

CROSS RIVER RAIL PROJECT BUSINESS CASE

COST BENEFIT ANALYSIS SUMMARY

June 2016



1.1 Introduction

Section 17(1)(a) of the *Building Queensland Act 2015* (the Act) requires that Building Queensland publish a summary, as approved by the Board of Building Queensland, of each Cost Benefit Analysis (CBA) undertaken as part of the development of any business cases that Building Queensland leads.

The following table provides a summary of the key project details.

PROJECT NAME	CROSS RIVER RAIL	
Location	Brisbane city rail network	
Project Owner	Department of Transport and Main Roads	
Delivery Agency	Cross River Rail Delivery Authority (proposed)	
BCR	1.21 (P50)	1.12 (P90)
Estimated Cost of Delivery	\$5.4b	
NPV	\$996.0m	
Estimated No. of Jobs Per Annum	1,547 FTEs (during construction)/576 FTEs (post-construction)	
Productivity Gains	CBA—Work related benefits	\$865m
	Wider Economic Benefits	\$1,209m

1.2 The Cross River Rail Project

In February 2016, the Queensland Government requested that Building Queensland lead the development of a business case for the Cross River Rail project, in conjunction with the Department of Transport and Main Roads.

The Cross River Rail project would deliver a new north-south rail connection across the Brisbane River. It would provide congestion relief on the rail network and rail service access to new locations near the Brisbane CBD. It would also provide a significant city-building opportunity in the Brisbane core from Dutton Park to Bowen Hills.





The project would provide a new 10.2 kilometre rail connection and a second inner city rail river crossing. The major capital elements include:

- twin 5.9 kilometre tunnels, entering a southern portal north of Dutton Park station, travelling under the Brisbane River and Brisbane CBD before exiting the northern portal south of the Exhibition station
- four new underground stations at Boggo Road, Woolloongabba, Albert Street and Roma Street
- two upgraded stations at Dutton Park and the Exhibition Showgrounds
- northern surface works consisting of a new track from the portal around the Exhibition Loop and through to Mayne Yard
- provision for additional stabling at Mayne North Yard
- European Train Control System Level 2 (ETCS L2) installed inside the tunnels
- enabling works (including bi-directional signalling from Dutton Park to Salisbury stations and southern platform faces).

1.3 The Business Case

The Cross River Rail business case was developed utilising the Building Queensland Detailed Business Case – Template and Guide, Cost Benefit Analysis Guide and Social Impact Evaluation Guide. The business case assessed the feasibility of constructing the Cross River Rail project to provide greater railway capacity on the inner city network, which in turn would facilitate a more extensive rail network and more frequent rail services.

Key benefits identified in the business case include:

- an additional rail crossing under the Brisbane River near the Brisbane CBD
- more railway capacity to significantly improve and increase rail services across the SEQ network
- less-congested roadways
- city-building opportunities at Woolloongabba, the Brisbane CBD and Bowen Hills.

The Queensland Government approved the business case in June 2016.

A detailed economic appraisal was undertaken for the project as part of the business case. It was developed to inform the type and magnitude of project beneficiaries and costs.

1.4 CBA Methodology

Section 14(3) of the Act requires the CBA to be prepared using a method, approved by Building Queensland that enables any infrastructure proposal to be compared.

A detailed CBA was undertaken as part of the business case to test the project's economic viability. CBA is universally applied to investment decision making for infrastructure in Australia. Its principles are accepted as the most appropriate tool to measure the direct contribution to economic and social objectives. It measures the direct impacts of public sector investment relative to whole-of-lifecosts.

In this regard, CBA provides a common and consistent way of evaluating investment cases where the tools are applied uniformly across projects. CBA seeks to demonstrate the efficiency and productivity gains to be generated from investing in infrastructure by quantifying the net impacts to society at large.



The CBA framework used to develop the economic appraisal for the Cross River Rail project follows guidance set out and contained within industry accepted economic appraisal guidelines, adapted to project specific parameters. These guidelines include:

- **The National Guidelines for Transport System Management (NGTSM), 2015.** These guidelines are currently being updated from earlier revisions in 2006. Guidance contained within the NGTSM (2015) has been utilised as the preferred source of contemporary economic values.
- **Cost Benefit Analysis Guide: Supporting Business Case Development, Building Queensland, April 2016.**
- **Infrastructure Australia, 2013. Reform and Investment Framework.** While these guidelines do not provide specific monetary unit values and parameters for use in the economic appraisal, the economic appraisal has been developed in accordance with the principles identified in the framework (including, for example, the discount rate and sensitivity analysis).
- **Austrroads, 2012. Guide to Project Evaluation: Parts 1–8.** The Austrroads’ suite of evaluation guidelines sets the foundation for transport appraisal in Australia. Principles adopted from these guidelines have been used where they are not covered in the NGTSM.

