Infrastructure Australia

Review of Major Infrastructure Delivery

December 2008

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1 Summary

Successful infrastructure delivery requires full attention to the detail and the overarching concept of projects at each stage of project development, approval, construction, and operation. There is no winning formula, but there are several essential elements that help to improve project success and minimise the probability and consequences of unintended adverse project outcomes.

For a range of reasons, State, Territory and Federal Governments are increasingly looking to private sector involvement in major project delivery to improve the cost effectiveness and timeliness of projects, and utilise the knowledge and systems of private financers, construction firms, and operators. Private sector involvement does not change the fundamental risks involved in major project delivery. However, it does inject important risk allocation and management issues into project success.

This review examines a set of six case studies to see what lessons can be learnt for the successful delivery of future infrastructure projects. It is not intended to reflect on how these projects might have been done differently. The case studies selected by Infrastructure Australia (IA) for this purpose include:

- Sydney's Cross City Tunnel;
- Melbourne's Southern Cross Station;
- Sydney's Westlink (M7 Motorway);
- Sydney's New Schools Project;
- Melbourne's CityLink Motorway; and
- Sydney's Airport Rail Link.

All of the case studies under review were delivered using Public Private Partnership (PPP) delivery models. However, the messages and lessons in this report are not about PPP projects or improving the success of PPPs but identifying key principles for better risk management, and redefining the responsibilities of Governments in delivering future infrastructure projects, be it with or without private sector partners. Irrespective of the funding source, all infrastructure proposals are considered in the context of a constrained budget, in which worthwhile infrastructure projects are prioritised and all available funding sources are considered to ensure best value for money.

In developing themes for improved project success, it is important to state that each of the projects examined were a product of their time. Some might now be considered 'old', and involved (what was then) groundbreaking technologies and methods that are today taken for granted, such as electronic tolling.

Most were also undertaken at a time when State Governments could not afford major infrastructure investments but required new projects to invigorate economies and lay the foundations for sustainable future economic development. It was also a time when there was ample credit, high usage of 'financial engineering', and strong private sector interest to invest in major infrastructure projects.

For example, Melbourne's CityLink was one of the earlier major infrastructure projects to be delivered using the PPP model when the combined experience of

State and private sector parties was still being developed and electronic tolling technologies were less tested.

Conversely more recent projects, such as the WestLink M7, benefitted from its predecessors challenges and successes. Hence the recommendations in this report are not intended to infer how past projects could have been done better, but how the combined experience of a selection of projects can help inform future infrastructure delivery.

Key findings

There are a number of common themes or lessons for future projects that arose in all the projects examined.

- **Project selection must reflect demonstrated need.** This means ensuring that projects only proceed if they address clearly identified problems and provide the greatest net benefit to stakeholders.
- **Cost effective projects are not the same as least cost proposals.** Government should critically evaluate proposals from bidders to independently identify potential risks and assess ability to complete the project to specification and proposed budget.
- **The allocation of risks and rewards must be clear and pragmatic**. This includes ensuring appropriate risk management strategies are in place for both Government and the private sector that are sufficiently flexible to deal with all of the risk that emerges over the course of the project.
- **Need to think more broadly than the project itself.** For larger infrastructure projects in particular, all parties should assess how well a project is integrated in the surrounding business and community environment. In some cases, this may mean transport projects should be addressed as part of a 'whole of corridor' solution.
- **Unforeseen changes can be commonplace. Contracts and relationships need to be flexible enough to accommodate changes.** To achieve this, contracts should be considered as a 'living document' and provide all parties with appropriate degrees of flexibility.
- **Effective community consultation is critical**. Communicating with the community at all stages of the project is important to ensure there is full information about project specifications and impacts. The evolution of projects including design and outputs should reflect community input wherever possible.
- **Collaborative and trust-based relationships between parties are important to project success**. Government and private sector partners need to have a cooperative and collaborative approach to project delivery, with transparent communication of expectations and responsibilities.
- **Clearly define project scope**. This should occur before going to tender and be well communicated during the tender process. Contracts should also be

structured so that they are capable of managing and resolving scoping issues.[1]

- **Utilisation of new infrastructure assets can be hard to predict**. Demand modelling should be as robust (and appropriately conservative) as possible, and funding arrangements should allow for unforeseen outcomes in patronage.

Lessons from each of the case study projects

From a review of publicly available material commenting on the projects, the key lessons that emerge from that material from the individual case study projects and the implications for future infrastructure delivery can be summarised in Table 1.

