

The primary revenue source for the project was expected to be toll fees. Additional income would come from hotels, restaurants, gas stations, and a viewing tower located on a platform in the middle of the bridge. Based on the feasibility studies, the project was expected to recover the capital cost in 15 years with a return on investment (ROI) of 12.58 percent (including construction period).^f 12.58 percent (including construction period).

Lessons Learned

Construction began in June 2003 and was completed in June 2007. Following a series of trials and evaluations, the bridge opened in 2008 as one of the longest trans-sea bridges in the world, with a length of 36 km. It shortened the travel distance between the two municipalities from 400 km to 180 km, or from a four-hour drive to only two hours. In 2013, however, the project was reportedly struggling, due in part to the following:

- i. Another bridge was built near the Hangzhou Bay Bridge with a toll price that was half that charged at the Hangzhou Bay Bridge;
- ii. An updated study completed in 2011 forecast that total costs would not be recovered over the 30-year concession period;
- iii. Facing these challenges, the private partners, which initially owned 80 percent of shares in the project company, quit the project, contributing to a capital shortage; and

- iv. After the private companies' divestment, the public sector became the majority shareholder (85 percent), such that the risks that had been assumed by the private sector were transferred back to the government.

The platform in the middle of the bridge that offered hotels, restaurants, and viewing deck was ultimately closed down to reduce costs.

This project highlights the following:

- Municipalities should try to consider all of the potential risks throughout the entire life of the life and strive to ensure a fair allocation of risks between the public and private partners. Transferring too much risk to the private partner can result in or contribute to project failure.
- PPPs entail a long-term agreement, over the course of which both parties need to be willing and properly incentivized to work together to ensure the project's success. This may include allowing reasonable accommodations, permitting alterations in the scope or design of the project, and not taking actions that would threaten the project's viability, including by agreeing to limit or prohibit competing projects.³⁶

³⁶ Wang, Queena Likun. *Case Study on P3 Failures in China: Taking Hangzhou Bay Bridge as an example*. Hamilton, Ontario: McMaster University, 2016. Accessed May 25, 2019. https://www.eng.mcmaster.ca/sites/default/files/uploads/case_study_on_p3_failures_in_china_report-likun_wang.pdf;

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Ke, Yongjian, Shou Qing Wang, and Albert Chang. "Public-Private Partnerships in China's Infrastructure Development: Lessons Learnt." Paper presented at CIB international Conference: Changing roles: New roles, New challenges, Noordwijk, January, 2019. Accessed May 25, 2019. https://www.researchgate.net/publication/260267511_Public-Private_Partnerships_in_China's_Infrastructure_Development_Lessons_Learnt;

Torres, Adrian. "PPP in Australia." ADB Presentation, Tokyo, Japan, June 2, 2015. Accessed May 25, 2019. <https://www.carecprogram.org/uploads/3-PPPs-in-Australia-1.pdf>.

³⁷ Photo in the public domain published by OSX [https://commons.wikimedia.org/wiki/File:Cross_City_Tunnel_entrance,_Harbour_Street,_Sydney,_New_South_Wales_\(2010-10-16\)_01.jpg](https://commons.wikimedia.org/wiki/File:Cross_City_Tunnel_entrance,_Harbour_Street,_Sydney,_New_South_Wales_(2010-10-16)_01.jpg)

17. Challenging Case: Cross-City Tunnel, Sydney, Australia



Photo Credit³⁷

Background

To ease congestion in the Sydney Central Business District (CBD), the Roads and Traffic Authority of New South Wales (NSW) planned to build a cross-city tunnel (CCT) – a 2.1 km twin two-lane motorway running east and west beneath the Sydney CBD. The estimated total project cost was as high as AUD 1.050 billion (USD 712.7 million). Due to the high cost, the NSW authority decided to pursue a PPP to deliver the project.

