



Port of Karumba

Preliminary Business Case

Prepared for Gulf Savannah Development
January 2026





01 Background & Purpose

Regional Economic Advisory Pty Ltd (REA) and Civil IQ have been engaged by Gulf Savannah Development (GSD) to develop a Preliminary Business Case for the sustainable development of the Port of Karumba (PoK).

The PoK is a critical regional asset, exporting zinc from the Sibanye-Stillwater (former Century mine) tailings retreatment operation, the shipment of general cargo for the surrounding Gulf communities, and has historically facilitated live cattle exports.

The Preliminary Business Case considers the financial viability of various development options, the economic impacts during development and once operational, and the long-term socio-economic benefits it will provide to the Gulf Savannah community.

The findings of this Preliminary Business Case will be used by GSD and regional stakeholders to advocate for investment and progress the development on this key strategic and economic asset.



Disclaimer

All care and diligence has been exercised in the preparation of this report. Forecasts or projections developed as part of the analysis are based on adopted assumptions and can be affected by unforeseen variables. Consequently, Regional Economic Advisory Pty Ltd gives no warranty that a particular outcome will result, and the authors accept no responsibility for any loss or damage that may be suffered as a result of reliance on this information.

02 Current Operations

The PoK is located at the mouth of the Norman River in the south-east corner of the Gulf of Carpentaria. PoK is currently managed by Ports North and has serviced remote Gulf communities since the late 1800s.



PoK facilitates the export of zinc from the Sibanye-Stillwater tailings retreatment operation. Zinc concentrates are transported to the PoK via a 304-kilometre underground slurry pipeline and are dewatered using Sibanye-Stillwater facilities at the Port. Once dewatered, the mineral concentrate is transported via a transfer vessel (the MV Wunma) to export ships anchored in a designated area 45 kilometres offshore in the Gulf of Carpentaria.

The Sibanye-Stillwater zinc tailings retreatment operation has a current estimated mine life to 2027, though the economic feasibility of further deposits (including the PhosOne joint venture project) is continuing to be assessed as potential stand-alone, life-extension projects. Under the current arrangement, Ports North will continue to maintain the channel depth over the lifetime of the Sibanye-Stillwater project.

Other key roles of the PoK include the shipment of general cargo. PoK serves as a transshipment port for the Port of Weipa and other Gulf communities, including Mornington Island, with refrigerated semi-trailers bringing goods north to Karumba for transshipment.

Facilities

The port incorporates the dewatering and storage facility for the Sibanye-Stillwater operations. A privately owned barge ramp and associated consolidation area is available for use for project logistics shipments.

