

# Berrimah Freight Terminal Expansion

**Economic Impact Assessment**

February 2024



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# 1. Introduction

## 1.1. Project context and overview

Aurizon Operations Limited (Aurizon) is proposing to expand the Berrimah Freight Terminal (BFT or the Project), an intermodal terminal located approximately 6.5 kilometres (km) south-east of the Darwin Central Business District and approximately 2km north-east of the East Arm Wharf, on the East Arm Peninsula.

The BFT was originally developed in 2003 to provide for containerised freight and bulk materials haulage. The Berrimah freight yards were completed in October 2003,<sup>1</sup> and the inaugural freight train left Adelaide on 15 January 2004 and arrived in Darwin on 17 January 2004.<sup>2</sup>

An "intermodal container terminal, plus the integration of the Alice Springs to Darwin Railway with the Port of Darwin at East Arm" were key elements of the project for which a draft environmental impact statement was released in 1983 and for which approvals were obtained from the Australian and Northern Territory Governments in 1997.

Aurizon is the largest bulk freight handler in Australia with 5,000 km of rail lines around the country. This Project is part of a wider set of works being undertaken by Aurizon to upgrade several of the rail terminals in its network to increase facility throughput and the viability of rail freight in Australia.

A proposal, such as the BFT expansion, requires referral to the Northern Territory (NT) Environment Protection Authority (EPA) in accordance with the *Environment Protection Act 2019* (EP Act) if it has the potential to have a significant impact on the environment, or meets a referral trigger.<sup>3</sup> The definition of 'environment' in section 6 of the EP Act includes all aspects of the surroundings of humans including physical, biological, economic, cultural and social aspects.

Aurizon has engaged SLR Consulting Pty Ltd (SLR) to prepare the appropriate referral documentation to assist with navigation of the approvals process. SLR engaged PricewaterhouseCoopers (PwC) to undertake an Economic Impact Assessment (this Report) of the BFT expansion to assist the NT Government in evaluating the Project and its potential value to the NT economy.

This Report assesses the expected economic impact of the Project, including an estimation of direct and indirect jobs that it will create in both its construction and operating phases. The findings of this Report will be appended to Aurizon's submission to the Northern Territory Environment Protection Authority (NTEPA).

## 1.2. Report structure

This Report has been structured to provide a holistic view of the Project, including an analysis of the current and future state of the BFT and the potential social and economic impacts as a result of upgrading the facility. This Report is structured as follows:

- **Section 2: Project details** provides details of the Project and its justification, operating model, related projects, constraints and opportunities

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<sup>1</sup> AustraAsia Rail Corporation (2021), *Summary of History: The Adelaide to Darwin Railway*, available at <[https://www.aarail.com.au/application/files/3416/1856/2784/Summary\\_of\\_History\\_-The\\_Adelaide\\_to\\_Darwin\\_Railway\\_-\\_1.pdf](https://www.aarail.com.au/application/files/3416/1856/2784/Summary_of_History_-The_Adelaide_to_Darwin_Railway_-_1.pdf)>.

<sup>2</sup> AustraAsia Rail Corporation (2021), *Summary of History: The Adelaide to Darwin Railway*, available at <[https://www.aarail.com.au/application/files/3416/1856/2784/Summary\\_of\\_History\\_-The\\_Adelaide\\_to\\_Darwin\\_Railway\\_-\\_1.pdf](https://www.aarail.com.au/application/files/3416/1856/2784/Summary_of_History_-The_Adelaide_to_Darwin_Railway_-_1.pdf)>.

<sup>3</sup> Sections 29 and 30 of the EP Act allow for the declaration of referral triggers by the Minister, which can be activity-based or location-based. The Minister may specify circumstances in which, and the thresholds above which, proposals are to be subject to the trigger. No referral triggers have been declared to date.

- **Section 3: Methodology and assumptions** quantitatively assesses the incremental economic impact of the project based on an analysis of facility throughput pre- and post-upgrade of the facility
- **Section 4: Economic impact** evaluates the potential social impacts of the Project as per the guidelines published by the NTEPA.



## 2. Project details

### 2.1. Purpose and overview

The purpose of this chapter is to provide an overview of the Project, including the facility operating model, project constraints and opportunities, timing and project planning. It also discusses the potential economic benefits and disbenefits that are expected to be influenced by the Project.

### 2.2. Project overview

#### 2.2.1. Current state of the facility

The BFT is located approximately 6.5 kilometres (km) southeast of the Darwin Central Business District and approximately 2km northeast of the East Arm Wharf, on the East Arm Peninsula of Darwin Port. The proximity of Darwin Port to the Asian region makes it an important hub for industry and trade, where current development as a service centre for mining, defence and energy sectors is well advanced.<sup>4</sup> The East Arm Wharf, which is the largest industrial port on Australia's north coast, is a multi-user facility with 865 metres (m) of continuous quay line for four births, including:

- **Berths 1 and 3** – used primarily for general cargo, containers, motor vehicles and livestock
- **Berth 2** – used for bulk ore exports, with a rail mounted dry bulk ship loader
- **Birth 4** – used for bulk liquids, with a dedicated bulk liquids transfer facility.<sup>5</sup>

The East Arm Wharf supports critical freight transport corridors that underpin the NT and Australian economies. In 2007, the NT Government proposed to expand the East Arm Wharf to meet the needs of the NT community and economy into the future and respond to high demand for Australia's bulk mineral exports.<sup>6</sup> The expansion of the wharf, under approval EPBC 2010/5304 involves the following major features:

- Developing a marine supply base (MSB), primarily to service the existing and developing oil and gas industries in the Timor Sea, Browse Basin and adjacent areas (completed)
- Constructing a multi-user barge ramp facility including a barge ramp and hardstand area, berthing for barges and facilities for loading and unloading (completed)
- Development of a moorings facility to accommodate tugs, customs boats and other smaller vessels (in development).

It is envisioned that works associated with the expansion of the East Arm Wharf will facilitate greater trade opportunities and pursuit of economic benefits for the NT whilst contributing favourably to Australia's broader economic agenda.

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<sup>4</sup> Darwin Harbour Advisory Committee (2020), *Darwin Harbour Strategy*, [https://industry.nt.gov.au/\\_\\_data/assets/pdf\\_file/0020/1041185/darwin-harbour-strategy-2020-2025.pdf](https://industry.nt.gov.au/__data/assets/pdf_file/0020/1041185/darwin-harbour-strategy-2020-2025.pdf)

<sup>5</sup> Darwin Port (2021), *East Arm & Fort Hill Wharf Overview*, <https://darwinport.com.au/facilities-services/east-arm-fort-hill-wharf-overview>

<sup>6</sup> Northern Territory Government (2017), *East arm wharf environmental compliance*, <https://eastarmwharf-eis.nt.gov.au/>

## 2.2.2. Operations and operating model

### Current facility operations and operating model

The Berrimah Freight Terminal Expansion Project is in response to the following fundamental constraints of the current facility and operating model:

- 1. Container handling:** The existing terminal currently handles 80,000 Twenty Foot Equivalent (TEU) containers per year. Construction of new container handling and storage hardstand on which mobile container handling equipment will be used for loading and unloading activities is expected to increase the total number of containers handled per year to 200,000 TEUs in the medium-term and 400,000 TEUs within five years of the opening.
- 2. Rail capacity:** Currently, two train movements per day occur at the BFT – one movement in and one movement out per 24-hour period. To support these movements, the existing BRT requires approximately 40 operational personnel, including drivers, terminal managers, reach-stacker operators and office staff. Additional rail sidings will be constructed within the Project site to provide added capacity for loading and unloading 1,800 meters consists.<sup>7</sup> The additional sidings and connections to the mainline will also enable locomotives to run-around for redirecting consists. Train movements are expected to increase to three per day as a result of the proposed terminal expansion.
- 3. Road access:** A new public access road will be developed between the existing Berrimah Road / Wishart Road intersection and the new secondary site entrance. The road will be two-lane and constructed to the relevant standards adopted by the Northern Territory Department of Infrastructure, Planning and Logistics (DIPL). It will connect to the current ‘missing’ fourth arm of the intersection.

Improving rail efficiency and intermodal capacity is essential in supporting the growth of the NT’s economy.<sup>8</sup>

A range of different quantities and types of freight transit through the BFT, consisting of bulk, containerised and break bulk<sup>9</sup> cargo. Two independent stevedore providers operate at the East Arm Wharf – LINX Stevedoring and QUBE Ports. These providers commonly use mobile harbour cranes to unload cargo and transfer it between modes – road, rail and sea – at the port facility.<sup>10</sup> The proximity of the BFT to the East Arm Wharf loading areas and Darwin Business Park enables increased intermodal efficiency capture when loading/unloading freight at the facility. The strategic location of the BFT is depicted in Figure 1.

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<sup>7</sup> A consist is a general term for a group of rail vehicles which make up a train.

<sup>8</sup> Infrastructure Australia (2023), *Northern Territory freight rail and logistics capacity improvements*, <https://www.infrastructureaustralia.gov.au/map/northern-territory-freight-rail-and-logistics-capacity-improvements>

<sup>9</sup> Break bulk cargo, also defined as general cargo, is loaded into ships as individual pieces or unitised on pallets, in bundles and is not containerised nor in the form of dry or liquid bulk consignments in whole or part shiploads.

<sup>10</sup> Darwin Port (2021), *East Arm & Fort Hill Wharf Overview*, <https://darwinport.com.au/facilities-services/east-arm-fort-hill-wharf-overview>

Figure 1: Current East Arm Wharf configuration<sup>11</sup>



#### Planned facility operations and operating model

The existing BFT requires approximately 40 operational personnel, including drivers, terminal managers, reach-stacker operators and office staff. The BFT is planned to operate 24 hours a day, seven days a week for 365/366 days per year, except during periods of scheduled rail maintenance activities or Darwin Port shutdown periods, which will take place as required. For the expanded Terminal, it is understood that there will be up to six movements per day – three movements in and three movements out per 24-hour period.

The expanded facility will have the ability to load/unload three trains concurrently, enabling increased throughput from 80,000 TEU to 200,000 TEU. Increased facility efficiency is also expected, with the ability to service a double stacked<sup>12</sup> 1,800m (or longer) consist in six hours.

The increase in efficiency will be facilitated by doubling the number of mobile reach stackers at the facility from two to four.

The expanded hardstand area will have short-term storage space to accommodate 4,000 containers, with potential to accommodate a maximum of 8,000 containers from larger vessels in high volume scenarios. The site will be accessible by heavy vehicles (up to B-Double 25m long) in accordance with the existing National Heavy Vehicle Regulator (NHVR) classifications relevant to the road network to, from and within the East Arm area. Other typical external operation vehicle movements associated with the site would likely include:

- Prime mover plus semi-trailer and/or dog-trailer

<sup>11</sup> Land Development Corporation (2023), *Common User Facility*, <https://landdevcorp.com.au/commonuserfacility/>

<sup>12</sup> Stacking 2 or 3 containers in a single well (i.e. a lowered area) in the flat railcar.

## Project details

- Heavy rigid trucks (GVM: >8 tonnes)
- Light rigid trucks (GVM: >4.5 up to 8 tonnes)
- Fuel transport vehicles
- Maintenance and trades vehicles
- Light vehicles and 4WDs driven by site personnel and site visitors.

Vehicle traffic generated by the operations of the expanded BFT will be consistent with the type of traffic currently accessing the East Arm area. Most of the truck movements to and from the expanded terminal will be a port to rail interface between the East Arm Wharf and the terminal. This is likely to be no more than 50 movements per day. The operational impact of ongoing traffic generation by the activity at the expanded BFT is expected to be relatively minor in context of the existing road network.

### 2.2.3. Land use, tenure and zoning

There are a mix of land uses in the areas that surround the Project site, including natural and built form environments. An overview of the different land uses is provided in Table 1.

Table 1: Project site surrounding land use

Orientation	Land use(s)
North	Mangroves fronting Bleasers Creek
South	The existing BFT, Darwin Railway Station, Vopak fuel terminal, Crowley fuel terminal (under construction), transport terminals for Linfox, Fastrack, Ichthys (Offshore Logistics Base), Team Global Express, Qube (Prelude Darwin Offshore Supply Base), FedEx and Border Express
East	Berrimah Road (including the road over the rail bridge), Berrimah cattle company facility, various industrial premises and vacant industrial lots
West	Darwin Harbour and the East Arm Wharf with its road and rail access

