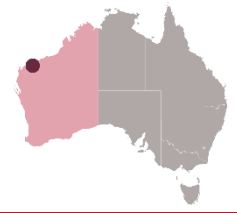


Lumsden Point development (Port of Port Hedland)



PURPOSE OF EVALUATION
Committed and funded project



EVALUATION OUTCOME¹
Funded proposal (not eligible for the Infrastructure Priority List)

**ASSESSMENT
FRAMEWORK
STAGE**



LOCATION

Port Hedland, Western Australia
Kariyarra Land

GEOGRAPHY

Developing regions and northern Australia

SECTOR

Transport

OUTCOME CATEGORY

Efficient Markets

PROPONENT

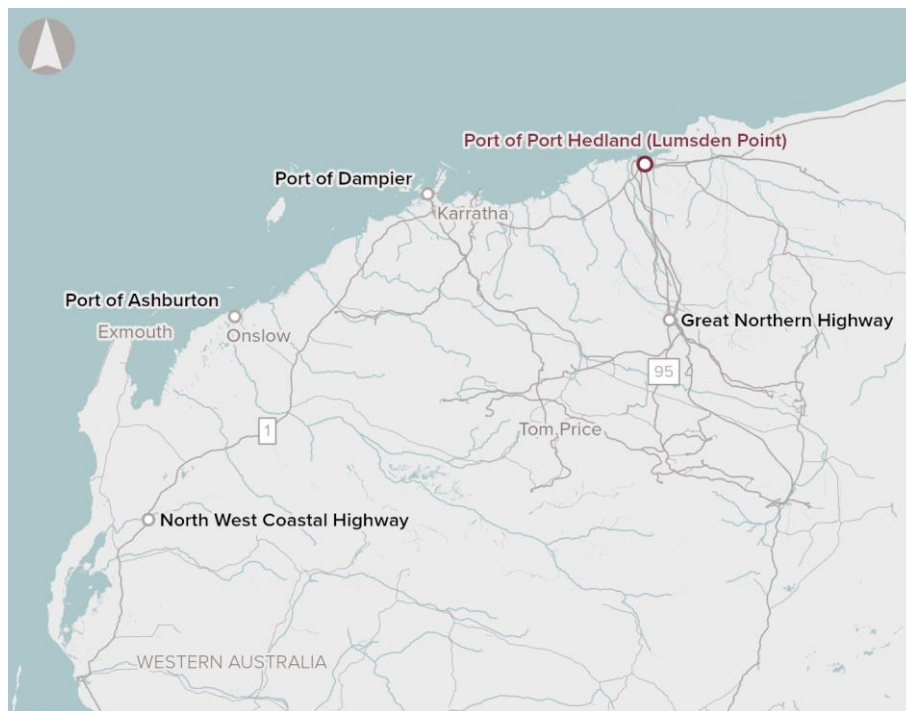
Pilbara Ports Authority (Western Australian Government Trading Enterprise)

INDICATIVE DELIVERY TIMEFRAME

Construction start: 2024
Completion by: 2026

EVALUATION DATE

6 December 2023



CAPITAL COST

\$663.4 million (P50, outturn)
\$736.0 million (P90, outturn)

FUNDING COMMITTED (P50)



Review summary

Infrastructure Australia has evaluated the business case for the **Lumsden Point development** in accordance with our Statement of Expectations, which requires us to evaluate project proposals that are nationally significant or where Australian Government funding of \$250 million or more is sought. As the project is fully funded, it is not eligible for inclusion on the Infrastructure Priority List. ²

The Lumsden Point development aims to alleviate increasing congestion and constraints on existing general cargo infrastructure at Port Hedland as well as facilitate forecast trade growth in the Pilbara. It is part of a broader project to upgrade marine and port-side common user facilities in the Pilbara, with capacity improvements also planned at

¹ Our assessments of funded proposals focus on identifying risks for delivery and realising project benefits, and highlighting opportunities for improving overall project outcomes.

