment of the enabling infrastructure to support downstream gas manufacturing has been conducted by the Northern Territory and identifies the following key elements required to be developed in order to create the best practice, controlled and certain baseline infrastructure needed for a multi – user environment:

- a common user wharf capable of access by vessels of at least 80,000 DWT for export of liquid and solid products, expandable as marine traffic increases
- common user land side facilities (CUF) to support port operations including tank compounds and lay down areas
- headworks including roads, product corridors, earthworks and coastal protection, stormwater drainage, power and water services
- subdivision works including product corridors, roads, drainage, earthworks, power, water and other services
- a modular offloading facility (MOF) to enable transport of large pre-assembled modules (PAMS) to be imported for construction of the plants

In addition to the above, but not positioned within the Middle Arm Industrial Development, significant water for industrial use is required and has been considered in the **Darwin Regional Water Supply Infrastructure** upgrades that are proposed to support growth of Darwin City including industrial, residential and horticultural development.

A high-level estimate of the capital cost of this enabling infrastructure is in the order of $1.5 – $2.0 billion.

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A high-level assessment of the potential environmental impacts of developing the Middle Arm Region as a gas manufacturing and mineral processing hub includes assessing how the development is likely to impact land, sea, air, freshwater systems, and people. This will facilitate a coordinated approach to statutory approvals required under the

Template for Stage 1: Problem Identification and Prioritisation (continued)

Northern Territory *Environment Protection Act 2019*, *Planning Act 1999*, *Waste Management and Pollution Control Act 1998* and *Water Act* and Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*. This strategic environmental assessment will assist in all future project approvals under these legislation.

Root Cause 2 – Access to long term, low cost gas and hydrocarbon liquids

The Northern Territory is already established as a globally significant liquefied natural gas export hub. With the Northern Territory's access to world class onshore and offshore petroleum geology, including Browse, Bonaparte, Beetaloo and Amadeus basins (Figure 2), there is the potential for a long-term supply for gas and hydrocarbon liquids. The majority of the current producing gas reserves are contracted. While there is possible access by new manufacturing proponents on individual agreements to access existing offshore and onshore gas production, Beetaloo Sub-Basin onshore gas presents an opportunity for long term agreements to be put in place at price points that will make manufacturing cost effective. Certainty regarding the supply of gas for downstream manufacturing is a key consideration for the final investment decision by the proponents.

The price of gas is a determining factor as a feedstock and energy source in manufacturing outputs and the Northern Territory is well placed to be in a competitive position to manage the inputs and energy cost derived from its onshore gas reserves to create a targeted cost advantage to energy supply and feedstock for the growth of advanced manufacturing industries in Darwin.

Beetaloo's long term gas supply is an opportunity for growth of existing LNG gas processing as well as an opportunity to enable downstream gas activities, which provides the Northern Territory an opportunity of national and international significance.

Template for Stage 1: Problem Identification and Prioritisation (continued)