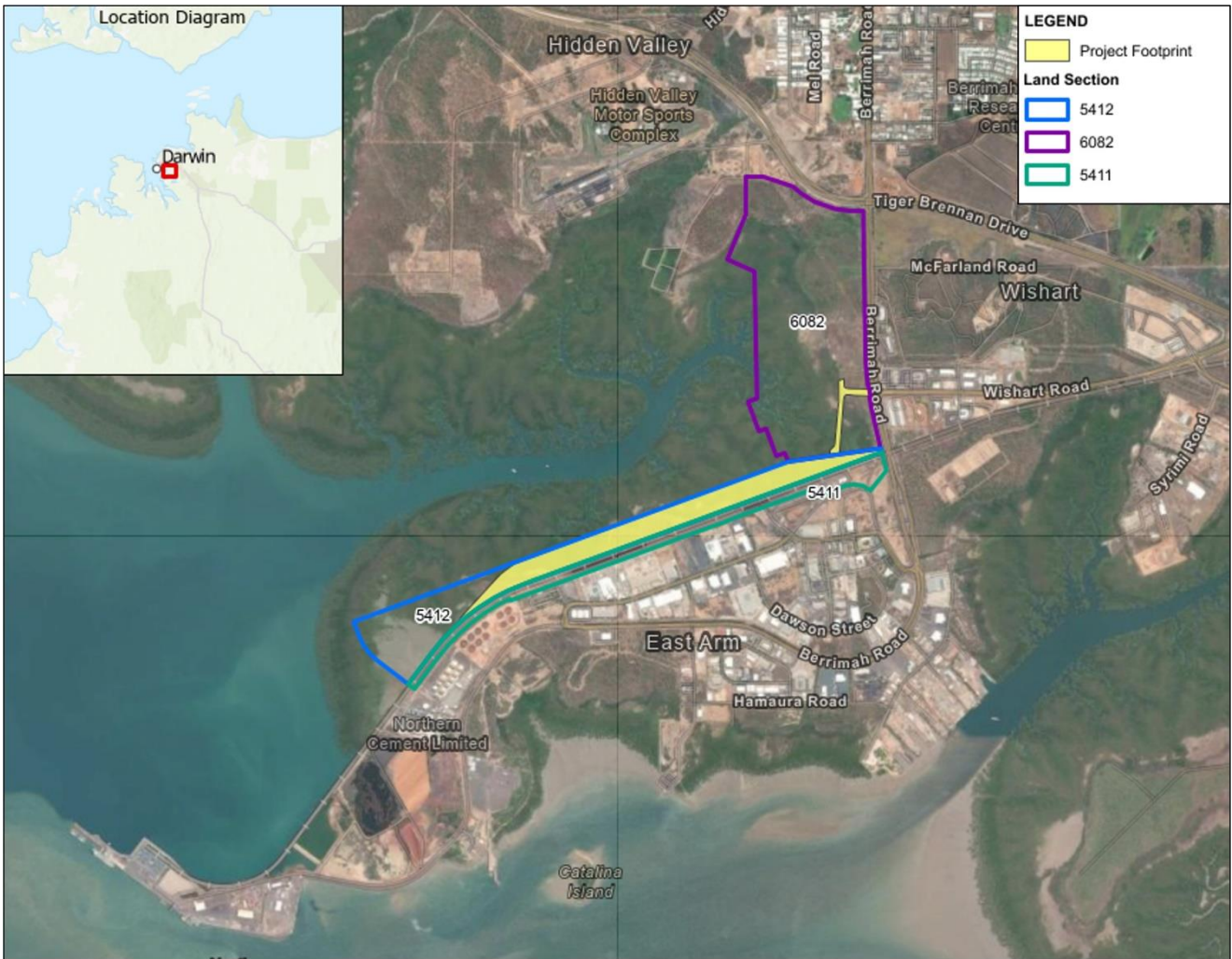
The Project site covers two land parcels including freehold land and leasehold land. A summary of the current tenure applicable to the Project area is provided in Table 2.

Table 2: Summary of land tenure within the Project site

Parcel	Parcel area (ha)	Tenure reference	Owner
6082	125.6	Freehold	Land Development Corporation
5412	64.52	Crown Lease Term	AustralAsia Rail Corporation

The Project site supports areas of remnant intertidal mangrove habitat and cleared land within Sections 5412 and 6082 (see Figure 2). Section 5411 is part of the Alice Springs to Darwin Railway corridor and includes the existing BFT and associated rail sidings, supporting infrastructure and rollingstock maintenance facility.

Figure 2: Land use and zoning of the Berrimah Freight Terminal facility surrounds



The East Arm Peninsula is designated for port and industrial related development, with this land use intent formalised in the regional planning for the Darwin Region and the East Arm/Middle Arm Peninsulas Masterplan 2008. The Project site is zoned partly as DV (Development) and predominantly as RW (Railway) under the NT Planning Scheme 2020 (NTPS 2020). Under the NTPS 2020:

- The purpose of DV Zone is to facilitate the development of major strategic industries that are important to the future economic development of the NT, including gas, road, rail or port-related industries
- The purpose of the RW Zone is to restrict development on land that is reserved for current or future development of railway or railway corridor.

The BFT complies with the purpose of these zones, as well as the strategic direction for development anticipated under Part 2 (Strategic Framework) of the NTPS 2020.

#### 2.2.4. Related projects

To enable the NT to capture increased social and economic opportunities through trade, Darwin Port will see several significant changes in the coming years, including:

- The \$515 million Darwin ship lift facility which involves the relocation of marine industry activities from Frances Bay to the East Arm Wharf and will integrate into Darwin's Marine Industry Park

## Project details

- Middle Arm Sustainable Development Precinct
- Defence infrastructure projects
- Gas-based industry development activities at the Middle Arm Industrial Precinct.

These projects will form part of a larger integrated shipping, logistics and commercial precinct around Darwin Port spread across the Middle Arm and East Arm peninsulas.

### East Arm

Located at East Arm, the Darwin Business Park is a 200-hectare (ha) estate which is zoned DV for strategic industrial uses and is (currently) home to a number of business interests, predominantly operating in the transport, logistics and marine industries. Several transport and logistics enterprises currently operate out of East Arm, including ASCO, Altus, Vopak, Toll, Linfox, Metcash, Qube and Northline.

### Middle Arm

The NT's record exports are largely driven by LNG, valued at over \$75,000 million in 2021-22, with majority of production exported to Asia; more than 80 per cent is exported to Japan, while China and Korea account for majority of the remaining share.<sup>13</sup> The NT's consistent contributions to Australia's LNG exports is intrinsically linked to the development of major projects and investments in the Territory, such as the INPEX-led Ichthys LNG project and Santos Darwin LNG processing facilities located in the Middle Arm Precinct. The INPEX Corporation's interests in the area include a multi-billion-dollar gas project in Darwin which is expected to provide a \$2.8 billion boost to the domestic economy between 2020 and 2030 and accounts for 12 per cent of Australia's oil and gas exports in 2020.<sup>14</sup>

Over the next decade, Australian LNG projects will be greatly influenced by the convergence of new sources of LNG supply, alternative pricing arrangements and the evolution of demand, given most existing (and forthcoming) production is committed under long-term oil-linked contracts. However, these factors also have the potential to influence the pricing and volumes of Australia's uncommitted short-term production capacity. Considering this, it will be the provisions pertaining to existing projects that will impact the domestic economy of Australia's increasing LNG production, which, given the strong outlook and long-term plans of LNG projects will remain relevant in the foreseeable future.

### Factors driving the increase in need for rail

Close proximity to the Asia-Pacific and natural resource offerings enables the NT to develop and export fuels, renewable energy and low emissions commodities to the global decarbonising economy. The cumulative investment across several proposed projects in minerals, mining and energy industries across is NT is estimated to be over \$38 billion.

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<sup>13</sup> Reserve Bank of Australia (2015), *Australia and the Global LNG Market*, <https://www.rba.gov.au/publications/bulletin/2015/mar/pdf/bu-0315-4.pdf>

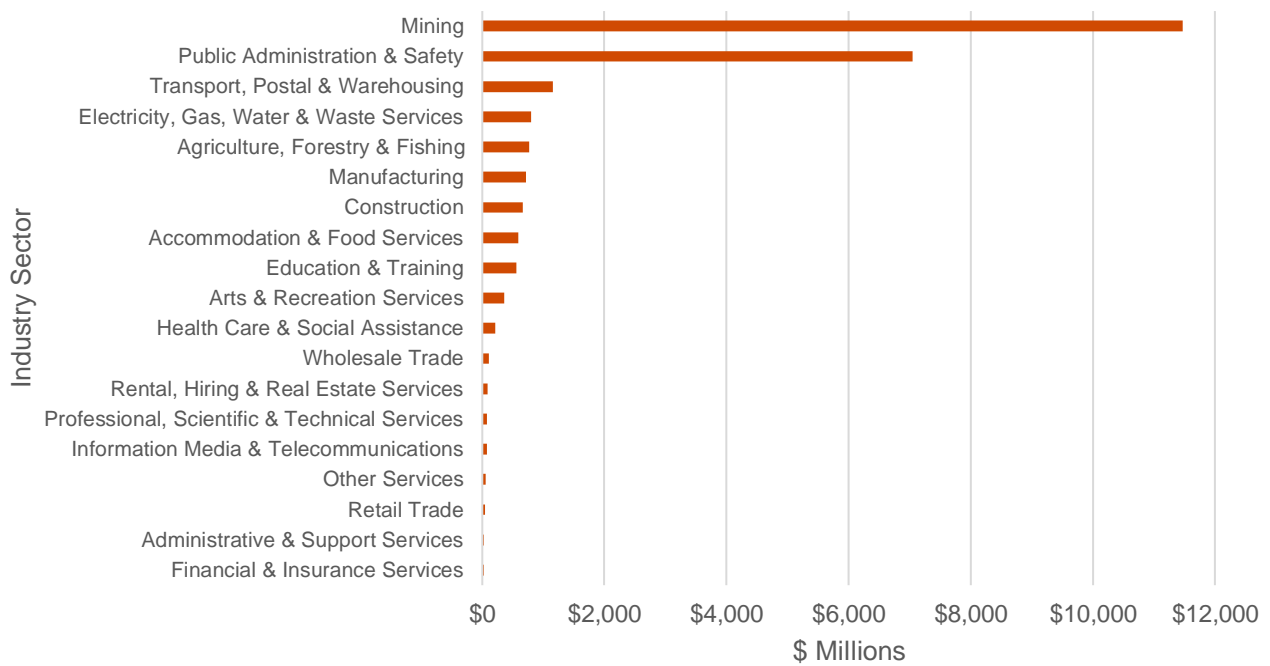
<sup>14</sup> Northern Territory Government (2022), *International Engagement Strategy 2022-26*, [https://industry.nt.gov.au/\\_\\_data/assets/pdf\\_file/0008/1095497/international-engagement-strategy-2022-2026.pdf](https://industry.nt.gov.au/__data/assets/pdf_file/0008/1095497/international-engagement-strategy-2022-2026.pdf)

### 2.2.5. Project justification

Mining is the largest contributor to gross state product (GSP) in the NT, contributing 46 per cent and over \$11 billion in 2022 (see Figure 3). Conversely, Transport, Postal and Warehousing ranks eighth by economic value add in the NT and contributed only 3 per cent to GSP over the same period.<sup>15</sup>

While the expansion of the BRT will help to support the growth of the mining industry, it presents an opportunity to diversify the NT economy. The Project will enhance the performance and capabilities of Transport, Postal and Warehousing which will indirectly result in the growth of other sectors.

Figure 3: Regional Exports by Industry Sector, Northern Territory (State), 2022

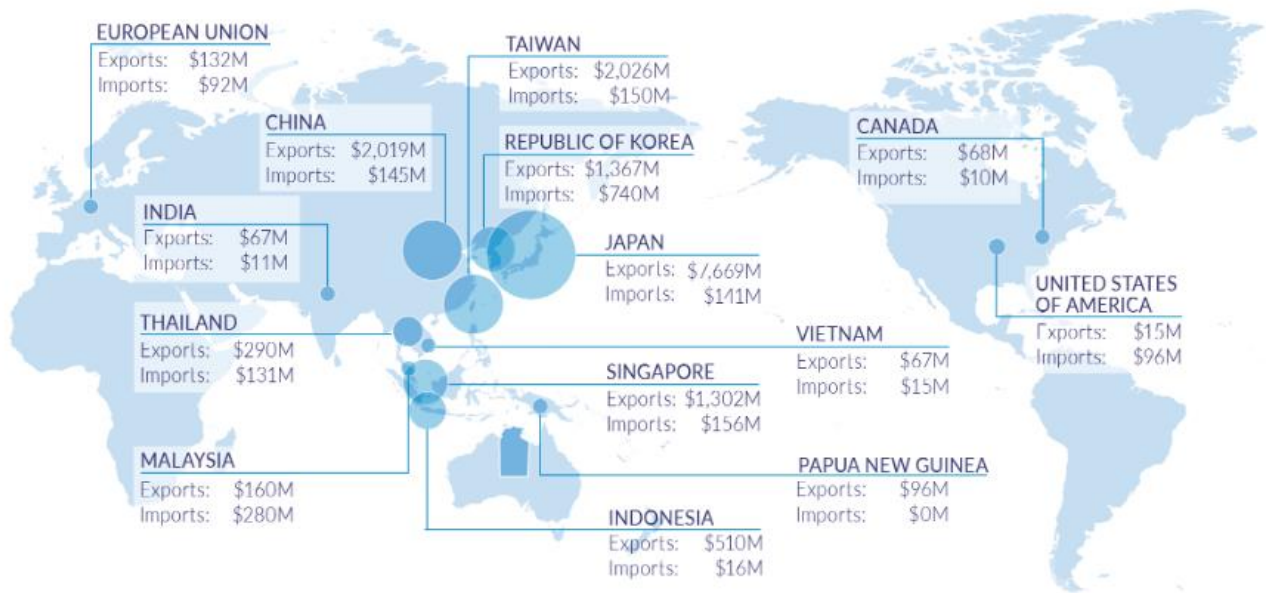


Darwin Port is the only major multimodal port located in Northern Australia and serves as Australia’s gateway to Asia by enabling a significant amount of trade to take place with major trading partners, including Japan, China, Taiwan and Korea.

A map of the NT’s major trading partners in 2022-23, including value of imports and exports, is provided in Figure 4.

<sup>15</sup> Northern Territory Government (2023), *International trade*, [https://nteconomy.nt.gov.au/internationaltrade#:~:text=Main%20commodities%20exported%20from%20the,and%20metal%20scrap%20\(6.0%25\)](https://nteconomy.nt.gov.au/internationaltrade#:~:text=Main%20commodities%20exported%20from%20the,and%20metal%20scrap%20(6.0%25))

Figure 4: Northern Territory's major goods trading partners (2022-23)<sup>16</sup>



Whilst the NT does not disclose all export-related information (i.e., type and quantity of goods exported), it is estimated that more than three-quarters of commodity exports are liquefied natural gas (LNG), around one-tenth are petroleum and petroleum-related materials and approximately 6 per cent are accounted for by metalliferous ores and metal scrap.<sup>17</sup>

The position of the BFT relative to the East Arm Wharf is an important part of the value proposition of the Project. The BFT is critical to realising the full economic potential of East Arm Wharf as it provides an essential intermodal connection and allows for receipt and distribution of international freight to, from and around Australia via the National Land Transport Network, which is depicted in Figure 5.