² The Infrastructure Priority List only identifies those proposals which are seeking investment.

the Port of Dampier.

The Lumsden Point development provides a comprehensive response to the opportunity for increased general cargo capacity in the Pilbara region and supports the development and growth of the export of battery metals and minerals, including lithium concentrate and copper concentrate, and the import of wind turbines and solar panels to support renewable energy and hydrogen projects.

The project would reduce the volume of heavy vehicles moving through the region by providing direct shipping to the Pilbara. This will have a road safety benefit as well as less vehicle noise, vehicle emissions and vibration, benefitting local communities. The development of new industries will diversify trade and employment opportunities and the facilitation of the renewables industry will reduce the carbon emissions of the resources industry.

The proponent has identified that the project would create 101 jobs during implementation and support up to 3,500 jobs on an ongoing basis through the operation of Lumsden Point and development of new industries across the Pilbara. Half of these jobs would be located in the Pilbara.

The proponent's business case states that the net present value (NPV) of the project is estimated to be \$686.3 million with a benefit-cost ratio (BCR) of 1.51, indicating that project benefits outweigh the quantified costs, and the project represents a net benefit to society. The proponent estimates the benefits of new economic activity in the Pilbara region, including producer surplus from new export commodity developments as a result of upgraded port facilities, to be \$38 billion. We consider this estimate of unlocked economic activity to be significantly overstated. However, we do acknowledge there would be some economic growth benefits from new private investments and the potential for industry developments within the Pilbara region.

The majority of the project's benefits relate to increased capture of direct shipping trade, and the benefits of importing modular cargoes and wind turbines directly into East Pilbara to support major project development. There are also benefits to existing port users through reduced demurrage over existing berths and near port landside efficiencies.

Infrastructure Australia's evaluation found that cost increases, regulatory approvals and market-based commodity demand are key risks to the successful delivery and outcomes of the project. Project governance arrangements should focus on ensuring environmental, delivery and market capacity risks are appropriately evaluated and mitigated. Cost risks relate to the high demand for contractors to deliver infrastructure projects. If actual global demand for commodities is lower than expected, there is a risk that the increased port capacity will not be utilized and the project's benefits will not be fully realised. The procurement approach, which stages project components sequentially, may mitigate some of this risk. Engaging with customers to secure throughput would reduce some market risk, although the proponent has noted that there is limited regular trade that would be suited to take-or-pay agreements (likely only the lithium volumes), which would be insufficient to underpin the investment payback.

The business case does not assess environmental risks and impacts in detail or identify the greenhouse gas (GHG) emissions impacts from the proposal's construction and operation. As a result, the extent of environmental and emissions impacts were not able to be assessed and were not monetised in the project's cost-benefit analysis.

Proposal description

The development of Lumsden Point involves the provision of an additional deep water general cargo facility and will provide enabling infrastructure to diversify trade in the region.

The project involves:

- dredging of a deepwater approach channel, turning basin and berth pockets
- construction of seawalls and bund walls
- reclamation of 10 hectares of wharf laydown area
- construction of two multi-user berths to accommodate Handymax vessels
- procurement of shiploader and harbour cranes
- construction of common-user minerals concentrate storage sheds, including truck receipt and outload conveyors
- a logistics hub area intended to be available for a combination of common users
- an access causeway connecting the wharf area to logistics hub area
- a road corridor connecting the wharf area and logistics hub to the Great Northern Highway
- provision of security and quarantine facilities and port operations buildings
- installation of services and utilities

Further information about the project can be found at <https://www.pilbaraports.com.au/current-projects/lumsden-point>