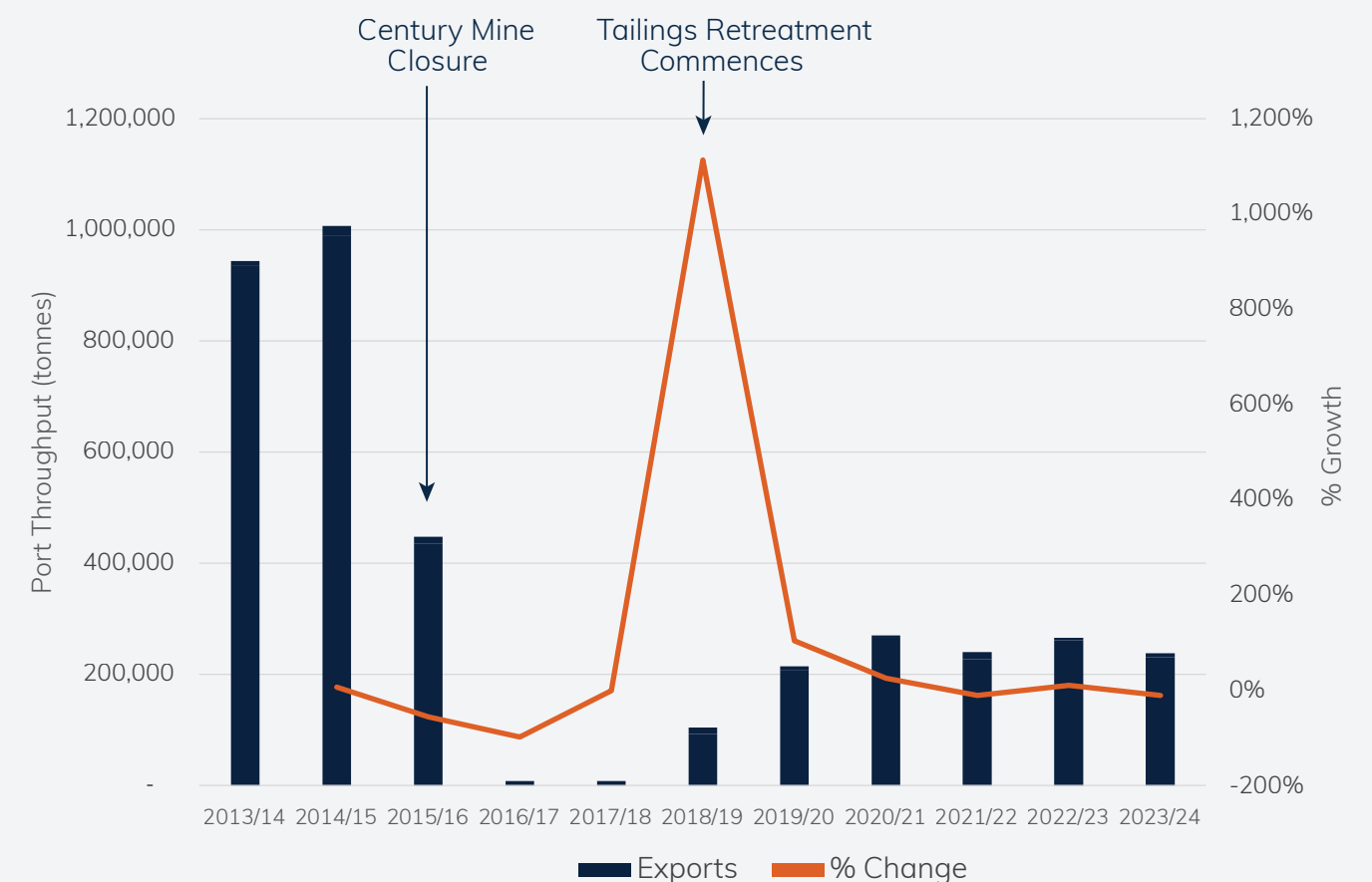
Other facilities in the Port provide for general cargo, fuel and fisheries' products (notably these facilities are privately owned and are not on Ports North land).

Because of the isolation of the Port, there are significant areas of land directly adjacent to the port facilities and across Yappar Street for the storage of project freight. There are also a number of sheds available for covered storage of equipment.

Trade Volumes and Mix

Volumes through the PoK have declined significantly since the initial closure of Century mine in 2015, which was previously one of the world's largest zinc operations, with historical throughput of circa 1 million tonnes of zinc concentrate.

The current tailings reprocessing operations has recovered volumes to around 25% of previous levels.





03 Future Development Scenarios

The future development scenarios allow for consideration of both immediate development opportunities (Scenario 1) and longer-term economic growth opportunities which have significant policy and infrastructure requirements beyond the development of the PoK (e.g. irrigated agriculture which requires dam infrastructure and notable amendments to the Gulf Water Plan).

Based on extensive regional consultation with project proponents, Ports North and the broader project working group, four future scenarios were developed to consider the sustainable development of the PoK.

Development Scenarios

Baseline Scenario

The closure of Sibanye-Stillwater's zinc tailings operations (currently planned by FY2027) with no transition of the site or assets to a new operator.

These impacts not only result in significant rehabilitation costs but preclude the future use of the infrastructure to facilitate new developments. This scenario forms the baseline that the alternative future development options are considered against.

Scenario 1: Transition to PhosOne

The Sibanye-Stillwater zinc tailings operation transitions to the PhosOne project (1MT of phosphate fines via the slurry pipeline) after a circa 18-month transition to refit the facilities for the transport and processing of phosphate.

Scenario 2: Regional Phosphate Supply Chain

Considers the potential for additional mining opportunities to also utilise the PoK, given the investments made to unlock the PhosOne operations, increasing production to circa 3MT per annum.

Scenario 3: Long Term Sustainable Development

Explores the longer term/diversified economic development opportunities which could be unlocked through the PoK. Developments within Scenario 3 include:

- » The regional phosphate supply chain established in Scenario 2.
- » Expanded irrigated and dryland cropping (cotton, chickpeas, grains) and associated agricultural processing for export via the PoK.
- » Establishment of a small cruise ship industry through the PoK expanding and diversifying the regional tourism offer.
- » Development of import facilities to service local needs and key inputs (e.g. sulphuric acid) for the regional mining industry.