<sup>16</sup> Northern Territory Government (2023), Major trading partners – financial year results, [https://nteconomy.nt.gov.au/international-trade/financial-year-results#:~:text=The%20Northern%20Territory%20\(NT\)%20is,the%20NT's%20major%20trading%20partners](https://nteconomy.nt.gov.au/international-trade/financial-year-results#:~:text=The%20Northern%20Territory%20(NT)%20is,the%20NT's%20major%20trading%20partners)

<sup>17</sup> Northern Territory Government (2023), International trade, [https://nteconomy.nt.gov.au/international-trade#:~:text=Main%20commodities%20exported%20from%20the,and%20metal%20scrap%20\(6.0%25\)](https://nteconomy.nt.gov.au/international-trade#:~:text=Main%20commodities%20exported%20from%20the,and%20metal%20scrap%20(6.0%25))



Figure 5: Australia's Mainland National Land Transport Network



Source: Department of Infrastructure, Transport, Regional Development, Communication and the Arts, *The National Land Transport Network*.

Intermodal freight terminals are critical components to support the competitiveness of rail freight as a viable alternative. To ensure this viability, freight handling needs to be as efficient as possible, typically requiring:

- Scale and utilisation
- Handling frequency
- Complexity of loading and unloading
- Storage cost for any time not in transit.

### Growth in exports

- Exports are a major contributor to the Territory's economy and GSP. The territory has consistently made outsized contributions to Australia's liquefied natural gas (LNG), mining, and live cattle exports.<sup>18</sup> Measured by revenue, nearly all of the NT's export revenue comes from three major product groups – energy products, minerals and related products, and live cattle.<sup>18</sup>
- Manganese, gold, bauxite, zinc and LNG are major commodities produced in the NT. Manganese is a key component in steel and is used in the production of lithium-ion batteries. A decline in the global

<sup>18</sup> Northern Territory Government (2022), *International Engagement Strategy 2022-26*, [https://industry.nt.gov.au/\\_\\_data/assets/pdf\\_file/0008/1095497/international-engagement-strategy-2022-2026.pdf](https://industry.nt.gov.au/__data/assets/pdf_file/0008/1095497/international-engagement-strategy-2022-2026.pdf)

price for manganese in 2020-21 lead to a decline in the value of manganese produced by 9 per cent. While the short-term demand for steel and batteries was affected by COVID-19 globally, the demand for electric vehicles and battery systems will remain strong over the outlook period. Additionally, an increase in manganese prices over 2021-22 and 2022-23 is expected with increasing global steel demand.<sup>19</sup>

- The main commodities imported to the Territory in the year to May 2021 were petroleum and petroleum-related products (41.2 per cent), road vehicles (21.4 per cent) and confidential items (8.0 per cent).<sup>20</sup>
- As a smaller jurisdiction (by population), an increase in overall trade volume is essential to ensure the feasibility and sustainability of commercial agreements and supply routes.<sup>18</sup>

As identified in the NT Government's International Engagement Strategy 2022-26,<sup>18</sup> there are several high priority international trade market opportunities that are being and can continue to be captured by the Territory. These have been summarised in Table 3.

Table 3: Northern Territory international trade market opportunities<sup>18</sup>

Market	Category	Example description
Indonesia	Existing exports	Defence and maritime services, cattle, education and training, meat products
	Potential exports	Health services, cotton, ICT – digital technologies
	Potential investment	Data centres, maritime infrastructure
Japan	Existing exports	Gas, mining, tourism
	Potential exports	Seafood – fisheries and aquaculture, critical minerals, hydrogen, defence and maritime services, horticulture, forestry (woodchips, sandalwood and African mahogany), health services, Aboriginal visual arts and crafts, fashion, ICT – digital technologies, meat products
	Potential investment	Gas, mining, value add processing for mining projects, hydrogen, solar, low-emissions manufacturing, maritime infrastructure, aerospace, data centres, sustainable development precincts (agriculture) and AgTech, tourism infrastructure, sustainable and Aboriginal tourism
North America	Existing exports	Aboriginal visual arts and crafts, fashion, meat products, tourism, defence and maritime services
	Potential exports	ICT – digital technologies, hydrogen, critical minerals, health services, film, television and digital media

<sup>19</sup> Northern Territory Government (2022), *Budget 2022-23 Industry Outlook*, [https://budget.nt.gov.au/\\_\\_data/assets/pdf\\_file/0013/1103152/2022-23-industry-outlook-book.pdf](https://budget.nt.gov.au/__data/assets/pdf_file/0013/1103152/2022-23-industry-outlook-book.pdf)

<sup>20</sup> Northern Territory Government (2023), *What we export and import*, <https://theterritory.com.au/trade/what-we-export-and-import>

Market	Category	Example description
	Potential investment	Gas, mining, value add processing for mining projects, hydrogen, solar, sustainable and Aboriginal tourism, aerospace, maritime infrastructure, low-emissions manufacturing, data centres, cattle, sustainable development precincts (agriculture) and AgTech, tourism infrastructure
Singapore	Existing exports	Defence and maritime services, horticulture, seafood – fisheries and aquaculture, tourism, film, television and digital media
	Potential exports	Gas, mining, hydrogen, solar, ICT – digital technologies, meat products, health services, Aboriginal visual arts and crafts, fashion
	Potential investment	Gas, mining, value add processing for mining products, hydrogen, solar, low-emissions manufacturing, data centres, maritime infrastructure, aerospace, sustainable development precincts (agriculture) and AgTech, tourism infrastructure, sustainable and Aboriginal tourism
South Korea	Existing exports	Gas, mining, meat products
	Potential exports	ICT – digital technologies, horticulture, seafood – fisheries and aquaculture, cotton, film, television and digital media, defence and maritime services, hydrogen, critical minerals, forestry (woodchips, sandalwood and African mahogany)
	Potential investment	Gas, mining, hydrogen, solar, aerospace, maritime infrastructure, data centres, tourism infrastructure
Vietnam	Existing exports	Cattle, education and training
	Potential exports	Meat products, horticulture, cotton, health services, mining, defence and maritime services, ICT – digital technologies
	Potential investment	Mining, cattle, sustainable development precincts (agriculture) and AgTech

In addition to the high priority international trade market opportunities summarised in Table 3, the Territory participates in trade with the following trading partners:

- Bangladesh
- Brunei
- China
- European Union
- Hong Kong
- India
- Malaysia
- Nepal

- New Zealand
- Papua New Guinea
- Philippines
- South America
- Taiwan
- Thailand
- Timor-Leste
- United Arab Emirates
- United Kingdom.

### **Development to support the volume and scale of shipping traffic**

Expansion of the BFT is expected to increase train movement from one per day under the current arrangement to three per day once the Project has been delivered. The project is expected to ramp up container handling capacity at the Port of Darwin when the expanded BFT facility commences operation:

- The expanded facility is expected to generate capacity of 100,000 TEU through the Port of Darwin in the first stage (18 months after approvals expected in the next 12 months).
- At an interim stage, 200,000 TEU could be achieved within one or two years of opening the expanded BFT, subject to one to two additional liner services choosing to use the Port of Darwin
- Throughput of 400,000 TEU is the ultimate plan for the expanded terminal and could be achieved within five years of the opening of the expanded terminal and subject to one additional liner service choosing to use the Port of Darwin

Rail contributes to approximately 56 per cent of the national freight task and will meet almost three quarters of the growth in demand expected over the next decade.<sup>21</sup>

The north-south rail corridor is capacity constrained and rail-road interface is severely limited and inefficient, which has led to the predominance of trucks as the NT's primary mode of freight transport. To realise the efficiency opportunity of rail freight, the primary north-south Darwin-Tarcoola rail corridor would need to be upgraded.<sup>22</sup>

- The 2019 Australian Infrastructure Audit noted that railway networks and port connectivity in the north of Australia are generally considered to be underdeveloped. Limited rail options put increased pressure on road networks, depending on the size and nature of the freight task.<sup>23</sup>
- Capacity bottlenecks in Australia's agricultural supply chains are common, particularly in bumper crop years, where the volume of commodities to be transported can be well above average.<sup>23</sup>
- The NT has a world-class mining export industry, including value-add processing and several major mines. There are key opportunities in attracting investment to spur the development of local processing

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<sup>21</sup> Australasian Railway Association (2023), *Delivering everyday essentials*, <https://ara.net.au/about-rail/freight-rail/>

<sup>22</sup> Infrastructure Australia (2023), *Northern Territory freight rail and logistics capacity improvements*, <https://www.infrastructureaustralia.gov.au/map/northern-territory-freight-rail-and-logistics-capacity-improvements>

<sup>23</sup> Infrastructure Australia (2019), *Australian Infrastructure Audit 2019*, [https://www.infrastructureaustralia.gov.au/sites/default/files/2020-09/audit\\_freight.pdf](https://www.infrastructureaustralia.gov.au/sites/default/files/2020-09/audit_freight.pdf)

and manufacturing as well as tapping into some of the most geologically promising greenfield or underexplored regions in Australia.<sup>24</sup>

### 2.2.6. Key features of the Project

The BFT expansion will include adding a second rail line and loadout facility. The Project is expected to include the following elements:

- Construction of seawall and land reclamation to create developable land above the level of overtopping by storm surge and sea level rise associated with climate change
- Construction of site stormwater management system, services and utilities and internal roads
- Construction of new container handling and storage hardstand on which mobile container handling equipment (e.g., rubber tyre gantry cranes or reach stackers) will be used for container loading and unloading activities
- Installation of new rail sidings and associated turnouts, drainage, communications and signalling infrastructure
- Construction of new public road from the Berrimah Road / Wishart Road intersection to the new site entrance
- Development of individual sites (approximately 1.3 ha in area for each site) for customers to lease for the purpose of developing freight forwarding / distribution centres in the future.

In addition to the elements listed above, the following ancillary features are expected to be included in the Project:

- Gate house (adjacent to the new access road) and associated security gates, truck waiting area, weighbridge and turn-around facility
- Waste management
- Fire-fighting system
- Security fencing
- CCTV system.

### 2.2.7. Key potential obstacles to delivery

The Project has a number of interdependencies, events and milestones which are critical to achieve delivery within the specified timeframes. Furthermore, there are several external risk factors that could cause delays if not mitigated appropriately. Any delays to the Project's delivery schedule will have operational impacts to Aurizon and its commercial interests and economic impacts in the area. These key events and risks include:

#### Securing approvals

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<sup>24</sup> Northern Territory Government (2022), *International Engagement Strategy 2022-26*, [https://industry.nt.gov.au/\\_\\_data/assets/pdf\\_file/0008/1095497/international-engagement-strategy-2022-2026.pdf](https://industry.nt.gov.au/__data/assets/pdf_file/0008/1095497/international-engagement-strategy-2022-2026.pdf)

## Project details

- Should there be any delay to project approvals during the planning and delivery phases, it will impact Aurizon's ability to appropriately plan and optimise use of the facility in its current and future state

### **Weather impacts to construction**

- Darwin's tropical climate makes it susceptible to monsoonal rains, storms and other significant weather events which could cause considerable delays to construction timeframes and ultimately to commissioning of the facility

### **Materials impacts to construction**

- Insufficient or difficult to obtain materials (e.g., engineered fill, armour rock, etc) required for the construction of the project, could cause considerable delays to construction timeframes and ultimately to commissioning of the facility

### **Recruitment**

- A tight labour market can impact Aurizon's ability to obtain the necessary workforce required to deliver the facility, which could lead to delays in the proposed delivery schedule. Furthermore, the ability to operate and maintain the facility is dependent on having sufficient skilled workers available in the area. Should Aurizon be unable to source an appropriately skilled workforce, it will negatively the Project.

# 3. Methodology and assumptions

This chapter provides an overview of the methodology implemented to undertake the economic impact assessment, and the assumptions that underpin it. This includes:

- Methodology
- Assumptions and key inputs

## 3.1. Methodology

This Economic Impact Assessment analyses the benefits resulting from the BFT expansion, including the additional rail holding and hardstand capacity, land reclamation works and development of individual sites for freight forwarding and distribution centres. This assessment was completed through a REMPLAN input-output model utilised to estimate the economic impacts to Darwin, the NT and Australia in terms of employment and output.

The REMPLAN model requires project specific inputs to measure impacts to the three regions of interest. This includes direct changes in jobs or output (\$M) and can be broken down by sector. The economic impact for this Project is comprised of two periods, including construction contribution and operations contribution. The contribution for these phases is described below:

- **Construction contribution:** The corresponding contribution of the direct short term capital investment of the Project to Darwin, the NT and Australia. This relates to the jobs supported and value added during the construction phase. This impact occurs only over the short term and does not represent a permanent increase to the outputs of the three regions of interest.
- **Operations contribution:** The ongoing contribution of the operations phase of the Project to the economic output, in terms of jobs and value added to the state. This represents the long-term annual expenditure of the facilities, permanent creation of FTEs, and ongoing contribution to Gross Value-Added (GVA) for Darwin, the NT and Australia.

The total economic contribution of the Project has been assessed through the 'direct' and 'supply-chain' effects. The consideration of these two effects, and exclusion of the 'consumption' effect ensures the total assessed benefit is a conservative representation of the benefits delivered from the Project. These effects are defined below:

- **Direct:** Effects related to the primary operations of the facility. At a high level, this represents the employment impacts and value added of the facility.
- **Supply-chain and industrial benefits:** the subsequent flow-on effects related to servicing sectors throughout Australia which increase their own output and demand for goods and services due to the increased purchasing impacts of the facility on the regional economy.
- **Consumption:** The increased expenditure derived from the change in salaries and wages because of direct and supply-chain effects. More specifically, this measures the portion of wages and salaries from the increased employment for the Project that is spent on consumption and captured in the local economy.

## 3.2. Assumptions and key inputs

This Economic Impact Assessment, conducted through the REMPLAN input-output model, requires a range of key inputs for the construction and operations periods. These inputs are discussed and outlined in this section. These assumptions are preliminary and based on the information available at this stage of the Project. As the

costs and scope of the proposed facilities are further developed in subsequent stages, these assumptions should be updated.