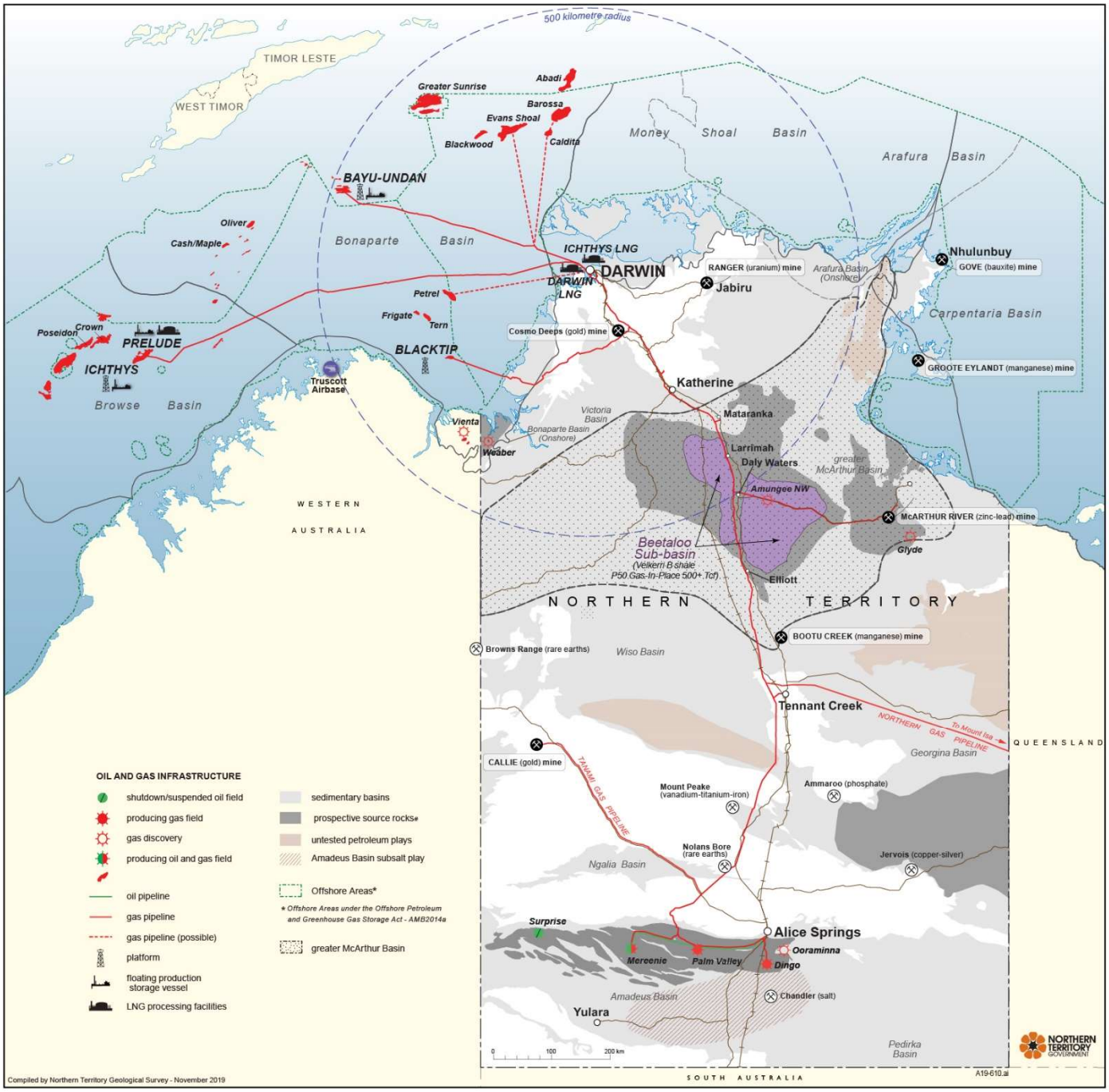

Figure 2- Northern Territory Gas Reserves

Template for Stage 1: Problem Identification and Prioritisation (continued)

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The Territory considers ammonia and gas to liquids (including methanol) industry clusters to be the most appropriate given the regional demand in Asia and Darwin's geographic proximity to this region.

The potential recovery of natural gas liquids from the onshore Beetaloo Sub-basin project means there is also an opportunity for future production of ethane-based products such as plastics, paints, polymers and rubbers as well as the production of liquid fuels to help address Australia's energy security. Some of the potentially suitable natural gas downstream products are shown in Figure 3.

Downstream gas processing in Darwin will create a new gas demand centre and open up opportunities for related industrial development, employment, education and training.