Review themes

Strategic Fit	The case for action, contribution to the achievement of stated goals, and fit with the community.
Case for change	<p>There is increasing congestion at existing general cargo infrastructure at the Port of Port Hedland, which is creating increased ship wait times and higher demurrage costs. The proponents' wharf utilisation analysis shows that the existing infrastructure will reach capacity in the next 4 years, limiting opportunities for growth and diversification in the region. The opportunities in the region include:</p> <ul style="list-style-type: none">• Direct Shipping to the Pilbara: resulting in emissions savings and freight efficiency for general cargo as inbound freight to the region is generally transported via road trains from Fremantle in Perth, a 1,650 kilometre trip. The 5-year forecast is for 25,000 to 35,000 twenty-foot equivalent units per annum to be direct shipped. Key drivers for this growth include cargo associated with solar farms, mining and resource processing projects, tyres and tyre recycling, local consumer goods and future exports of copper cathode and lithium sulphate.• Renewable Energy Production and resource industry decarbonisation: Development of the Pilbara Hydrogen Hub³ estimates hydrogen production and exports in the Pilbara ranging from 3 to over 10 million tonnes per annum by 2050. According to the Australian Government's Clean Energy Regulator, covered facilities emissions in the Pilbara's minerals industry were just under 10 million tonnes in 2022. The need to reduce these emissions is driving demand for renewable energy investments and the need for cargo capacity at Lumsden Point in particular. There are a range of wind turbine projects proposed, such as the Australian Renewable Energy Hub (AREH).⁴ The AREH project is forecast to require 150-200 wind turbines per annum over a 10-year period. Wind turbines are extra-long cargoes imported via specialised vessels and require appropriate marine import facilities, quarantine facilities and storage areas. The nature of these cargoes means there are specific requirements to support their safe transfer and transport, particularly in respect of the wind turbine blades, which cannot be accommodated at any existing berths in the Pilbara.• Critical Minerals and Battery Metals: Western Australia is the largest lithium supplier in the world, accounting for 52% of global supply in 2021 and its lithium reserves accounted for 24% of the world's lithium reserves in 2021. An additional 2.5 million tonnes of critical minerals have been identified for export from the Pilbara region. <p>The Pilbara has been identified as a regional hub under Australia's National Hydrogen Strategy, and the 2019 Australian Infrastructure Audit identified the opportunity for further economic growth in northern Australia through natural resources, such as critical materials including lithium.</p> <p>Capacity development in the Pilbara Ports network, including Lumsden Point, was included as a Stage 1 (nationally significant problem/opportunity) proposal on the <i>Infrastructure Priority List</i> in February 2020.</p>
Alignment	<p>The Lumsden Point project has strategic alignment with local, state and Commonwealth Government policies. In particular, the project aligns to government strategies to increase renewable industries and materials, including WA Future Battery and Critical Minerals Industries Strategy (2020), WA Renewable Hydrogen Strategy (2019), Diversify WA (2019), Australia's Critical Minerals Strategy 2023-2030, forthcoming National Battery Strategy and Australia's National Hydrogen Strategy (2019). The project aligns with Pilbara Port Authority's legislative requirements under section 30 (1) (a) of the <i>Port Authorities Act 1999</i> (WA) to facilitate trade and plan for future growth and development of ports. This includes supporting lithium and copper concentrate export projects. The development is closely aligned with the vision of the town of Port Hedland and Development WA for the development of the Boodarie Strategic Industrial Area, which accommodates downstream resource processing industries related to</p>

³The Pilbara Hydrogen Hub initiative comprises, amongst other things, a hydrogen pipeline system with a transfer capacity equivalent to 2–5 Gigawatts (GW) of renewable energy, the facilitation of vocational and university-level training, and the upgrade of key infrastructure at Lumsden Point (Port Hedland). See: [Pilbara Hydrogen Hub » Pilbara Development Commission \(pdc.wa.gov.au\)](#)

⁴ The Australian Renewable Energy Hub is a private proposal to develop a 26 GW wind and solar hybrid renewable energy project, to be situated in the Pilbara region. For further detail see: [Renewable energy hub in Australia | Who we are | Home \(bp.com\)](#)