Table 1: Summary of case study key lessons

Case study	Key lessons	Implications for future delivery
Sydney's Cross City Tunnel	• All parties to a project need to fully understand how Government's need to manage the whole transport network can affect individual projects. • Having a statistical evidence base on traffic flows and the road network is important to demonstrate that Government management of the transport network does not have a material adverse effect on individual private projects. • Late changes in project scope (eg the addition of pollution filtering technology) which when funded by the private sector through higher tolls can adversely affect demand and overall viability. Vehicle forecasts need to be recalculated for any material changes to assumed toll levels. • Demand forecasts can suffer from optimism bias. In this case the demand forecasts of both the Government and the private party overstated actual demand. • Consistent with the finding of the NSW Audit Office, requiring bidders to compete based on the size of their upfront concession or 'Business Consideration Fee' has a range of risks and such fees should be limited. • Privately funded projects that fail to meet expectations expose Governments to political risk.	• Government needs to maintain its right to manage the transport network around any PPP project. • There is still risk for the Government when undertaking a PPP, or any other approach where risk is transferred to another party, and that these risks need to be managed. • Risk management strategies must include risk to Government of private sector failing to manage the risks it takes on. • Assessment of project bids should include identification of key assumptions upon which success depends. Such critical assumptions should be subject to independent evaluation.

[1] This is also a key finding from the recent Blake Dawson report 'Scope for Improvement 2008'.

Case study	Key lessons	Implications for future delivery
Melbourne's Southern Cross Station	• 'Constructability' of designs could arguably have been more fully analysed to ensure that relevant parties have the capacity to deliver projects as proposed. In this case, the engineering and construction of the iconic roof proved to be a considerable challenge. • The complexity of the roof design was potentially underestimated by the private sector partner and its cost was higher than expected. • Major project upgrades, on existing infrastructure that needs to remain operational, pose complex technical challenges. • It is important to ensure that construction companies have a suitable team to perform all of the tasks and manage all of the risks that are accepted by them. Allocating additional technical skills to undertake the more complex aspects may have improved outcomes. • The precinct development was generally well integrated and able to ensure that the project did not divide the city from Docklands. However, with the benefit of hindsight, the bus station design may have been more architecturally consistent with the rest of the development. This was not a requirement of the Governments project scope, and improved precinct wide planning may have identified the merit of greater consistency.	• There are additional risks associated with 'iconic' projects and these risks need to be managed more intensively. Additionally, 'icon' projects are likely to require more flexibility in contracting and funding arrangements to ensure that all project risks are managed. • Construction risks need to be proactively managed by all parties. • Governments should focus on the best risk adjusted cost outcome, not the lowest cost bid. • Individual projects should be considered as part of a precinct development to ensure that they are well integrated with the site and respond to the needs of the precinct. • PPP models can be very effective forms of delivery, even when major issues arise with the concessioner in question.
Sydney's M7 Motorway	• The relationship between (co-funding) State and Federal Government agencies appeared generally collaborative and flexible and this helped make for a successful project. For instance, the agreed redirection of surplus funds to investments in access roads helped to improve utilisation. • Private sector parties can bring innovative ideas to projects, such as the design for the intersection with the M4, which was superior to all prior designs. • Extensive market research was important to help sell the project to motorists, as well as ensure that the pricing strategy suited their expected use patterns (i.e. allowing infrequent users to pay toll within 24 hours rather than signing up to credit arrangements, having a toll free period, and offering undifferentiated pricing for trucks to encourage their use).	• Effective stakeholder engagement by both the Government and the private sector partner should be key part of project planning and delivery. • Large greenfields projects offer opportunities to obtain economies of scale, and allow concurrent construction of various project segments. • Projects with predictable site access issues and standard construction techniques are more likely to achieve successful outcomes. • Projects that provide a missing link in a strategic corridor have more likelihood of success than those that do not.