### 3.2.1. Construction phase

The inputs used for this phase of the Project include expenditure on the construction of the additional rail line, sea wall, land reclamation works and sites for the development of freight forwarding and distribution facilities.

The BFT expansion is expected to cost \$100 million and will be delivered over a three-year period. Key features of the Project outlined in Section 2.2.6 are likely to be delivered over three separate stages:

- Reclamation works
- Terminal works
- Balance of terminal, including new public road from the Berrimah Road and Wishart Road intersection to the new site entrance

The Project is at an early stage of development and the timeframes for the development of the three separate stages are only approximate. Aurizon has an operational objective to deliver and commission this Project as soon as reasonably possible but is not certain when operations will commence at the expanded BFT. Reclamation works, specifically, the clearing, seawall and reclamation will be the first things to occur. The terminal works (and balance of terminal) will then take place on the reclaimed land. The reclamation work will be completed over a much longer period due to the need for long term pre-loading and settlement.

It is expected that the terminal works could be delivered over 18 months following the receipt of required approvals for Stage 1. The high-level program provided by Aurizon shows terminal operations are expected to commence at the end of 2028 (seawall - 200 days; reclaim - 400 days; intermodal terminal/rail upgrades - 260 days; road access connections - 250 days; staged warehouse works - 300 days), assuming that some of these items can occur concurrently.

The balance of the terminal will be delivered in a staged approach over the next three years, depending on market demand.

Limited information is available on the estimated costs for the design and construction of the BFT expansion. Therefore, the cost of each stage of the Project has been estimated using benchmarking information from similar projects.

#### Reclamation works

Large-scale land reclamation works are planned to create developable land above mean sea level to protect against the risk of storm surge and sea level rise associated with climate change. The development is likely to require large volumes of good quality fill material. Depending on the type of material and its scarcity, the land reclamation may be very costly due to high volumes and high costs of fill material. Further, ongoing management of the reclamation would be required until the sediment is effectively consolidated and dewatered and therefore suitable for medium to high load bearing. This process may take several years before any final engineering work can be undertaken and the area function as the proposed final use.

A recent project with some public cost information available is the Port of Townsville's Channel Capacity Upgrade Project. The Project will deliver a 62ha port reclamation area and wider shipping channel to accommodate vessels up to 300m in length when completed in 2024.<sup>25</sup> Approximately \$103.5 million (61.2 per cent of the estimated total budget) was budgeted in 2019 for the cost for completion of the dredging,

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<sup>25</sup> Townsville Port (March 2023), *Background*, available at <<https://www.townsville-port.com.au/projects-development/channel-upgrade/background/>>



reclamation works and rock wall to support the reclamation area. If a similar proportion was applied to the BFT upgrade, the land reclamation is estimated to cost between \$58.0 and \$62.0 million.

### Terminal works

New intermodal terminals and connecting infrastructure typically require significant cost commitments. For example, in March 2022, construction began on the new \$514 million Interstate Intermodal Terminal at Moorebank Logistics Park in Sydney's southwest, comprising 85 hectares of modern warehousing and freight management facilities.<sup>26</sup> Around \$3.1 billion in funding has been announced for the two new intermodal terminals proposed to be built in Melbourne to provide an efficient freight interface with the Inland Rail Freight Corridor.<sup>27</sup> The proposal to extend Inland Rail from Toowoomba to the Port of Gladstone has an estimated cost of \$5.2 million/km, compared to \$17.0 million/km to build the rail line from Toowoomba to Brisbane.

However, the BFT expansion is unlikely to involve the significant costs associated with these projects. The additional rail line is expected to extend over a relatively small distance of only 5-6 kms, rather than the significant acquisition or exchange of land through protected areas and or state forests. Instead, a possible comparator may be the replacement cost for the Australian Rail Track Corporation Ltd interstate network in Victoria, South Australia, Western Australia and NSW. A review of the replacement cost by the Australian Competition and Consumer Commission found that the unit rate for track replacement was \$573,221 per km, or \$902,873 in 2023 terms. Adopting a rounded figure of \$1.0 to \$1.7 million per kilometre to the estimated 6km of track for the BFT expansion, the relevant rail works are estimated to cost between \$6.0 and \$10.0 million.

### Balance of terminal

The remaining capital expenditure represents the balance of terminal works. Aurizon plans to develop individual sites (approximately 1.3 ha in area for each site) for customers to lease for use as freight forwarding or distribution centres in the future. A new public access road will also be developed between the existing Berrimah Road and Wishart Road intersection and the new secondary site entrance. The road will be two-lane and constructed to the relevant standards adopted by the Northern Territory Department of Infrastructure, Planning and Logistics (DIPL).

A similar project with some public cost information available is the \$190 million Moorebank Logistics Park West project in NSW, which will be constructed on a 243-hectare site and link Port Botany direct to rail terminals and warehousing.<sup>28</sup> Assuming a similar cost per hectare for the BFT expansion, the balance of terminal is estimated to cost between \$28.0 and \$36.0 million.

### Local spending

The economic impact analysis should only consider expenditure in the region being assessed, as any impact from expenditure on imported goods or services will be experienced in the seller's country. For this project, it is assumed that the majority of labour inputs for construction will be locally sourced, from Darwin or other parts of the NT. Recent evidence from other large-scale infrastructure projects suggests around 85 per cent to 90 per cent of the construction workforce is comprised of local workers. Several large-scale infrastructure projects underway across Australia use or plan to use a majority of local labour, including Victoria's Inland Rail (90 per

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<sup>26</sup> Mikayla Bridge, 'Moorebank Interstate Intermodal Terminal construction begins', *Infrastructure Magazine* (7 April 2022), available at <<https://infrastructuremagazine.com.au/2022/04/07/moorebank-interstate-intermodal-terminal-construction-begins/>>

<sup>27</sup> Australia New Zealand Infrastructure Pipeline (2023), Melbourne Intermodal Terminal Package, available at <<https://infrastructurepipeline.org/project/melbourne-intermodal-terminal#:~:text=PROJECT%20HISTORY&text=The%202022%2D23%20Federal%20Budget%20committed%20%243.1%20billion%20for%20the,and%20%241.2%20billion%20in%20funding.>>>

<sup>28</sup> Georgiou (2023), *Moorebank Logistics Park West*, available at <<https://www.georgiou.com.au/projects/moorebank-logistics-park-west/>>

cent of the jobs offered acquired by local residents)<sup>29</sup> and the Eyre Peninsula Link (85 per cent of the jobs offered acquired by local residents).<sup>30</sup>

For non-labour inputs, recent trends in the construction sector suggest that only certain materials can be sourced from within the Darwin, the NT and Australia. Steel products and construction machinery is typically manufactured and imported from overseas, meaning that the economic impact from expenditure on those goods will be experienced outside Australia. Examples of other sources for non-labour materials are shown in Table 4 below:

Table 4: Non-labour materials involved in construction

Material	Description	Locally sourced (Darwin and NT)	Nationally sourced (Australia)	Imported (International)
<b>Cement</b> <sup>31</sup>	Sourced locally due to its bulk and weight. While majority can be sourced from local cement manufacturer <i>Northern Cement Darwin</i> , located a kilometer from the Project area, it is likely that ~40 per cent of the domestically produced cement is manufactured from imported clinker*. <sup>32</sup>	100%*	-	-
<b>Steel reinforcement</b> <sup>33</sup>	Oversupply in past years caused Chinese steel to flood the market, causing steel prices to drop and downstream markets to swap to imports. Regulations on production in China have significantly dampened imports, yet high prices have discouraged some domestic customers from sourcing steel products domestically.	-	50%	50%
<b>Quarried material</b> <sup>34</sup>	Majority of quarried materials can be sourced locally due to the abundant local supply of sand and gravel.	100%	-	-
<b>Timber</b> <sup>35</sup>	The Project requires very minimal quantities of timber. Given the dominance of domestically sourced timber products within the market, the Timber Wholesaling industry encounters minimal reliance on substitute imports.	90%	10%	-
<b>Construction machinery</b> <sup>36</sup>	The NT accounts for a smaller share of the population, meaning less residential construction activity and infrastructure spending occurs, therefore specialty machinery may need to be sourced nationally. All other machinery (e.g., excavators, bulldozers, graders etc.) can be sourced locally.	-	100%	-
<b>Total</b>		<b>60%</b>	<b>30%</b>	<b>10%</b>

<sup>29</sup> Inland Rail (October 2023), 'Inland Rail provides a boost to local business and employment', available at <<https://inlandrail.artc.com.au/regional-victorian-boost/>>

<sup>30</sup> Editorial, 'New high-voltage transmission line powering SA's Eyre Peninsula', *Utility Magazine* (3 May 2023), available at <<https://utilitymagazine.com.au/new-high-voltage-transmission-line-powering-sas-eyre-peninsula/>>

<sup>31</sup> L.E.K. Consulting (2020), *International Comparison of Australia's Freight and Supply Chain Performance Final Report – Cement*, <https://www.freightaustralia.gov.au/sites/default/files/documents/fp-supplychain-benchmarking-study-cement.pdf>

<sup>32</sup> Clinker is a nodular material that once cooled, milled into a fine powder and combined with 2-3 per cent of gypsum, can be packaged and distributed to the market in bulk as cement.

<sup>33</sup> IBISWorld (2023), *Iron Smelting and Steel Manufacturing in Australia*, <https://my.ibisworld.com/au/en/industry/c2110/at-a-glance>

<sup>34</sup> IBISWorld (2023), *Gravel and Sand Quarrying in Australia*, <https://my.ibisworld.com/au/en/industry/b0911/at-a-glance>

<sup>35</sup> IBISWorld (2023), *Timber Wholesaling in Australia*, <https://my.ibisworld.com/au/en/industry/f3331/at-a-glance>

<sup>36</sup> IBISWorld (2023), *Mining and Construction Machinery Manufacturing in Australia*, <https://my.ibisworld.com/au/en/industry/f3331/at-a-glance>

Table 5 outlines the assumptions used as inputs in the REMPLAN model, that form the basis of this Economic Impact Assessment. The facility construction figures have already been adjusted to represent the different proportion of local spending.

Table 5: Economic assessment inputs – construction period

Input	Region	Construction Years			Total
		Year 1	Year 2	Year 3	
Labour inputs, by region (per cent)	Darwin and NT	90%	90%	90%	–
	Australia	10%	10%	10%	–
	International	–	–	–	–
	<b>Total</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	
Non-labour inputs, by region (per cent)	Darwin and NT	60%	60%	60%	–
	Australia	30%	30%	30%	–
	International	10%	10%	10%	–
	<b>Total</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	
Facility construction (\$m, real 2023)	Darwin and NT	15.8	31.8	21.4	69.0
	Australia	21.3	42.9	28.8	93.0
	International	2.3	3.2	2.2	7.7
<b>Total (\$m, real 2023)</b>		<b>23.6</b>	<b>46.1</b>	<b>31.0</b>	<b>100.0</b>

### 3.2.1.1. Estimating output and gross value add during the construction period

The impacts of the Project on output and gross value-add during the three-year construction period were estimated by modelling the change to output in millions (gross revenue). For example, as shown in Table 5, the change modelled for Darwin and the NT is \$15.8 million in the first year of construction, \$31.8 million in the second year of construction and \$21.4 million in the third year of construction. Similarly, the change modelled for Australia is \$21.3 million in the first year of construction, \$42.9 million in the second year of construction and \$28.8 million in the third year of construction.

### 3.2.1.2. Estimating employment and wages and salaries during the construction period

An estimate of direct full-time jobs supported by the project was also developed for this analysis. One full-time equivalent (FTE) job or job-year represents full-time employment for one person for the duration of a year. Three FTEs could therefore be made up of either one full-time job for three years or three full-time jobs for one year.

A large proportion of the workers involved in construction of the BFT upgrade are expected to join the project on a short-term basis, with the number of workers increasing as the project ramps up. Construction for projects similar to the BFT upgrade usually occurs in stages, each lasting a few months and requiring different skills (e.g., earthmoving, construction of on-site infrastructure and assembly).<sup>37</sup> While the maximum number of workers on the BFT construction site at any given month could be quite high (well over 100 workers), this analysis looks at the average number of workers based on an annualised employment intensity. The average

<sup>37</sup> Mary-Alice Doyle (December 2014), Labour Movements during the Resources Boom, *Bulletin*, available at <<https://www.rba.gov.au/publications/bulletin/2014/dec/pdf/bu-1214-2.pdf>>.

employment intensity was estimated by taking the total labour share of the project’s capital expenditure, divided by an average salary and on-costs of \$105,614 for each FTE.<sup>38</sup> This salary estimate is slightly higher than the estimate of average annual earnings in the NT, calculated as \$98,332 per year (based on average weekly earnings of \$1,891 per week).<sup>39</sup>

Table 6 outlines the employment assumptions used as inputs in the REMPLAN model, that form the basis of analysis for the labour share of construction expenditure.

**Table 6: Labour inputs – construction period**

Input	Region	Construction Years			Total
		Year 1	Year 2	Year 3	
<b>Labour inputs (\$m, real 2023)</b>	Darwin and NT	\$4.7 m	\$9.6 m	\$6.4 m	\$20.7 m
	Australia	\$6.4 m	\$12.9 m	\$8.6 m	\$27.9 m
<b>Annual salary and on-costs (\$, real 2023)</b>	All jurisdictions	\$105,614	\$105,614	\$105,614	–
<b>FTE (Number)</b>	Darwin and NT	45	90	61	–
	Australia	60	122	82	–

### 3.2.2. Operations phase

The operations phase of the Project is expected to commence at the beginning of 2028, with a ramp up period increasing the number of TEUs handled from 200,000 within 1-2 years of opening to 400,000 TEUs within five years of opening. The ramp up period will not apply to FTEs, which reflects how the efficiency of the plant gradually improves over time, requiring no additional workforce in year five than it did in year one. The inputs used for this phase of the Project include direct employment for the Project, including the employment for the freight distribution centres, administration, and other supporting staff.