Network and system integration

Lumsden Point will operate within the network of existing ports within the Pilbara and will need to be integrated into this system. Achieving the objectives and benefits of the project relies on attaining the trade forecasts, which is dependent on the development of renewable energy and resource projects in the Pilbara region. There are also a range of related projects which are dependent on additional multi-user port capacity being developed in Port Hedland, including:

- Pilbara Hydrogen Hub: to facilitate the transport of wind turbines and related over-size over-mass (OSOM) cargo associated with renewable energy and decarbonisation projects, road access from the new berths and upgrades to the Great Northern Highway intersection are required. The Commonwealth and WA Governments have committed \$36 million towards the road upgrades .
- Boosting Australia's Diesel Storage Program: Qube Holdings Pty Ltd is the recipient of a \$33 million grant to develop a 110 million litre diesel storage and import terminal at Lumsden Point.
- Recycling Modernisation Fund: Kariyarra Aboriginal Corporation in partnership with Tyrecycle, Australia's largest tyre recycler, received a \$6.9 million grant to fund the development of a processing facility in Port Hedland with capacity to 27,000 tonnes annually of waste tyres. The repurposed waste is proposed to be loaded into containers for export to South-East Asia.

An estimated \$150 million of private investment in storage and logistics infrastructure for mineral concentrates, fuel and chemicals is proposed once new port capacity is available at Lumsden Point.

With a significant increase in ship arrivals estimated, and increased diversity of products and customers, information on the operating arrangements may require additional management and resources in several areas, for example port logistics, tugboats, commercial, general management, and safety.

The project will also rely on shipping companies providing direct services to the Pilbara, which relies on the forecasted trade volumes to be achieved.

Solution justification

The proposal to develop Lumsden Point has been in planning since 2008. In 2012, Lumsden Point was identified as the preferred location for new general cargo berths in the Port of Port Hedland Port Development Plan due to its proximity to deep water in the inner harbour and to capitalise on adjacent reclaimed land areas from previous port expansions and the realignment of the Great Northern Highway. A high-level options analysis was included in the business case which determined that Lumsden Point was the preferred option based on the ability to support forecast market demand, connectivity to the surrounding road network and the potential displacement to existing trade if other port options were selected. The information provided did not identify the process by which the preferred option was selected. The business case considers a single option.

The project proposed in 2022 included the development of a single wharf at Lumsden Point. Based on available funding and changes in market demand, the project is now proposed to include two wharves and the development of common-user minerals concentrate storage sheds, including truck receipt and outload conveyors.

Stakeholder endorsement

There is evidence of broad support for the project and that input has been used to refine the project, for example, changes to the road connection with Main Roads WA.

The proponent is a regular participant at the Community Consultation Committees and Port Hedland Industry Council forums. The Lumsden Point development has been discussed at both of these community forums, with community feedback noted and acknowledged.

The proponent has engaged with the Kariyarra Aboriginal Corporation as part of their joint venture with Tyrecycle Pty Ltd for the export of tyres and conveyor belt rubber waste through Lumsden Point. Engagement will continue with Traditional Owners as the project progresses.

The Town of Port Hedland has raised concerns with the accommodation for workers during construction and expanded operations. The local government would like the proponent to include scope in the project to build workers accommodation which could then be used following construction for longer term accommodation solutions.

Societal Impact The social, economic and environmental value of the proposal, as demonstrated by evidence-based analysis.

Quality of life The project is proposed to reduce the volume of heavy vehicles moving through the region by providing direct shipping to the Pilbara. This will have a road safety benefit as well as less vehicle noise, emissions and vibration.

The development of new industries will diversify trade and employment opportunities and the facilitation of the renewables industry will reduce the carbon emissions of the resources industry.

The latest economic analysis by the proponent identifies that Lumsden Point will create significant employment opportunities over the study period.