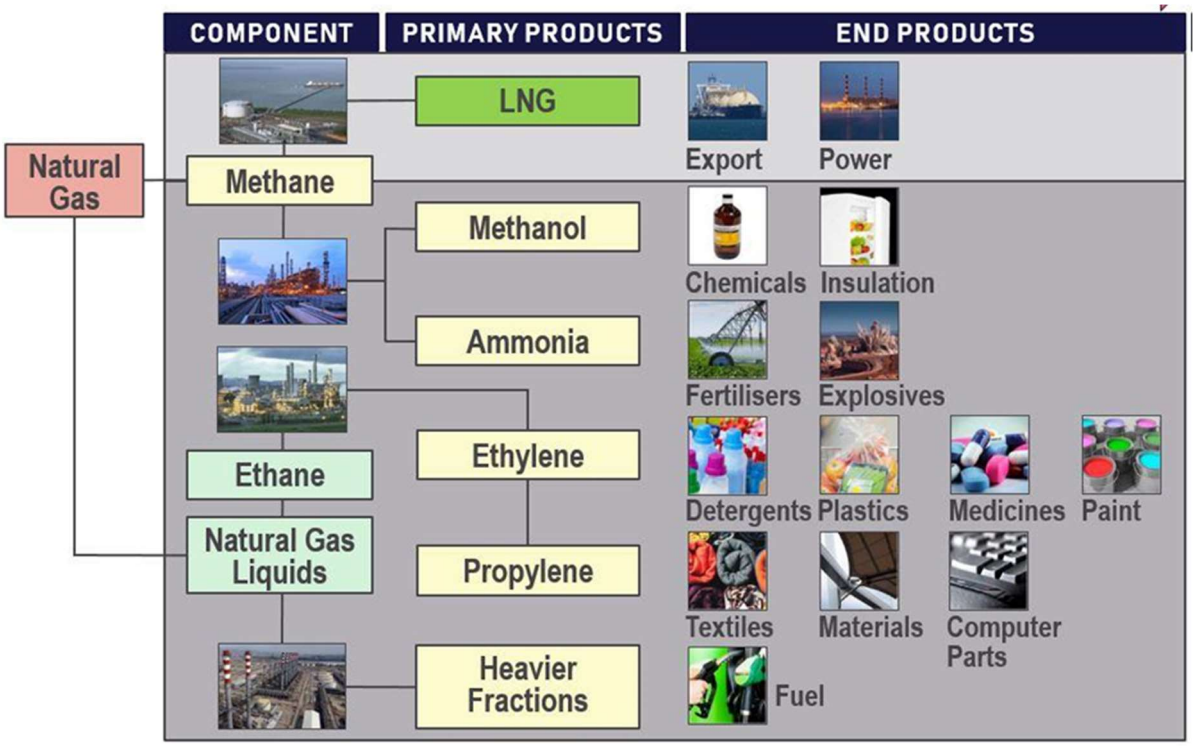

Figure 3-Potential natural gas downstream products

Template for Stage 1: Problem Identification and Prioritisation (continued)

Root Cause 3 – World class mineral deposits, including minerals for necessary for modern life

The Territory is an established mining jurisdiction with six major operating mines and a range of smaller operations (Figure 4). Seventeen new projects and one mine expansion are currently proceeding through feasibility and approvals phases. While exploration is active in greenfield and brownfield areas, the Territory is relatively underexplored and sparsely populated, which provides opportunities for new significant discoveries.

Manufacturing, service, support and supply opportunities also exist down the value chain to refine and process high value commodities such as vanadium and titanium, before they are exported for overseas markets. These high value products are used in most advanced manufacturing processes including technology and high value products. The Territory already exports Manganese and Bauxite (aluminium) from three operating mines and further potential mines have been identified in the Territory for Vanadium, Titanium, Iron, and Molybdenum.

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Template for Stage 1: Problem Identification and Prioritisation (continued)