(continued next page)

Case study	Key lessons	Implications for future delivery
NSW's New Schools Project	• It is important to properly advise bidders of all project requirements. A stronger bidder interaction component was built into the second contract for the new schools project, as private sector understanding of DET requirements was insufficient for the first contract. • The first contract was more complex and the key performance indicator ('KPI') regime was simplified for the second contract, which reduced transactions costs. • Private sector delivery can provide innovative outcomes, such as third party revenue from childcare facilities adjacent to schools. • Setting up public sector facilities in new development areas leaves the State with unavoidable utility risk and a reliance on the private sector to develop around them. • State projects that require local council approval expose the State to local council demands that can be time consuming to resolve. • The planning process can result in public facilities being allocated the less desirable pockets of land. The additional construction costs required to get them to a level that the community is expecting should be factored into total project costs.	• PPPs can be used to successfully deliver social infrastructure, reducing both the cost and time taken to deliver. • Clear guidance and understanding between all parties on the technical requirements of projects is important. • To encourage innovation, technical requirements and KPIs should be as simple as possible, being outcomes focused rather than micro-managing the delivery process. • Bidder engagement sessions can prove a valuable tool in encouraging innovation by clearly articulating required outcomes. • Cooperative relationships between State and local council approval authorities improve project outcomes. • Need to establish early on in the process what are 'reasonable' demands for local councils to make of State projects during approval.
Melbourne's CityLink	• Projects that have elements that are being developed for the 'first time' will face unique challenges. These include technical challenges, such as those relating to a fully electronic tolling system, as well as stakeholder and community resistance to the use of new technologies (concern about back up systems and contingencies, reluctance from financiers etc.). • The collaborative relationship between the parties provided an important degree of flexibility, allowing for a series of deed amendments over the project life. This made it possible to successfully accommodate changes in project scope, such as the addition of the Exhibition Street extension. • Allowance in the contract for the private sector partner to receive compensation if revenue was 'materially affected' by the construction of a freight rail link to Tullamarine Airport led to contractual disputes between the private sector partner and the Melbourne CityLink Authority. • Some construction companies can be slow to fully analyse problems that may exist in components of projects. There may also be some delays or potentially some reluctance about fully informing Government of such problems until solutions are developed. The issues with Burnley Tunnel had some of these features.	• Major projects should have an independent reviewer to check on the quality of construction, design and implementation. • Collaborative relationships and clear contractual obligations between parties are essential to effectively managing unexpected events. • It is difficult to predict future infrastructure needs. Governments should avoid making concessions that limit their options to deal with future infrastructure needs. • Innovative aspects of a project that affect users need to be well designed and communicated to stakeholders. • Governments need to maintain the ability to address future infrastructure needs. This may require offering compensation if existing projects are adversely affected by future investments. • Community consultation should be an essential part of project development and implementation to ensure that the right amenity issues are addressed in the project design. Consultation should also be undertaken during all phases of the project and by parties that are experts at consulting with the public. Obtaining community input to mitigate noise issues is an issue warranting strong focus.

Case study	Key lessons	Implications for future delivery
Sydney's AirportLink Railway	• It is important for Governments to independently assess whether the cost of projects can be fully privately funded (and reimbursed through user charges). Initially promoting the project as having 'no net cost to Government' created public expectations that could not be fully met. • Initial cost estimates of the project understated the likely cost of upgrading the network and the fleet to make it fit for purpose, and upward revisions created some public scepticism about the project. • The contract between the parties was possibly insufficient for resolving all the complex challenges that would arise. This may be partly due to the relatively short period utilised to develop and execute the contract. • The major State Government financial commitment to the project utilised a large proportion of the capital expenditure program in the following years. • Changes to the project scope through the inclusion of major extra components (eg new stations) should occur only after undertaking revisions to the economic cost benefit analysis (CBA) to test merit. • Private sector acceptance of financial risks does not fully absolve the Government of responsibility to ensure the viability of the financial model used. There is merit in Government fully assessing the achievability of key assumptions such as patronage forecasts (including ramp-up assumptions) and operating cost estimates to assess whether cashflows are adequate to service debt obligations. • The State Government contractually committed to KPIs that proved difficult to meet, which led to claims of non performance. • Seemingly strained relationships between financiers, operators and the State Government prolonged the period of contract renegotiation along with intractable positions on issues, led to a longer dispute resolution and arbitration process. • The State Government was able to provide additional funding for the project by diverting a proportion of the existing train fare from passengers travelling to and from the Airport Link Stations, provided ongoing financial support without committing the State to a large upfront payment.	• Contracts should not expose Governments to excessive risk if private partners are unable to fulfil their contractual obligations. • Some infrastructure projects have good long term merit from a strategic transport planning perspective but are difficult to justify by current travel patterns. Funding arrangements for such projects should reflect this without expecting current users to fund all the gains for future users i.e. have a greater allocation from consolidated revenue. • Governments should more closely assess their ability to regularly meet KPIs as repeated under performance may trigger claims. • KPIs in PPP contracts should be structured to provide credits or payments between the parties in the event of good performance or under performance. Moderate under performance should not trigger contract default. • Governments should ensure that they maintain the right to deliver public services irrespective of the contractual status of PPP contracts for infrastructure projects. • Where demand is critical to project feasibility, a strong focus on fare levels / pricing is required to ensure it encourages utilisation. • Plan early the environmental assessment process for new projects to avoid having to formulate new Government planning policies to accommodate project specific complexities in the approvals process.[2]

[2] This point was also made by Blake Dawson (2008), 'Scope for Improvement'.