The project will facilitate population growth through the development of new industries, although this may put pressure on the local housing market. The town of Port Hedland has a current shortage of accommodation, resulting in it being unable to house large construction workforces.

Productivity Providing direct shipping opportunities for general cargo to the Pilbara will reduce heavy vehicle movements between the Port of Fremantle and the Pilbara. This is estimated to provide 62.3% of the project's benefits by reducing the cost of cargo movements. This reduction in cost may flow through to local community or industry in lower prices.

The facilitation of a renewables industry by providing opportunities to transport wind turbines and supporting equipment, and facilitation of renewables materials to support the renewables industries, such as lithium, will result in increased output of production activities. The proponent estimates that the benefit of this production is \$38 billion in present value terms over the appraisal period. While this value is considered to be overstated, there would be a significant economic output improvement.

Environment The project has environmental approval under Ministerial Statement 967 and consent from the Western Australia Minister for Aboriginal Affairs under Section 18 of the *Aboriginal Heritage Act 1972* (WA) for the development at Lumsden Point. An amendment to Ministerial Statement 967 to realign the causeway for the inclusion of a conveyor, pipeline and OSOM road corridor is with the Department of Water and Environmental Regulation.

Environmental impacts and risks in relation to dredging and increased truck movements during the construction (transport of quarry rock for example) were not addressed in the business case.

The project includes recognition of opportunities to increase renewable energy and to reduce vehicle emissions (3.1% of benefits identified in the economic appraisal) through direct shipping to Pilbara rather moving general cargo through the Port of Fremantle.

The proponent is currently developing a Net Zero Transition Plan in line with the WA State Government's targets of 80% reduction of government's GHG emissions by 2030 (against 2020 levels) as well as net zero for state emissions by 2050. The proponent has reported under the National Greenhouse and Energy Reporting system for over five years and has recently completed an external audit of its operational control and emissions profiles.

Due to a lack of information from the proponent, Infrastructure Australia was unable to assess the impact of emissions from project construction and operations on the Australian and Western Australian Government's net zero emissions targets. GHG emissions were not a consideration in the scoping and selection of options, and the business case does quantify the benefits of reduced levels of emissions due to changes in heavy vehicle movements. As a result, it is unclear whether the project overall will directly lead to a reduction in emissions.

Sustainability The proponent has provided the corporation's Sustainability Approach 2023, which defines the organisation's overall approach and plan to managing environmental and sustainability issues. A project specific sustainability plan has not been provided. The business case identifies sustainability strategies that have been considered for the project, which include re-use of dredge material for fill and reclamation purposes, re-design of the development footprint to reduce the area of mangrove disturbance, capture and treatment of water run-off for re-use where appropriate, consideration of waterless dust management systems on export conveyors, and solar panelling on buildings in the Lumsden precinct, to reduce reliance on traditional energy sources. Design and cost information provided does not identify if these sustainability

measures have been incorporated or costed. Low emissions materials for construction have not been identified and the business case has not measured emissions from construction.

Resilience The business case does not consider resilience in detail. The proponent considers that supply chain resilience will be improved through increased access for general cargo at Lumsden Point. The provision of general cargo facilities in the Pilbara would reduce reliance on the Port of Fremantle and ensure continuity of supply if there were access issues for transport between Fremantle and the Pilbara.

Deliverability **The capability to deliver the proposal successfully, with risks being identified and sufficiently mitigated.**

Ease of implementation The proponent proposes to stage the project sequentially, with procurement through multiple contract packages to reflect different construction methodologies and required plant and equipment. While this will allow the proponent to manage market capacity risks, it will introduce interface and project management risks that will require capable delivery expertise. The following packages (and procurement models) are proposed:

- Dredging and Reclamation (construct only)
- General Cargo Wharf, PH 5 (construct only or design and construct)
- Bulk Export Wharf, PH6 (construct only or design and construct)
- Bulk Minerals Storage Sheds and Outload conveyors (construct only)
- Port buildings and operational infrastructure (construct only)
- Materials and cargo handling equipment (harbour cranes and shiploader) will be either directly procured from suppliers or incorporated into design and construct contracts with wharf delivery

We note that the procurement approach for some packages is not finalised, and this presents an element of cost risk. The project is set to be completed in 2026 and the proponent has developed a delivery and milestone timetable.

