



PROJECT PROFILE

Australia

**Sydney Cross-City
Tunnel**

omega centre

Centre for Mega Projects in Transport and Development

A global Centre of Excellence in Future Urban Transport
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This report was compiled by the Australasian Centre for the Governance and Management of Urban Transport (GAMUT), University of Melbourne, Melbourne, Australia.

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A PROJECT INTRODUCTION

Cross City Tunnel (CCT) is a privately financed, constructed, owned and operated toll road which passes to government after 18 December 2035 (2006a, p157).

Cross City Tunnel includes two 2.1km long tunnels. It links Darling Harbour on the western fringe of the central business district to Rushcutters Bay in the eastern suburbs. The route largely follows William St and Park or Bathurst Streets (Wikipedia, 2008).

Type of project

Road tunnel

Project name

Sydney Cross City Tunnel

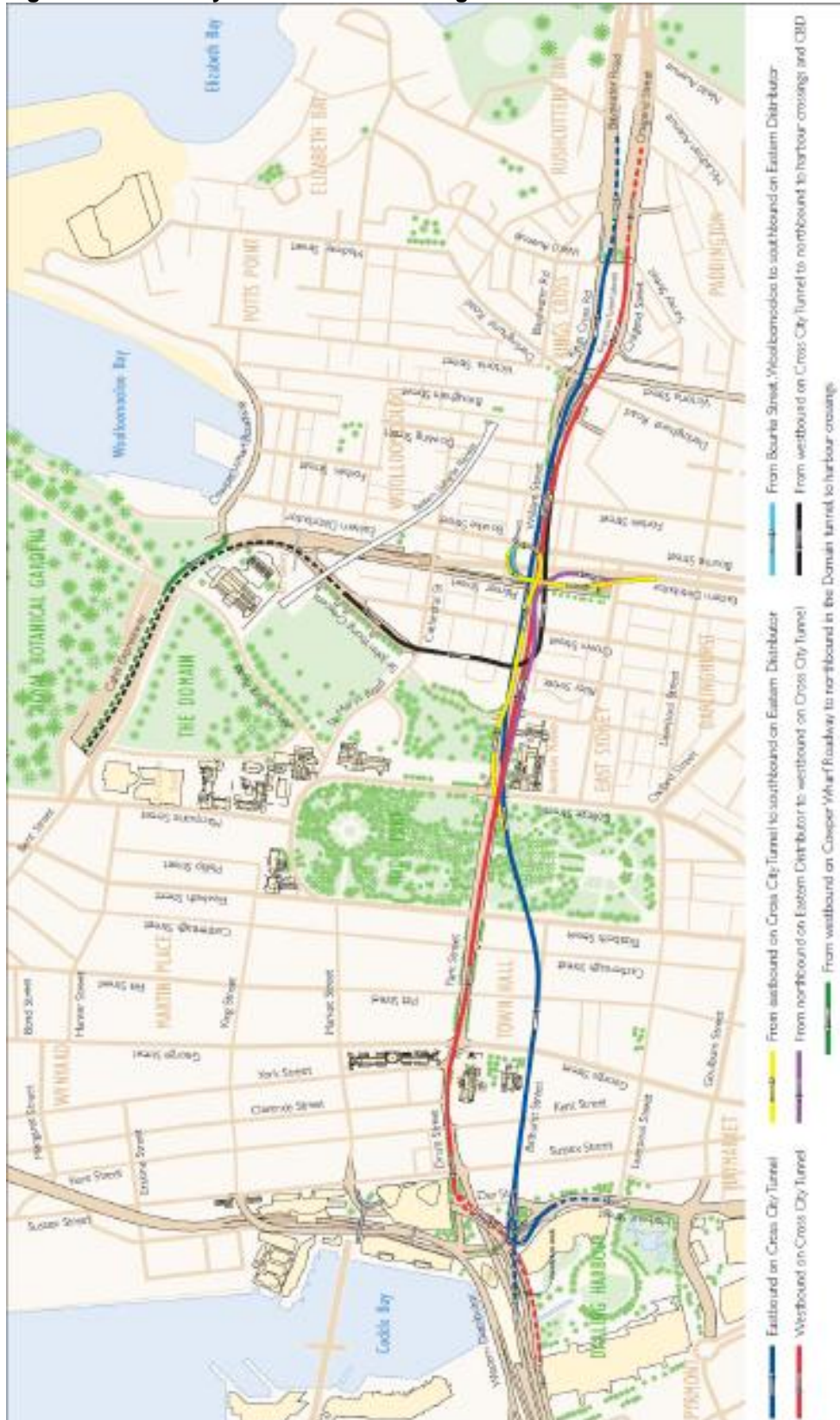
Description of mode type

Toll road.

Technical specification

The CCT project involves the financing, design, construction, operation and maintenance of two new east-west toll road tunnels, and the financing, design and construction of associated improvements to surface roads, including new bus and bicycle lanes, intersection improvements, traffic calming measures, wider footpaths and other improvements to pedestrian facilities to take advantage of the opportunities afforded by reduced traffic congestion (Road and Traffic Authority NSW, 2005b). For further details see Main Engineering Features.

Figure 1: Cross City Tunnel horizontal alignments



Source: Catalyst Communications, 2003 p2

Principal transport nodes

None.

Major associated developments

Lane Cove Tunnel

Just as the Cross City Tunnel was being built, the government entered into negotiations for the Lane Cove Tunnel. Planning approval for the project was granted in December 2003 and the tunnel opened in March 2007 (Technology, 2010). The timing of the Lane Cove contract negotiations was cited as the reason for the delay in release of the summary of the contract for the Cross City Tunnel to the public. The Lane Cove Tunnel encountered a number of problems with its financial model and was also the subject of the Joint Select Committee review.

Joint Select Committee on Cross City Tunnel (Parliamentary Inquiry)

The Joint Select Committee on Cross City Tunnel was established in 2005 to inquire into the Tunnel, and was also given a role to inquire into the Lane Cove Tunnel, including the role of government agencies negotiating the contract and the extent to which community consultation determined the substance of the contract and the method used by the RTA in tendering and contract negotiations (Joint Select Committee on the Cross City Tunnel, 2006c).

Committee members included: Revd the Hon Fred Nile MLC (CDP), the Hon Amanda Fazio MLC (ALP), the Hon Greg Pearce MLC (Lib), Ms Lee Rhiannon MLC (Greens), Mr Michael Daley MP (ALP), Mr Andrew Constance MP (Lib), Mr Paul McLeay MP (ALP), and Mr John Turner MP (Nat). Mr Daley MP (ALP) replaced Mr Matt Brown MP (ALP) (Joint Select Committee on the Cross City Tunnel, 2006b).

Discussion from Hansard concerning the formation of the committee indicates some of the perceptions that abounded concerning the Cross City Tunnel and particularly why it was a failure. Members of parliament raised issue with the committee as being an attempt by the government to distance itself from the activities of previous ALP premiers Carr and Egan (Gallacher), or to whitewash the debacle (Rhiannon). They raised concern that the government had managed public-private partnerships badly, and had “robbed New South Wales blind” (Chesterfield-Evans), and that the gridlock of the city was a problem resulting from the tunnel which was a dangerous PPP (Rhiannon). Concern was raised that the terms of reference were designed to permit blame for the road closures on the community, for not complaining about them, or on the Lord Mayor of Sydney for asking for quieter streets (Ryan). “There is no doubt in my mind that keeping inner-city streets quieter is a Government excuse to avoid the fact that streets are being made narrower and less traffic is able to travel on them. Traffic is being funnelled through the cross-city tunnel.” (Parliament, 2005).

The Committee produced three reports. The first was concerned with the matter of the road closures and the lack of users of the tunnel, and the matters that were perceived relevant to that, including public consultation and the decision to make the project a private tollway. “The most pressing issue, however, is how to overcome the chaos of the current situation as soon as possible.” So the report advised reversal of the surface road changes. “If this recommendation is adopted, there will be an immediate relaxation of the restrictions to the freedom of movement of people in cars moving through the surface streets of Central Sydney” (Joint Select Committee on the Cross City Tunnel, 2006a).

The report contained 17 recommendations:

Recommendation 1

That 'Working with Government: Guidelines for Privately Financed Projects' be made more prescriptive in relation to the public interest evaluation of projects before the decision to consider funding them through private finance. Specifically:

- the section of Government responsible for making the decision should be clearly identified;
- the decision, including a summary of the evaluation, should be made public.

Recommendation 2

That toll levels for future toll roads should be assessed not only in terms of what the private sector offers during tender processes and contract negotiations. Mechanisms must be in place to ensure that appropriate environmental and planning consideration is given, in particular, to the impact of tolls and tolling regimes on mode shift, traffic inducement and value for money for the motorist.

Recommendation 3

That the review of the 'Working with Government: Guidelines for Privately Financed Projects' consider specific issues raised in relation to the Cross City Tunnel project, including:

- the process to be followed where both conforming and non-conforming bids are to be considered by agencies contemplating the use of private finance for projects;
- clearer guidance on the role of the environmental planning and assessment process and its relationship to other processes and procedures required in entering into privately financed projects.

Recommendation 4

That a separate, more detailed, policy on privately financed projects be developed to guide government agencies. This was considered further in the Committee's second report.

Recommendation 5

That both 'Working with Government: Guidelines for Privately Financed Projects' and the detailed policy on privately financed projects include review mechanisms to ensure that changes to relevant government policy, changes to key agencies and structures, and significant issues arising out of project reviews of privately financed projects can be incorporated in an efficient and timely manner.

Recommendation 6

That the Summary of Contracts for future infrastructure projects includes a summary of the comparison of the Public Sector Comparator with private sector proposals. The summary should:

- outline the criteria used in the comparison and relative weightings assigned to those criteria;
- include details of the analysis conducted against the criteria.

Recommendation 7

That the NSW Roads and Traffic Authority request that CrossCity Motorway place daily and monthly Cross City Tunnel traffic use figures on their website.

Recommendation 8

That any policy of charging private consortia a fee for a 'right to operate' a piece of infrastructure be expressly discontinued.

Recommendation 9

That any information relevant to an increase in toll pricing resulting from contract variations should be transparent and publicly available. The information should include:

- the original toll price proposed;
- toll price projections for each period where a price escalation or Consumer Price Index increase is provided in the contract;
- the price component of specific contract variations that increase the toll price.

Recommendation 10

That the Government review existing community consultation practices, particularly in relation to major infrastructure projects, and develop standardised, plain English guidelines available to the community defining 'community consultation' in relation to such projects.

Recommendation 11

That the Government refer the issue of community consultation to the Standing Committee on Social Issues to conduct a review of the experiences of New South Wales residents with consultation processes, and perform a comparative study of best practice consultation methods.

Recommendation 12

That the NSW Roads and Traffic Authority ensure that the community consultation process in relation to Bourke Street's future status is inclusive and considers the wide variety of opinions and views in the community. The process should be conducted with a view to addressing the opposing views and if possible to developing a consolidated position.

Recommendation 13

The trial closure of Bourke Street ends on 28 February 2006. The Committee recommends that the NSW Roads and Traffic Authority immediately reopen the street while the review is being conducted.

Recommendation 14

That the NSW Roads and Traffic Authority immediately reverse the traffic measures identified in Appendix 5 of this report and categorised as category B, C or D and further investigate reversing those referred to as category A as soon as possible.

Recommendation 15

That the Government continue to encourage the operators of the Cross City Tunnel to lower the toll. A reduction of the toll to AUD 2.90, as suggested by the NSW Roads and Traffic Authority's traffic consultants, would be revenue neutral and improve patronage of the tunnel.

Recommendation 16

That the Government finalise the revised guidelines for public release of documents, taking into consideration the recommendations of the Infrastructure Implementation Group's 'Review of Future Provision of Motorways in NSW' and the Auditor General.

Recommendation 17

That the revised guidelines for the public release of documents clarify the status of amendments or variations to existing contracts.

The second report concerned the role of government agencies in PPPs and made further recommendations concerning the Cross City Tunnel including permanently lowering the toll. This was considered critical as PPPs provide between 10% and 15% of government's infrastructure delivery programme. Seventy-five submissions were received, and evidence from 78 witnesses was heard (Joint Select Committee on the Cross City Tunnel, 2007).

The third report, tabled on 26 August 2006, concerns the Land Cove Tunnel. It highlights the need for more comprehensive community information about surface road changes that will take effect around these projects. In this report the Committee recommended monitoring to ensure that narrowed roads can "meet the ongoing traffic demand", and that road changes should be delayed until after tunnel completion (Joint Select Committee on the Cross City Tunnel, 2006d).

Infrastructure Implementation Group Review of Future Motorways

In August 2005 the Premier established an Infrastructure Implementation Group, the first task of which was to review the future provision of motorways in NSW, "in light of public controversy following the opening of the CCT" (Infrastructure Implementation Group, 2005).

Cross City Tunnel Performance Audit

A performance audit was undertaken by the Auditor-General New South Wales in 2006. The report focuses on: whether the upfront payment was a legitimate reimbursement of necessary expenditure; whether the variations to the contract in the amending deed of December 2004 were reasonable and handled appropriately; and whether changes to surface roads were based on a robust assessment against stated objectives.

The report highlights the importance of: value for money for motorists being an explicit objective of the bidding process; the need to define project costs; separate funding of costs not directly related to a project so the user-pays principle can apply in a fair way; handing contract variations transparently; effective community consultation; patronage projections in determining project impacts (Sendt, 2006).

Upgrade of Bourke St

An upgrade of Bourke St, one of the routes through Woolloomooloo, previously used to access both the Eastern Distributor and the Harbour crossings, has been proposed following

consultation with the community insisted upon in the conditions of approval set for the Cross City Tunnel. The consultation arose due to a change in arrangements concerning the capacity of traffic to turn right from William St into Bourke St. It provides an urban design strategy to take advantage of the reduced traffic in Bourke St, and deal with a number of issues regarding urban amenity such as dangerous temporary curb extensions which impact cyclists. The plan is to create a cycle path which travels down the street, and further reduce traffic speeds in certain areas. It provides for tree planting and various urban amenity improvements such as street furniture and lighting. The overall objective is to improve mixed use development and create a human scale (Road and Traffic Authority NSW, 2007). This project demonstrates the complexity of issues arising from the road closures associated with Cross City Tunnel, the conflicting desires in the local community to both achieve a more local, less traffic oriented feel to their neighbourhoods and also to keep local access available.

