

Projects

Barron River Cost-Benefit Analysis

Cost-Benefit analysis to support project option decision making



LOCATION

Cairns

CLIENT

Department of Transport and Main Roads

Cost-benefit Analysis

Background

The Barron River Bridge is a vital link in the transportation network as alternative routes are significantly longer, making access to Cairns challenging. The Barron River bridge planning project aims to explore long-term, sustainable solutions for the bridge located near Kuranda. Inspections of the bridge in 2020 revealed fatigue cracks in certain steel components of the bridge due to decades of exposure to heavy vehicle loads.

Since then, load limits have been imposed on the bridge, with periods of single lane operation being required. Ongoing monitoring and testing have been required to assess the bridge's condition and uphold safety standards. While the bridge has returned to two lane operation, the existing structures are not suitable for use into the future.

NineSquared was engaged by the Department of Transport and Main Roads to undertake a cost-benefit analysis of various long-term solutions for the bridge.

Our role

NineSquared undertook the cost-benefit analysis at the Preliminary Evaluation and Business Case stages of the planning process.

At the Preliminary Evaluation stage, a rapid cost-benefit analysis was undertaken to help identify preferred options from an initial shortlist. Key to this assessment was understanding the condition of the structure into the future and the associated impacts to the community. This included consideration of load limits on the bridge which require heavy vehicles to divert, having single lane operations which delays road users, or closing the bridge for periods to ensure the required maintenance works are able to be undertaken. Another key consideration was the cost of maintaining the existing structures and whether ongoing maintenance of the structure is a viable alternative.

At the Business Case stage, a detailed cost-benefit analysis was undertaken to inform an investment decision. The cost-benefit analysis was driven by NineSquared's Cost-Benefit Analysis Tool for Transport.

This analysis captured impacts such as improvements in travel time, changes in vehicle operating costs, safety improvements, environmental impacts, and reliability improvements. Modelling was undertaken on various vehicle classes as the potential impact differs greatly. Scenario modelling was also undertaken to determine the impact to community should the structure deteriorate at a different rate than expected. This helped inform a risk analysis and, ultimately, the investment decision for Government.

Project Outcomes

NineSquared provided a report which documented the approach taken, the headline results and key findings of the analysis. Recommendations for future analysis and considerations to be made during design were also provided. Insight was provided as to the timing of the upgrade, as the impact on the local community is particularly great should the structural concerns worsen.

FOR FURTHER INFORMATION

For more information, find one of our experts at ninesquared.com.au/people