Capability & capacity The proponent is well-equipped to deliver the project, with a track record of delivering similar port projects across the Pilbara ports network. The proponent notes that Western Australia is currently experiencing a high demand for contractors to deliver infrastructure projects. There is a risk of price increases from contractors and/or inability to secure a quality and highly competent contractor to deliver the projects. This is consistent with the findings in Infrastructure Australia's [2022 Infrastructure Market Capacity report](#).

Project governance The proponent operates as a Western Australian Government Trading Enterprise and is governed under the Port Authorities Act 1999 WA and the Government Trading Enterprises Act 2023 WA. The project will be implemented using the proponents' governance process and project delivery framework. This includes following the Project Management Framework, Risk Management Framework, Procurement Guidelines and Tendering Procedure. The tender process incorporates WA Government Procurement and Contracting Initiatives, including the WA Industry Participation Scheme, Buy Local Regional Content Policy, Aboriginal Procurement Policy and Priority Start Policy.

The proponent worked with the Western Australian Treasury Corporation on delivery options. Multiple public and private sector delivery model options were considered for the development of Lumsden Point. The analysis determined that delivery by the Pilbara Port Authority offered the highest degree of alignment with state initiatives and is better suited to accommodate the greenfield challenges of the project. Private and Hybrid (Private with capital contribution support) delivery models, where potentially viable, offered a lesser degree of alignment with State objectives.

The proponent is proposing to recover the investment in the project using normal port charges across all port users, rather than impose a dedicated capital recovery charge. Industry is contributing approximately \$80 million to the funding of the project.

Risk The proponent has identified the following key risks, although there is little detail on the reasons why these risks may eventuate:

- delays greater than 12 months due to delays with respect to funding, approvals and/or procurement for construction

- cost increases
- the project is not completed to final design and results in an inability to facilitate existing customers, new customers and trade growth.

The proponent will undertake further risk assessments regularly to review, manage and mitigate identified risks throughout the implementation phase and as the development progresses in line with their Project Management Framework.

While a risk assessment is included in the 2022 business case, only one risk is rated as high, being that Lumsden Point is not completed to final design. The business case does not provide sufficient information to mitigate this risk. Examples of other risks where mitigation measures should be developed include environmental impacts, operational or weather interruptions during construction, possible delays with approval of road intersection, and shortage of accommodation for construction workforces. For a project of this size and complexity, a more comprehensive project risk assessment should be developed, potentially as part of a report back to provide sufficient assurance to governments as the project investors. This is particularly pertinent because interagency governance arrangements for the project have been inactive since 2018.

The proponent has developed P50 and P90 costs to concept level which is appropriate for the project stage. There is a risk that detailed design will result in increased cost estimates.

There are additional operational risks that are not considered, which would undermine the project's benefits if they occurred. These include:

- Risk of not achieving trade forecasts, particularly for mineral commodities, which are subject to global demand and can experience variations based on prices and market changes.
- Risk that shipping lines will not directly service the Pilbara region based on volumes or costs.

Lessons learnt

The Lumsden Point project will be delivered in accordance with the proponent's Project Management Framework which has delivered complex major capital projects involving dredging, land reclamations, seawalls, navigation aids and marine structures in the Pilbara. The proponent notes that recent projects undertaken, which were delivered on budget, include the Hedland Tower, Channel Marker Replacement, Channel Risk & Optimisation Project, Berth 3 Deck Replacement and the Spoilbank Marina Project.