Note: The feasibility of logistics solutions including a potential second pipeline from the PhosOne mine to Sibanye-Stillwater's Lawn Hill processing facilities are currently under investigation by the PhosOne joint venture partners.



04 Infrastructure Requirements

Realisation of the future development scenarios will require substantial investment in supply chain infrastructure. Preliminary scoping of infrastructure requirements have been undertaken by Civil IQ and are summarised in this section, which also includes a summary of the financial appraisal and the economic impact assessment.

Phosphate	Scenario 1	Scenario 2	Scenario 3	Timing (FY)	Direct Project Capital	Additional Supply Chain Capital ¹	PoK Throughput (Capacity p.a.)	Annual Turnover (\$25/26)
PhosOne	✓	✓	✓	Construction 2027 Operation 2029	\$700M	PoK Dredging \$15M	1MT	\$450M
Korella		✓	✓	Construction 2029 ² Operation 2031	Allow \$30M	Laydown Area \$35M Common User Facility - Export \$70M Barge Handling Facilities \$17.5M Road Upgrades \$335.8M	Initial 0.2 MT (Potential Production up to 2.25MT)	\$90M
Ardmore ³		✓	✓	Construction 2029 Operation 2031	Allow \$20M	Road Upgrades \$5.4M	0.65MT	\$281M
Other Opportunities								
Regional Agriculture Expansion			✓	Road Construction 2030/31 Ag Construction 2032 Operation 2035	Gilbert River Dam \$1.1B On Farm Capital \$1.25B Cotton Gin \$42M	Gilbert River Bridge & Embankment Raising \$100M Norman River Crossing of Gulf Developmental Road \$100M	200k Cotton Bales 116kT Chickpeas 260kT Grains	Cotton ⁴ \$137M Chickpeas \$99M Grains \$109M
Small Cruise Ship Tourism			✓	Construction 2036 Operation 2037	n/a	Passenger & Bus Terminals \$7M	Initial target up to 12,880 visitors p.a. ⁵	Visitor Spend \$3M
Regional Imports			✓	Construction 2029 Operation 2031	n/a	Import Wharf \$60M	100-500kT Elemental Sulphur p.a.	Considered from Port revenue perspective

¹ Additional supply chain costs are included with the first project within the scenarios to utilise the infrastructure (see full report for detail).
² Consultation indicates that the Chatham Rock Phosphate Project could occur earlier and modelled timeframes should be considered conservative.
³ Included for illustrative purposes only, new owners PRL Ardmore do not plan to export via the PoK.
⁴ Includes ginning returns of \$80/bale in addition to grower returns. ⁵ Aspirational, long term industry target.



GULF SAVANNAH ROAD INFRASTRUCTURE UPGRADE

The Port of Karumba Preliminary Business Case spans over 1,000 km of sealed and unsealed roads, many requiring upgrades to improve access and safety. The network includes numerous causeways, bridges, and culverts, with several shared and unique routes to be assessed in more detail. Distances and cost estimates are indicative and subject to further planning, costing and design.

Korella - Karumba

- Sealed Roads: 616km
- Unsealed Roads: 10km
- Major Crossings: 2

Ardmore - Karumba

- Sealed Roads: 632km
- Unsealed Roads: 55km
- Major Crossings: 2

PhosOne - Karumba

- Options for pipeline transport to PoK are currently under investigation

Avenira - Karumba

- Sealed Roads: 934km
- Unsealed Roads: 10km
- Major Crossings: 2

Walford Creek - Karumba

- Sealed Roads: 631km
- Unsealed Roads: 20km
- Major Crossings: 2

Etheridge Agricultural Opportunity

- Norman River Crossing
- Gilbert River Crossing

4.1 Financial Appraisal

A preliminary financial appraisal was undertaken for key potential costs involving the PoK and broader potential State Government input into the supply chain.