Reopening

Following completion of the tunnel in August 2005, Cross City Motorways commenced work on phase two of the contract, changes to the surface streets. These changes included changes to William St, which reduced the number of lanes available for east-west traffic. To accommodate the reduced road space, most dedicated right turning lanes were removed, and right hand turns from William St reduced. This affected traffic traveling through Woolloomooloo north of William St to the Harbour Crossings and North Sydney. Prior to the changes motorists traveling from the east to north had six toll free options from William St to the Harbour crossings, but after the changes they had only one (Sendt, 2006).

A huge public campaign was run concerning the street closures after the tunnel opened. The general tenor of the campaign was that Cross City Motorways (CCM), the company which owned the tunnel, had demanded a series of road closures designed to 'funnel' traffic into the tunnel, because they were losing money due to a general boycott of the road which had occurred because the toll was too high. In truth, CCM had only ever requested one change to surface traffic flows. This change, which would have seen no right hand turn traffic from Cowper Wharf Roadway into the Cahill Expressway (and subsequently to the harbour crossings), was denied planning approval under the Supplementary EIS process, and resulted in the RTA including the forecast lost revenue (AUD 22m) in the calculations for the increase in toll escalation agreed under the Amending Deed (Sendt, 2006, p64). All the other surface road changes were designed by the RTA, to take advantage of the reduced traffic on the surface from the opening of the tunnel, and dedicate road space to other users especially pedestrians, public transport and cyclists. The contract with CCM for the surface changes held that such changes should be made on opening the tunnel, to avoid the risk that the newly free road space would induce new traffic demand.

The pervasiveness of this public story about the road changes is indicated in the discussion of it in the first parliamentary report. Although the executive summary mentions the strongly held public view that the surface changes were about funnelling traffic into the tunnel to help the private providers, it is not until page 147 that a statement about the invalidity of this perception is made, and even then it is a fairly weak statement.

"Despite the extensive evidence presented to the Committee demonstrating that the purpose of the Cross City Tunnel project was clear since its inception, and included modifications to surface streets to improve urban amenity – particularly changes to William Street – there remains a strong public perception that the road changes have occurred in order to 'funnel' traffic into the Cross City Tunnel for the purpose of ensuring the financial viability of the project." (Joint Select Committee on the Cross City Tunnel, 2006a, p147).

To outsiders the decision to reverse the road closures due to the public controversy is inexplicable. In an ABC special on infrastructure, one interviewee said the following concerning the controversy:

"I'm never surprised by talkback, right, but I'm not led by it and I don't think the public should be led by it. I don't think policy making should be led by it if it's superficial. I think we have to get beyond it. If there's mistakes that have been made and the public has been dislocated from a public policy debate then they've got every right to be aggrieved. But it's important that we get the infrastructure scenarios based on really good environmentally sustainable and economical footing; not on some glib comments that have the impact of cutting us off from an option we actually need ... I just found parts of the debate almost bizarre. The whole idea that you'd build a new tunnel underground, get the traffic off a crowded and ugly thoroughfare and then not fix up that thoroughfare, I mean give me a break. Why would you put a new tunnel in and not fix up William Street as well? You want to do both, and for some people saying, oh now they're changing William Street, well good. As an outsider, I come from Melbourne, I think it's one of the ugliest parts of Sydney. Now there's the opportunity to beautify it for pedestrians as well as for cars and get most of the traffic underground." (Four Corners, 2006)

Following the recommendation of the Joint Select Committee on the Cross City Tunnel, that the RTA reverse all road changes that "will not lead to a contractually imposed liability to pay compensation to tunnel operators, and investigate the feasibility of reversing even those changes that may impose liability to pay compensation" (Joint Select Committee on the Cross City Tunnel, 2006b), the RTA moved to do just that.

The re-openings were proposed by the Premier in 2006, without the approval of CCM. Apart from the Parliamentary inquiry they were not subject to community consultation (Road and Traffic Authority NSW, 2006b, p33). A report on the effect of the proposal was conducted by Masson Wilson Twiney on 13 June 2006. The report notes that the original traffic measures were not about traffic function but about other objectives and recognises the issue as being that too much traffic capacity has been withdrawn, which affects those without the option to use CCT, generally those with origins or destinations within Sydney CBD and Woolloomooloo (Masson Wilson Twiney Traffic and Transport Consultants, 2006, p5). The report found that the package of road changes shows no significant overall changes to the travel demand on the CBD streets, but some localised changes, which will divert traffic from congested areas and thus improve the situation (Masson Wilson Twiney Traffic and Transport Consultants, 2006, p5). The report found that the re-openings would have little effect on CCT traffic, mainly from those traveling in a westerly direction (Masson Wilson Twiney Traffic and Transport Consultants, 2006, p6). This view is supported by the fact that CCM (and the new owners of the tunnel) have not brought material adverse effect (MAE) proceedings to court as yet. Approval for the proposed changes was sought by the RTA in Jun 2006 under the Environmental Planning and Approval Act Part 3A, (Road and Traffic Authority NSW, 2006b).

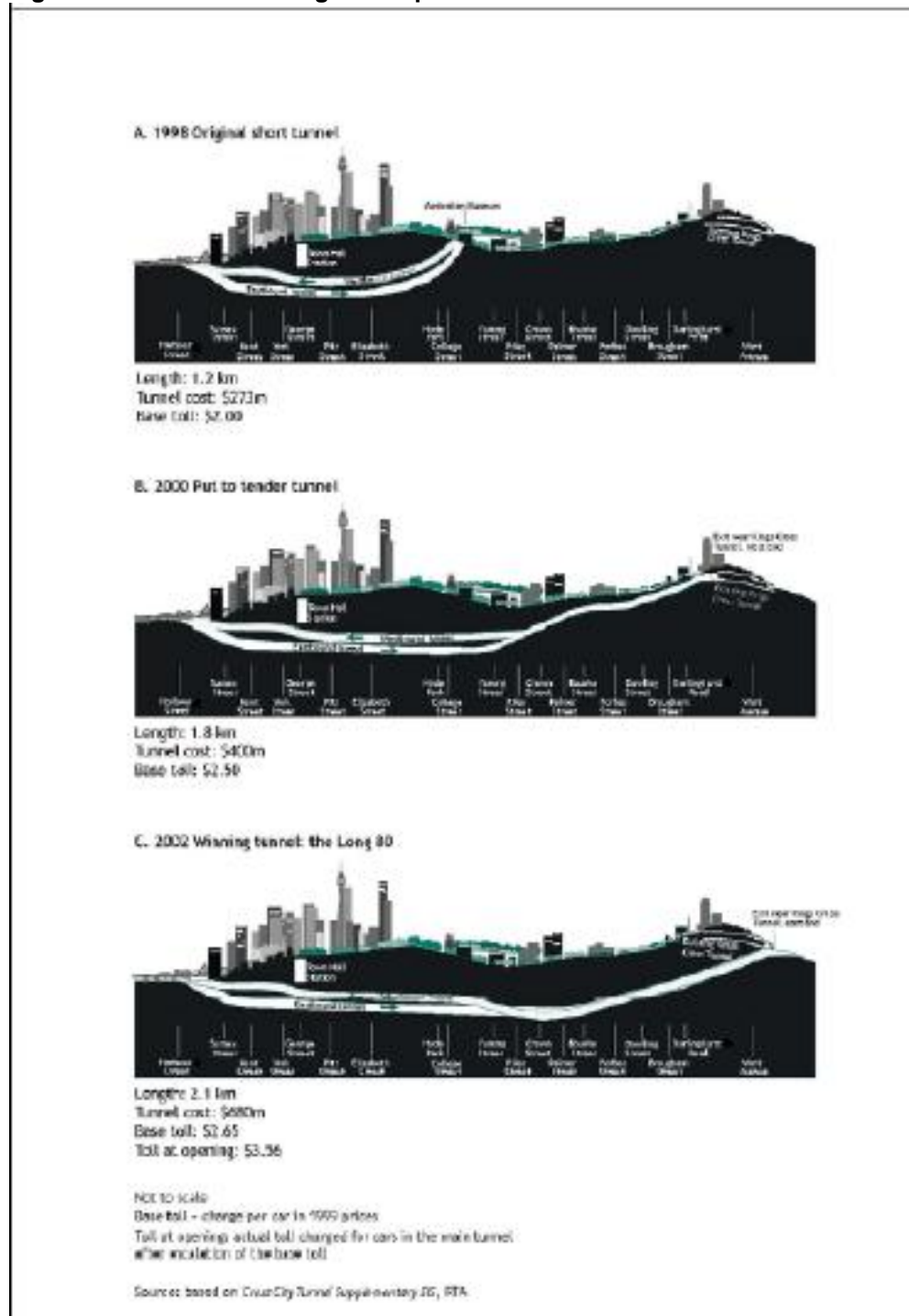
The original road closures occurred in four categories, of which category A reflected those changes to which the MAE provisions of the contract would apply. There were 22 such changes, of which nine relate to entry and exit lanes on surface roads, and ten restrict road space for general traffic on the central corridor (William St). Two provide CCT with direct access to the Cahill expressway and the Domain Tunnel at the expense of local roads. One restricts general traffic on Kings Cross Road (Sendt, 2006). Category D changes were isolated bus lane areas within the city. Category C and D changes were all reversed, except an emergency turning bay put in at Shekspere Place (Joint Select Committee on the Cross City Tunnel, 2007). The intent of the proposed modifications was to alleviate traffic congestion on some surface roads and improve accessibility within Sydney CBD which has precipitated since the opening of the tunnel. The changes were to improve traffic flow

around Market/Clarence St, William St eastbound from Palmer and for CBD traffic generally. Access out of Woolloomooloo to Cahill expressway and Sydney Harbour Tunnel was to be improved, without attracting through traffic to the area. The changes were to assist road based public transport by removing congestion (although they also remove a busway, which is yet to be built and so would not be counted) (Road and Traffic Authority NSW, 2006b, p19).

The proposed changes were claimed to be broadly in line with the objectives of CCT as stated in the initial EIS: to improve the environmental quality of public space within Central Sydney, to improve ease of access and reliability of travel within Central Sydney, and to improve reliability and efficiency of travel between areas east and west of central Sydney (Road and Traffic Authority NSW, 2006b), although urban amenity issues and the question of more space for non-car users were clearly abandoned. The modifications were considered minor compared to the overall changes. They include reopening Druitt St; not providing bus lanes in Elizabeth St, removing cycle lane and pedestrian space to make a new lane in William St, removal of cycle lanes that enable crossing the tunnel portals, and changing flows around Sir John Young Crescent and Palmer St so more accesses are available for harbour crossings (Road and Traffic Authority NSW, 2006b, p. 10).

Parent projects

Figure 2: three tunnel designs compared



Source: (Sendt, 2006, p. 19)

As depicted in Figure 2 the project progressed through three distinct phases of development. The first proposal was for a short tunnel about 1.2km long passing from effectively the western end of William St to the Western Distributor. The eastern portal of the tunnel would have emerged outside the Australian Museum in William St (Road and Traffic Authority NSW, 1998). This tunnel would have bypassed many intersections where Park, Drui

Bathurst Sts (the continuation west of William St) cross Elizabeth, Castlereagh, Pitt, George, York, Kent and Sussex Streets, and would allow changes to traffic light configuration to prioritise north-south bus routes on these streets (Road and Traffic Authority NSW, 1998). Under the proposal the tunnel was to be built with double decks and two lanes of traffic each way, and constructed using a cut and cover method (Road and Traffic Authority NSW, 1998). This proposal was exhibited for public comment in 1998.

Protesting against particularly the location of the portals outside the Australian Museum, Sydney City Council prepared an alternative tunnel proposal, 'Cross City Tunnel Alternative Scheme', in 1999 (Joint Select Committee on the Cross City Tunnel, 2006a, p64). This proposal involved extending the tunnel under William St to Kings Cross Tunnel. It was proposed that this would allow William St to be developed as a proper boulevard as envisaged under the Gateways Agreement between the RTA and Council to improve the urban design of major entry roads to the CBD (Joint Select Committee on the Cross City Tunnel, 2006a).

State environmental planning policy No 63 (2 Feb 2001) enables the project to be entirely assessed under Part 5 of Environment Planning and Assessment Act 1979. The RTA was both the proponent and the determining authority for the proposal. It prepared an Environmental Impact Assessment (EIS) under Part 5, division 4, of the Environment Planning and Assessment Act 1979, for the longer tunnel, which was now 1.8km long with a speed limit of 70km per hour (Joint Select Committee on the Cross City Tunnel, 2006a). The EIS was exhibited between 2 August 2000 and 6 October 2000. The Department of Planning then conducted an independent assessment, with the Director-General's report released in September 2001. The project was then approved by the Minister under section 115B on 3 October 2001 (Planning NSW, 2004). Final tenders were then sought.

Cross City Motorways put forward a non-conforming bid for a longer tunnel which would pass under the Kings Cross Tunnel and exit at the eastern end at Rushcutters Bay. For environmental and traffic reasons it was proposed to increase the tunnel length by 300m and depth by 30m at the eastern end. It was estimated that this would increase daily capacity by an extra 17,000 vehicles (Pretorius, 2007). The RTA selected this bid and determined to modify the original project to "increase its benefits, primarily with respect to construction stage impacts and to achieve better financial return". The proposal increased the length and depth of the tunnel which, importantly, eliminated cut and cover construction techniques which were likely to be highly disruptive to traffic (Planning NSW, 2004). The RTA requested modification under section 115B of Act following assessment of the bids and selection of a non-conforming tender offer. The first determination to modify was submitted in late 2002. The Supplementary EIS was exhibited between 1 August 2002 and 31 August 2002. Approval was granted on 12 December 2003 (Planning NSW, 2004).