2 Background

The importance of infrastructure to economic success

Modern, efficient infrastructure underpins the economic health of all economies. High performing infrastructure improves the efficiency of a range of activities, and can help to ease inflationary pressure and promote sustainable economic growth. As economies grow and populations expand, so does the scale of demand on the infrastructure.

Australia's sustained period of economic success has led to a sustained increase in infrastructure demand. Both to respond to this demand and to the current challenges of a global economic slowdown, new infrastructure investments will be made over the short and medium term. The renewed commitment by State and Federal Governments to infrastructure investment provides an opportunity to examine the key drivers of infrastructure success and ensure that challenges and lessons from past infrastructure projects are utilised for new investments going forward.

Key tasks for this review

The key tasks for this review are to examine six major infrastructure project case studies to:

- assess the various factors that affected individual project success; and
- develop common themes that can provide guidance for new infrastructure commitments to improve project success.

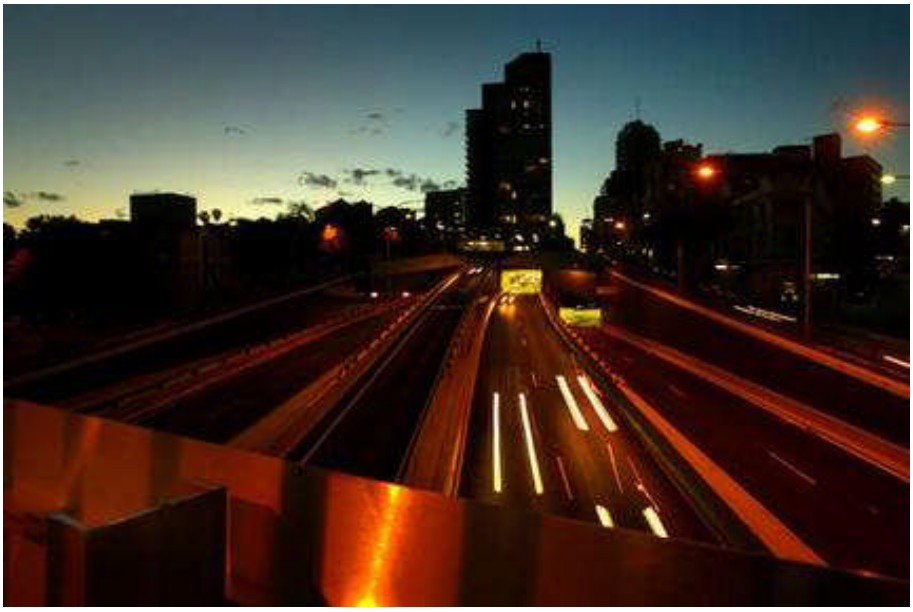
The case studies selected by IA for this purpose include:

- Sydney's Cross City Tunnel;
- Melbourne's Southern Cross Station;
- Sydney's Westlink (M7 Motorway);
- Sydney's New Schools Project;
- Melbourne's CityLink Motorway; and
- Sydney's Airport Rail Link.

All of these projects are PPPs. However, it is not the procurement strategy that is the focus of this study. Rather, it is draw out lessons to improve project success associated with:

- infrastructure assessment and planning;
- project planning;
- choice of delivery and funding methods, including the allocation of risk;
- project management and delivery; and
- ongoing operations.

3 Sydney's Cross City Tunnel



A Cross City Tunnel to remove surface traffic from the CBD

Project summary

The Cross City Tunnel (CCT) project involved the procurement of two toll road tunnels running 2.1 kilometres east-west underneath Sydney's Central Business District (CBD). The tunnel runs from Darling Harbour to the west of the CBD to the Kings Cross Tunnel in the east, shown in Figure 1.