Port Costs

To achieve cost recovery (annual nominal operating costs and 20-year recovery of initial dredging capital), the project requires an annualised payment of:

- » **\$6.6 million in Scenario 1 (PhosOne operations)** equates to a cost of \$7.6 per tonne of projected phosphate shipped over the 20-year analysis (incorporating initial capital development time and ramping up of operations to 1MT p.a.).
- » **\$7.2 million in Scenario 2 (Regional Phosphate Supply Chain)** equating to an average cost of \$4.7 per tonne of phosphate across PhosOne, Ardmore, and Korella (initial production).
- » **\$11.1 million in Scenario 3 (Long-Term Sustainable Development)** equating to an average cost of \$4.5 per tonne of imports/exports (or cubic metre for cotton exports).

PoK Financial Appraisal Results
Capital Subsidy (20 years from FY2027)

		0%	25%	75%
Levelised Costs p.a. (\$M)	Scenario 1	\$6.6	\$6.4	\$6.0
	Scenario 2	\$7.2	\$7.0	\$6.6
	Scenario 3	\$11.1	\$10.9	\$10.5
Levelised Costs \$Per Tonne/Cubic Metre	Scenario 1	\$7.6	\$7.3	\$6.9
	Scenario 2	\$4.7	\$4.6	\$4.3
	Scenario 3	\$4.5	\$4.4	\$4.2

Subsidisation of the initial capital dredging costs between 25% and 75% would have a modest impact on cost recovery outcomes reducing payments by up to \$600,000 per year.

Road Access Costs

Costs over 20 years equate to circa \$400 million to support the regional phosphate export supply chain (Scenario 2), rising to just under \$640 million for Scenario 3 with the inclusion of the Norman River Crossing of Gulf Developmental Road and Gilbert River Bridge raising.

Net Present Value (NPV) of Road and Bridge Upgrade Costs (20 Years)
Discount Rate of 6%



Road Ownership

The mix of road upgrades are roughly evenly split between Local Government (at level causeway crossings, bridges and/or culverts along PhosOne’s preferred export route) and State assets under Scenario 2.

The mix changes to approximately 70/30 State assets with the inclusion of the Norman River Crossing of Gulf Developmental Road and Gilbert River Bridge raising in Scenario 3.



4.2 Identified Risks

Operating Costs for Phosphate Producers

Key operating costs including the PoK dredging, transport, and energy are notable challenges for phosphate production: which is typically a high volume/lower value commodity subject to significant market volatility.

A circa \$10/tonne subsidy, similar to the incentives offered to junior phosphate miners on the Mount Isa to Townsville Rail Line, is shown to cover the PoK dredging costs and substantially improve operational viability.

Potential for Increased Dredging Requirements

Potential for increased dredging requirements as volumes increase from Scenarios 1-3 which have been identified by Civil IQ within this analysis and are under more detailed investigation by Ports North.

Seasonal Road Closures Impacting Operations

Even with the substantial upgrades road access between Normanton and PoK will remain subject to periodic closures during the wet season. Operations (beyond using the Sibanye-Stillwater slurry pipeline) will need to factor in strategies for stockpiling and staff management around the circa 9-month operating window.