#### 3.2.2.1. Estimating employment impacts during operations

Aurizon provided an estimate of additional jobs supported by expanded operations at the BFT. These employment forecasts have been used as the input for the analysis of supply-chain and consumption effects. Table 7 outlines the assumptions used as inputs in the REMPLAN model. for the analysis of employment.

<sup>38</sup> Salary estimate calculated as a weighted mean of salaries for civil engineers and construction workers. Salary information was weighted by the proportion of hours for design and engineering work compared to construction work for a construction project of this type, namely civil engineering (15%) and construction work (85%). Salaries for each job role and area were obtained from salary averages published on job search websites in February 2024 including Talent.com, seek.com.au, payscale.com and adzuna.com.au.

<sup>39</sup> Northern Territory Government (November 2023), *Northern Territory Economy*, <https://nteconomy.nt.gov.au/prices-and-wages%23:-.text=ABS%25202016%2520Census-,Average%2520weekly%2520earnings,to%25205.3%2525%2520in%2520Western%2520Australia>.

Table 7: Economic assessment inputs – operations phase

		Direct change in FTE									
	Occupation	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037
Number of FTEs	Terminal operations	25	25	25	25	25	25	25	25	25	25
	Distribution or warehousing	300	300	300	300	300	300	300	300	300	300

### 3.2.2.2. Estimating other impacts during operations

In a competitive market environment, a business operation like the BFT will have annual revenues that follow annual costs. These annual costs include both labour costs plus the annual fixed costs such as depreciation, interest, insurance, profit, rent, utilities and other costs. As such, in addition to the 325 workers supported by the expanded BFT, an estimation of the Project's full economic impact during operation needs to take into account the other non-wage cost components.

As the Project is at an early stage of development, Aurizon was not able to provide additional data to allow an estimate of non-labour operating expenditure segments. In the absence of Project-specific information, information on operating revenue per TEU at an interstate intermodal logistics hub was used as a proxy for the BFT expansion. The financial information used as a benchmark for performance was drawn from Moorebank Intermodal Company's Annual Report 2020. Figures from the consolidated statement of profit or loss as at 30 June 2020 showed total revenue to be \$17.9 million. Based on the throughput at Moorebank's import–export (IMEX) terminal of 250,000 TEU per year, annual operating revenue is estimated to be \$71.5 per TEU.<sup>40</sup> When multiplied by the forecast annual throughput of the Project (400,000 TEU at maximum capacity), annual operating revenue is \$28.5 million. This figure was used as the value of non-labour operating expenditure for Darwin, the NT and Australia.<sup>41</sup>

<sup>40</sup> It should be noted that the use of a single estimate of annual operating revenue per TEU from another intermodal logistics hub is at best an imperfect standard or point of reference to use when estimating the likely cost structure for the expanded BFT. In this case, only one source of information was publicly available to draw on for the development of a benchmark for forecasting.

<sup>41</sup> It should be noted that the non-labour operating revenue (\$28.5 million) was added to the total estimated revenue produced by 325 workers expected to be employed at the expanded BFT. The revenue produced for the 325 workers was not adjusted downward to account for the possibility that benchmark value of \$71.5 in revenue per TEU may have included a labour cost component. However, the incremental revenue of 25 workers (325 total minus the 300 warehouse workers) was immaterial and not expected to overestimate the impact of the BFT's operation to a significant degree. The more significant impact on the estimates of the BFT's ongoing impact will occur if the forecast warehouse jobs (300 in total) do not materialise.

## 4. Economic impacts

### 4.1. Purpose and overview

This chapter details the expected economic impact associated with the expanded BFT, including the:

- impact of construction
- impact of operations
- summary of construction and operations impact.

Our results are presented across various measures of economic activity. These measures include output, employment, wages and salaries, value-added and gross regional product (GRP). An overview of each of these measures is outlined below:

Impact	Description
<b>Output</b>	The gross revenue generated by businesses and organisations in a defined region. Gross revenue is also referred to as total sales or total income.
<b>Employment</b>	The number of people employed by businesses and organisations in a defined region.
<b>Wages and salaries</b>	The payments to employees for a specific period worked, paid by businesses and organisations in a defined region.
<b>Value-added</b>	The incremental economic value that is added by each industry sector in a defined region. Value-added can be calculated by adding the wages and salaries paid to local employees, the gross operating surplus and taxes on products and production. Value added is also the difference between gross output (see above) and intermediate inputs (e.g. raw materials, semi-finished goods).
<b>Gross regional product (GRP)</b>	GRP is the net measure of wealth generated by the region. GRP can be measured by using the incomes approach, where all incomes earned by individuals (wages and salaries), firms (gross operating surplus) and governments (taxes on products or services) are added.

### 4.2. Impact of construction

The CAPEX for the facilities and supporting infrastructure would directly benefit Darwin, the NT and Australia through increased employment and expenditure in the regional economy. Using local suppliers and construction companies, the development would directly support roles in heavy and civil engineering and construction and engineering roles over the three-year construction period. This section provides an assessment of the economic impact of the construction phase of the Project.<sup>42</sup>

#### 4.2.1. Output

##### Darwin and the NT

From a direct increase in output of \$69.0 million over the three-year period, it is estimated that the demand for intermediate goods and services would have the following effects:

<sup>42</sup> Given the level of accuracy of input data, all figures in this section have been rounded to one decimal place. This may lead to variances in multiplying 'rounded' inputs and factors.

- In **Darwin**, it is estimated that the demand for intermediate goods and services would rise by \$31.5 million. This represents a Type 1 Output multiplier of 1.5. Type 1 Multipliers only look at business to business purchases and are representative of direct plus indirect effects.<sup>43</sup>
- In the **NT**, it is estimated that the demand for intermediate goods and services would rise by \$32.5 million. This represents a Type 1 Output multiplier of 1.5.<sup>44</sup>

The multipliers reflect the scale of engineering and heavy construction required for the complex construction components of the Project. These supply-chain effects include multiple rounds of flow-on effects, as servicing sectors increase their own output and demand for local goods and services in response to the direct change to the economy.

The increases in direct and indirect output during the construction phase would typically correspond to the creation of jobs in the economy and a subsequent increase in the total wages and salaries paid to employees. The proportion of these wages and salaries is spent on consumption and captured in the local economies of Darwin and the NT:

- In **Darwin**, the consumption effects under this scenario are estimated at \$18.7 million.
- In the **NT**, the consumption effects under this scenario are estimated at \$19.6 million.

Total output over the three-year period, including all direct, supply-chain and consumption effects is estimated to increase:

- by up to \$119.2 million in **Darwin**. This represents a Type 2 Output multiplier of 1.7. Type 2 Multipliers include the impact of household spending and capture the direct, indirect and induced effects of an industry.<sup>45</sup>
- by up to \$121.1 million in the **NT**. This represents a Type 2 Output multiplier of 1.8.<sup>46</sup>

## Australia

A much large share of the total economic activity generated by the Project comes from Australia as a whole, as opposed to the NT. From a direct increase in output of \$93.0 million over the three-year period, it is estimated that the demand for intermediate goods and services would rise by \$81.0 million. This represents a Type 1 Output multiplier of 1.9.<sup>47</sup> These supply-chain effects include multiple rounds of flow-on effects, as servicing sectors increase their own output and demand for local goods and services in response to the direct change in economic activity.

The increases in direct and indirect output would typically correspond to the creation of jobs in the economy. Corresponding to this change in employment would be an increase in the total of wages and salaries paid to employees. A proportion of these wages and salaries are typically spent on consumption and a proportion of this expenditure is captured in the local economy. The consumption effects under this scenario are estimated at \$64.2 million.

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<sup>43</sup> A Type 1 output multiplier of 1.5 (1.456 rounded to 1 decimal place) means that for every \$1 spent on the Project's construction, 45.6 cents of benefit is created in the supply chain.

<sup>44</sup> A Type 1 output multiplier of 1.5 (1.472 rounded to 1 decimal place) means that for every \$1 spent on the Project's construction, 47.2 cents of benefit is created in the supply chain.

<sup>45</sup> A Type 2 output multiplier of 1.7 (1.728 rounded to 1 decimal place) means that for every \$1 spent Project's construction, 72.8 cents of benefit is created in the supply chain and employees spending their wages.

<sup>46</sup> A Type 2 output multiplier of 1.8 (1.756 rounded to 1 decimal place) means that for every \$1 spent Project's construction, 75.6 cents of benefit is created in the supply chain and employees spending their wages.

<sup>47</sup> A Type 1 output multiplier of 1.9 (1.862 rounded to 1 decimal place) means that for every \$1 spent on the Project's construction, 87.1 cents of benefit is created in the supply chain

Total output over the three-year period, including all direct, supply-chain and consumption effects is estimated to increase by up to \$238.2 million. This represents a Type 2 Output multiplier of 2.6.<sup>48</sup>

#### 4.2.2. Employment

##### Darwin and the NT

It is estimated that at peak level of construction activity (year 2), employment would increase across Darwin and the NT as follows:

- In **Darwin**, in year 2 there is an estimated net 90 direct jobs supported. From this direct expansion in employment, flow-on supply-chain effects in terms of local purchases of goods and services are anticipated, and it is estimated that these indirect impacts will support 86 jobs. This represents a Type 1 Employment multiplier of 2.0.
- As Darwin represents such a large share of the **NT** economy, the impact of the Project in the NT is similar in terms of net direct jobs supported. In the NT, there is an estimated net 90 direct jobs supported in year 2 and 88 jobs supported by indirect impacts. This represents a Type 1 Employment multiplier of 2.0.

The direct and indirect output and the corresponding jobs in the economy result in additional wages and salaries paid to employees. A proportion of these wages and salaries are typically spent on consumption and a proportion of this expenditure is captured in the local economy. The consumption effects under this scenario are estimated to support the following jobs:

- In **Darwin**, the consumption effects support 62 jobs in year 2. Under this scenario, there is an expansion in overall employment, including all direct, supply-chain and consumption effects, estimated at 238 jobs. This represents a Type 2 Employment multiplier of 2.6.<sup>49</sup>
- In the **NT**, the consumption effects under this scenario are estimated to support 65 jobs in year 2. There is an expansion in overall employment, including all direct, supply-chain and consumption effects, estimated at 243 jobs. This represents a Type 2 Employment multiplier of 2.7.<sup>50</sup>

##### Impact of the Project on jobs in Darwin and surrounding communities

The Project has the potential to create high skill jobs and opportunities for local workers and presents an opportunity to support local communities to build the skills, capacity and collective capability to share in the benefits of the BFT expansion.

Every area in Australia has a diverse range of different people and dwellings. The Socio-Economic Indexes for Areas (SEIFA) is an Australian Bureau of Statistics (ABS) product that ranks areas in Australia according to relative socio-economic advantage and disadvantage. The indexes are based on information from the 2016 Census of Population and Housing. The Index of Economic Resources (IER) summarises indicators of high and low income, as well as variables that correlate with high or low wealth. Figure 6 illustrates the Local Government Areas (LGAs) in and around Darwin coloured depending on their IER score. Areas with higher scores, indicated by darker shading (e.g., Darwin, Palmerston and Litchfield) have relatively greater access to economic resources than areas with lower scores (e.g., Wagait, West Daly and Belyuen).

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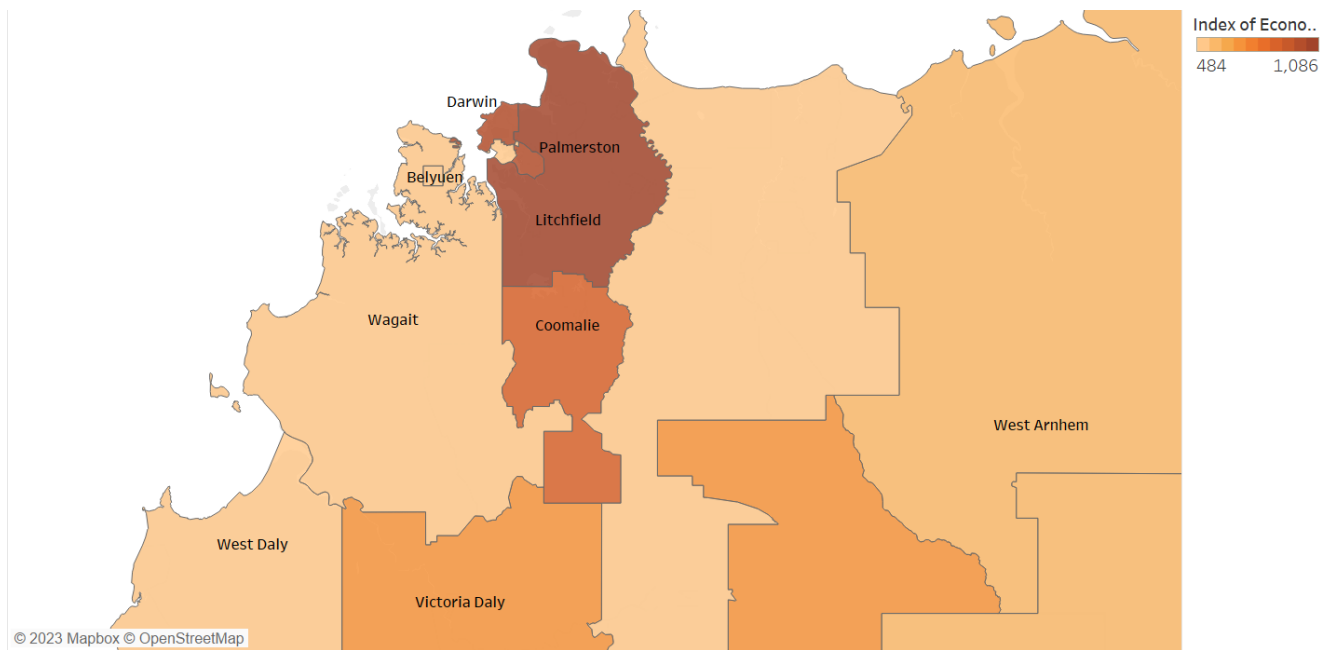
<sup>48</sup> A Type 2 output multiplier of 2.6 (2.561 rounded to 1 decimal place) means that for every \$1 spent Project's construction, \$1.6 cents of benefit is created in the supply chain and employees spending their wages.