Project Structure

In October 2000 a total of eight consortia expressed interest in bidding for the project. Of the eight, three were shortlisted, leading to the selection of Cross City Motorway Pty. Ltd. (CCM), a consortium comprising Bilfinger Berger AG, Baulderstone Hornibrook Pty. Limited, and Deutsche Bank AG, as the winner in 2002. CCM was selected due to its innovative design, more aggressive traffic forecast, and willingness to provide an upfront payment of around AUD 100 million (USD 68 million) to the NSW state

³⁸ Torres, Adrian. "PPPs in Australia." ADB Presentation, Tokyo, Japan, June 2, 2015. Accessed May 25, 2019. <https://www.carecprogram.org/uploads/3-PPPs-in-Australia-1.pdf>;

APC, Chan, Lam PTI, Chan DWM, and Cheung, E. 2008. "Risk-sharing mechanism for PPP Projects – the case study of the Sydney Cross City Tunnel." *Surveying & built environment* 19, no. 1: p. 670-80. <http://hdl.handle.net/10397/31862>; Omega Centre. 2014. "Project Profile, Australia, Sydney Cross-City Tunnel." Omega Centre. Accessed June 4, 2019. http://www.omegacentre.bartlett.ucl.ac.uk/wp-content/uploads/2014/12/AUS_SYDNEY_PROFILE.pdf;

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Quiggin, John. 2005. "Improving public infrastructure contracts with the private sector: Lessons from the Cross-City Tunnel." Parliament. Accessed August 19, 2019. <https://www.parliament.nsw.gov.au/lcdocs/submissions/45268/Sub%2072%20Quiggin.pdf>;

Graham, Danny. "The use of PPPs for infrastructure investments in urban areas." OECD. Accessed August 6, 2019. <https://www.oecd.org/gov/budgeting/45039865.pdf>;

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government. According to the proposal submitted by CCM, the project would be delivered at no cost to the government.

The consortium was responsible for financing, designing, building, operating, and maintaining the CCT. The state government bore the risks relating to native title, force majeure, uninsurable events, and legislative and government policy. Meanwhile, the consortium bore the design, construction and commissioning risks, delay and completion risks, demand risks, ground/geotechnical condition risks, and operation and maintenance/facility management risks.

Based on CCM's high traffic estimate of around 86,000 to 90,000 vehicles per day, the project attracted both local and international financiers. Debt was provided by Deutsche Bank, Westpac Banking Corporation, and other syndicated debt financiers; while equity was provided by CKI Tunnel Investment (Malaysian) Ltd. (50%), Bilfinger Berger BOT GmbH (20%), SAS Trustee Corporation (12.5%), JP Morgan Nominees Australia Ltd. (10%), PSS Board (3.75%), and CSS Board (3.75%). It was expected that toll fees would recover the costs of design, construction, and maintenance of the CCT.

Lessons Learned

Construction started in January 2003 and the CCT officially opened to the public in August 2005. It was the first motorway in Sydney to have full electronic tolling. However, the toll was set relatively high, at around AUD 3.56 (USD 2.42) each way, which was the highest per km of any toll road in Sydney. Owing likely in part to the high fee, the actual traffic was only around 30,000 vehicles per day – less than half of the forecasted amount.

At the same time, the government elected to close off some surface roads to benefit from the presumed reduction in traffic on the surface that would result from the opening of the tunnel. These roads were meant to be set aside for use by pedestrians, public transport, and cyclists.

However, the closure of the surface roads caused some public controversy. Public opinion regarded the closure of the surface roads as a scheme to 'funnel' traffic to the CCT, to ensure the financial viability of the project, rather than as a decision made purely for traffic planning purposes.

The private consortium requested compensation from the government or a toll subsidy, but the government declined. Less than two years after opening the tunnel, the private consortium went into bankruptcy, with outstanding debts of AUD 560 million (USD 380 million).

The government then sold the project to ABN Amro and Leighton contractors in 2007 for a sale price of AUD 700 million (USD 475 million). The original creditor banks were all paid in full and the equity investors received their expected return due to the high selling price. Currently, the tunnel is privately owned and operated and is expected to be returned to the NSW state government in 2030.

This project highlights the following:

- Determining the appropriate price, taking into account the willingness and ability of end-users to pay, is essential in user-funded projects.
- Municipalities must be wary of optimism bias in demand forecasts, especially when demand is difficult to guarantee, as in the case of a toll road with free or cheaper alternative routes.
- A PPP is first and foremost a "partnership." When problems arise, the public and private partner need to be able to discuss in good faith all possible means of mitigating the damage.
- The municipality should have an appropriate communications strategy in place to manage public perception of the project. Ultimately, the public partner is responsible for ensuring public support for a PPP and realizes the full benefit of the project only if users and the broader population view the project positively.³⁸