Broader Opportunities Requiring Policy Shift

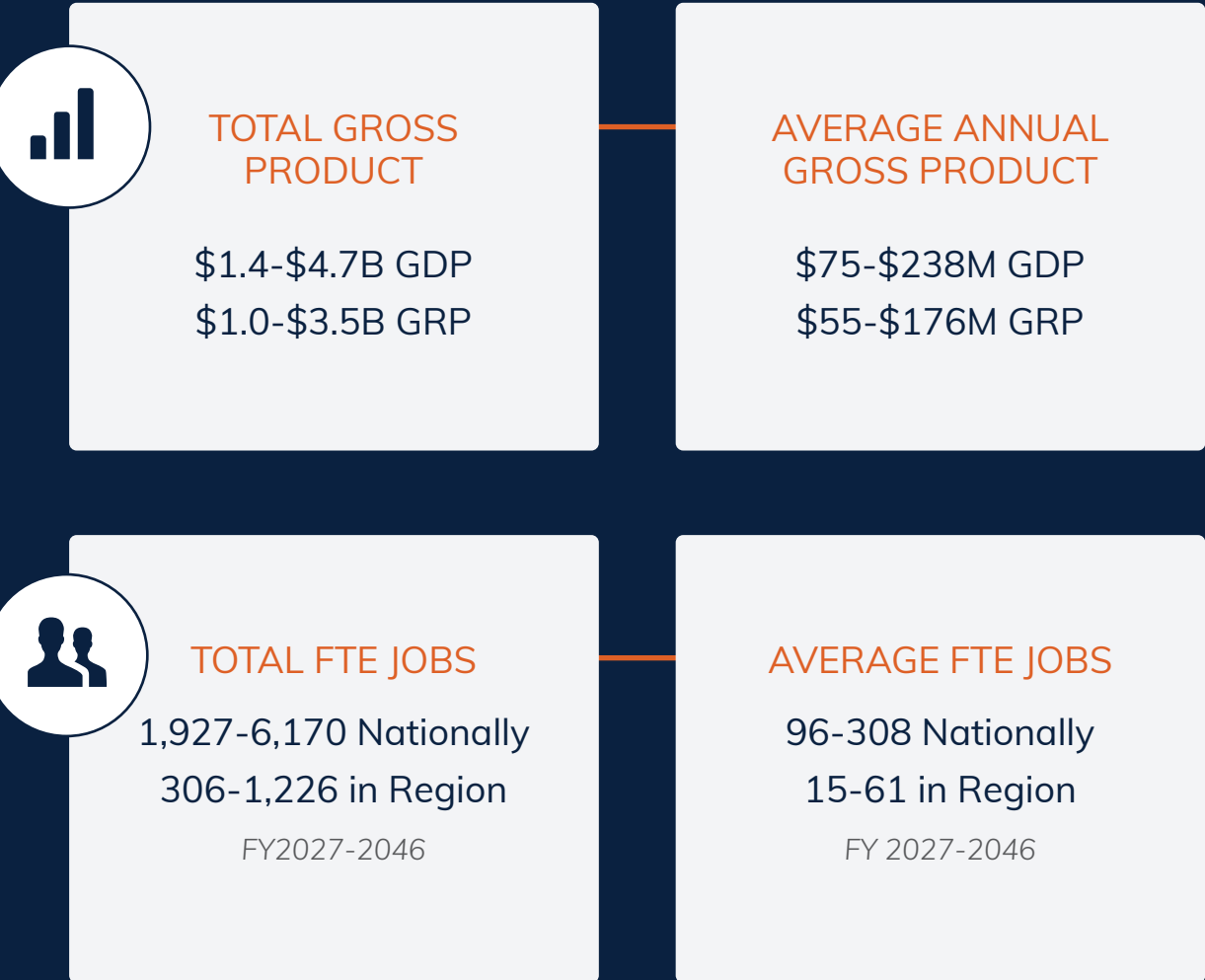
Broader opportunities including irrigated agriculture are reliant on substantial policy (unlocking additional water allocations under the Gulf Water Plan) and infrastructure (e.g. Gilbert River Dam) requirements beyond the scope of the PoK. The timing and likelihood of these developments are subject to significant uncertainty.



4.3 Economic Impact Assessment

Economic Impacts

Each of the scenarios is projected to have extensive economic impacts to the catchment region economy modelled over a 20-year period. The economic activity captures both one-off construction and ongoing operational impacts.



Construction Impacts (2027-46)
(Total Scenario Development)

		 Total Gross Product	 Average Annual Gross Product	 Total Employment	 Average Annual Employment
		(\$M)	(\$M)	(FTE)	(FTE)
Scenario 1					
	Region	\$1,093	\$55	306	15
	Rest of Queensland	\$470	\$24	2,661	133
	Rest of Australia	-\$78	-\$4	-1,040	-52
Scenario 2					
	Region	\$1,970	\$98	490	24
	Rest of Queensland	\$720	\$36	4,154	208
	Rest of Australia	-\$146	-\$7	-1,638	-82
Scenario 3					
	Region	\$3,527	\$176	1,226	61
	Rest of Queensland	\$1,579	\$79	8,603	430
	Rest of Australia	-\$335	-\$17	-3,659	-183

Note: totals may not sum due to rounding.

4.4 Cost Benefit Analysis

The preliminary Cost Benefit Analysis (CBA) assessed the following costs and benefits for each of the identified scenarios with results summarised here at the chosen discount rate of 6%.

Costs

- » Capital Costs
- » Ongoing operational/maintenance costs
- » Environmental costs associated with dredging and project operations

Benefits

- » Economic activity unlocked through the scenarios
- » Residual value of long-life infrastructure

Scenario 1 PhosOne	Scenario 2 Other Phosphate Exports	Scenario 3 Ag, Tourism, Imports
NPV of \$104.8 million	NPV of \$190.1 million	NPV of -\$262.5 million
BCR of 1.1	BCR of 1.1	BCR of 0.9
IRR of 8%	IRR of 7.9%	IRR of 4.7%

Supplementary Benefits

In addition to the significant socio-economic benefits measured within the CBA, the scenarios will unlock a range of positive impacts and avoided costs which have not been quantified in this preliminary assessment.