The CBA valued the economic benefit of increased rail network capacity and reliability, compared to the capital, operational and rollingstock costs.

1.5 Assumptions

The key assumptions used in the Cost Benefit Analysis include:

CROSS RIVER RAIL ECONOMIC APPRAISAL ASSUMPTIONS		
PARAMETER	ASSUMPTION	SOURCE
Discount rate	A central rate of 7% (real). Sensitivities provided at 4% and 10 %	Infrastructure Australia
Price year	December 2015	Adopted from cost estimates developed by the Cross River Rail Project Cost and Risk Advisor
Evaluation period	30 years of benefits post construction	NGTSM (2015)
Indexation	Unit costs and parameter values indexed from the price year by the Consumer Price Index (including sub-categories as appropriate) and Producer Price Index.	Australian Bureau of Statistics (2016)
Unit costs	Adopted from NGTSM and related sources	NGTSM (2015)

Transport user benefits are calculated in accordance with the national appraisal guidelines referred to in Section 1.4 above.

1.6 CBA Results

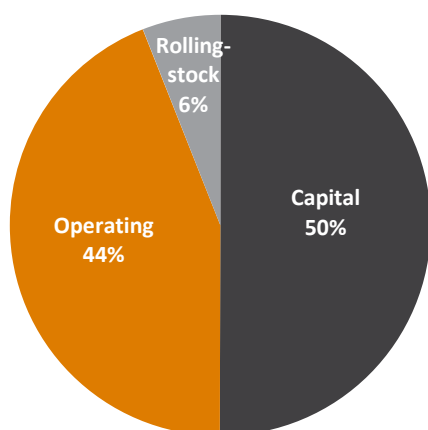
The CBA demonstrated a positive economic return in excess of the project’s whole of life costs, with the Cross River Rail project returning a Benefit Cost Ratio (BCR) of 1.21. The Net Present Value (NPV) of the Cross River Rail project is \$996million.



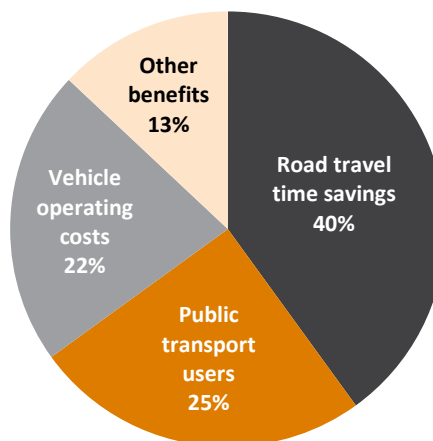
The CBA establishes that the Cross River Rail project delivers benefits to public transport, road users and the wider community.

The relative proportions of the elements of project benefits and costs are illustrated in the following charts.

Cross River Rail Project Costs



Cross River Rail Project Benefits



1.7 Gross State Product and Wider Economic Benefits

Cross River Rail is expected to contribute \$3.28 billion (present value, 7%) to the Gross State Product over the evaluation period. The project is also expected to support 1,547 direct and indirect full-time equivalents (FTEs) during construction and 576 FTEs during operations, per annum.

An estimated \$1,209 million (present value) of wider economic benefits are attributable to the Cross River Rail project.

1.8 Productivity Gains

Consistent with the requirements of s14(2) of the Act, the business case identifies the productivity gains that are anticipated from the project.

Well-targeted transport investment results in significant, long term productivity benefits for local, regional and national economies. Productivity is the efficiency of transforming inputs (including capital and labour) into outputs (goods and services).

Reduced transport costs result in a reduction in costs of doing business, lowering the costs of production and increasing the efficiency of business interactions.

Productivity gains for the Cross River Rail project have been derived by identifying work related benefits as a sub-set of the benefits identified in the CBA in the order of \$865 million (present value) and wider economic benefits of \$1,209 million for a total productivity gain of \$2,074 million.

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