Current status

Construction of the tunnel was completed and it was opened to traffic in August 2005. Surface works (both the doing and the undoing) were completed by the end of 2006. The 2.1km tunnel cost AUD 1bn to build (AAP, 2007). In December 2006 the company was declared insolvent with debts of AUD 0.56bn. A syndicate of 16 domestic and international banks, which was owed money, appointed the insolvency firm Korda Mentha. The tunnel attracts only about 30,000 vehicles per day (ABC News Online, 2006). On 20 June 2007 Leighton Contractors and ABN Amro purchased it for AUD 0.7bn (AAP, 2007). The tunnel is still privately owned and operated and will revert to public ownership in 2030 (Wikipedia, 2008).

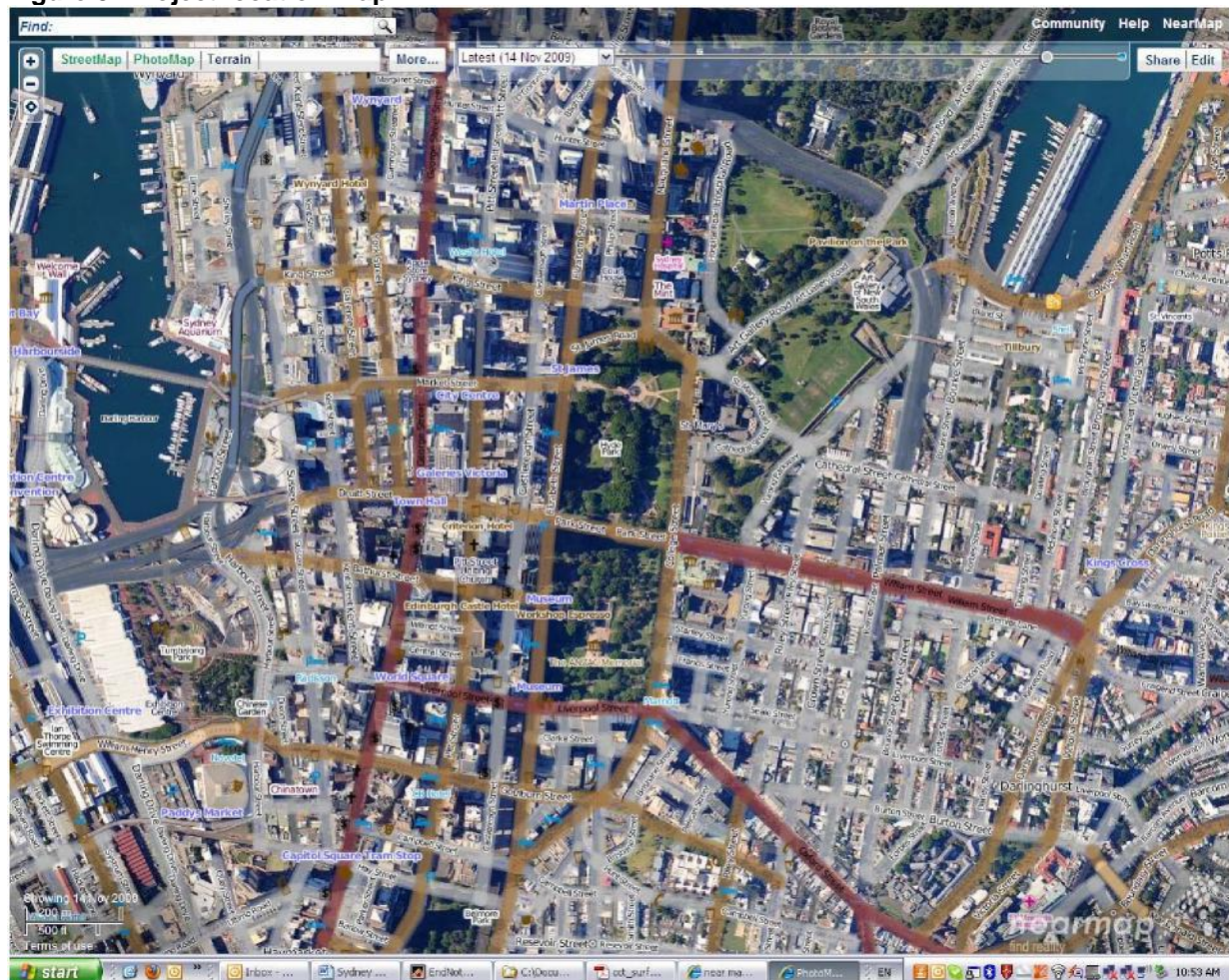
The sale is said to have confirmed the view that the tunnel is a long term growth asset of considerable value (Martin Madden of Korda Mentha) (AAP, 2007). The banks were repaid their indebtedness in full and the sale price also allowed a return to equity investors (AAP, 2007).

The ABN AMRO/ Leighton Contractors consortium funded the equity through:

- ABN AMRO Diversified Infrastructure Trust (47%);
- ABN AMRO Global Infrastructure Fund in the UK (47%); and
- Leighton Contractors (6%).

(ABN Amro, 2007)

Figure 3: Project location map



B PROJECT BACKGROUND

Principal project objectives

The original environmental impact statement (2000) for the project provided an outline of the its context. The report noted that the CBD was the main influence on Central Sydney. A key issue was the question of population growth. In 1996 the workforce of 217,000 was predicted to grow to 233,000 by 2016, with the residential population of the CBD predicted to increase by 100% to 28,000 by 2016 (PPK Environment and Infrastructure Pty Ltd, 2000c). Key issues identified in the summary statement were "the public domain of the CBD is characterised by an undesirable competition between pedestrians and motorists for road space. High volumes of traffic contribute to poor air quality and a noisy environment." (PPK Environment and Infrastructure Pty Ltd, 2000c, p3). Problems with William St were identified as that it lacks visual coherence and fails to act a structuring element. Harbour St was also identified as lacking a strong overall design concept and definition. The visual quality and legibility of central Sydney would be improved by an upgrade (PPK Environment and Infrastructure Pty Ltd, 2000c). The report expected an average increase in traffic volumes of 12% between 1998 and 2006 and 15% between 2006 and 2016. Figure 4 indicates the type of upgrade to William St that was envisaged.

Figure 4: proposed upgrade to William St



William Street near Yurong Street, looking east today (top) and after narrowing of the roadway, widening of the footpaths and landscaping works.

(Source: Catalyst Communications, 2003, p. 3)

The environmental impact of traffic in Sydney is considerable. Daytime noise levels range from 65 to 74 decibels when the goal is 60 decibels, and night time noise ranges from 62 to

73 decibels when the goal is 55 decibels. Air quality is poor in public spaces. Fine particulate matter and total particulates exceed air quality goals, and carbon monoxide sometimes exceeds goals. There were 4,130 traffic accidents between January 1995 and September 1998, 25% of which involved pedestrian casualties (PPK Environment and Infrastructure Pty Ltd, 2000c).

The Eastern and Western distributors provide alternatives for north-south travelers to avoid the city, but similar alternative did not exist east-west. The streets used by cars to traverse the city east-west are, west bound: William, Park and Druitt St (they all run into each other) and, east bound: Bathurst and Elizabeth and Park/William or Liverpool/Oxford St. Because of the short block sizes north-south, and the availability of bypasses, priority is given to east-west traffic. This causes congestion and slows down public transport which mainly operates on the north-south routes (PPK Environment and Infrastructure Pty Ltd, 2000c).

Interestingly, Volume 1 of the EIS is the only document of its kind which has overtly attempted to integrate principles of ecologically sustainable development. Ecologically sustainable development is defined to mean four interrelated principles:

- the precautionary principle: namely that if there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation (PPK environment and Infrastructure Pty Ltd, 2000b, pp1-7);
- intergenerational equity: that the present generation should ensure that the health, diversity and productivity of the environment are maintained or enhanced for the benefit of future generations (PPK environment and Infrastructure Pty Ltd, 2000b, pp1-8);
- conservation of biological diversity and ecological integrity; and
- improved valuation pricing and incentive mechanisms: namely, that environmental factors should be included in the valuation of assets and services (PPK environment and Infrastructure Pty Ltd, 2000b, pp1-8).

This focus on the principles of ecological sustainability provided a challenge for the writers of the report because they were unsure how to measure many of these things. The primary and secondary objectives, which were drafted in accordance with these principles, reflect this. In the report primary objectives are what are listed as needing to be done, while secondary objectives are considered 'the best way to achieve them' (PPK Environment and Infrastructure Pty Ltd, 2000 #371 @5).

The primary objective in relation to environmental quality was:

- to improve the environmental quality of public spaces within Central Sydney.

The primary objectives in relation to efficiency and accessibility were:

- to improve ease of access and reliability of travel within Central Sydney; and
- to improve the reliability and efficiency of travel between areas east and west of central Sydney.

Secondary objectives in relation to environmental sustainability were:

- to identify and enhance the potential beneficial effects and to identify and manage potential adverse environmental impacts by:
 - conserving biological diversity and ecological integrity;
 - eliminating the threat of serious or irreversible environmental damage;
 - improving air quality and reducing greenhouse gas emissions; and
 - minimising the use of energy and non-renewable resources.

In relation to economic and financial outcomes:

- to achieve acceptable economic and financial outcomes namely:
 - that economic benefits exceed economic costs; and
 - minimisation of the financial cost to government.

The objectives of the project reported in the Supplementary EIS objectives were unchanged. The objectives of the Supplementary EIS itself, or the changes to the project were:

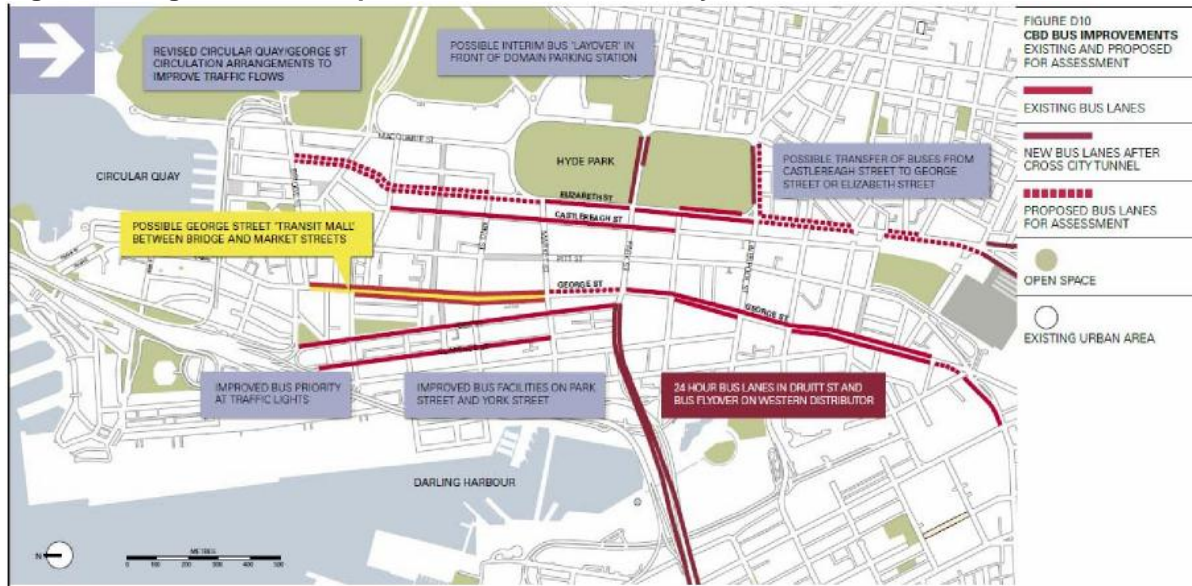
- to enhance the environmental and transport related benefits;
- to reduce the construction impacts;
- to maintain acceptable economic and financial outcomes.

The Director-General's report found that the two projects delivered similar strategic and environmental and transport benefits, although the longer tunnel provided a slight overall increase in benefits but an increase in traffic on some streets (Joint Select Committee on the Cross City Tunnel, 2006a).

These objectives stem from the original project, 'Improving the Heart of the City', which made a number of statements concerning the objectives of the project. "By building a Cross City Tunnel much of the traffic that currently chokes the city's streets would be put underground. For those vehicles crossing east west the travel time would be significantly reduced" (Road and Traffic Authority NSW, 1998, p1). The project was imagined as making it possible to transform retail and business areas, widen footpaths, plant trees, creates space for open air cafes and restaurants and to create less noise and improved air quality as a result of reduced traffic. Buses would run faster without congestion, as would services and emergency vehicles. The project could enable the City Council to restrict traffic in Park St, or close it and allow Hyde Park to be unified (Road and Traffic Authority NSW, 1998).

"The tunnel will allow consideration to be given to making certain streets one-way, reviewing the phasing of traffic lights, the provision of kerb bulges and mid-block pedestrian crossing" (Road and Traffic Authority NSW, 1998, p4). The tunnel could also make a major improvement for buses running north-south, because of reduced east-west traffic. It could allow the Public Transport Authority to take buses off Castlereagh St (97 of them carrying peak hour passenger numbers of 4,750) and route them all down Elizabeth St then down George St, which would make them easier to understand and find. At the time George St carried 375 peak buses or 22,500 peak passengers, and Elizabeth St carried 373 peak buses or 17,330 passengers (Road and Traffic Authority NSW, 1998). A diagram of the bus improvements implemented as a result of the project is included below (Figure 5).

Figure 5: Diagram of bus improvements after Cross City Tunnel 2005



(Source: Department of Planning NSW, 2005, p179)

All these objectives and more found their way into the design of the project, even though they were not explicitly detailed in the objectives of the project in the EIS. This can be seen in the way that the benefits of the project are documented following the project. For Pretorius (2007) the benefits of the Cross City Tunnel were:

- reduced congestion, the ability to bypass 18 sets of eastbound traffic lights or 16 sets of westbound lights on the old routes;
- improved travel times with savings of 20 minutes during peak hour;
- higher service reliability for buses through the introduction of bus priority measures;
- improved access to and movements for pedestrians and vehicles;
- safer and more pleasant environments with better urban design, wider footpaths, and removal of intrusive through traffic;
- better air quality and reduced traffic noise levels.