<sup>49</sup> A Type 2 employment multiplier of 2.6 means that for every job created by construction of the Project, 1-2 jobs are created in the supply chain and through employees spending their wages.

<sup>50</sup> A Type 2 employment multiplier of 2.7 means that for every job created by construction of the Project, 1-2 jobs are created in the supply chain and through employees spending their wages.



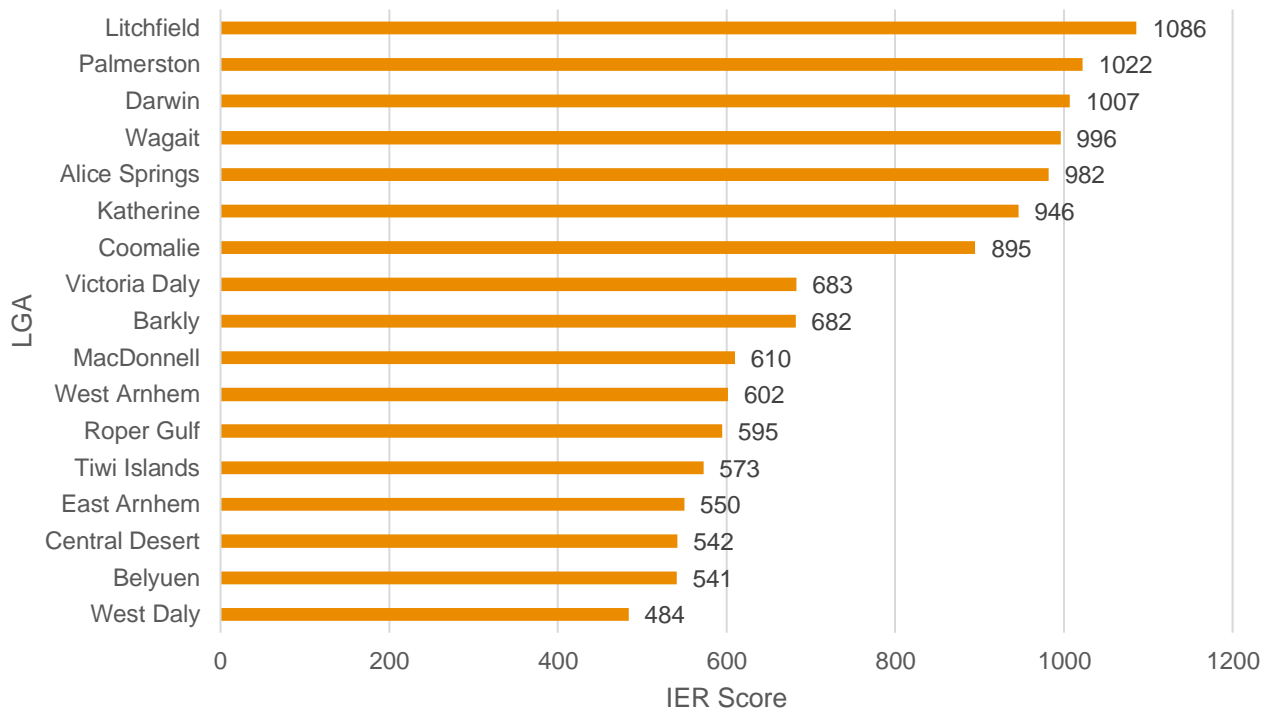
Figure 6: Index of Economic Resources, NT Local Government Areas (2016 Census)



Map based on Longitude (generated) and Latitude (generated). Colour shows sum of Index of Economic Resources Score. The marks are labelled by their NT LGA name.

Figure 7 shows the ranking of each LGA in the NT by IER score. Litchfield is the highest scoring LGA with an IER of 1086, with Darwin ranking third with an IER of 1007. Darwin’s comparatively high ranking potentially indicates a higher level of disposable income resulting from employment levels and a greater opportunity for businesses to capture this income locally. Darwin’s ranking also indicates that the resident population is relatively well-educated, and capable of providing a local workforce for established and new businesses looking to relocate. These characteristics suggest the area provides a potential employment pool of highly skilled individuals that might not be found in other neighbouring regions.

Figure 7: NT Local Government Areas ranked by Index of Economic Resources Score (2016 Census)



## Australia

During peak construction in year 2, the Project supports an estimated net 122 direct jobs throughout Australia. From this direct expansion in employment, flow-on supply-chain effects in terms of local purchases of goods and services are anticipated, and it is estimated that these indirect impacts will support 206 jobs. This represents a Type 1 Employment multiplier of 2.7.<sup>51</sup>

The direct and indirect output and the corresponding jobs in the economy are expected to support the payment of wages and salaries paid to employees. A proportion of these wages and salaries are typically spent on consumption and a proportion of this expenditure is captured in the local economy. The consumption effects under this scenario are estimated to support 187 jobs in year 2.

Overall, during peak constructed it is expected that the Project will support an estimated 515 jobs, as a result of an expansion in overall employment, including all direct, supply-chain and consumption effects. This represents a Type 2 Employment multiplier of 4.2.

### 4.2.3. Wages and salaries

It is estimated that direct wages and salaries would increase across Darwin and the NT as follows:

- In **Darwin**, direct wages and salaries would increase by \$44.7 million. From this direct impact on the economy, flow-on supply-chain effects in terms of local purchases of goods and services are anticipated, and it is estimated that these indirect impacts would result in the net increase in wages and

<sup>51</sup> A Type 1 employment multiplier of 2.7 means that for every job created by construction of the Project, 1-2 jobs are created in the supply chain.

salaries of \$28.7 million paid to workers. This represents a Type 1 Wages and Salaries multiplier of 1.5.<sup>52</sup>

- As Darwin represents such a large share of the **NT** economy, the impact of the Project in the NT is similar in terms of wages and salaries. In the **NT**, direct wages and salaries would increase by \$44.7 million. It is estimated that these indirect impacts would result in the net increase in wages and salaries of \$29.6 million paid to workers. This represents a Type 1 Wages and Salaries multiplier of 1.5.

The net increase in direct and indirect output, and the additional construction jobs in the economy are expected to correspond to an increase in the wages and salaries paid to employees. A proportion of these wages and salaries are typically spent on consumption and a proportion of this expenditure is captured in the local economy. The consumption effects in Darwin and the NT are as follows:

- In **Darwin**, the consumption effects are expected to result in an overall increase in wages and salaries by \$16.5 million.
- In the **NT**, the consumption effects under this scenario are expected to result in an overall increase in wages and salaries by \$17.4 million.

Total wages and salaries over the three-year period, including all direct, supply-chain and consumption effects is estimated to increase as follows:

- In **Darwin**, total wages and salaries increase by up to \$99.6 million. This represents a Type 2 Wages and Salaries multiplier of 1.8.
- In the **NT**, total wages and salaries increase by up to \$101.4 million. This represents a Type 2 Wages and Salaries multiplier of 1.9.

## Australia

It is estimated that direct wages and salaries would increase by \$46.8 million in Australia. From this direct impact on the economy, flow-on supply-chain effects in terms of local purchases of goods and services are anticipated, and it is estimated that these indirect impacts would result in the net increase in wages and salaries of \$58.1 million paid to workers. This represents a Type 1 Wages and Salaries multiplier of 2.0.

The net increase in wages and salaries paid to employees is also expected to have consumption effects. A proportion of wages and salaries is typically spent on consumption and a proportion of this expenditure is captured in the local economy. The consumption effects under this scenario are expected to result in an overall increase in wages and salaries by \$43.8 million.

Total wages and salaries over the three-year period, including all direct, supply-chain and consumption effects is estimated to increase by up to \$161.9 million. This represents a Type 2 Wages and Salaries multiplier of 2.7.

### 4.2.4. Value-added

#### Darwin and the NT

It is estimated that direct value-added would increase across Darwin and the NT as follows:

- In **Darwin**, direct-value-add is estimated at \$27.3 million. From this direct expansion in the economy, flow-on supply-chain effects in terms of local purchases of goods and services are anticipated, and it is

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<sup>52</sup> A Type 1 output multiplier of 1.5 means that for every dollar in wages created by construction of the Project, 52.7 cents of wage increase is created in the supply chain.

estimated that these indirect impacts would result in a further increase to value-added of \$12.3 million. This represents a Type 1 Value-added multiplier of 1.5.

- In the **NT**, direct value-added is estimated at \$27.3 million. Indirect impacts are estimated to result in a further increase to value-added of \$12.8 million. This represents a Type 1 Value-added multiplier of 1.5.

The consumption effects under this scenario are expected to further boost value-added in the respective economies:

- In **Darwin**, the consumption effects under this scenario are expected to further boost value-added by \$10.9 million.
- In the **NT**, consumption effects under this scenario are expected to further boost value-added by \$11.3 million.

Total value-added over the three-year period, including all direct, supply-chain and consumption effects is estimated to increase in Darwin and the NT as follows:

- In **Darwin**, total value-added is estimated to increase by up to \$50.5 million. This represents a Type 2 Value-added multiplier of 1.9.
- In the **NT**, total value-added is estimated to increase by up to \$51.4 million. This represents a Type 2 Value-added multiplier of 1.9.

## Australia

The increase in direct value-added is estimated at \$36.7 million. From this direct expansion in the economy, flow-on supply-chain effects in terms of local purchases of goods and services are anticipated, and it is estimated that these indirect impacts would result in a further increase to value-added of \$31.9 million. This represents a Type 1 Value-added multiplier of 1.9.

The increase in direct and indirect output and the corresponding boost to jobs in the economy are expected to result in an increase in the wages and salaries paid to employees. A proportion of these wages and salaries are typically spent on consumption and a proportion of this expenditure is captured in the local economy. The consumption effects under this scenario are expected to further boost value-added by \$32.8 million.

Total value-added over the three-year period, including all direct, supply-chain and consumption effects is estimated to increase by up to \$101.4 million. This represents a Type 2 Value-added multiplier of 2.8.

### 4.2.5. Gross regional product

Gross regional product (GRP) or Gross state product (GSP) is a measure of the contribution of an activity to the economy. GRP and GSP are measured as value of gross output (business revenue) less the cost of goods and services (including imports) used in producing the output. It represents payments to the primary inputs of production (labour, capital and land).

#### Darwin and the NT

The expansion of construction activity for the BFT expansion will have a direct impact on GRP in all regions by the same amount:

- In **Darwin**, GRP is expected to increase by \$50.5 million over the three-year period. Contributing to this is a direct increase in output of \$69.0 million, \$44.7 million more in wages and salaries and a boost in value-added of \$27.3 million.

- In the **NT**, GSP is expected to increase by \$51.4 million over the three-year period. Contributing to this is a direct increase in output of \$69.0 million, \$44.7 million more in wages and salaries and a boost in value-added of \$27.3 million.

From this direct expansion in the economy, flow-on supply-chain effects in terms of local purchases of goods and services are anticipated. It is estimated that these indirect impacts would result in:

- a further increase to output in **Darwin** valued at \$31.5 million, \$28.7 million more paid in wages and salaries, and a gain of \$12.3 million in terms of value-added.
- a further increase to output in the **NT** valued \$32.5 million, \$29.6 million more paid in wages and salaries, and a gain of \$12.8 million in terms of value-added.

## Australia

As a result of the construction activity associated with the Project, Gross Domestic Product (GDP) is estimated to increase by \$101.4 million over the three-year period. Contributing to this is a direct increase in output of \$93.0 million, \$46.8 million more in wages and salaries and a boost in value-added of \$36.7 million.

From this direct expansion in the economy, flow-on supply-chain effects in terms of local purchases of goods and services are anticipated, and it is estimated that these indirect impacts would result in a further increase to output valued at \$81.0 million, \$58.1 million more paid in wages and salaries, and a gain of \$31.9 million in terms of value-added.

### 4.2.6. Summary of construction impacts

Table 8 summarises the economic impact of the three-year construction period in Darwin. Jobs were categorised under the *Heavy & Civil Engineering Construction* industry sector and input into REMPLAN using the Australian and New Zealand Standard Industrial Classification (ANZSIC).

Table 8: Summary of economic impact of construction in Darwin

Impact	Direct effect	Supply-chain effect	Consumption effect	Total effect	Type 1 multiplier	Type 2 multiplier
<b>Output, Yrs 1-3 (\$M, real 2023)</b>	\$69.0	\$31.5	\$18.7	\$119.2	1.5	1.7
<b>Employment – peak gain (jobs)</b>	90	86	62	238	2.0	2.6
<b>Wages and salaries, Yrs 1-3 (\$M, real 2023)</b>	\$44.7	\$28.7	\$16.5	\$99.6	1.5	1.8
<b>Value-added, Yrs 1-3 (\$M, real 2023)</b>	\$27.3	\$12.3	\$10.9	\$50.5	1.5	1.9

Table 9 summarises the economic impact of the three-year construction period in the NT.

Table 9: Summary of economic impact of construction in the NT

Impact	Direct effect	Supply-chain effect	Consumption effect	Total effect	Type 1 multiplier	Type 2 multiplier
Output, Yrs 1-3 (\$M, real 2023)	\$69.0	\$32.5	\$19.6	\$121.1	1.5	1.8
Employment – peak gain (jobs)	90	86	62	238	2.0	2.6
Wages and salaries, Yrs 1-3 (\$M, real 2023)	\$44.7	\$29.6	\$17.4	\$101.4	1.5	1.9
Value-added, Yrs 1-3 (\$M, real 2023)	\$27.3	\$12.8	\$11.3	\$51.4	1.5	1.9

Table 10 summarises the economic impact of the three-year construction period in Australia.