The project was billed as providing the following benefits:

- reduced travel time across the city to approximately 2 minutes, from up to 20 minutes, by avoiding 18 sets of traffic lights;
- reduced number of vehicles on city streets;
- improved reliability of bus services in the city;
- improved access and movement within the city for taxis, delivery vehicles, cyclists and pedestrians; and
- improved safety and aesthetic features of city streets for pedestrians, residents and business people due to removal of intrusive through traffic and provision of more footpath space in some streets.

The project formed a part of the NSW Government's *Action for Transport 2010* strategic plan and was intended to remove a large amount of surface traffic from the CBD. The project was also intended to improve the environment of Central Sydney, the reliability of public transport and travel times for vehicles travelling east-west across Sydney.

To this end, the project included various street works designed to alter traffic flows in and around the suburbs at either end of the tunnel.

Work on the tunnel commenced in January 2003, and the tunnel opened almost 3 years later in August 2005. Since opening, patronage has been lower than originally forecast, and less than two years after opening the

CCT project was the first road project in Australia procured by PPP to go into receivership.

The key features of the CCT project are outlined in Table 2.

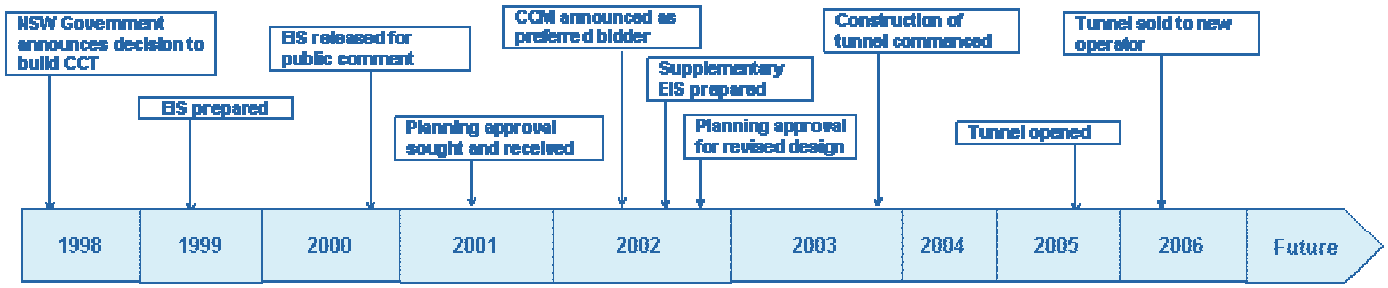
Table 2: Project overview: Sydney's Cross City Tunnel

Key features	Sydney's Cross City Tunnel
Project specifications	Finance, design, construction, operation and maintenance of two new east-west toll road tunnels between Darling Harbour and Rushcutters Bay. Finance, design and construction of associated improvements in surface roads – including bus and cycle lanes, intersection improvements and pedestrian facilities.
Procurement strategy	PPP using a Build Own Operate Transfer (BOOT) model. Under this model, components of project are owned, operated and maintained by private sector until 18 December 2035. The CCT was designed, constructed, financed, owned, operated and maintained by the CrossCity Motorway (CCM) Consortium.
Financial cost	Cost of construction was $680 million, funded by the private consortium and reimbursed by toll receipts. The total cost of the project to CCM was approximately $1 billion, including financing costs.

Source: NSW Auditor-General 2006, Performance Report- Cross City Tunnel, Sydney.

A timeline of key milestones is illustrated in Figure 1.

Figure 1: Timeline of events for the Cross City Tunnel



Delivery process

Inception, planning and approval

Positive cost benefit ratio was later reduced as project was re-scoped to exclude car parking facility

The planning phase of the CCT was extensive, with the idea of a tunnel running east-west underneath the Sydney CBD first proposed in 1990.

At that time, an economic evaluation estimated that a positive benefit cost ratio was only obtained when additional benefits in the form of the operation of a large underground car park with associated retail was added to the scheme. Without these additional benefits, when the road user benefits including travel time savings were compared to construction costs, the benefit cost ratio was 0.88[3].

The basic concepts behind the CCT as it was eventually built were developed by the Road Traffic Authority ('RTA') from the mid-1990s and were first publicly released in a public consultation report on 22 October 1998.[4] This cross city tunnel was similar to that previously designed, running from William Street (outside the Australian Museum) under Park and Druitt Street to Sussex Street. In September, 1999, the State Government adopted a modified proposal – a longer tunnel, under William Street from Kings Cross to Sussex Street.