While for the RTA (2006a) benefits of the Cross City Tunnel include:

- cutting travel times for trips across the city to approximately two minutes, from up to 20 minutes, by avoiding 18 sets of traffic lights;
- removing vehicles from city streets;
- improving the reliability of bus services in the city;
- improving access and movement within the city for taxis, delivery vehicles, cyclists and pedestrians;
- making city streets safer and more pleasant for pedestrians, residents and business people by removing intrusive through traffic and providing more footpath space in some streets.

No cost to government

There is some evidence to suggest that the objectives of the project were compromised because of a motivation to deliver it at no net cost to the government. The decision to go ahead was made at a time when the government was focused on debt reduction. So the focus on private funds allowed the project to be brought forward and delivered earlier than

public finance would have allowed: “it is clear that when determining the value for money for the CCT, the government focused on a policy of ‘no cost to government’”. The value for money to those paying for the project, that is the users of the tunnel, was not adequately considered (Joint Select Committee on the Cross City Tunnel, 2006a, p. xiii).

The RTA placed considerable weight on the objective to undertake the project at no cost to government. This led to acceptance of the bid containing the highest business consideration fee, and to a number of amendments to the contract to ensure the RTA incurred no cost in other parts of its budget.

Key enabling mechanisms

RTA is constituted under Part 6 of the Transport Administration Act 1988. Its powers in relation to the Cross City Tunnel project arise from the Transport Administration Act which empowers the RTA to enter into contracts or arrangements for the carrying out of works and the performance of services and the Roads Act 1993.

Under the Roads Act 1993 the Minister for Roads may declare tollways, the RTA and its agents and contractors may carry out road works and the RTA may lease land it owns. Under the Transport Administration Act the RTA may do any of these things and exercise any of its other functions, either in its own right or in a partnership, joint venture or other association with others.

A number of key policies were critical to the development and completion of the project:

‘Action for Transport 2010 - An integrated Transport Plan for Sydney’ (1999). This was the government’s key strategic policy for the development of transport in Sydney. The policy is based on promotion of the principles of linking transport infrastructure with population growth, encouraging employment and regional development, improving infrastructure for rail, buses and vehicles and concentrating employment in primary and secondary centres, for integrated land use and transport planning.

‘Working with Government: Guidelines on Privately Financed Projects’ (November 2001). This document outlines the State government policy and procedures for Publicly Financed Projects, including bid development, tender evaluation and assessment, acceptance of non-conforming bids, contract negotiations.

‘Premier’s Memo No 200-11 Disclosure of Information on Government Contracts with Private Sector’ (2000). This establishes public disclosure requirements for documents created during public private partnerships, or other contractual negotiations involving the private sector.

A number of other documents concerning the project were produced:

‘Director General’s Requirements for the Cross City Tunnel Project’ (July 1999). This documents the Director General of Planning’s requirements for the EIS and provides guidance on what was to be considered in that process.

‘Cross City Tunnel – Environmental Assessment’ (September 1999). This provides a description of the modified proposal (from ‘Heart of the City’), seeking public comment on issues associated with the tunnel, and documenting initial findings of reports that were being developed for the EIS. It was exhibited for public comment from 24 September to 11 December 1999.

'Cross City Tunnel EIS, prepared by PPK Environment and Infrastructure Pty Ltd' (2000). The key public consultation document for the project, this document was developed by the RTA, and includes all traffic modeling, environmental studies, and studies into the social and economic impacts of the project. The document runs to seven folders of information. It was exhibited for public consultation from 2 August to 6 October 2000.

'Cross City Tunnel Preferred Activity report' (May 2001). This outlines modifications suggested in response to the EIS, and includes over 20 modifications to the project accepted by the RTA.

'Cross City Tunnel Representations report' (May 2001). This contains a summary of submissions received by RTA during the EIS process.

'Proposed Cross City Tunnel Kings Cross to Darling Harbour: Director General's Report' (September 2001). Prepared by the Department of Urban Affairs and Planning, this report provided an independent assessment of the proposed project, considering the EIS, submissions and other factors. It contained recommendations relating to conditions of approval.

'Cross City Tunnel Planning Approval Conditions' (October 2001). The Minister for Planning's approval for the project, including 240 planning conditions, which the RTA undertook to deliver on.

'Cross City Tunnel Supplementary EIS' (July 2002). Placed on public display from 30 July to 31 August 2002, this was prepared by Evans and Peck (same as other one but changed name), in response to the RTA's selection of CCM's non-conforming proposal. The report contains two volumes and details modifications to the EIS tunnel, construction and operation and other associated works. The project described the proposal by CCM to prevent all right turns from Cowper Wharf Roadway to the Cahill Expressway.

'Supplementary Cross City Tunnel Representations Report' (November 2002). This contained a summary of representations made during the supplementary EIS process, and included a change to the project with the reinstatement of one right hand turning lane from Cowper Wharf Roadway to Cahill Expressway, in contrary to the agreement negotiated with CCM.

'Cross City Tunnel: Proposed Modifications of Approved Project' (November 2002). This document provided the Director-General's report on the proposal under the supplementary EIS process, and the representations report.

'Conditions of Approval' (December 2002). This provides the Minister of Planning's conditions for approval of the project as amended by the Supplementary EIS and Representations Report. It contained 292 conditions of approval, which were the responsibility of RTA to fulfil.

A further amendment was made to the project in 2006, to allow for the road re-openings (Sartor, 2006).

Key contracts setting out the roles and responsibilities of the RTA and CCM and its subsidiary partners were:

- Cross City Tunnel Project Deed signed 18 December 2002;
- Summary of Contracts produced by RTA tabled parliament February 2004;
- Cross City Tunnel First Amendment Deed entered into 23 December 2004;

- Summary of Amendment Deed published November 2005. This document provides an overview of the circumstances requiring amendment, and the conditions of the project as amended.

Key enabling mechanisms timeline

Month	Year	Event
Oct	2001	Project Approved by Minister
Dec	2002	Amended Project Approved by Minister
Dec	2002	Project Deed signed
Dec	2004	Amendment Deed signed

Main organisations involved

Key parties from the government

Minster for Roads

The Minister responsible for RTA which entered into the contract:

- Carl Scully from 28 November 1996 to 21 January 2005;
- Michael Costa from 21 January 2005 to 3 August 2005;
- Joseph Tripodi from 3 August 2005 to 16 February 2006.

Minster for Planning

The Minister who provided consent under EIS processes:

- Craig Knowles, Minister for Urban Affair and Planning from 4 April 1995 to 8 April 1999, Minister for Infrastructure, Planning and Natural Resources from 2 April 2003 to 3 August 2005;
- Andrew Refshauge, Minister for Urban Affairs from 8 April 1999 to 21 November 2001, Minister for Planning from 21 November 2001 to 2 April 2003;
- Frank Sartor, Minister for Planning from 3 August 2005.

Treasurer

Who authorises Minister for Roads to sign off project:

- Michael Egan 3 April 1995 to 21 Jan 2005;
- Morris Iemma 3 August 2005 to 16 February 2006.

Key government agencies

Road and Traffic Authority (RTA)

The RTA is the proponent of the project under the EIS, and the government representative on the contract. It is the organisation which provided entry into the deed. Key personnel were Paul Forward (CEO) and Les Wielinga (Director Motorways).

Budget Committee of Cabinet (BCC)

BCC approves major capital works. Approval is given through five stages: project definition; expressions of interest and short listing; detailed proposals and assessment; negotiations and contracts; disclosure and implementation.

Department of Planning

The Minister for Planning has to give planning approval, to consult about strategic planning and assessment, issue requirements for development of the EIS, assess environmental impacts, and monitor compliance with conditions of approval. The department changed name several times during the project. It was called:

- Department of Urban Affairs and Planning until December 2001;
- Planning NSW from December 2001 until May 2003;
- Department of Urban and Transport Planning from May 2003 until July 2003;
- Department of Infrastructure, Planning and Natural Resources from July 2003 until August 2005;
- Department of Planning from August 2005 to present.

Other

The Treasury also has a specialist Private Projects Branch, which consulted and advised RTA on financial aspects of the project.

The role of environmental protection agency was given to the Department of Environment and Conservation.

Key private sector parties

CrossCity Motorway Consortium

The company contracted to finance, build, own, operate and maintain the tunnel for concession terms. Sponsored by Baulderstone, Bilfinger, Deutsche Ban Aktiengesellschaft.

The Trustee (CrossCity Motorway Nominees No 2 Ltd) and Company (Crosscity Motorway Pty Ltd), entered into the Project Deed with RTA.

Bilfinger Berger Aktiengesellschaft and Baulderstone Hornibrook formed a joint venture to design, construct and commission the tunnels. This joint venture is known as the Contractors, and signed the Design and Construct contract with the Trustee and Company.

The Trustee and Company are jointly wholly owned by CrossCity Motorway Holdings Pty Ltd, whose equity investors are CKI City Tunnel Investment (Malaysian), GmbH (Bilfinger Berge AG subsidiary), and smaller superannuation trust equity investors: SAS Trustee Corporation, JP Morgan Nominees Ltd, PSS Board, CSS Board.

- protect the environment;
- improve governance.

The five aims are to be implemented over seven strategies or subject areas:

- economy and employment;
- centres and corridors;
- housing;
- transport;
- environment and resources;
- parks and public places;
- governance and implementation.

The basic assumptions on which the strategic plan is built are that Sydney will grow its population by 1.1 million between 2004 and 2031, which will require 640,000 new homes, 500,000 more jobs, 7,500 ha of extra industrial land, 6.8 million square metres of additional commercial floor space, and 3.7 million square metres of additional retail space.

In the section on transport, the plan allows for the development of more active and public transport. "Sydney's neighbourhoods will have improved local transport with walking and cycling facilities and bus services to major centres. People will be able to carry out more of their trips closer to home, reducing the time taken and cost of longer trips" (Department of Planning NSW, 2005, p154).

The objectives and initiatives in the strategic plan concerning transport are to:

- improve transport between Sydney's centres;
- improve the existing transport system;
- influence travel choices to encourage more sustainable travel;
- improve transport decision making: planning, evaluation and funding;
- ensure sufficient port capacity is available to serve Sydney;
- improve efficiency of all types of freight movements in Sydney;
- connect the regions and economic gateways within the greater metro region;
- minimise the adverse impacts from freight movements.

(Department of Planning NSW, 2005, p. 157)

Integrating land use and transport

The critical objectives of these broader strategic policies are to:

- reduce the growth in vehicle kilometres traveled;
- improve air quality and reduce emissions;
- build more compact cities;
- promote economic development and create jobs.

The government has produced guidelines for how these objectives should be implemented in planning regimes at the local level through 'Integrating Land Use and Transport: Improving Transport Choice - Guidelines for planning and development' (Refshauge & Scully, 2001). The guidelines set out ten principles for accessible development, relocation, design and implementation of urban development that will support transport choice, and the relevance of the principles for all planning stages. They provide location and design criteria for a range of land uses, and discuss ideas about how to implement the criteria.

These objectives of land use and transport planning integration are predicated on research by the RTA in 1991 which found that “forecast levels of travel demand in urban areas cannot be met by new and upgraded roads for private cars. The economic social and environmental costs are too great” (Refsauge & Scully, 2001, p4). The ten principles are to:

- concentrate in centres;
- mix uses in centres;
- align centres with corridors;
- link public transport with land use strategies;
- connect streets;
- improve pedestrian access;
- improve cycle access;
- manage parking supply;
- improve road management;
- implement good urban design.

Outline of planning legislation

Planning in NSW is currently the subject of significant reforms, including the establishment of an independent Planning Assessment Commission, which will take over about 80% of the projects currently approved by the Minister. Joint Regional Planning Panels will decide regionally significant proposals. A new system of Planning Arbitrators will also be established (Department of Planning NSW, 2010a).

The key legislation governing the planning system in NSW is the Environmental Planning and Assessment Act 1979 ("Environmental Planning and Assessment Act," 1979). This is supported by the Environmental Planning and Assessment Regulation 2000 ("Environmental Planning and Assessment Regulation", 2000). These Acts govern how planning and development is carried out. The plan making system is managed by environmental planning instruments, including both state environmental planning policies and local environmental plans, legal documents regulating land use and development. Until July 2009 the planning policy system also included regional environmental plans, but these have now been deemed State environmental planning policies. The plan making system is set out in Part 3 of the Environmental Planning and Assessment Act 1979 (Department of Planning NSW, 2010b).

The State environmental planning policies cover such matters as the creation of economic development and employment zones such as the Western Sydney Employment Area; establishment of a consistent planning regime for the provision of affordable rental housing; development of planning controls for specific parklands; streamlining assessment processes for development that complies with specified development standards; the orderly development of rural lands for rural and related purposes; a consistent planning regime for infrastructure and the provision of services across NSW; and such matters (Department of Planning NSW, 2010d).

Local environmental plans guide planning decisions for local government areas. They provide zoning and development controls over the land in their area. They are the primary planning tool to oversee local development. They include development standards such as height and minimum lot sizes (Department of Planning NSW, 2010c).

In NSW, PPPs occur under a policy which includes the NSW government procurement policy, 'Working with Government: Guidelines for Privately Financed Projects'. This policy is set by the Department of Treasury. The Department of Commerce provides assistance to NSW government agencies that lack the management skills to implement PPPs. The Department of Planning has no direct role in negotiating or implementing PPPs but has

statutory and administrative responsibility for land use planning, EIA and development approvals. The Department of Planning sets the strategic framework noted in the previous section (Nile, 2006).

Under the 'Working with Government' rules the Department of Planning must assess a proponent's proposal on the basis of that proposal. It cannot recommend that a different manner of meeting the stated objectives would be more appropriate (Joint Select Committee on the Cross City Tunnel, 2006a). This created issues in the process for Cross City Tunnel. As a result the Premier's review of Future Motorways recommended aligning the environmental impact assessment processes for motorway projects more closely with the Government's decision making process on each project, particularly to ensure explicit deliberation on the overall impact and costs of the likely or potential planning approval conditions (Infrastructure Implementation Group, 2005, p3).