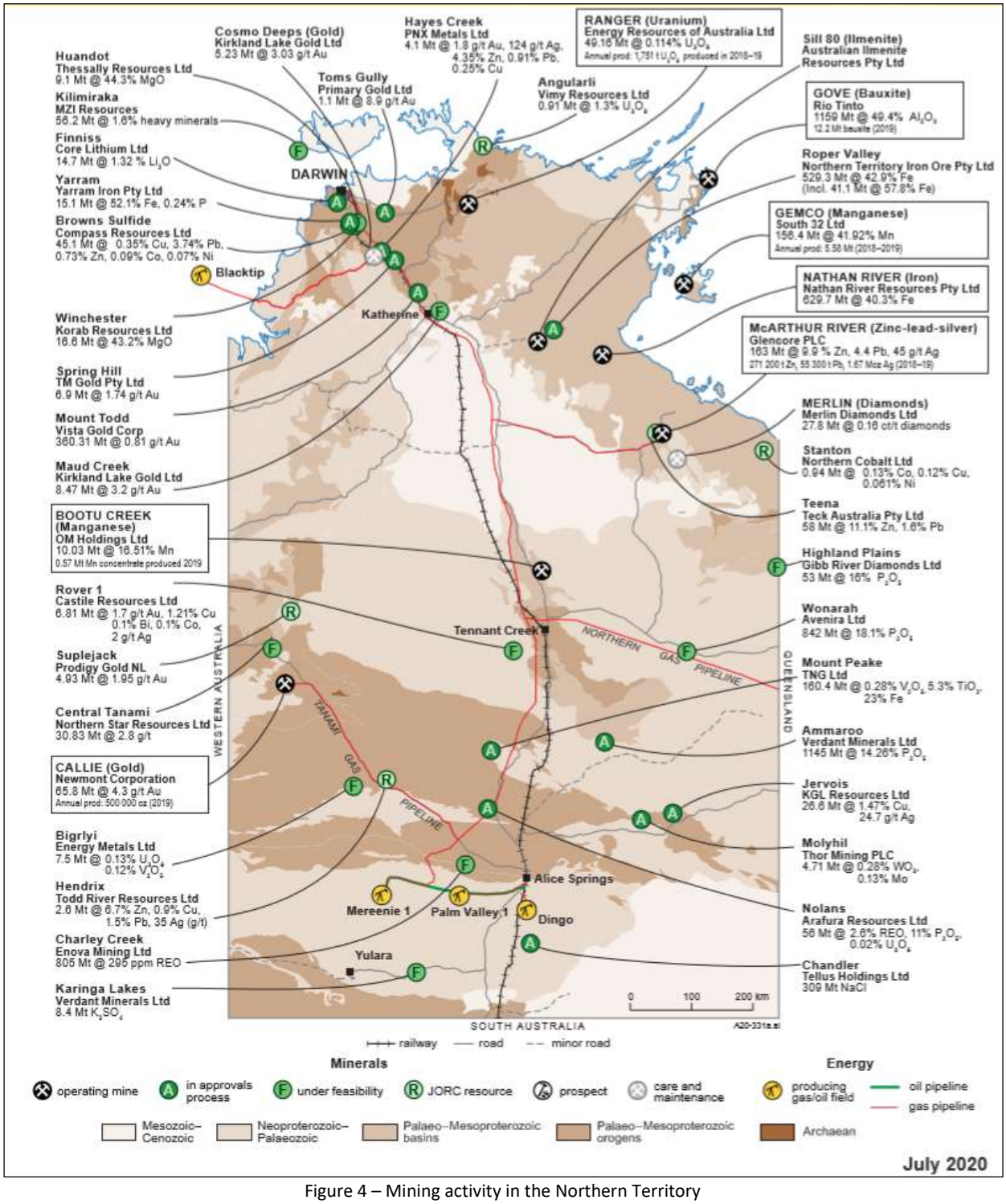

Figure 4 – Mining activity in the Northern Territory

Template for Stage 1: Problem Identification and Prioritisation (continued)

Root Cause 4 – World class renewable resource in high levels of solar irradiance

One of the clear drivers of manufacturing is reliable and economic sources of energy. The Northern Territory is ideally placed to exploit its geographical advantages in the renewable energy industry. This can then drive the potential manufacturing industry within Northern Australia. The **Northern Territory's Road Map to Renewables** targets the increase of renewable energy from 4% to 50% by 2030. The mix of 50% renewables and gas fired generation represents one of the lower emission profiles of any Australian jurisdiction, with the Northern Territory already one of the lower emission jurisdictions in Australia.

Northern Territory Government's plans to take its three grids to an installed total of 450 MW renewables by 2030, mostly solar PV, as envisaged in the Roadmap to Renewables Report. Among initiatives, the Northern Territory Government has invested;

- $59 million joint investment with ARENA for the Solar SETuP program providing 10 MW of solar across 25 remote communities
- $5 million into the Rooftop Solar in Schools program
- $8.3 million in the 5 MW Alice Springs battery energy storage system
- $4.5 million in our smart energy grants scheme
- $30 million battery energy storage system on the Darwin/ Katherine grid.

Large scale solar installations are already producing power in Katherine and Batchelor (46.2 MWp) with more planned throughout the Territory to connect to the limited Darwin Katherine power grid. This is further enhanced by the Territory Government's decision to install a battery energy storage system to support the existing and planned renewable projects.

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Darwin's large tidal range also has sparked interest from international companies in potential tidal energy production with initial studies of a 10 MW system for the Clarence Straits to the north of Glyde Point near Darwin, but these are not considered viable in the medium term. Geothermal energy also has potential in the NT but requires further development to be considered a viable energy source in the medium term.

These projects draw on the natural advantages of the Northern Territory in high irradiance across large areas of the Territory (refer Figure 5) and large tidal ranges along the coastline.

Template for Stage 1: Problem Identification and Prioritisation (continued)