A cost-benefit analysis (CBA) prepared for the modified design in 2003 delivered a positive cost benefit ratio of 3.0 at a discount rate of 7% including design, construction, operating, and maintenance costs (Table 3).

Table 3: RTA estimates of the likely economic performance of the CCT

Discount rate	PV of costs	PV of benefits	NPV	Benefit : cost ratio		NPV / initial capital cost
				Benefits – O&M / D&C	Benefits / D&C + O&M	
4%	$693m	$2,754m	$2,061m	5.0	4.2	4.0
7%	$576m	$1,689m	$1,114m	3.4	3.0	2.4
10%	$495m	$1,102m	$607m	2.4	2.3	1.4

Source: RTA 2003, Cross City Tunnel: Summary of Contracts

[3] Manindis Roberts Consultants, 1990, *Park Street Tunnel – Economic Evaluation- Report to the Concrete Kumagai Joint Venture,* p.12.

[4] NSW Premier, Bob Carr and Minister for Roads, Carl Scully, *The Cross City Tunnel: Improving the Heart of the City*, joint media release

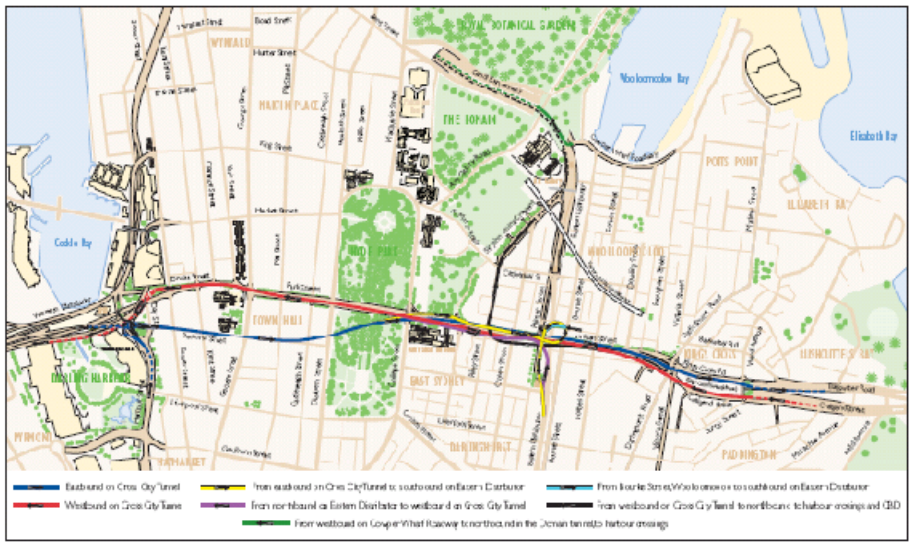
Following community and stakeholder feedback and consultation, refinements were made to the design concepts. An Environmental Impact Statement (EIS) was prepared and released for public comment from August – October 2000. Minor changes were made as a result of submissions. In May 2001, a *Preferred Activity Report* was released for public comment that contained these design changes.

The RTA sought registrations of interest from private sector parties in September 2000. Eight consortia submitted bids, which were evaluated and a shortlist of three were asked to submit proposals in February 2001.

In October 2001 the Minister for Urban Affairs and Planning approved the Project. Three weeks later detailed proposals were submitted to the RTA by the three shortlisted bidders. CrossCity Motorway (CCM) was identified as the preferred bidder, and their selection was announced in February 2002.

CCM proposed a design different to that sought by the RTA in the bid process, see Figure 2. This design was considered to deliver better value. As a result a supplementary EIS was required, including public consultation, and planning approval. A supplementary EIS was released for public comment from July – August 2002 and planning permission was sought in November 2002. The final project design was publicly released in late November and planning approval was received in December 2002.

Figure 2: Final route of the CCT



Source: Roads and Traffic Authority 2003, Cross City Tunnel: Summary of contracts

Construction and operation

Late changes to scope were to be funded by the private sector, which added to the toll and broke the link between original demand modelling and pricing.

Construction of the CCT commenced in January 2003. In December 2004, the RTA identified additional work required to be undertaken that cost $38.1 million. Due the requirement that the CCT be completed at 'no net cost to Government' the RTA negotiated a solution with CCM. CCM would undertake the additional work and incur the majority of the costs. To partly fund the additional works, the RTA reduced the original $100.1 million in upfront payments (Development Fee plus the Business Consideration Fee) made by CCM to just under $97 million.[5] In December 2004 the contract was amended to allow CCM to increase the base toll by 15 cents to fund a further $35 million of additional project costs.