A key concern of the process of planning infrastructure projects is the question of community consultation. In NSW the government minister for planning is the consent authority in major projects overriding local councils' normal powers (Kalowski, 2008). Once the successful tenderer receives approval to begin construction, the Minister imposes conditions of consent. One condition is that community liaison groups be established to facilitate dialogue between the government, the construction consortium and citizens affected by the project. These liaison groups are generally organised by the construction consortium (Kalowski, 2008).

Numerous other planning approval conditions can be placed on projects. In the Cross City Tunnel project the original approval by the Minister of the RTA proposal was in October 2001, and was subject to 240 conditions (Planning NSW, 2004). The approval by the Minister for the supplementary project contained 292 conditions of approval. The RTA was expected to cover the cost of complying with the conditions, which included land acquisition and utility adjustments, with the development fee (Sendt, 2006). Because of the RTA's no-cost to government policy stance, paying for these elements involved negotiating further payments from CCM. The costs concerned matters such as

- the Department of Heath required more stringent in-tunnel carbon monoxide standards;
- representations and further modeling resulted in significant changes to the Domain connection between CCT and the Eastern Distributor, Cowper Warf Roadway connections and East Sydney traffic arrangements as well as adjustments at the William St ramp;
- tunnel facilities required changes particularly signage;
- infrastructure owners' additional requirements, such as moving a power substation, became apparent;
- additional community urban design treatments were required.

The costs of these matters were largely covered by the Amending Deed. They included the Vent stack (AUD 0.94m); moving the control centre (AUD 7.485m), widening the Kings Cross land bridge (AUD 7.751m), urban design in William and Park St (AUD 14.26m), other (conditions of approval) (AUD 7.707m) (Sendt, 2006).

Environmental statements

CCT conducted two environmental and planning assessment processes. The EIS assessed key areas of concern to the community including toll levels, traffic levels and traffic management measures (Joint Select Committee on the Cross City Tunnel, 2006a).

The overriding objective of no cost to government was present during the preparation and assessment of the supplementary EIS. It led to alterations to tolls, traffic levels and traffic management measures during and after the supplementary EIS, which was conducted without the depth of analysis of the initial EIS (Joint Select Committee on the Cross City Tunnel, 2006a).

The EIS was conducted in accordance with the Environmental Planning and Assessment Act 1979 and 1994 Regulation (PPK Environment and Infrastructure Pty Ltd, 2000c). It examines:

- the existing and predicted future environment of the proposed road corridor and the surrounding area;
- the need for and benefits of the proposal;
- the potential impacts of constructing and operating the CCT;
- the measures that could be put in place to minimise potential adverse impacts.

One of the key environmental concerns related to exhaust fumes in the tunnel. The initial proposal did not contain plans for a separate ventilation shaft and considered most venting would occur through the portal at the eastern end. This was not considered likely to meet air quality standards within the tunnel. Supplementary proposals included a third tunnel to act as a ventilation tunnel, with air released via a vent stack at the western end of the tunnel (PPK Environment and Infrastructure Pty Ltd, 2000c). The location of this vent stack led to considerable difficult negotiations with the Sydney Harbour Foreshore Authority, responsible for the development of Darling Harbour (Cripps, 2006). The initial proposal was for a short stack, then it was to be placed inside an existing building, and this proposal was amended as one of the conditions imposed by the Minister for Planning to a single 60m high vent stack positioned between the western distributor viaducts above the eastern side of Darling Harbour (Wikipedia, 2008). In the end the design was very well camouflaged so that the stack looks like a twenty storey building. It was decided not to process emissions from the vent stack because concentrations would not reach above air quality standards, it would cost AUD 28m and treatment of nitrogen dioxide would increase nitric oxide which would then probably oxidise to nitrogen dioxide in the atmosphere anyway (PPK Environment and Infrastructure Pty Ltd, 2000c). Provision was made in the design of the stack to allow scrubbing technology to be retrofitted should it improve in the future.

Other impacts of the proposal identified in the EIS included modifications to non-tolled routes due to changes in surface streets. This was considered likely to lead to an improvement in facilities for cyclists through the provision of cycle lanes from Rushcutters Bay and George St in CBD; Improvement in bus travel times and operations due to extension of the bus lane network, and improved speed north-south; improvements in public space for pedestrians and reduced delays in traffic signals. The overall social impacts were considered likely to be beneficial to the wider community, with disadvantages being experienced only by those in the vicinity of the project during construction (PPK Environment and Infrastructure Pty Ltd, 2000c).

The EIS also reviewed the likely impact of the project on transport mode choice and travel time, identifying a small modal shift to cars from public transport in 2006 but its reversal by 2016 with a shift from the car to public transport. The estimated total number of trips in 2006 was 454,000. There would be a slight increase of 0.04% in distance traveled in 2006, and a 0.57% reduction in vehicle hours traveled. The project was predicted to reduce accidents by 31 in 2006 and 32 in 2016, and reduce energy consumption by 26.6 million litres of fuel per annum by 2016. No impact on biodiversity was identified, and air quality would see a minor reduction and improved dispersal (PPK Environment and Infrastructure Pty Ltd, 2000c).

The EIS noted that the project would be realized at the cost of a number of adverse environmental impacts. The most significant would be the short term environmental impacts caused by the construction of the Link. Although these impacts would be localised and short term, the effect on individuals who are, in some instances, sensitive to construction related impacts due to recent experience (namely the Eastern Distributor) would be significant (PPK Environment and Infrastructure Pty Ltd, 2000c).

As noted in the Objectives section above, one of the criteria which the project sought to meet was that of intergenerational equity. This was raised as an issue in the performance audit (Sendt, 2006), with regard to the changes to the fee escalation fraction. The report suggested that the change to the escalation fraction shifted costs to users more distant in time than the original users and thus distorted intergenerational equity. This was denied by the RTA in response, on the basis that the term of the contract (30 years) is not long enough to affect future generations inequitably (Sendt, 2006).

Predicted and actual impacts

Air quality in the tunnel is monitored and is within acceptable limits for pollutants. Ambient air limits were monitored until 2009 and remained within acceptable limits. Air quality data is available from the Cross City Tunnel managers at <http://www.crosscity.com.au/DynamicPages.asp?cid=95&navid=9> (accessed 31 January 2010).

Construction impacts for the project were minimised by the its being constructed entirely underground rather than with a cut and cover method as originally anticipated. Soil removal was effected largely through the eastern distributor so that even truck movements on city streets were minimised.

Overview of public consultation

"The story of the Cross City Tunnel is one of a single over-arching paradox: before and after so starkly different as to suggest they are two completely different projects. The Cross City Tunnel grew out of a long, growing and popular movement to tackle a key city issue: increasingly choked east-west traffic steadily eroding conditions for motorists, public transport users and pedestrians alike." (Infrastructure Implementation Group, 2005, p32)

No formal public interest evaluation was undertaken for the CCT project, although it was thought that community consultation carried out under the EIS processes would serve the same purpose (Joint Select Committee on the Cross City Tunnel, 2006a). The Joint Select Committee thus concluded that there was insufficient public interest evaluation, and that the government should establish that the public interest is best served before opening projects to the private sector (Joint Select Committee on the Cross City Tunnel, 2006a). That being said, the EIS prepared for the project has this to say on the function of an EIS: an EIS is a process to ensure all relevant environmental matters are examined and community and interest groups involved: "the process provides the basis for stakeholders to convey their views on the proposal to government". It quantifies adverse impacts and documents benefits, and then seeks to reduce adverse impacts and increase benefits (PPK environment and Infrastructure Pty Ltd, 2000b, pp1-5).

The result of the consultations in 1998 on 'Heart of the City'.

The proposal was displayed at shopping centres, stakeholder discussion surveys were conducted and a 1800 number was provided (PPK environment and Infrastructure Pty Ltd, 2000b). These consultations indicated a broad level of support, with initiatives for public

transport strongly supported. The broader community especially saw the merits of removing surface traffic and was keen to see major design improvements to Market and Druitt Streets (PPK Environment and Infrastructure Pty Ltd, 2000a). These consultations led to a number of changes to the design (PPK environment and Infrastructure Pty Ltd, 2000b). While there was no formal requirement for community consultation during the preparation of the EIS, consideration of best practice and community interest generally result in a consultation programme facilitating community and stakeholder input. Government agencies and services and representative groups were consulted with in 1999, as was the William Street Steering Committee established by the urban design advisory service (PPK Environment and Infrastructure Pty Ltd, 2000a).

An EIS scoping session was conducted with the RTA, DUAP and EPA to determine what elements should be considered. The project promoters also met with a wide range of affected government agencies, including planning focus meetings with representatives of local councils, a strategic options workshop with the Department of Transport, Department of urban Affairs, EPA, State Transit Authority and City of Sydney, a William Street design workshop and briefing sessions with Darling Harbour Authority and Councilors. They also consulted with service authorities such as electricity companies, and Telstra, and agencies of interest such as the Property Council of Australia. Issues identified formed the basis of detailed assessments and refinements to the project.

The RTA placed advertisements in the local and metropolitan newspapers announcing the commencement of the EIS and publicising the focus group and community discussion sessions. Brochures were distributed to 300 houses en route, and to those who had responded to the October 1998 brochure. Brochures for distribution were placed at the motor registries, libraries and community centres in eastern and inner western suburbs and the Australian Museum. A display was mounted at the City Exhibition Centre, Circular Quay, information was put on the RTA website and a toll-free number put in place. The EIS process included focus group sessions for immediate landowners around entries in Kings Cross and Darling Harbour, five community discussion sessions along the corridor, briefings for property owners and issue-specific information sharing sessions on urban design, air quality, construction impact and bicycle issues.

Issues were raised by the community through telephone conversations, reply-paid submission forms, letters, email, community meetings and discussion groups. Over 146 individuals and organisations raised issues over the phone, whilst 190 people attended briefings, community meetings and discussions, and 200 calls were made to the 1800 line. One quarter of the inquiries were about traffic and transport considerations.

Once the project was approved, the local community was to be informed by correspondence and newspaper notices including information about construction, with the Determination of the RTA Chief Executive, Representations Report, Assessment of the Director of the Department of Urban Affairs and Planning, and the Ministers Approval, all made publicly available. Also the project promoters had to notify property owners affected by stratum acquisition. This was done.

The supplementary EIS attracted 1,000 representations from the community within a month. The initial EIS only attracted 196 representations (Joint Select Committee on the Cross City Tunnel, 2006a). Over half of the representations to the supplementary EIS supported the project in principle but raised objections to specific elements such as stack emissions, traffic impacts, noise and the eastern portal locations (Joint Select Committee on the Cross City Tunnel, 2006a, p98), whilst 661 felt it would have negative impacts on local amenity due to increased traffic and noise, pollution and visual impacts. The overall sense from the community was that consultation on road closures was not productive and that information

was deliberately withheld (Kalowski, 2008). Consultation was considered tokenistic at best (Joint Select Committee on the Cross City Tunnel, 2006a).

Further consultation was held with the local community on changes to the surface streets. There is an indication that these consultations were conducted in response to directions in the Conditions of Approval. An unpublished report by Parsons Brinkerhoff (2004) provides information about the results of community consultation workshops conducted to resolve issues about the eastern portal of the tunnel. The RTA met with residents four times in August and October 2004 to examine concerns relating to traffic safety, traffic speeds, queuing, parking and local road access in the area immediately surrounding the eastern portal of the CCT. Of particular concern was the merging of traffic to turn into Ward St.

Despite these consultation measures, the project clearly generated considerable frustration and anger in the community, particularly about the road closures which limited access to the harbour crossings from eastern Sydney. The Joint Select Committee found that both the toll levels and communication about the levels were inadequate. The method of setting the toll was not transparent. The information on that should be available on the website of the toll road operator. The amount of the toll is not advertised on entry to tunnel (Joint Select Committee on the Cross City Tunnel, 2006a). Part of the reason for the change in attitudes may be the consultations conducted by the project proponents after they commenced work. The Conditions of Approval required the Company to create community liaison groups to facilitate dialogue between the government, the construction consortium and citizens affected by the project. These groups reportedly became very frustrated with the apparent inability of the project engineers to answer questions simply and directly, with relations deteriorating to the point where the facilitators resigned due to a lack of faith in the company's intentions concerning the process (Kalowski, 2008).

Ecological mitigation

A cover for the portal on the eastern end was extended to provide noise proofing for nearby residents and new land for a park.

Regeneration

The estimated number of jobs created was 1,600 direct jobs and 3,600 indirect jobs during construction, and 30 jobs following construction. There was one industrial accident death.

Office space created: a three storey office building to house control centre and back room operations.

Land acquisition

The tunnel operators lease land from RTA, with rent payments made for the first 12 months, and then each successive six month period and the final period of the lease. The payments are AUD 1 plus 35% of actual gross revenue, less GST and other charges other than income tax, from any non-toll business uses of the tunnel or the land leased such as telecommunications, if the toll and administration charge revenue for the period less the amount of GST and taxes and government charges was more than 10% higher than that forecasted by the private sector participants' base case financial model a progressively increasing share of this extra revenue.

Appraisal methods and approaches

Before construction:

- Baseline Studies:
 - Appraisal of tenders;
 - EIS process;
- Monitoring environmental variables:
 - Air quality monitoring.

During construction:

- Monitoring environmental variables:
 - Air quality monitoring;
 - Evaluation against core principles of sustainable development.

After construction:

- Baseline Studies:
 - Performance Audit
 - Parliamentary Inquiry
- Monitoring environmental variables:
 - Air quality monitoring.