Table 10: Summary of economic impact of construction in Australia

Impact	Direct effect	Supply-chain effect	Consumption effect	Total effect	Type 1 multiplier	Type 2 multiplier
Output, Yrs 1-3 (\$M, real 2023)	\$93.0	\$81.0	\$64.2	\$238.2	1.9	2.6
Employment – peak gain (jobs)	122	206	187	515	2.7	4.2
Wages and salaries, Yrs 1-3 (\$M, real 2023)	\$46.8	\$58.1	\$43.8	\$161.9	2.0	2.7
Value-added, Yrs 1-3 (\$M, real 2023)	\$36.7	\$31.9	\$32.8	\$101.4	1.9	2.8

### 4.3. Impact of operations

The analysis of economic contribution does not capture the full extent of the economic benefits of the Project. These benefits can be broken down into several categories, including:

- **Employment** – In addition to the direct employment created by the upgraded facility, it will also provide an opportunity to increase Indigenous and local employment in these areas
- **Education** – The facility will provide training opportunities for the local workforce to increase productive capacity
- **Supply chain development** – The facility will strengthen and increase the resilience of Australian supply chains. It will strengthen local and international supply chains and improve competitiveness of rail as a strategic alternative to sea freight.
- **Economic diversification** – The NT economy is heavily dependent on Mining, Public Administration and Safety, and Construction. Collectively, these industries account for approximately 48 per cent of economic activity in the NT. The Project presents an opportunity to diversify the NT economy by

increasing the contribution of Transport, Postal and Warehousing from where it currently stands at 5 per cent of total economic activity.<sup>53</sup>

The continued operations of the facility will generate significant economic impact through the creation of an additional 325 FTEs in high-value roles. Many of these roles would support the attraction of skilled workers and residents to Darwin and the NT. Over the long term this may result in several secondary impacts, including increased expenditure in the region, greater demand in the housing market, greater population growth and retention, and the increased job opportunities for students and other skilled workers.

This section provides an assessment of the ongoing economic contribution that the increase in employment during operations makes to the region. Other flow on impacts associated with long-term population growth have not been included.

### 4.3.1. Output

#### Darwin and the NT

The ongoing economic impact of the Project to the Darwin and NT economies is represented by the increase in annual output in the economy, attributed to the proposed 325 FTEs required to support the operations of the BFT and warehouse and distribution facilities. This impact is related to the uplift in economic activity and flow-on effects, as relevant supply-chain sectors increase their output and demand for local goods and services to support the increase in economic activity.

As the Project is at an early stage of development, Aurizon was not able to provide additional data to allow an estimate of non-labour operating expenditure segments. The non-labour expenditure segments include items such as purchases, profit, depreciation, rent utilities and other costs. Section 3.2.1.1 outlines how the non-labour estimate of operating expenditure was developed.

Consequently, the results presented in this section are based on employment forecasts from Aurizon and output forecasts from REMPLAN input-output model. The total impact of operations is made up of **(1)** the FTE impacts and **(2)** the non-labour impacts.

- In **Darwin**, when the rail terminal and warehouses are operational, it will generate a forecast direct output of approximately \$280.0 million in real terms per year. From this increase in output, it is estimated that the demand for intermediate goods and services would rise by \$115.0 million per year. This represents a Type 1 Output multiplier of 2.8. The consumption effects under this scenario are estimated at \$64.9 million.
- In the **NT**, when the rail terminal and warehouses are operational, it will generate a forecast direct output of approximately \$280.0 million in real terms per year. From this increase in output, it is estimated that the demand for intermediate goods and services would rise by \$118.0 million per year. This represents a Type 1 Output multiplier of 2.8. The consumption effects under this scenario are estimated at \$68.0 million.

Total output, including all direct, supply-chain and consumption effects is estimated to increase significantly.

- In **Darwin**, by up to \$459.9 million. This represents a Type 2 Output multiplier of 3.3.
- In the **NT**, by up to \$466.1 million. This represents a Type 2 Output multiplier of 3.3.

#### Australia

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<sup>53</sup> REMPLAN (2023), *Economy, Jobs and Business Insights*, <https://app.remplan.com.au/eda-northernterritory/economy/industries/output?state=p9xlFK!6Q7Pcqa9rl2JM7rhPARj7hnhjf7Zaigqv15iENkNpf5frMS3f1INN3xi2OI>

In Australia, when the rail terminal and warehouses are operational, it will generate a forecast direct output of \$194.8 million in real terms per year. From this increase in output, it is estimated that the demand for intermediate goods and services would rise by \$139.1 million per year. This represents a Type 1 Output multiplier of 3.4.<sup>54</sup> The consumption effects under this scenario are estimated at \$108.3 million.

Total output, including all direct, supply-chain and consumption effects is estimated to increase significantly by up to \$442.2 million. This represents a Type 2 Output multiplier of 4.5.

### 4.3.2. Employment

It is estimated that employment would increase across Darwin and the NT in each year of operations as follows:

- In **Darwin**, from the 325 FTE positions, flow-on supply-chain effects are anticipated to result in the gain of a further 213 jobs each year. This represents a Type 1 Employment multiplier of 1.7. The consumption effects under this scenario are estimated to further boost employment by 137 jobs.
- In the **NT**, from the 325 FTE positions, flow-on supply-chain effects are anticipated to result in the gain of a further 218 jobs each year. This represents a Type 1 Employment multiplier of 1.7. The consumption effects under this scenario are estimated to further boost employment by 144 jobs.

To summarise total employment, including all direct, supply-chain and consumption effects, the Project's impact can be described as follows:

- In **Darwin**, the total impact of the Project's wage expenditure, including from direct effects, supply-chain flow on effects and consumption flow on effects results in 675 FTE positions. This represents a Type 2 Employment multiplier of 2.1.
- In the **NT**, the total impact of the Project's wage expenditure, including from direct effects, supply-chain flow on effects and consumption flow on effects results in 687 FTE positions. This represents a Type 2 Employment multiplier of 2.1.

### 4.3.3. Wages and salaries

It is estimated that direct wages and salaries would increase across Darwin and the NT as follows:

- In **Darwin**, direct wages and salaries would increase by \$43.6 million per year. From this direct impact on the economy, flow-on supply-chain effects in terms of local purchases of goods and services are anticipated, and it is estimated that these indirect impacts would result in the increase in wages and salaries of \$30.0 million paid to workers. This represents a Type 1 Wages and Salaries multiplier of 3.4.<sup>55</sup>
- As Darwin represents such a large share of the **NT** economy, the impact of the Project in the NT is identical in terms of wages and salaries. In the **NT**, direct wages and salaries would increase by \$43.6 million per year. It is estimated that these indirect impacts would result in an increase in wages and salaries valued at \$30.9 million paid to other workers in the supply chain. This represents a Type 1 Wages and Salaries multiplier of 3.4.

The net increase in direct and indirect output and the corresponding jobs in the economy are expected to correspond to an increase in the wages and salaries paid to employees. A proportion of these wages and

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<sup>54</sup> A Type 1 output multiplier of 3.4 means that for every \$1 spent on the Project's construction, \$2.4 of benefit is created in the supply chain.

<sup>55</sup> A Type 1 output multiplier of 3.4 means that for every dollar in wages created by construction of the Project, \$2.37 of wage increase is created in the supply chain.



salaries are typically spent on consumption and a proportion of this expenditure is captured in the local economy. The consumption effects in Darwin and the NT are as follows:

- In **Darwin**, the consumption effects are expected to result in an overall increase in wages and salaries by \$14.6 million.
- In the **NT**, the consumption effects under this scenario are expected to result in an overall increase in wages and salaries by \$15.4 million.

Total wages and salaries over the operational period, including all direct, supply-chain and consumption effects is estimated to increase as follows:

- In **Darwin**, total wages and salaries increase by up to \$88.2 million. This represents a Type 2 Wages and Salaries multiplier of 4.0.
- In the **NT**, total wages and salaries increase by up to \$89.9 million. This represents a Type 2 Wages and Salaries multiplier of 4.1.

## Australia

It is estimated that direct wages and salaries would increase by \$31.9 million in Australia. From this direct impact on the economy, flow-on supply-chain effects in terms of local purchases of goods and services are anticipated, and it is estimated that these indirect impacts would result in the net increase in wages and salaries of \$33.8 million paid to workers. This represents a Type 1 Wages and Salaries multiplier of 4.1.

The net increase in direct and indirect output and the corresponding jobs in the economy are expected to correspond to an increase in the wages and salaries paid to employees. A proportion of these wages and salaries are typically spent on consumption and a proportion of this expenditure is captured in the local economy. The consumption effects under this scenario are expected to result in an overall increase in wages and salaries by \$22.6 million.

Total wages and salaries over the operational period, including all direct, supply-chain and consumption effects is estimated to increase by up to \$88.2 million. This represents a Type 2 Wages and Salaries multiplier of 5.5.

### 4.3.4. Value-added

It is estimated that value-added would increase across Darwin and the NT as follows:

- In **Darwin**, direct-value-add is estimated at \$138.3 million. From this direct expansion in the economy, flow-on supply-chain effects in terms of local purchases of goods and services are anticipated, and it is estimated that these indirect impacts would result in a further increase to value-added of \$53.5 million. This represents a Type 1 Value-added multiplier of 2.8.
- In the **NT**, direct value-added is estimated at \$138.3 million. Indirect impacts are estimated to result in a further increase to value-added of \$54.9 million. This represents a Type 1 Value-added multiplier of 2.8.

The consumption effects under this scenario are expected to further boost value-added in the respective economies:

- In **Darwin**, the consumption effects under this scenario are expected to further boost value-added by \$37.7 million.
- In the **NT**, consumption effects under this scenario are expected to further boost value-added by \$39.3 million.

Total value-added over the operational period, including all direct, supply-chain and consumption effects is estimated to increase in Darwin and the NT as follows:

- In **Darwin**, total value-added is estimated to increase by up to \$229.4 million. This represents a Type 2 Value-added multiplier of 3.3.
- In the **NT**, total value-added is estimated to increase by up to \$232.5 million. This represents a Type 2 Value-added multiplier of 3.4.

## Australia

The increase in direct value-added is estimated at \$98.6 million. From this direct expansion in the economy, flow-on supply-chain effects in terms of local purchases of goods and services are 66.0 million. This represents a Type 1 Value-added multiplier of 3.3.<sup>56</sup>

The consumption effects under this scenario are expected to further boost value-added by \$54.4 million.

Total value-added over the operational period, including all direct, supply-chain and consumption effects is estimated to increase by up to \$219.0 million. This represents a Type 2 Value-added multiplier of 4.4.<sup>57</sup>

### 4.3.5. Summary

Table 11 summarises the annual impact of the Project's operations in Darwin. Jobs were categorised under the *Transport Support Services & Storage* industry sector and input into REMPLAN using the ANZSIC.

Table 11: Summary of economic impact of operations in Darwin

Impact	Direct effect	Supply-chain effect	Consumption effect	Total effect	Type 1 multiplier	Type 2 multiplier
<b>Output (\$M, real 2023)</b>	\$280.0	\$115.0	\$64.9	\$459.9	2.8	3.3
<b>Employment – jobs each operating year</b>	325	213	137	675	1.7	2.1
<b>Wages and salaries (\$M, real 2023)</b>	\$43.6	\$30.0	\$14.6	\$88.2	3.4	4.1
<b>Value-added (\$M, real 2023)</b>	\$138.3	\$53.5	\$37.7	\$229.4	2.8	3.3

Table 12 summarises the annual impact of the Project's operations in the NT.

<sup>56</sup> A Value Added Multiplier of 3.3 indicates that for every dollar of Direct Value Added created by the operation of the expanded BRT terminal, another \$2.30 of Value Added is created in the supply chain.

<sup>57</sup> A Value Added Multiplier of 4.4 indicates that for every dollar of Direct Value Added created by the operation of the expanded BRT terminal, another \$3.40 of Value Added is created in the supply chain and through employees spending their wages.

Table 12: Summary of economic impact of operations in the NT, per year

Impact	Direct effect	Supply-chain effect	Consumption effect	Total effect	Type 1 multiplier	Type 2 multiplier
<b>Output (\$M, real 2023)</b>	\$280.0	\$118.0	\$68.0	\$466.1	2.8	3.3
<b>Employment – jobs each operating year</b>	325	218	144	687	1.7	2.1
<b>Wages and salaries (\$M, real 2023)</b>	\$43.6	\$30.9	\$15.4	\$89.9	3.4	4.1
<b>Value-added (\$M, real 2023)</b>	\$138.3	\$54.9	\$39.3	\$232.5	2.8	3.4

Table 13 summarises the annual impact of the Project's operations in Australia. The Australian economy has a very different structure to the smaller, local economy of Darwin or the economy of the NT. In particular, the input–output relationships between sectors vary significantly between territory and national economies. For example, local expenditure in Australia's Transport, Postal and Warehousing sector (a large, national economy) is a larger proportion of total output than in the Northern Territory's transport, Postal, and Warehousing sector (around 44 per cent for Australia compared to around 35 per cent in the NT). As a result, the additional local expenditure in this sector is expected to have a greater impact in NT, relative to Australia.

Table 13: Summary of economic impact of operations in Australia, per year

Impact	Direct effect	Supply-chain effect	Consumption effect	Total effect	Type 1 multiplier	Type 2 multiplier
<b>Output (\$M, real 2023)</b>	\$194.8	\$139.1	\$108.3	\$442.2	3.4	4.5
<b>Employment – jobs each operating year</b>	325	298	256	879	1.9	2.7
<b>Wages and salaries (\$M, real 2023)</b>	\$31.9	\$33.8	\$22.6	\$88.2	4.1	5.5
<b>Value-added (\$M, real 2023)</b>	\$98.6	\$66.0	\$54.4	\$219.0	3.3	4.4



## 4.4. Summary of construction and operations impact

### 4.4.1. Jobs

Table 14 and

Table 15 summarise the total number of construction and operations jobs supported by the Project in **Darwin**. Table 14 shows the number of workers involved in construction over each year in the total three-year construction delivery timetable, while Table 15 shows the number of workers supported once the expanded BFT is operational.

The estimated number of construction jobs is not additive across years. That is, it is expected that some of the workers employed in the first year of the Project's construction will continue to be employed on the project in subsequent construction periods.