CCM was permitted to recover its costs through an increase in the base level toll, and the increased costs were passed on to road users. The tunnel opened with a $3.56 main tunnel toll for a 2.1km journey; 15 cents higher than would have been the case under the original plan.

This change made the CCT toll was the highest toll per km in Sydney. It also severed the link between the original demand modelling and pricing. Furthermore, when it opened, users without an e-tag had to pay higher tolls.

The opening of the tunnel in August 2005 was met by public criticism centred on the cost of the toll ($3.56 main tunnel and $1.68 for the Sir John Young Crescent exit) and the extent and impact of road alterations. The daily CCT patronage in the first weeks of fewer than 20,000 vehicles was a fraction of the 70,000 vehicles a day forecast by CCM.[6]

In October 2005 CCM announced a three week toll-free period, along with various other pricing initiatives, and halved the toll in February 2006. The NSW Premier commissioned the Infrastructure Implementation Group to report on motorways (the Richmond Report).[7]

Lower than projected traffic volumes continued and as a result revenue was lower than required for the owner/operators to meet debt obligations. As a result the CCT was placed in receivership in 2006 and sold for $695 million in 2007. It was purchased by ABN AMRO and Leighton Holdings.

Key project risks and risk allocation

Failure of the project to meet public expectations exposed the Government to reputational risk

Under the project deed CCM accepted all the financial risks associated with the project, including:

[5] NSW Auditor-General 2006, *Performance Report - Cross City Tunnel*, Sydney. p. 35

[6] NSW Auditor-General 2006, *Performance Report - Cross City Tunnel*, Sydney. p. 21

[7] Ibid

- risks associated with financing, design, construction, operation, maintenance and repair costs of the project; and
- traffic volumes or project revenues that could be lower than forecast.

However, the transfer of financial risk to the private sector did not absolve the NSW Government of the political risk associated with the project not meeting expectations. The reputation of NSW Government and the RTA appeared to be harmed as a result of this project.

Outcomes and value delivered

Utilisation

Patronage forecasts for the final tunnel design were compiled by the RTA and CCM, see Table 4.

Table 4: Patronage projections for the CCT

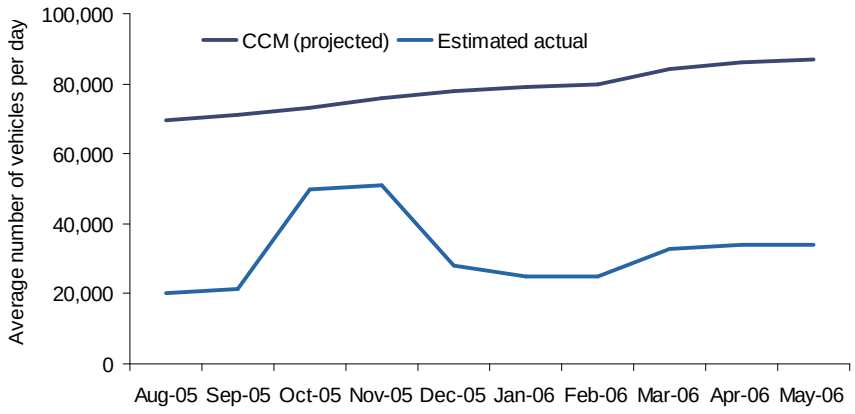
	2006	2016
CCM	87,088	99,967
RTA	82,347	91,628

Source: NSW Auditor-General 2006, Performance Report- Cross City Tunnel, Sydney

Shortly after opening in August 2005, it became apparent that patronage was far below expectations. Initial low traffic figures and community backlash against the road changes were widely reported in the press.

The 2008 patronage level of around 40,000 cars each day was still less than half that projected. Figure 3 compares actual and expected patronage during the first nine months of operation.

Figure 3: Estimated actual patronage compared to CCM's projections



Source: NSW Auditor-General 2006, Performance Report- Cross City Tunnel, Sydney

Key success factors

Project delivered ahead of time and at almost no cost to Government

The CCT project delivered a high quality road project at no net cost to the taxpayer. It is also likely that the selection of the PPP model resulted in delivery of the tunnel far earlier than would have been possible under Government funded models, and construction itself was completed two months ahead of schedule.