The business case does not include a benefits management plan or plans for a post completion review. We encourage the proponent to develop these plans and publish the findings of any reviews undertaken to capture the lessons learned from design and delivery for the benefit of future projects.

Economic appraisal results (preferred option)

The proponent's business case states that the NPV of the project is estimated to be \$686.3 million with a BCR of 1.51⁵, indicating that project benefits outweigh the quantified costs and the project represents a net benefit to society.

We consider the economic analysis is generally robust and a fair representation of the project. The following table presents a summary of the economic appraisal results for the preferred option considered in the business case.

	Discount rate:	4%	7% (central)	10%
Core evaluation results¹	BCR:	1.69	1.51	1.33
	NPV (\$m):	1,335.2	686.3	325.8
Key benefits measured:	The majority of the benefits reflect the expected capture of direct shipping trade, alongside the benefits of direct importation of modular cargoes and wind turbines to support major project development in East Pilbara (62.3%). There are also benefits to existing port users through reduced demurrage over existing berths (13.7%) and near port landside efficiencies (4.1%). Additional benefits associated with direct shipping, and the resultant reduction in heavy			

⁵ Using a 7% real discount rate and a P50 capital cost estimate.

vehicle trips to and from the Pilbara providing freight transported through Fremantle Port, include reduction in carbon emissions (3.1%) and road safety (1.7%).

The project identifies a range of non-monetised benefits including:

- Creating regional jobs and supporting population growth in the Pilbara region,
- Reduced long haul trucking and the improved quality of life for drivers,
- Direct shipping to Port Hedland will provide cost savings for local business and industry, and
- Reduced noise pollution from engines, air brakes, bodywork rattle and horns at properties situated close to major highways and port access roads.

Key observations and issues

The project has been assessed over a 30-year evaluation period, post construction. The project provides a positive economic outcome, although it is reliant on a significant increase in trade volumes through the Pilbara region, with the estimated throughput volume forecast to double over the next 15 years. The forecast growth is in commodities that are experiencing high demand, such as lithium spodumene concentrate and copper concentrate, to support renewable energy industries. Commodities markets are subject to global demand and often experience price fluctuations which impact on trade volumes. The benefits are also reliant on direct shipping services being provided to the Pilbara, which does carry some risk if shipping lines do not provide these services.

We consider that there is likely to be some upside benefits to the economic analysis, including:

- Inclusion of identified user costs, such as environmental remediation, road freight industry activity losses, as disbenefits rather than costs which improves the BCR.
- Removal of the port revenue impacts, both positive and negative, as these are considered financial measures and are transfers from customers to port operators and have net zero impact on economic outcomes.
- The road freight industry activity losses are likely to be overstated. Firstly, they are developed using a value-add approach which will overstate the impact. Secondly, the road freight industry could switch to alternative freight tasks, such as short haul trips servicing metropolitan freight services.
- The base economic appraisal does not include the benefits of production output. The proponent has estimated this benefit is valued at \$38 billion over the evaluation period. The estimate is based on a value-add approach, which will overstate the benefit. However, we agree that there would be a substantial production benefit associated with the development of the project.

The economic analysis has not considered climate scenarios. The impact of climate change could have both negative and positive implications for the project, for example negative impacts of sea level rise or positive impacts from increased demand for renewable energy inputs.

(1) Costs reported in this table are based on P50 cost estimates.

Project development

The Lumsden Point project has been considered for development in Pilbara Port Authority strategic documents since 2008 and has been identified as a priority project in Pilbara Port Authority's strategic planning documents since 2013. Since 2017, enabling works have progressed the staged development of Lumsden Point. These have been funded through a combination of Pilbara Port Authority's minor works program, industry contributions and works undertaken by port users. In December 2021, Pilbara Port Authority submitted a business case to the Western Australian Government. An updated business case was developed in 2022. The Western Australian Government approved \$78.1 million for initial works (seawalls, bunding walls and causeway).