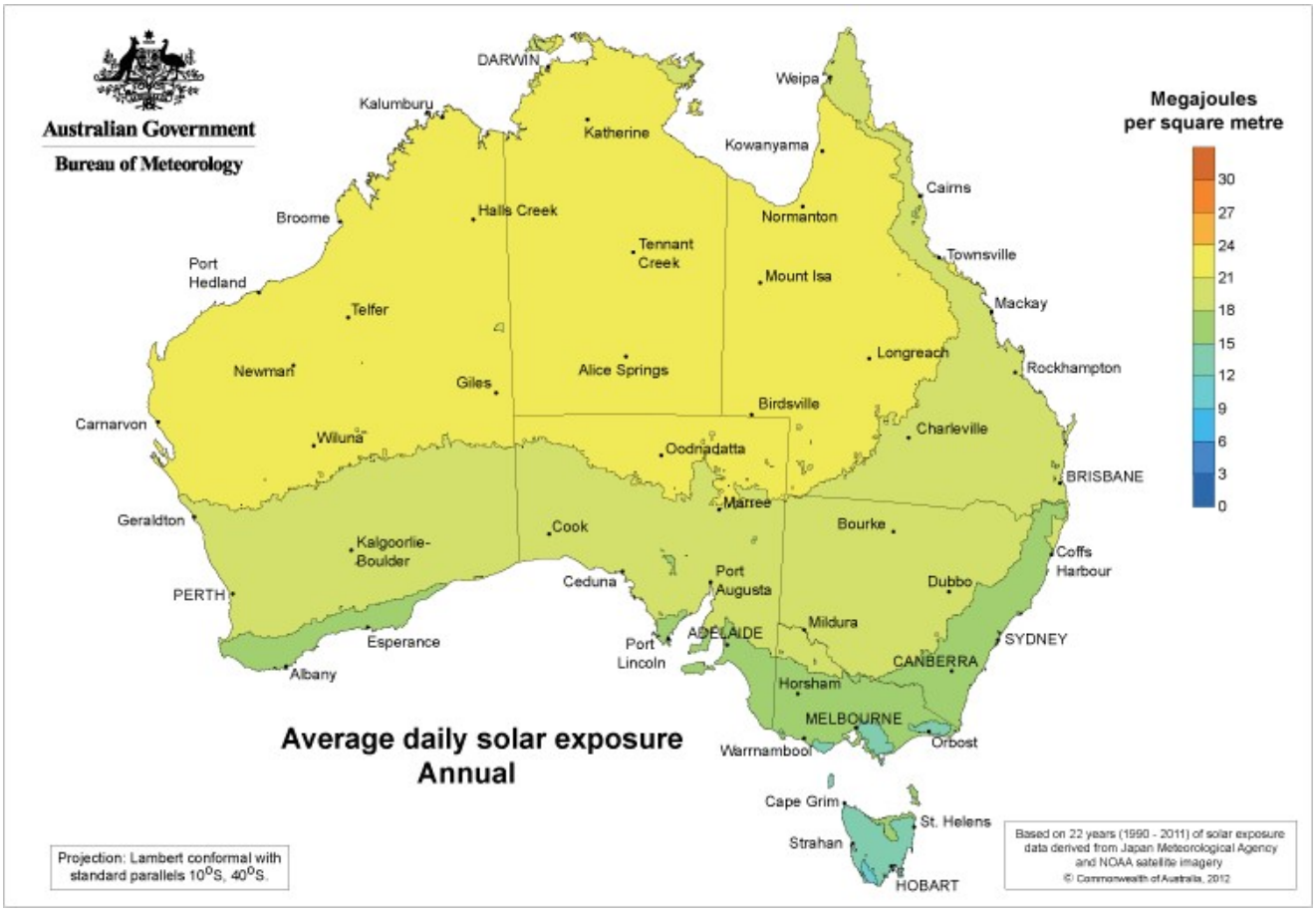

Figure 5-Australian daily solar exposure

The Northern Territory is in a unique position to have access to immediate offshore gas and in the coming few years onshore gas through the development of Beetaloo Sub-Basin. Gas is therefore 'on our doorstep' to be used in a manufacturing industry and therefore **creating a significant value add to** the Northern Territory's economy.

In the longer term manufacturing will have access to cheap, abundant and reliable renewable energy resources driven by a clean (green) hydrogen industry. Renewable solar energy as an energy source to support green hydrogen production has the potential to significantly reduce greenhouse gas emissions, supporting Australia's climate change strategies.

Root Cause 5– Access to Regional Markets

Import replacement and export markets will be key to development of Australia's manufacturing industry. There is an opportunity to improve Australia's economic resilience through a manufacturing hub located away from existing hubs in South-eastern Australia. In addition, to ensure that Australia is internationally competitive, building markets for manufacturing product with trading partners will be essential to meeting international demand.

Template for Stage 1: Problem Identification and Prioritisation (continued)

The Territory is physically situated in close proximity to international export markets and offers the shortest and quickest route from Australia to potential product markets throughout Asia. Through its establishment as a world-scale LNG export hub, the Northern Territory has already developed trade relationships with international neighbours leading to increase demand for our products.

This proximity to markets provides the Northern Territory with the opportunity to manufacture on an international scale because 56% of the world's population is located in the broader region (Figure 6).