The EIS included a cost benefit analysis of the project and compared the tunnel against other methods of achieving the project objectives. The evolution of options involved the definition of objectives; identification of strategic options, initial assessment of strategic options and the assessment of short listed strategic options. The identification of options followed a review of international literature and NSW government responses to travel demand issues. The options identified were grouped under four areas: minimal intervention, management of travel demand, improvements of public transport, and improvements of road based infrastructure. A qualitative process was used to decide which option in each group best met the objectives. A fourth stage then analysed the preferred options in each group quantitatively (PPK Environment and Infrastructure Pty Ltd, 2000b, pp4-2). The options analysed at stage 4 determined that the demand management option would take many years to produce the achievements sought. Similarly the public transport option would not be successful because the analysis of travel patterns indicated that east-west travel was to very variegated destinations and thus not likely to be achievable by public transport. The road options reviewed involved considerable improvement to road capacity, which if achieved on the surface only would create considerable environmental, social and property acquisition costs and degrade the environment (PPK Environment and Infrastructure Pty Ltd, 2000b). Notably the benefits of the project were largely a result of the proposed urban amenity changes on the surface streets.

The EIS also considered the impact of the project on regional planning and land use issues, the effect on the road network, public transport and freight movements and socio-economic effects (PPK Environment and Infrastructure Pty Ltd, 2000b, Chapter 9). The review found that the tunnel provided only a small increase in capacity of the road network, and thus was unlikely to lead to any land use changes or pressures for change at a regional level. But there could be local effects such as changes to the intensity of retail or commercial activity in William St as a result of amenity improvements. The forecast traffic models also showed that the project would not generate trips, and would assist accessibility to the north-west part of the city from the east.

The EIS included models of how traffic volumes would be affected by tolling. The report found that to not toll the tunnel would make it very attractive and divert capacity from longer routes. It would shift the congestion from elsewhere to the environs of the tunnel approaches. This would have an adverse effect, reducing the effectiveness of these other roads. On the other hand, tunnel use was found to be sensitive to toll levels with a reduction of AUD 0.50 increasing traffic by 13.9%, most of which would be induced traffic, with only a 2% decrease in surface traffic. The tunnel was forecast to attract traffic from the main central Sydney east-west routes and routes on the fringe as well (PPK Environment and Infrastructure Pty Ltd, 2000b, pp9-25).

The EIS presents an explicit assessment of the project against the core principles of sustainable development, namely the precautionary principle, intergenerational equity and conservation of biological diversity. It found that the impact against these three principles were as follows:

Table 1: assessment against sustainable development principles

	Precautionary Principle	Intergenerational Equity	Conservation of biological diversity
Traffic and transport changes	No threat of serious irreversible damage	Overall long term changes beneficial in terms of efficiency of road network	No impact
Air quality	No threat of serious or irreversible damage	Small reduction in air-shed emissions and improvements in air quality	No loss of species
Water quality	No threat of serious or irreversible damage	Water will not be allowed to flow unprocessed into waterways	No effect on species
Energy consumption	Energy expended during construction will be offset by fuel savings in the first year	Long term reduction in greenhouse gas emissions from improvements to public transport	No effect on species

(Source: PPK environment and Infrastructure Pty Ltd, 2000b, pp9-47)

The Cost Benefit Analysis in the EIS found that time savings for public transport users equated to about 7% of the total benefit, and pedestrian time savings 6%. These time savings were available from changes to the traffic signaling system, from the current system which favoured east-west travel. The analysis found that the greatest benefits were from vehicle operating costs and travel time savings, and that the reduction in greenhouse gases equated to 4% of benefits.

Table 2: quantification of benefits

Line Item	AUD m
Capital cost	AUD 329.59
operating maintenance costs	AUD 47.33
Road user time savings	AUD 738.15
Public Transport user time savings	AUD 83.48
Pedestrian time savings	AUD 67.15
Vehicle operating cost savings	AUD 211.28
Accident reduction	AUD 10.17
Noise	AUD 0.81
Air	AUD 0.13
GHG	AUD 50.58
loss of parking space	AUD 1.08
Increased property development potential	AUD 0.71

Under these calculations,

Table 3: results of cost-benefit analysis

	Discount rate		
	4%	7%	10%
NPV	AUD 1,446m	AUD 783m	AUD 424m
BCR less recurrent costs	5	3.4	2.4
BCR	4.4	3.1	2.3
NPV/Capital outlay	3.9	2.2	1.3
BCR without external impacts, but including public transport benefits, less recurrent costs	4.5	3	2.1
BCR without external impacts, but including public transport benefits	3.9	2.8	2
NPV costs during construction period	AUD 15.65m	AUD 14.38m	AUD 13.25m

(Source: PPK environment and Infrastructure Pty Ltd, 2000b, pp14-12)

A second set of assessments followed during the tender selection process. This process included a comparison of the proposed tender options against the Public Sector Comparator, which is to say against the project if it was delivered by the public sector (Joint Select Committee on the Cross City Tunnel, 2006a). The call for registrations of interest in 2000 produced eight expressions of interest, which were assessed using pre-determined and weighted criteria to evaluate the proposals as follows:

- design and construction capability (weighted at 27%);
- financial capacity (weighted at 22%);
- project features (including approvals, traffic management, environmental impacts, community liaison, issues management and risk management; weighted at 17%);
- project finance (including experience, delivery record and strategy for equity, debt funding, structure and risk allocation; weighted at 12%);
- organisation (roles and structures within the consortium, roles and relationships; weighted at 5%);
- toll road management (experience, key personnel and commitment; weighted at 9%)
- operation and maintenance (weighted at 8%).

Three consortia were short-listed, CrossCity Motorway, E-Tube Consortium, and Sydney City Tunnel Company. The three consortia were then invited to submit bids. The assessment process included a 'comparative value' assessment against the Public Sector Comparator, and a 'non-price assessment' against weighted pre-determined criteria including:

- design and construction (30%);
- project structure, participants and organisation (25%);
- initial project plans (25%);
- operation and maintenance (10%);
- initial traffic management and safety plans (10%).

Following this process the RTA concluded that CCM afforded the best value (Joint Select Committee on the Cross City Tunnel, 2006a, p75).

In a review of the process of selection used by the RTA the Infrastructure Implementation Group noted that during bid processes, limitations are placed on the negotiation. Neither the toll level nor the government's contribution to the project (nil in this case) were open to negotiation. The group found that this meant that negotiations tended to focus on the government's budget position rather than value for money for users (Infrastructure Implementation Group, 2005, p20).

C PRINCIPAL PROJECT CHARACTERISTICS

Detailed description of route

Two tunnels run east west generally along the alignment of William St. The tunnels are 2.1km long, and have a speed limit of 80km/hr.

Entrances for westbound traffic are from the eastern end of Kings Cross Tunnel, or the Eastern Distributor (northbound). For eastbound traffic there are entrances from the Western Distributor, and from northbound on Harbour Street.

Exits for westbound traffic are from the Western Distributor, and from Harbour Street (northbound and southbound). For eastbound traffic there are exits at the eastern end of the Kings Cross Tunnel, onto the Eastern Distributor (southbound). There is also an exit for westbound traffic to the north onto Sir John Young Crescent.

The tunnels avoid 16 sets of traffic lights westbound, and 18 sets of traffic lights eastbound on the alternative surface streets. The trip through the tunnel takes two minutes in free flowing traffic, saving up to 20 minutes and an average of eleven minutes in peak times on existing surface roads (Road and Traffic Authority NSW, 2008).

Figure 7: graphic of vertical layout of tunnel route

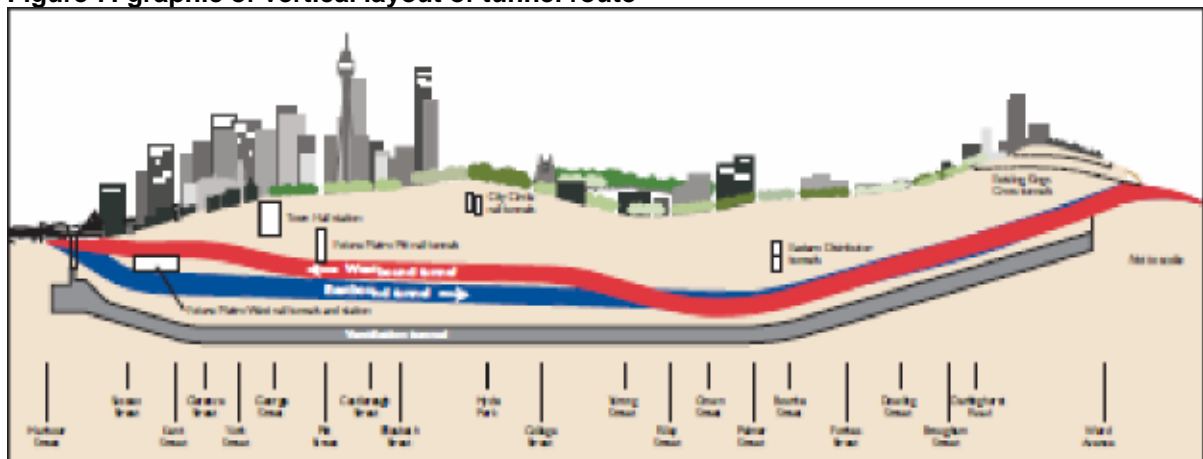


Figure 2. Indicative vertical alignments of the main tunnels.

(Source: Catalyst Communications, 2003, p3)

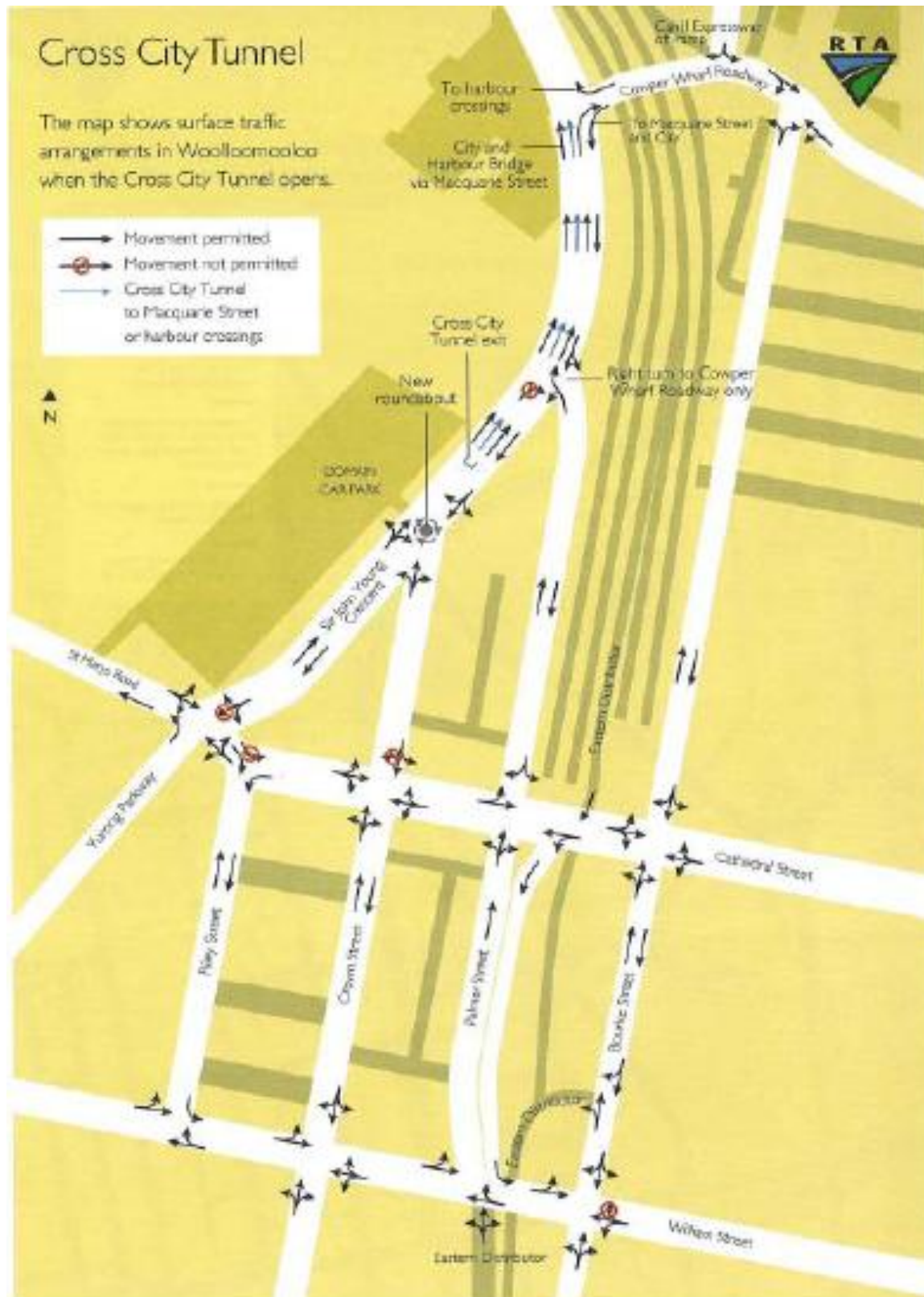
Detailed description of main and intermediate travel nodes

The Cross City Tunnel project involved two phases, the building of the tunnel, and the associated surface street works. The main interconnections of the tunnel are with the eastern distributor, Sir John Young Crescent and Harbour St, apart from the tunnel entrance/exit portals at Kings Cross Tunnel and Western Distributor. The location of these portals is depicted in Figure 7.

The surface street changes involved numerous changes to the organisation of streets. These mainly involved reducing general traffic lanes in William St, widening footpaths, planting trees, building bus transit lanes and improving cycle access. This was achieved through reducing general traffic lanes from three each way to two each way. To

accommodate these changes a number of changes were made to the capacity to turn right out of William St. A graphical depiction of the changes is shown in Figure 8.

Figure 8: approved changes to local traffic movements in Woolloomooloo



(Source: Marshall, 2004, pp1-3)

Key features

A singular road tunnel.

Project costs

The initial project as described in 1998 in the document 'Improving the Heart of the City', estimated the cost of the project would be AUD 0.273bn and that it would be paid for by tolls. This tunnel was only 1.25km long, with a vertical clearance of 4.5m, and was set to carry 4,000 vehicles an hour at peak (Road and Traffic Authority NSW, 1998, p14).