It should also be noted that the flow-on effects (supply-chain and consumption effects) of construction jobs should not be added to the effects of operations jobs. These indirect effects of construction jobs will cease once construction of the BFT is complete.

An early project delivery schedule indicates design and construction could commence in Q3 2025, allowing operations to commence in 2028.

Table 14: Construction jobs supported by the Berrimah Freight Terminal Expansion, Darwin

Project Phase	Impact Type	Effect			Total
		Direct	Supply-Chain	Consumption	
Construction Year one (2025-26)	Employment (# of jobs)	45	43	31	119
Construction Year two (2026-27)	Employment (# of jobs)	90	86	62	238
Construction Year three (2027-28)	Employment (# of jobs)	61	58	42	161

Table 15: Operations jobs supported by the Berrimah Freight Terminal Expansion, Darwin

Project Phase	Impact Type	Effect			Total
		Direct	Supply-Chain	Consumption	
Operations per year	Employment (# of jobs)	325	213	137	675

Table 16 and

Table 17 summarise the total number of construction and operations jobs supported by the Project in the **NT**.

Table 16: Construction jobs supported by the Berrimah Freight Terminal Expansion, NT

Project Phase	Impact Type	Effect			
		Direct	Supply-Chain	Consumption	Total
Construction Year one (2025-26)	Employment (# of jobs)	45	44	33	122
Construction Year two (2026-27)	Employment (# of jobs)	90	88	65	243
Construction Year three (2027-28)	Employment (# of jobs)	61	60	44	165

Table 17: Operations jobs supported by the Berrimah Freight Terminal Expansion, NT

Project Phase	Impact Type	Effect			
		Direct	Supply-Chain	Consumption	Total
Operations per year	Employment (# of jobs)	325	218	144	687

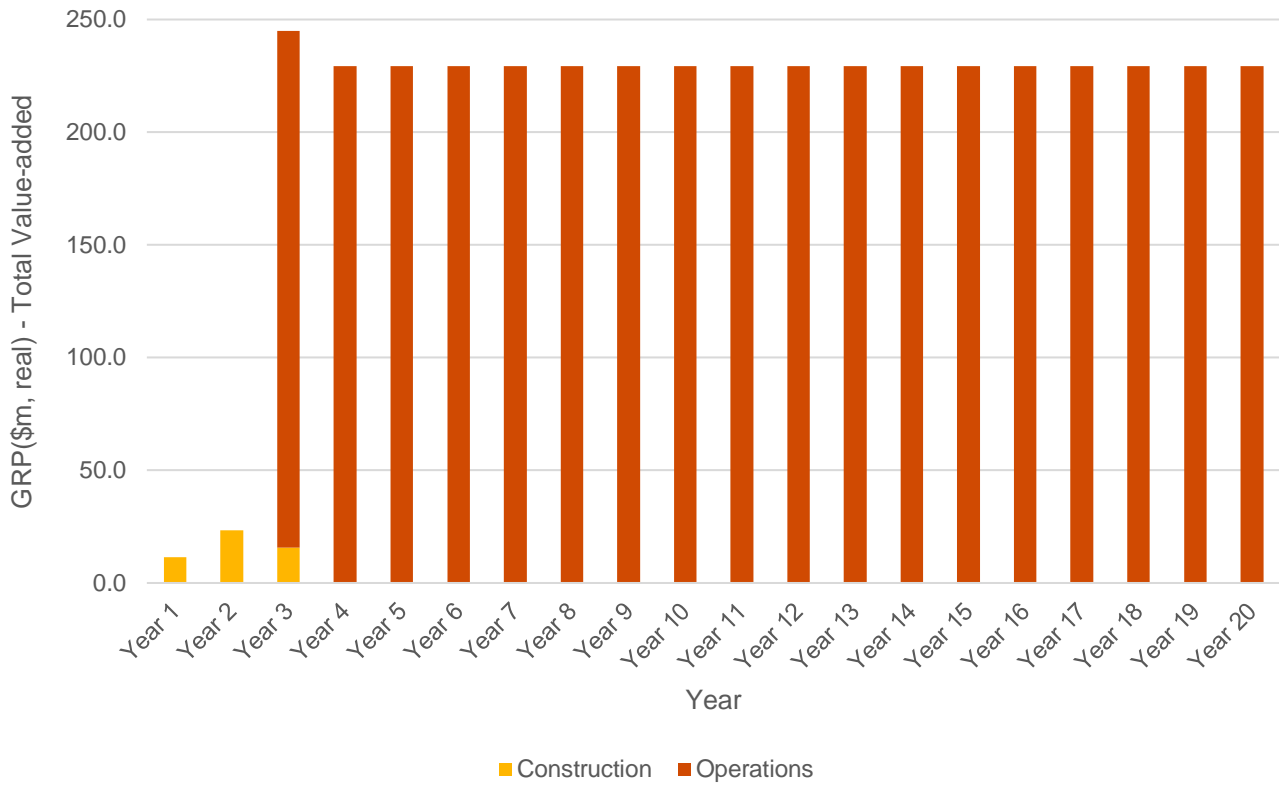
#### 4.4.2. Gross regional product

For investment of approximately \$69 million in the Darwin area<sup>58</sup> during the three-year construction period for the Project, and an ongoing operational requirement of 325 FTEs, over a 20-year period the Project is expected to contribute \$4.2 billion (real terms) to the Gross Regional Product (GRP) of Darwin, as illustrated in Figure 8. GRP is an estimate of the GVA of all producers resident in the region.<sup>59</sup> There is a small increase in GRP in the first year that construction commences (Year 1), but the most significant impacts are the result of the significant number of new positions created when the Project is fully operational (Year 3 onwards).

<sup>58</sup> As noted in Section 3.2.13.2.1, the economic impact analysis only considers expenditure in the region being assessed, as any impact from expenditure on imported goods or services will be experienced in the seller's country. It is estimated that \$69 million of a total project cost of \$100 million will be spent in the Darwin region.

<sup>59</sup> Bureau of Infrastructure, Transport and Regional Economics (March 2019), 'Measuring Gross Regional Product', available at <[https://www.bitre.gov.au/sites/default/files/Measuring\\_Gross\\_Regional\\_Product-Information\\_Sheet\\_100.pdf](https://www.bitre.gov.au/sites/default/files/Measuring_Gross_Regional_Product-Information_Sheet_100.pdf)>

Figure 8: GRP impact of the Project to Darwin



## 5. Other economic impacts

This chapter expands beyond the economic impacts factored into the input-output model, providing an overview of the unmeasured economic impacts of an expanded facility, construction of seawall and land reclamation, and development of individual sites for freight forwarding or distribution centres. Through the increased container handling capacity at the BFT, the Project will generate employment opportunities across various fields of expertise in freight and logistics, transportation, and beyond. Furthermore, the Project may promote transformative development in the production supply-chain, Indigenous employment and economic diversification. This chapter further discusses the other economic impacts stemming from the Project's integration into the economy.

### 5.1. Other economic impacts

The economic impact analysis only measures employment and contribution outcomes of the Project from input-output modelling. It does not capture the full extent of the benefits of the Project, particularly the wider social and economic impacts of a Project of this nature. To ensure these benefits are identified and considered in the assessment of this Project, these benefits have been summarised below in several categories:

### 5.2. Contribution to the NT and Australian economy

- **Value of exports and imports to the NT economy** – with its strategic proximity to Asia, the proposed terminal expansion will support the high demand driven by Japan, China and Korea for Australia's LNG and bulk mineral exports. Additionally, the East Arm Wharf expansion will enhance freight capacity in Darwin for major imports such as petroleum, dry bulk<sup>60</sup> and cement.<sup>61</sup> Its connection to critical freight corridors will support the transport of these imports to meet the needs of the NT community and economy into the future.
- **Overall tax and royalty payments** – the BFT is unlikely to be the direct cause of increased mineral extraction or production of petroleum in the NT. Consequently, the Project is unlikely to result in any additional royalty payments under the *Mineral Royalty Act 1982 (NT)* and the *Petroleum Royalty Act 2023 (NT)*.

However, the Project is expected to generate additional taxation payments to the Australian Government and NT Government over the operating life of the terminal. The Project is expected to generate taxation revenue for the Australian Government through national taxes such as company tax and goods and services tax (GST). As the project is at an early stage of development, it is difficult to estimate how the effect of national taxes would influence economic behaviour, and the structure of income and expenditure in an economy.

A number of taxes and levies applied by the NT Government, including payroll tax and stamp duties, could also be affected. For example, if the NT payroll tax rate for the 2022-23 financial year of 5.5 per cent<sup>62</sup> continued to apply to the direct wages and salaries of \$39.2 million per year, the annual payroll tax liability would be approximately \$2.07 million.

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<sup>60</sup> A solid material (either a combination of particles, granules or large pieces) shipped in large quantities.

<sup>61</sup> Darwin Port (2023), *Trade & Port Statistics*, <https://darwinport.com.au/trade/trade-port-statistics>.

<sup>62</sup> Northern Territory Government of Australia (2023), *Payroll tax*, available at <<https://treasury.nt.gov.au/df/territory-revenue-office/payroll-tax>>



- **Impact to neighbouring businesses** – the terminal expansion, coupled with the increasing investment and trade links with Asia, will provide significant opportunities for Darwin Port to work with local companies in the commodities, agri-business and general trade sectors. This will work to improve the competitiveness of the NT economy and deliver increased business for both the Port and neighbouring businesses.<sup>63</sup>

### 5.3. Contribution to employment and training

- **Indigenous employment** – not only will the Project increase direct employment in a high-value activity, it will also provide an opportunity to increase Indigenous and local employment in these areas. These opportunities may range from heavy and civil engineering construction to administrative roles and local services. The construction industry has seen the largest growth in jobs for First Nations people, increasing by more than one-third in the number of Aboriginal and Torres Strait Islander employees from 2011-2016.<sup>64</sup> Additionally, Aurizon's Reconciliation Action Plan (RAP) details the actions and deliverables that Aurizon have developed to improve the socio-economic outcomes for Aboriginal and Torres Strait Islander peoples and communities by developing opportunities within Aurizon. This includes "Careers in Action" and "Indigenous Future Leaders" programs which continue to be implemented and have resulted in an increase in the proportion of Indigenous Australians within Aurizon's workforce from 2.5% in 2012 to 6.6% in 2021. While there are no NT specific actions reflected in the current RAP, a review in the next 18-24 months will include the NT sphere of operations for Aurizon that have come as part of the One Rail Australia acquisition. Aurizon is working to increase Aboriginal and Torres Strait Islander representation within its workforce to a minimum of 7% by February 2025 and to improve from 0.9% to 1.5% in management/senior level positions.
- **Education and training** – the Project may create additional education opportunities in the high value heavy and civil engineering industry sector, as well as in the fast-growing transport, postal and warehousing sector. Partnerships with universities, TAFEs and independent training organisations offer several benefits and long-term value to the region. Participation, training and employment in this sector will not only bring positive benefits to communities now but will have lasting impacts as demand for the NT's exports increases into the future.

### 5.4. Contribution to regional development

- **Regional benefits** – the Project has the potential to provide both direct and indirect economic growth, first in the supply chain, then in the industries that add value to transport and goods before they move. Increased rail and container handling capacity can see the arrival of various businesses that support the supply chain such as terminals, logistics, consolidation, and warehousing. Additionally, the terminal expansion is likely to attract businesses (e.g., manufacturers) who add to the value of goods before they are transported. Intermodal terminals in regional centres along the rail corridor can also support regional supply chains and assist producers to gain better access to markets.<sup>65</sup>

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<sup>63</sup> Darwin Port (2016), *Port Development Plan*, [https://darwinport.com.au/sites/default/files/uploads/2017/Port-Development-Plan\\_0.PDF](https://darwinport.com.au/sites/default/files/uploads/2017/Port-Development-Plan_0.PDF).

<sup>64</sup> ABS (2016), *Aboriginal and Torres Strait Islander Census: Industry*, <https://www.abs.gov.au/ausstats/abs@.nsf/mediareleasesbytitle/142C08A784A1B5C0CA2581BF001EE22C?OpenDocument>.

<sup>65</sup> Inland Rail (2023), *Long-term economic opportunities*, <https://www.inlandrail.gov.au/benefits/long-term-economic-opportunities>.

- **Community benefits** – the terminal expansion has the potential for businesses to gather in hubs, making the most of a concentrated group of services, transport options and suppliers.<sup>65</sup> Improving rail efficiency and intermodal capacity will support rail volumes, resulting in reductions in road freight and heavy vehicle crashes. Having viable alternative transport modes increases supply chain resilience opportunities for freight movement. Improved local supply chains for consumer and essential goods will build community resilience and social benefits, supporting the living standards in Darwin and other remote and regional towns in the NT that will need to grow to support the delivery of private projects.<sup>66</sup>
- **Contribution to Indigenous communities** – the Project will support the NT Government’s Aboriginal Economic Participation (AEP) Framework to increase the involvement of First Nations people. The expansion will provide opportunities for increased Indigenous involvement in the daily operation of the terminal and ownership of Aboriginal Business Enterprises (ABE), for example, companies, sole traders, and partnerships.<sup>67</sup> Additionally, supply contract opportunities will be made available through the procurement process to locally based Aboriginal and Torres Strait Islander businesses, as required by the employment policies of the Australian and NT Governments.

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<sup>66</sup> Infrastructure Australia (2023), *Northern Territory freight rail and logistics capacity improvements*, <https://www.infrastructureaustralia.gov.au/map/northern-territory-freight-rail-and-logistics-capacity-improvements>.

<sup>67</sup> Northern Territory Government (2022), *Aboriginal Economic Participation Framework 2022-2032*, [https://aboriginalaffairs.nt.gov.au/\\_\\_data/assets/pdf\\_file/0010/1109296/aboriginal-economic-participation-framework.pdf](https://aboriginalaffairs.nt.gov.au/__data/assets/pdf_file/0010/1109296/aboriginal-economic-participation-framework.pdf).

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