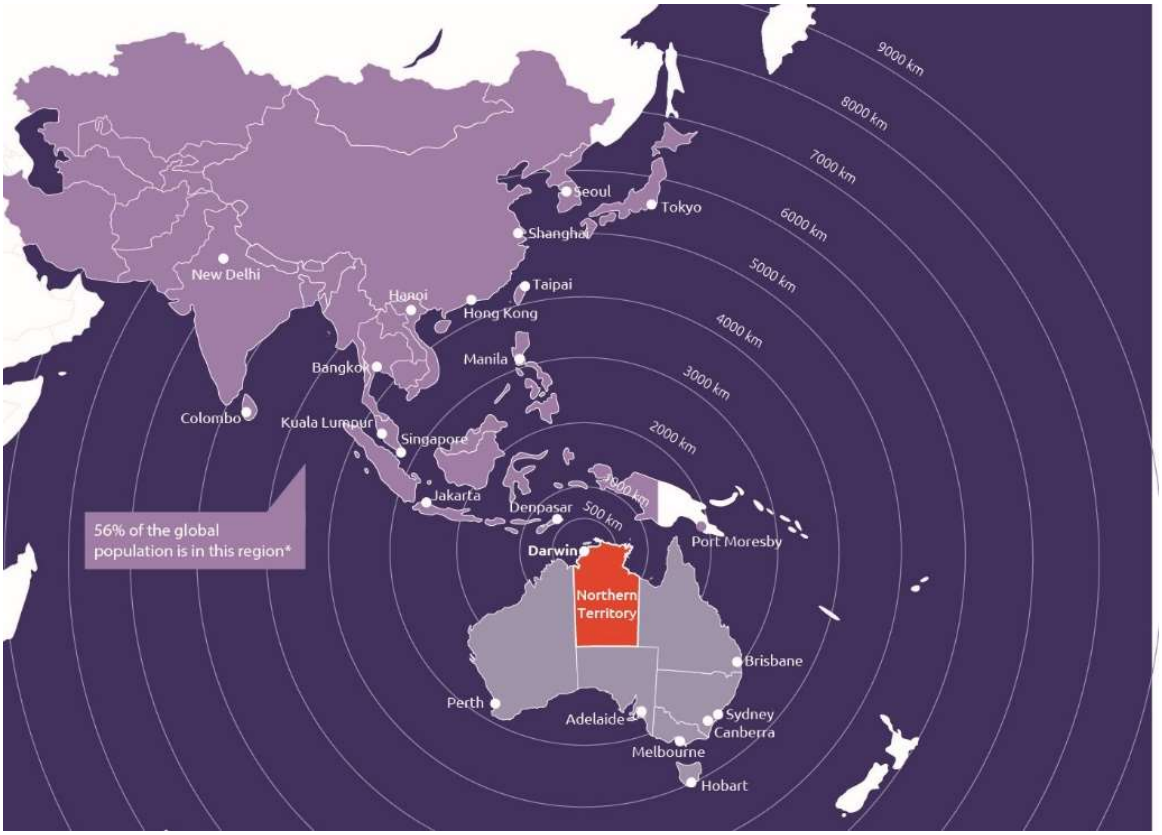

Figure 6-Northern Territory and the Asian Market

Template for Stage 1: Problem Identification and Prioritisation (continued)

2.4 Information about the problem and opportunity

Monetising Economic Cost/Opportunity through Value Added

Given the diverse potential uses of a manufacturing hub, there are a number of approaches to understanding the monetised economic cost/opportunity.

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The Value Added represents the marginal economic value that is added by an industry to the costs of inputs and consists of:

- Income for individuals
- Income for businesses (gross operating surplus)
- Income for government (net taxes on production, products and services).

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Using these operational jobs as an input into REMPLAN software to estimate value added, the first 1600 jobs in the precinct will create $450 million in value added each year and a further $517 million associated with supply chain effect and consumption flow on effect.

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It should be noted that while ongoing operational revenues and expenditure will depend on the specific industries that will be based at Middle Arm, without serviced land availability and common user infrastructure it is unlikely that these industries will commence in the short to medium term.

Template for Stage 1: Problem Identification and Prioritisation (continued)

Value added (summarised in Table 2 below) from direct operational employment is estimated at $450 million per annum in 2026 with a further $306 million per annum from supply chain and $211 million per annum from consumption flow-on effect. By 2036, value added per annum is estimated at $920 million per annum from direct employment, $654 million per annum from supply chains and $428 million per annum from consumption flow-on effects.

Template for Stage 1: Problem Identification and Prioritisation (continued)

Table 2-Jobs and Economic Growth from Manufacturing

Year	Hectares under operations	Jobs	Value Added (current $ million per annum)
2026	836	Direct – 1600	Direct - $450
		Supply chain effect - 1240	Supply chain effect - $306
		Consumption effect - 891	Consumption effect - $211
		Total - 3761	**Total - $967**
2036	1258	Direct - 3009	Direct - $920
		Supply chain effect - 2602	Supply chain effect - $654
		Consumption effect - 1806	Consumption effect - $428
		Total - 7417	**Total - $2,002**

Source: Northern Territory Department of Treasury and Finance – Remplan modelling

Non-jobs Monetising the Economic Cost/Opportunity

Other mechanisms for considering the monetised economic cost/opportunity includes:

a) Capital Investment

Further to the value added from operations in the precinct there will be significant value added from capital expenditure and employment in the construction stage of each project and construction of enabling infrastructure.