The approval for the original long tunnel (October 2001) estimated a cost of AUD 0.4bn. The project at the time was for two tunnels 1.8km long, from Darling Harbour to Kings Cross with outlets to Sir John Young Crescent and the Eastern Distributor (Planning NSW, 2004, p. ii). The construction of the tunnel was to be through cut and cover and boring machines. A crossover ventilation tunnel was included in the project (PPK Environment and Infrastructure Pty Ltd, 2000c, p11).

In 2001 the supplementary EIS estimated the cost of the project (as built) would be AUD 0.62bn (Planning NSW, 2004). In this project the tunnels would be 2.1km long, and a third ventilation tunnel would be built. The improved project would be constructed entirely using tunnel boring machines. The access to the Harbour Crossings and City North from Cowper Wharf Roadway for local residents would be partly restored and the requirements for changes to surface roads arising from the consultation following the conditions of approval from the first EIS would be carried out. The RTA accepted CCM's proposal to carry out about AUD 75m worth of additional work in return for more revenue by increasing escalation of the toll. The project deed was executed in December 2002 (Sendt, 2006, p21).

The final cost for development, design, construction, fit out and commissioning was reported as AUD 0.68bn in 2005. Surface road and property works were also to be maintained by the consortium (Road and Traffic Authority NSW, 2005b).

The accepted bid for the project included a payment, originally of AUD 100m but actually of AUD 97m on finalisation due to movements in interest rates. Of this sum, AUD 54m was for the initial cost estimate of the project development costs for the RTA, the remainder of AUD 46.1m was a Business Consideration Fee (Sendt, 2006, p5).

After receiving the AUD 97m payment in Dec 2002, RTA used it to recover project development costs, and committed another part to future CCT project costs. By April 2005 it had neither spent nor committed about AUD 9m of upfront payments earmarked for finalisation of outstanding project costs. The RTA earmarked only AUD 3.1m of the unspent portion of the upfront payment on the subsequent cost increases which largely flowed from the Planning Minister's conditions of approval. The rest of the AUD 38.1m (AUD 35m) was paid for through an amendment to the deed, which allowed for a toll increase of AUD 0.15 (across all journeys) from the day of opening (Sendt, 2006). The project thus incurred an extra AUD 110m in project costs (AUD 75m at supplementary EIS stage, and AUD 35m at deed amending stage). These were separate and additional to the upfront payment (Sendt, 2006).

The estimated total cost including financing costs of the project is just over AUD 1bn (Sendt, 2006). Development, design and construction cost was around AUD 0.68bn (Sendt, 2006, p51).

Construction costs timeline

Decision to Proceed	18 December 2002
Construction Start	28 January 2003
Commencement of Use	28 August 2005

Project delivery

The project opened on 28 August 2005. It was originally scheduled to open in October 2005.

Main engineering features

Despite issues which occurred concerning congestion around the city street closures, the high toll levels, and the subsequent collapse of the company, the engineering and construction of the tunnel is considered exemplary.

Details of engineering and construction

At the peak of construction, nine tunnel road headers were used for the 8.5km of tunneling which included the connecting ramps and ventilation tunnel. For the first time in NSW construction history, four of these 100 tonne machines were lowered down a 42m deep vertical access shaft near the intersection of William and Bourke streets. This provided truck access for the removal of tunnel spoil, allowing 24-hour tunneling (Road and Traffic Authority NSW, 2005a).

A total of 680,000 cubic metres of spoil was excavated across the project. An extra ramp was constructed to link the tunnels with the Eastern Distributor so that trucks could remove the spoil via the Eastern Distributor and therefore avoid city streets. The spoil was sold as sub-grade material and used for new road projects around Sydney. During peak periods, more than 5,000 tonnes of spoil was removed daily in nearly 150 truck and trailer loads. Approximately 92% of the excavated material was reused on other infrastructure projects such as the F3 widening, the Bangor Bypass and rehabilitation of Kurnell's former sand quarry (Road and Traffic Authority NSW, 2005a).

Tunneling began at the centre of the route in January 2003, allowing cut-and-cover construction to commence in tandem at the portals. The main tunnels were excavated by a road header, carving a face (8.6m wide by 7.8m high) through the tough sandstone rock using 36 tungsten tipped picks. At the height of tunneling activity, when all nine road headers were in use, they were each able to cut through up to 6m a day in a process which advanced the tunnel in 600mm lengths. The surface of the tunnel was then secured by installing rock bolts and spraying steel fibre reinforced concrete onto the excavated face in two 50mm passes (Road and Traffic Authority NSW, 2005a).

Main engineering key facts and figures

The tunnels have a height clearance of 4.6m (Road and Traffic Authority NSW, 2008). The maximum depth is 53m beneath Hyde Park (Road and Traffic Authority NSW, 2008). The tunnel is fully electronically tolled, and the tolling system is compatible with all other toll roads in Sydney and other states of Australia. The tunnel is speed limited to 80km/hr.

Surface road works included:

William Street: Footpath widening, upgrading and tree planting by reduction to one through lane, one T2 transit lane and one dedicated cycle lane, in each direction.

Park Street at Hyde Park: Footpath widening, upgrading and landscaping by reduction to one bus lane and a single through lane in each direction.

Druitt Street: Bus lanes provided in each direction. Closed to general traffic between Clarence and Kent streets - bus lanes only.

Public transport: Daytime T2 transit lanes on William Street and new bus lanes through Hyde Park. Bus lanes on Druitt Street and Druitt Street viaduct. New bus lanes on other city streets. Increased priority for north/south bus routes at city traffic signals.

Cyclists: New on-road bicycle lanes between Kings Cross and Town Hall.

Construction facts: The tunnel contains 4,000 fluorescent lights; 420km of electric cables; 546 electronic signs; 300 static signs; 108 emergency phones; 133 CCTV cameras; 4,500 cubic metres of asphalt; 44,000 rock bolts; 32,500 cubic metres of concrete (Road and Traffic Authority NSW, 2008).

Road changes

RTA developed 73 road changes, most of which were not closures but changes to lanes and road use. By May 2006, 63 had been completed and six reversed, with four still pending. Twenty-eight of these changes were developed in response to the EIS, and 45 in response to the Supplementary EIS. Twenty-two were specified as MAEs and may trigger compensation if reversed (Sendt, 2006). The widely held view, that the road changes were unnecessary but were designed to force motorists into the tunnel to profit the tunnel operator, is not supported (Sendt, 2006).

CCM proposed one road change, closing the right turn from Cowper Wharf Roadway to the Harbour crossings. The Department of Planning denied this request following community consultation during the supplementary EIS process (Sendt, 2006, p55).

Of the 73 road changes, ten related to tunnel openings, and 33 reallocated road space to pedestrians, cyclists and public transport along William, Park and Druitt Sts. Of the further 45 changes suggested in the supplementary EIS, nine were MAEs, and they were all proposed by RTA. They were based on assumptions of traffic in the tunnel. The Department of Planning accepted the proposed changes because of concerns about induced traffic. In view of the high estimates of traffic to be diverted to the tunnel, RTA and DoP decided needed road restrictions from the outset (Sendt, 2006, p59).

Of the 45 additional changes in the supplementary EIS, three related to changed tunnel portals, 15 to the central corridor (William St and its extensions), and 27 affected streets in Woolloomooloo and Kings Cross. RTA proposed the changes "due to increased traffic volumes forecast under the modified activity" (Sendt, 2006).

D PROJECT TIMELINE

Month	Year	Key Decision/Event
	1990	State Government and City of Sydney Council propose a tunnel under Park St leading to an underground car park and bus interchange
	1995	City of Sydney propose a tunnel from the Western Distributor under Market St and Hyde Park connection to William St near Boomerang St
22 Oct	1998	Premier (Carr) and Minister for Roads (Scully) release an exhibition for comment on the initial concept (the short tunnel) in a 16 page report entitled The Cross City Tunnel: Improving the Heart of the City. A toll of AUD 2.00 is flagged
Aprl	1999	The City of Sydney releases the Cross City Tunnel Alternative Scheme. This was a longer tunnel than proposed in 1998, running to the eastern end of the Kings Cross Tunnel, including narrowing William St (to cars)
22 July	1999	The Director General of Planning issues requirements for the preparation of the initial EIS by letter to the RTA
24 Sept to 11 Dec	1999	RTA publishes the modified proposal in the brochure Cross City Tunnel, Environment Assessment
Nov	1999	The Action for Transport 2010 plan is released and includes the project in a section entitled 'making space for cyclists and walkers'
2 Aug	2000	RTA releases the Cross City Tunnel Environmental Impact Statement for public comment
15 Sept	2000	RTA invites Registrations of Interest from private sector parties for the financing design, construction, operation and maintenance of the Cross City Tunnel Project
6 Oct	2000	Closing date for submissions to the EIS
23 Oct	2000	Closing date for registrations of interest to construct and operate tunnel
Feb	2001	The Minister for Roads announces three consortia have been shortlisted to prepare detailed proposals: Cross City Motorways, E-Tube and Sydney City Tunnel Company
14 May	2001	RTA submits Preferred Activity Report to the Department of Urban Affairs and Planning (DUAP) with a Cross City Tunnel Representations Report
19 May to 18 June	2001	Preferred Activity Report, containing more than 20 modifications to the proposal as presented in the EIS, publicly exhibited
16 Aug	2001	RTA presents an Addendum to the Representations Report to DUAP
Sept	2001	The Proposed Cross City Tunnel: Director General's Report as required under s115C of the Environmental Planning and Assessment Act is submitted to the Minister for Urban Affairs and Planning
3 Oct	2001	Planning approval including 240 conditions is granted by the Minister of Urban Affairs and Planning
Oct	2001	Detailed proposals for implementation of the project are lodged by the three consortia and reviewed by assessment panel.
Feb	2002	Budget Committee of Cabinet approves CCM to be selected as preferred proponent and for the CCM 'long 80 tunnel' option to be selected as the preferred proposal
27 Feb	2002	The Minister for Roads announces that CCM is the preferred proponent. The tender submission from CCM incorporated changes to the Approved Activity that the Minister for Roads considered would provide more benefits and reduce construction related impacts on the community. As a result of the proposed changes a number of additional environmental impacts would occur. A supplementary EIS is prepared
14 March	2002	Letter from the Treasurer (Egan) to the Minister for Roads stating "a key

		objective of the project has been its development at no net cost to Government" and "It is not certain as this time that the project can achieve a 'no net cost' to government outcome if the project cannot proceed without a Government contribution, any such contribution would need to be funded out of the RTA's existing forward capital program".
30 Jul to 31 Aug	2002	The Supplementary Environmental Impact Statement goes on public display. It was displayed at 19 locations and on the RTA website, with a toll free number for public comment, and 25,000 copies of the brochure were distributed
4 Nov	2002	The Supplementary Cross City Tunnel Representations Report is submitted by the RTA to DUAP, drafted in response to the Supplementary EIS, as a result of additional studies and community feedback. Further alterations to the project are proposed.
25 Nov	2002	Supplementary Cross City Tunnel Representations Report released to the public. The right hand turn at Cowper Warf Road was reinstated. The report was displayed at 19 locations and on the RTA website, with a toll free information line, and 5,000 copies of the brochure were distributed.
Dec	2002	Cross City Tunnel: Proposed Modifications of Approved Project - Director Generals Report was completed
12 Dec	2002	Planning approval granted by the Minister for Planning (Dr Refshauge). The approved route is twice the length of the 1998 initial concept. The project is approved subject to 292 Conditions of Approval
16 Dec	2002	Approval is given by the Treasurer (Egan) to sign the project deed, under the Public Authorities (Financial Arrangements) Act 1987
18 Dec	2002	The contract between the CCM consortium and RTA is signed, to finance, construct, operate and maintain the CCT. Differential tolling, AUD 2.50per car, and AUD 5.00 for heavy vehicles.
28 Jan	2003	Major work starts on the AUD 0.68bn Cross City Tunnel
3 Mar	2003	RTA meets the Auditor General to explain that if the terms of the CCT had been made public during the negotiations of the Land Cove Tunnel Project Deed, those negotiations would have been compromised (Land Cove Tunnel Project was signed on 4 Dec 2003)
24 June	2003	The first order for the production of state papers by the legislative council relating to the Cross City Tunnel. It focuses on documents relating to contract negotiations. Sir Laurence Street, independent Legal Arbiter, upholds the validity of the claim of privilege on the majority of documents and only a small section of privileged documents are made public. A substantial volume of documents were released into the public domain without a claim for privilege being made
June	2003	Contract summary provided to the Auditor General
Sept	2003	Documents relating to the Cross City Tunnel are tabled in the Legislative Council. Documents that were considered privileged by the RTA are sent to an Independent Arbiter to determine the validity of this claim, which was upheld.
2 Dec	2003	Letter from the Minister for Roads to the Minister for Infrastructure, Planning and Natural Resources (Knowles), regarding the relocation of the ventilation stack for the CCT, expressing "disappointment and concern at the fact that extracts from the draft Cabinet Minute of this issue have been sighted by members of the CCM consortium, with the consequence that the Government's ability to secure an outcome which best protects the interest of NSW taxpayers may have been compromised". This letter was forwarded to ICAC by Mr Andrew Stoner MP on 3 November 2005
29 Feb	2004	Cross City Tunnel- Summary of Contract tabled in Parliament
16 June	2004	Road header breaks through at Rushcutters bay
21 Dec	2004	Treasurer approves RTA to enter into the Cross City Tunnel Project First

		Amendment Deed with CCM. This deed included a provision that "in consideration for the CCM's agreement to fund and carry out certain [changes if required by the RTA] the CCM may increase the Base Toll to be collected from motorists on the terms set out".
23 Dec	2004	The first amendment deed is entered into by RTA and CCM enabling AUD 35m of additional works to be paid for through a higher base toll (AUD 0.15)
17 Jan	2005	Conditions of the amendment deed met
3 Aug	2005	Joseph Tripodi replaces Carl Scully as Minister for Roads
28 Aug	2005	Tunnel Opened
13 Oct	2005	Papers considered privileged in June 2003 to be reassessed. Documented in the House 20 October 2005
Nov	2005	Summary of Cross City Tunnel Project Deed made public
4 Nov	2005	Dispute validity of claim of privilege on documents, released to Sir Laurence Street and then made public
Dec	2005	Cheung Kong Infrastructure, the major equity investor in the Cross City Tunnel project, writes down the carrying value of their investment in the CCT by AUD 0.102bn, "in view of lower [that] projected toll revenue"
9 Feb	2006	Announcement made that Peter Sansom is to be replaced as CEO by Graham Mulligan
17 Feb	2006	Roozental replaces Tripodi as Minister for Roads
28 Feb	2006	Joint Select Committee on the Cross City Tunnel tables its First Report
5 Mar	2006	The tunnel toll is halved for at least three months, the Premier and Minister for Roads announce 12 category C and D road changes to be reversed.
April	2006	ICAC reports no corruption in regard to leaking of cabinet minutes
April	2006	William St surface works completed
27 Dec	2006	Cross City Tunnel placed in receivership by bank syndicate
20 June	2007	Leighton Contractors/ABN Amro buys tunnel for AUD 0.7bn
19 Dec	2035	Cross City Tunnel due to be returned to public ownership.