The Commonwealth Budget 2022/23 committed \$565 million to invest in common user port facilities in the Pilbara to boost the region's readiness for new green hydrogen markets and its transition to renewable energy. Pilbara Port Authority provided a Project Proposal Report (PPR) to the Commonwealth Government in July 2023. The PPR includes an update to the project scope to include an additional multi-user bulk export berth and a common-user minerals concentrate export facility.

The business case explores alternative options at a high level, although they have not been explored in detail. Three options for berth capacity to service the additional demand were identified, including the use of Dampier Cargo Wharf

(DCW), upgrade of PH berth 1 and development of Lumsden Point. The process by which the options were shortlisted and the preferred option was selected is not detailed. However, Pilbara Port Authority has noted that Lumsden Point was identified as the preferred location for new general cargo berths in the Port of Port Hedland Port Development Plan in 2012 due to its proximity to deep water in the inner harbour and to capitalise on adjacent reclaimed land areas from previous port expansions and the realignment of the Great Northern Highway.

As a result, the business case only considered a single development option for Lumsden Point. The Infrastructure Australia Assessment Framework recommends considering at least two options in the business case. Without a comparison to alternative options, the appraisal does not provide certainty that the preferred option delivers the greatest benefit. A robust business case and economic appraisal would include analysis of alternative option(s).

Proposal engagement history

The Pilbara Ports Capacity proposal was added to the *Infrastructure Priority List* in February 2020 as an early-stage (Stage 1) proposal. The Pilbara Ports Capacity proposal identified potential constraints and opportunities across a network of ports including the ports of Port Hedland (Lumsden Point), Dampier and Ashburton. Lumsden Point is the first business case from the Pilbara Ports Capacity proposal to be provided to Infrastructure Australia. The proponent did not provide a Stage 2 submission for this project. As this project was fully funded at the time of the business case (Stage 3) submission, it is not eligible for separate listing on the *Infrastructure Priority List*.



Detailed economic appraisal results

The following table presents a breakdown of the benefits and costs stated in the business case.

Benefits and costs breakdown

Proponent's stated benefits and costs	Present value (\$m, 2022/23)			% of total for 7% results
	4%	7%	10%	
Costs				
Total capital costs (P50)	\$495.6	\$462.5	\$430.9	34.3%
Operating costs	\$59.6	\$36.9	\$24.1	2.7%
Maintenance costs	\$105.1	\$51.1	\$24.9	3.8%
Lost domestic freight activity	\$1,024.6	\$628.5	\$407.8	46.7%
Lost port revenues	\$257.4	\$166.1	\$113.7	12.3%
Environmental remediation costs	\$2.2	\$1.3	\$0.8	0.1%
Total costs^{1,2}	\$1,944.5	\$1,346.4	\$1,002.2	100%
Benefits				
Cargo import cost reduction	\$2,065.3	\$1,266.9	\$822.1	62.3%
Near port freight efficiencies	\$133.4	\$82.5	\$53.9	4.1%
Carbon emissions reduction	\$106.6	\$63.0	\$39.2	3.1%
Reduced road safety issues	\$57.9	\$35.3	\$22.8	1.7%
Reduced demurrage risks	\$427.9	\$278.5	\$186.9	13.7%
Improved port revenues	\$488.5	\$306.4	\$203.3	15.1%
Total benefits¹	\$3,279.7	\$2,032.7	\$1,328.0	100%

Net present value (NPV)³	\$1,335.2	\$686.3	\$325.8	n/a
Benefit-cost ratio (BCR)⁴	1.69	1.51	1.33	n/a

Source: Proponent's cost-benefit model

- (1) Totals may not sum due to rounding.
- (2) Costs reported in this table are based on P50 cost estimates.
- (3) The net present value is calculated as the present value of total benefits less the present value of total costs.
- (4) The benefit-cost ratio is calculated as the present value of total benefits divided by the present value of total costs.