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In a small jurisdiction such as the Northern Territory, projects with large capital investments can have a significant impact on the local economy. Job creation and population growth through the construction phase which has a flow on effect through the support of large projects through the food and beverage, accommodation and transport sectors.

b) Increased Value Add through Gas Value Chain

An alternative approach to estimating value add is monetising the increase in the value chain through downstream gas processing and manufacturing and the export of derivatives of LNG, rather than the export of the LNG itself.

s47B found the economic contribution from LNG exports is $6M/Petajoule (PJ) of exported LNG compared to $44.6M/PJ of gas used as feedstock for the chemical manufacturing sector s47B On this basis, gas manufacturing would equate to a value add to the Australian economy of 7 times the value of exporting LNG.

Template for Stage 1: Problem Identification and Prioritisation (continued)

Gas industry expert s47B has estimated that a fully utilised Middle Arm gas manufacturing hub at peak production could process up to 376PJ per year with a potential economic contribution of up to $16.77 billion to the Australian economy.

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Non-monetised Benefits

The establishment of a manufacturing hub in the Northern Territory could provide numerous non-monetised benefits in addition to the economic and employment opportunities, summarised below:

- An opportunity to improve Australia's fuel security through import substitution
- Greater diversity in manufactured products and markets. Gas is a primary feedstock for the production of plastics, fertilisers and other chemicals. Whilst natural gas is highly substitutable for electricity and heat purposes, this is often not the case for gas use as a feedstock. For some products, gas use for feedstock is 85 per cent of total gas use, with the remainder for energy and heat and can represent 80 per cent of production costs. Gas-reliant industries tend to be highly productive and hire highly-skilled workers.
- Population growth in the North, bring diverse, high skilled and experienced workers and their families. Plus providing ongoing jobs not previously available in the Territory.
- Increasing the share of Aboriginal workers employed in the Territory, associated with positive social impacts and breaking the cycle of disadvantage in Indigenous communities.

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Template for Stage 1: Problem Identification and Prioritisation (continued)

Opportunity	Qualitative description	Quantitative evidence	Monetised cost of problem/opportunity $m, current
Current			
Opportunity 1	*New Manufacturing Industry in the Northern Territory*		*$-*
Problem 1	*Infrastructure not capable of supporting manufacturing industry*	*Assessment of infrastructure needs* s47B	*$1.5-2.0 billion*
Medium term (2026)			
Opportunity 1	*New Manufacturing Industry in the Northern Territory*	*Value add from downstream gas manufacturing in 2026* *Direct Jobs (1600)* *Indirect jobs (2131)*	*$967 million per annum*
Longer term (2036)			
Opportunity 1	*New Manufacturing Industry in the Northern Territory*	*Value add from downstream gas manufacturing in 2036* *Direct Jobs (3009)* *Indirect jobs (4408)*	*$2.002 billion per annum*

Template for Stage 1: Problem Identification and Prioritisation (continued)

2.5 Stakeholder impact

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Template for Stage 1: Problem Identification and Prioritisation (continued)

Template for Stage 1: Problem Identification and Prioritisation (continued)

2.6 Problem/opportunity alignment with relevant government policy objectives, strategies and other problems/opportunities/programs

Development of Middle Arm as an advanced gas manufacturing is strongly aligned to published policies and strategies of both the Australian and Northern Territory Governments.

Northern Territory Gas Strategy - Five Point Plan

The Northern Territory Gas Strategy has as its vision "By 2030, the Territory is a world class gas production, manufacturing and services hub" (refer Figure 4). This will position the Northern Territory to take full advantage of our gas reserves and maximise our export opportunities.

Under this initiative, a **Gas Taskforce** (GTF) has been established to provide a whole of government approach to the delivery of a Gas Strategy and the Five Point Plan (FPP) to:

1. Expand the world-scale Darwin LNG export hub
2. Grow the Northern Territory's service and supply industry
3. Establish gas based processing and manufacturing
4. Grow local research, innovation and training capacity
5. Contribute to Australia's energy security

Territory Economic Reconstruction Commission

The **Territory Economic Reconstruction Commission** (TERC) has been established to inform the development of a Rebound strategy following the COVID-19 pandemic. TERC plans to evolve the Government's existing Five Year Plan for Northern Australia into a Northern Australia Recovery and Growth Plan. TERC provided its first report in July 2020, making 15 recommendations which have been accepted by the Northern Territory Government. Creation of a new manufacturing industry as outlined in the Northern Territory Gas Strategy directly aligns with recommendation number five (5) of the report which:

- Acknowledges that Middle Arm Industrial Development Precinct provides the opportunity for the significant growth of private sector led manufacturing in the Territory in a range of industries and downstream sectors.
- Provides a recommendation to urgently undertake a number of masterplan actions in recognition of the opportunity and what is missing as a means to attract relevant private sector enterprises, including to the Middle Arm Industrial Development Precinct.
    - **Renewables based hydrogen industry-** to be at the forefront of the developing renewable hydrogen industry.
    - **Minerals processing** – to grow on and off-site mineral processing and value adding opportunities including manufacturing.
    - **Low emissions fully integrated petrochemical industry-** to grow this industry and associated downstream sectors noting there are many sectors that could be attracted downstream from a full scale petrochemicals complex.