E PROJECT FUNDING

Background to funding

When the project was first mooted in 1998 there was no possibility of public funding. The Government was committed to debt reduction rather than infrastructure spending. Maintaining low debt, at or below the level of 30 June 2005, is enshrined in the Fiscal Responsibility Act 2005. The government did toy with the idea of a public tollway company for a period before settling on funding the project through a PPP (Joint Select Committee on the Cross City Tunnel, 2006a, p36). It also conducted a public sector comparator study which showed the public sector could not deliver the project as cheaply or easily as the private sector could.

In fact the NSW government could have borrowed the money – a property council study had showed that it could borrow AUD 5bn without affecting its credit rating. The argument from the Treasurer however was that since the time was one of high economic growth and high revenues it was not the time to borrow but rather the time to pay back debt (Joint Select Committee on the Cross City Tunnel, 2006a, p40).

This led to a commitment on the part of the RTA to completing the project at no cost to government, including to its recurrent budget. This in turn led the winning bidder to provide a business consideration fee of AUD 97m in its bid of AUD 0.68bn.

Funding key stages

- October 2001: detailed bids provided by three consortia;
- 3 October 2001: planning approval with 240 conditions granted;
- 27 February 2002: CCM announced preferred bidder with non-conforming bid leading to need for supplementary EIS;
- 18 December 2002: Contract signed (with an amendment for extra works to the value of AUD 75m);
- 23 December 2004: First Amending Deed signed (adding extra works to the value of AUD 35m);
- December 2005: Cheung Kong Infrastructure writes down the carrying value of the investment by AUD 0.102bn;
- 27 December 2006: a syndicate of 16 Australian and international banks appointed insolvency firm Korda Metha as receivers after accrued debts exceeded AUD 0.56bn (Wikipedia, 2008);
- 20 June 2007: Leighton Contractors/ABN Amro buys tunnel for AUD 0.7bn.

Predicted and actual revenue

Revenue for the road is generated entirely through tolls, with a toll in both directions on the road. This is different to some roads in Sydney, such as the Harbour Bridge where a toll is levied in one direction only.

The toll estimate initially provided by RTA was based on what the cost benefit analysis in the original EIS estimated was the grossed up benefit to the consumer. It was set at AUD 2.50 on all vehicles at March 1999 prices, subject to quarterly increases by CPI only. Westbound vehicles using the northern exit at Sir John Young Crescent would pay only AUD 1.10 for that considerably shorter trip (Joint Select Committee on the Cross City Tunnel, 2006a, p85).

The first variation was to allow differential tolls for heavy vehicles at double the rate for ordinary vehicles. This was included in the supplementary EIS following the acceptance of the long 80 tunnel proposal from CCM (Joint Select Committee on the Cross City Tunnel, 2006a).

The next changes were made due to the conditions for approval for the project. These added AUD 75m of costs for maintaining flexibility in the road network, changes in the insurance market, and additional requirements imposed by government infrastructure owners. The RTA renegotiated with CCM to finance these requirements in return for changing the toll escalation regime from a basic CPI increase regime to:

- 1998 to Dec 2011: Minimum of 4% or CPI;
- Jan 2012 to Dec 2017: Minimum 3% or CPI;
- Post 2017: CPI.

(Joint Select Committee on the Cross City Tunnel, 2006a, p86).

The final increase in tolls occurred in late 2004 with the first amendment deed, which was entered into to allow CCM to carry an extra increase of AUD 35m to the cost of works from further conditions of approval required of the RTA. This change increased the base tolls to AUD 0.15 for cars and AUD 0.30 for heavy vehicles (Joint Select Committee on the Cross City Tunnel, 2006a, p86). The Ernst and Young report in December 2004 states this increase would result in an increase of AUD 308.199m over the life of the project (Joint Select Committee on the Cross City Tunnel, 2006a, p87).

In 2006 the toll level was reportedly AUD 3.56 each way for cars (Joint Select Committee on the Cross City Tunnel, 2006b).

Traffic forecasts

Traffic forecasts for the Cross City Tunnel were grossly inflated over the real number using the tunnel. This led directly to the financial collapse of the initial owner of the tunnel, CrossCity Motorways Pty Ltd.

The initial traffic forecasts for the tunnel were made in the original EIS. The traffic modeling in that document provides that:

- there is little difference between peak times and business times, so that the traffic profile during weekdays is pretty flat and surveys show up to 50,000 cars a day east-west through traffic (PPK Environment and Infrastructure Pty Ltd, 2000b, pp2-42);
- it is estimated that in 1998, 60,000 vehicle trips per day were made across central Sydney and areas immediately to the south between the inner east sub-region and areas in the west and northwest of Sydney. This is expected to increase to 75,000 per day in 2016 (PPK Environment and Infrastructure Pty Ltd, 2000b, pp2-48);

- the analysis of the travel patterns indicates that east-west travel is to very variegated destinations and thus is not likely to be achievable by public transport options (PPK environment and Infrastructure Pty Ltd, 2000b, pp4-7);
- two lanes of traffic in each direction are equivalent to a nominal capacity of 4,000 in each direction. The estimated traffic is around 2,200 in each direction per hour in 2006 and 2,500 per hour in 2016 (PPK Environment and Infrastructure Pty Ltd, 2000b, pp6-19);
- forecast traffic flows in tunnel are: daily 69,600 in 2006 and 77,600 in 2016 (PPK environment and Infrastructure Pty Ltd, 2000b, pp9-2);
- "allowing for natural growth in traffic demand the tunnel is likely to capture over 90% of potential east-west traffic passing through Central Sydney in 2016" and the forecast shows the tunnel would not generate trips (PPK environment and Infrastructure Pty Ltd, 2000b, pp9-11).

Table 4: traffic estimates for 2006 and 2016

Traffic Estimate (Year)	VPD 2006	VPD 2016
Masson Wilson Twiney Pty Ltd (2000) long tunnel	69,600	77,600
Masson Wilson Twiney Pty Ltd (2002) long (80km/hr) tunnel	86,330	101,700
Hyder Consulting (2002) CCM's business case estimates	90,000	

(Source: PPK environment and Infrastructure Pty Ltd, 2000b, p79)

Traffic modeling conducted on the effect of the reversal of changes to the surface streets found that they would have only a small impact on CCT patronage, mostly in the western direction. Proposed changes to Bourke St would only generate traffic of 3,000-4,000 vehicles per day, well below the pre-CCT numbers of 7,000. Changes to Sir John Young Crescent would increase traffic on Cahill Expressway by about 7,500 vehicles per day but only a small number of these would be as a result of CCT (Masson Wilson Twiney Traffic and Transport Consultants, 2006).

Funding sources

The Trustee and Company are owned by CrossCity Motorway Holdings Pty Ltd, and the equity investors are CKI City Tunnel Investment (Malaysian), GmbH (Bilfinger Berge AG subsidiary), and smaller superannuation trust equity investors (Joint Select Committee on the Cross City Tunnel, 2006a). Capital raised is AUD 0.846bn, AUD 0.3435bn equity.

The project was refinanced in 2003, involving about 17 national and international banking institutions, and the total capital raised for the project was around AUD 0.846bn (Johnston & Gudergan, 2007, p575).

The total cost was AUD 0.68bn, financed by AUD 0.58bn debt and the remainder in equity. Half the initial debt finance was provided by Deutsche Bank and Westpac Banking Corporation, with further syndicate participation expected to reduce their commitment if the project proceeded. CKI financed its equity commitment by means of a 42-month equity bridging loan from China construction bank (Pretorius, 2007).

Commentary on financing/funding

A great deal of comment has been made about the no-cost to government policy and its effect on the overall cost of the project. Most of this is represented above. This project is an excellent demonstration of how a well-executed project can fail due to a failure in its business case. Here the fundamental failure was in the estimation of revenue, which was based on traffic modeling. This modeling was clearly in error and representations were made to the Joint Parliamentary Committee suggesting that CCM's estimates exceeded the ceiling capacity for the tunnel, and indeed that the RTA's estimates exceeded the ceiling capacity of the major intersection directly before the eastern portal, a site which has evidenced in long term traffic counts that it has reached the ceiling capacity at around 52,000 to 53,000 vehicles per day (Zeibots, 2006).

Apart from clear problems with the traffic modeling, it may be that there were several factors which created an enticement to overestimate traffic volumes. Firstly, the main benefits of the road were in its capacity to divert traffic from the surface streets. Secondly, the requirement that the project be undertaken at no cost to government meant that there was an increased impost of almost one-sixth the standard cost of the project. It should be noted that CCM was the only bidder to submit a bid with a business consideration fee, or indeed a payment to meet the RTA's projected project costs. Both these factors necessitated a higher cost for the project, which logically could only be funded with sufficient throughput of customers.

The present lack of traffic may also be a function of other factors such as the level of the toll, and the concerted public campaign to demonise the project. Certainly the new owners of the company believe that they will eventually be able to recoup their investment of AUD 0.7bn on the basis of current traffic and their estimates of its growth. This would provide some support for the notion that an inability to restructure the financial model under which CCM was operating was at least partially to blame for its collapse.

Finally considerable concern has been raised about the use of toll roads to fund urban amenity measures which by their nature do not benefit those in the tunnel. The argument in most of the reports arising from the Cross City Tunnel is that such public good actions should be costed to the community as a whole rather than the motorist.

F OPERATIONS

Reported traffic volume

Actual traffic numbers reported to parliamentary inquiry (PPK Environment and Infrastructure Pty Ltd, 2000b) were:

- 2 September 2005 20,000 (first week);
- 2 December 2005 31,000;
- 6 December 2005 27-28,000;
- Week beginning January 30 2006:
 - Monday 26,380;
 - Tuesday 27,388;
 - Wednesday 29,292;
 - Thursday 29,550;
 - Friday expect between 30,000 and 31,000.

After the tolls were halved in 2006, traffic volumes changed, with a daily average traffic volume of 33,500 from 6 March to 30 March (Nile, 2006).

How traffic forecasts were formulated

SEIS predicted the new tunnel would generate more operating revenue through higher speeds and increased length, therefore attracting more users (Joint Select Committee on the Cross City Tunnel, 2006b).

The 2006 traffic model reported implications relative to the nature and scale of the project as approved on 3 October 2001 and modified in December 2002. Changes have occurred to affect base assumptions including population and employment growth; toll behavioural responses; petrol pricing; travel time savings; and e-tag uptake in the corridor. "Even taking that into account tunnel traffic volumes are still in a 'ramp-up' phase, traffic forecasts provided in the Supplementary Representations Report for the CCT are clearly at variance to that now observed" (Masson Wilson Twiney Traffic and Transport Consultants, 2006, p3). So they are using different models. The new models rely on more recent data, and a new modeling technology. The new modeling is done at two levels, strategic forecasting Sydney-wide, and micro-simulation of Sydney CBD only. The report notes that the road network is still in a state of flux due to the ramp up phase and continued roadworks. So the data is not validated nor has the model been calibrated.

The travel times suggested by these new models were validated on William St, Park St, Bathurst St and Druitt St. Only one east-west screenline test has been carried out on the CBD, in comparison with four in the EIS. The model's value of time is not validated and not audited.

The modeling found that the RTA SCATS - Sydney Co-ordinated Adaptive Traffic System does impact road capacity in the CBD. This was not previously accounted for. Micro-modeling picked this up and where relevant it was fed into strategic modeling. New works will impact SCATS. The method is considered an improvement on the EIS, despite the lack of validation (Masson Wilson Twiney Traffic and Transport Consultants, 2006).

In the original EIS, the traffic modeling used screenlines to indicate the changes to traffic flows on surface streets. These screenlines showed:

- no change to traffic in Ultimo;
- reductions in east west flows at screenlines at:
 - York St (19.7%);
 - Macarthur St (18.5%);
 - Woolloomooloo 35.6%;
 - back of the Domain 43.4%;
- also shows increase in north south traffic of 4.5% at Liverpool St;
- daily traffic east-west at the screens was 145,100 through Woolloomooloo and 150,600 through York St without the tunnel in 2006.

{PPK Environment and Infrastructure Pty Ltd, 2000 #371 @9}.

The traffic forecasts were:

Table 5: traffic forecasts for 2006 and 2016

	2006			2016		
	Vehicles per hour AM Peak	Vehicles per hour PM Peak	Daily	Vehicles per hour AM Peak	Vehicles per hour PM Peak	Daily
Main tunnel eastbound	1,900	2,200	27,500	1,900	2,500	30,900
Main tunnel westbound	2,200	1,900	25,200	2,600	2,100	28,600
Sub total	4,100	4,100	52,700	4,500	4,600	59,500
SJYC Exit	1,700	900	16,800	1,900	800	18,100
Total	5,800	4,900	69,600	6,400	5,400	77,600

(Source: PPK environment and Infrastructure Pty Ltd, 2000b)

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