Decommissioning of SSW assets under the Base Case:

Will result in the loss of billions of dollars in productive assets to the region in addition to the financial cost of decommissioning.

Flow on benefits of infrastructure investments for other industries:

An increase in port depth will support other key regional industries (notably fishing and developing regional imports) by allowing access to larger vessels.

Benefits of an increase in business confidence:

Each of the future scenarios will underpin business and investment confidence in the GSD region and likely support future rounds of investment as a key growth catalyst.

CBA Results

The CBA highlights that each of the scenarios has the potential to return a positive net socio-economic benefit to the State of Queensland compared to the Base Case (though each are sensitive to the discount rate applied). Scenario 2 returns the highest NPV, with substantial, additional benefits from new mining operations unlocked leveraging the infrastructure investment made in Scenario 1.

		PV* Costs (\$M)	PV Benefits (\$M)	NPV (\$M)	BCR
Scenario 1	4%	\$948.0	\$1,193.3	\$245.4	1.26
	6%	\$908.2	\$1,012.9	\$104.8	1.12
	10%	\$848.3	\$764.9	-\$83.4	0.90
Scenario 2	4%	\$1,513.3	\$1,965.6	\$452.3	1.30
	6%	\$1,455.2	\$1,645.3	\$190.1	1.13
	10%	\$1,366.3	\$1,205.2	-\$161.1	0.88
Scenario 3	4%	\$3,887.5	\$4,070.1	\$182.6	1.05
	6%	\$3,560.0	\$3,297.5	-\$262.5	0.93
	10%	\$3,041.4	\$2,267.9	-\$773.4	0.75

While the NPV & BCR returns are lower, Scenario 3 returns the highest PV of benefits of \$3.3 billion, with broader agricultural and tourism development driving long term growth in the Gulf Savannah region.

* Present Value (PV)

05 Recommendations & Next Steps

It is recommended that the analysis move to a Detailed Business Case, with a focus on the nearer term development of a phosphate supply chain utilising the PoK, and specifically the PhosOne project which has substantial operational synergies leveraging the existing export infrastructure (Scenario 1).

The broader port-side and access infrastructure required for the Scenario 1 development will also support the broader identified opportunities within the Preliminary Business Case as they advance and mature.

Progression of this project to a Detailed Business Case requires a more comprehensive assessment across all criteria associated with developing the PoK, the underlying private development opportunities, and associated leading infrastructure requirements.



Engineering & Design Considerations

- » Analysis of all key inputs
- » Design and operating principles
- » Design complexity
- » Interdependencies of design elements
- » Use of benchmarking data
- » Sequencing requirements
- » The level of resources/ effort used to inform design and cost estimates
- » Assurance activities
- » The assessment of risk and uncertainty including sensitivity analysis



Critical Investigations

- » Evaluation of the viability of the highest ranked scenario/s from this Preliminary Business Case.
- » Provision and review of current maintenance dredging permits and Environmental Authorities with the State and Federal Governments.
- » Confirmation and agreement of maintenance dredging depths and requirements including all approvals in coordination with Ports North, associated stakeholders, and State and Federal Government requirements and legislation.
- » Provision and review of current environmental activities including seagrass, water, sediment, turtles and dugongs, and biosecurity.
- » Development of significant State and Federal Government environmental assessments and approvals.
- » Confirmation and agreement of shipping and vessel sizes for all PoK activities.
- » Confirmation and agreement of vehicle sizes and frequency.
- » Targeted geotechnical investigations, factual and interpretative reporting for PoK laydown area, material sources and quarries, and road locations.
- » Critical assessment of road networks and accurate determination of scope for sealed/unsealed roads, including condition assessments, reconstruction, widening, raising, geometry, causeways, and culverts/ bridges.
- » Determination of agreed vision for flood immunity for the new supply chain.
- » Undertake flood modelling for agreed crossings and floodplains to determine flood immunity requirements and proposed raising and widening of roads, culverts, causeways, bridges, etc.
- » Documentation of assumptions and limitations associated with development of engineering, infrastructure and cost estimates.



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**Queensland
Government**



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