Template for Stage 1: Problem Identification and Prioritisation (continued)

In addition to recommendation number five (5), a new manufacturing industry in Northern Territory also indirectly relates to the other TERC recommendations, including:

- 1 to 3-Energy (renewables and gas)
- 6-Resources
- 7-Agribusiness
- 8-Water
- 9-Infrastructure
- 14-Digtial Industry

Our North, Our Future: White Paper on Developing Northern Australia

The Commonwealth Government's Office of Northern Australia in the Department of Industry, Science, Energy and Resources is leading the implementation of the northern Australia agenda in partnership with state, territory and local government agencies, industry and community bodies.

The Our North, Our Future: White Paper on Developing Northern Australia released in 2015, sets out the priorities to drive growth in Australia's north. It's a 20-year plan for investment and support to grow the north through 6 key policies:

1. simpler land arrangements to support investment
2. developing the north's water resources
3. business, trade and investment
4. infrastructure to support growth
5. the northern workforce
6. good governance

The development of a manufacturing industry in the Northern Territory is key to attracting significant private investment to support the Developing Northern Australia agenda.

Federal Government's fuel security package

A manufacturing industry in the Northern Territory has the potential to support the Federal Government's fuel security package. This includes developing more local storage as quickly as possible and ensuring a sustainable refining sector. Darwin Clean Fuels proposed 100,000 barrels per day condensate and LPG processing plant at Middle Arm would contribute up to 10% of Australia's liquid fuel requirements from Australian sourced condensate.

Template for Stage 1: Problem Identification and Prioritisation (continued)

Australia in the Asian Century white paper

Australia in the Asian Century white paper, which focuses on Darwin and the key role northern regional Australia will play in shaping Australia's future engagement with Asia. The provision of more effective infrastructure systems will support all five of the key determinants outlined in the white paper for long term regional economic growth:

1. Education and skills
2. Sustainable communities
3. Access to international
4. National and regional markets
5. Comparative advantages and business competitiveness; and intergovernmental partnerships and integrated regional planning.

Further synergies with other government initiatives and policies will develop over the coming phases of the development.

3. Confidentiality

Confidentiality

This report contains commercial in confidence information and any material to be made public must be approved by the Northern Territory Government prior to publishing.

Checklist for Stage 1: Problem Identification and Prioritisation (continued)

The following provides a checklist for proponents to prepare Stage 1 submissions.

Proponents are encouraged to contact Infrastructure Australia for clarification on any part of this checklist, or for additional guidance in preparing a submission.

Infrastructure Australia can be contacted via email on IPLSubmissions@infrastructure.gov.au, or telephone on (02) 8114 1900.

Key questions	Complete?
Is the problem/opportunity expressed as a straightforward statement?	☒
Is there an explanation of how and why the problem/opportunity is nationally significant?	☒
Is the problem/opportunity to link to jurisdictional goals and objectives, as well as other problems, programs and projects?	☒
Is the problem/opportunity measured by quantitative and/or qualitative data?	☒
Is the problem/opportunity articulated in the base case i.e. the state of the world in the absence of major future investment?	☒
Has the problem/opportunity been monetised over time?	☒
Have assumptions about future trends in drivers (e.g. population, economic growth, technology, climate trends) been described?	☒
Have the project/opportunity interrelationships been described?	☒

Checklist for Stage 1: Problem Identification and Prioritisation (continued)

National Significance Definition

Infrastructure Australia uses the IPL to identify major infrastructure proposals that have substantial strategic merit and are of national significance. An infrastructure investment is considered to be nationally significant if, based on the evidence presented, the Infrastructure Australia Board is of the opinion that the investment is expected to have a material impact on national output by:

1. Addressing a problem that would otherwise impose economic, social, and/or environmental costs; or
2. Provide an opportunity for realising economic, social, or environmental benefits; or
3. Both addressing a problem and providing an opportunity.

For the purposes of assessing submissions to the IPL, we have applied, as a guide, a threshold value of $30 million per annum (nominal, undiscounted)[1] in measuring material net benefit[2], taking potential unquantified quality of life considerations into account.

[1] This threshold was adopted by the Infrastructure Australia Board based on evidence drawn from the 2015 Infrastructure Audit
[2] This includes economic, social and environmental net benefits