Key areas for improvement

Business case development

Changes to project scope were to be funded ultimately by users, which pushed up the toll to a level that appeared to dissuade users

It has been argued that the business case for the CCT had challenges due to factors including the high cost of tunnelling through densely populated areas, relatively low volumes of traffic travelling on existing east-west roads across the city, and modest scope for traffic growth.[8]

The Joint Select Committee on the CCT found a lack of strategic planning by Government in the project planning period.[9] In the EIS the RTA was required to consider strategic alternatives to the CCT. However, the Committee noted:

- that the RTA had already made a considerable commitment to the project, which may have limited the extent to which alternatives were explored; and
- that the Department of Planning was required to assess the proposal on the basis of the CCT project, and could not strategically assess transport plans or recommended alternatives to achieving the stated objectives.

If inadequate consideration was given to options and option evaluation through robust CBA, the business case for the CCT may have been somewhat optimistic.

Risk management

As is typical with PPP projects there was a transfer of a number of risks from the Government to the private sector. However, the identification of risk and management of risk are two areas which it could be argued lead to the less than optimal outcome for this project. In this case, the bidding model contained significant risks.[10]

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[8] Ibid

[9] NSW Parliament Joint Select Committee on the Cross City Tunnel 2006, *Cross City Tunnel First Report*, February, p. 60

[10] NSW Auditor General 2006, op.cit, p. 25

Bid evaluation

In line with RTA practice at this time, the RTA required an 'upfront payment' from the successful bidder. Typically this payment is a mainly a reimbursement for the Government's project development costs. As part of the bid requirements, and for the first time, the RTA also required an additional 'Business Consideration Fee'. This fee was payable by the successful bidder to the RTA for the right to operate the business. It represents the amount each proponent was prepared to pay the RTA for the perceived value of the project.

While bids were evaluated using a range of different criteria, the NSW Audit Office found that the financial evaluation focused largely on the size of the proposed upfront payment and that the value for money for motorists - achieving the lowest toll - was of less concern.[11]

Patronage projections

Estimations of patronage were key to the ability of bidders to make an upfront payment. Forecast usage varied considerably between bidders, as did proposed upfront payments. Projections in CCM's conforming bid were higher that those of the RTA and the other two bidders.[12]

In fact, the differences in patronage projections between CCM and the two other bidders were so significant that the Auditor General considered that the assessment panel should have more robustly challenged all bidders.

On the surface, the risk of over-estimating patronage appears to lie only with the bidder as they would appear to bear the risk from lower toll receipts. However, as highlighted by the Auditor General there are two key risks to Government from this approach, these risks are identified as,

- If fewer vehicles than expected were using the CCT the network changes managed by the RTA on the surface roads may be inappropriate and lead to a risk of increased congestion.
- If fewer vehicles than expected use the CCT, the financial viability of the project will be at risk. In a 'worst case' scenario the Government may be required to intervene to keep the tunnel operating and avoid significant traffic disruption.

Community Consultation

The CCT project also highlights the importance of community consultation throughout the life a project. The CCT grew from long, growing and popular

[11] Ibid, p.28

[12] Ibid, p. 25

desire to tackle a key city issue: increasingly chocked east-west traffic that was reducing conditions for motorists, public transport and pedestrians.

During the planning phase there was broad public discussion, sustained 'expert' input, extensive community involvement and strong support from opinion leaders. Despite this the CCT has been a source of controversy and community dissatisfaction. This is thought to be because:

- the community engagement post planning approval was not seen to be reflected in how the project was delivered, and community dissatisfaction was not managed appropriately;
- the toll was higher than many users were prepared to pay for the trip. There also appeared to be a lack of transparency in regards to the determination of the toll; and
- the CCT has no clear destination and actually was seen as denying access to certain destinations.[13]

The importance of communication with stakeholders is most evident in relation to the road changes that occurred as a result of the CCT construction. The NSW Auditor General's Performance Audit indicated that there is a widely held view that the road changes were not necessary, but were introduced to force motorists into the tunnel in order to profit the tunnel operator. However, the NSW Auditor General found no evidence of this and concluded that the objective of the road changes was to reduce through traffic in and around Central Sydney and to improve the public domain.[14]

Community consultation over road changes did occur but it appears that the consultation process did not identify and communicate the significant resentment held by the community towards the project as a result of the road changes.

Lessons learned

Contracts need to sufficiently flexible to enable Government to exercise its right to manage the road network

Overall the experience of the CCT highlights the need for rigour in every aspect of the planning and delivery process. Some valuable key lessons that stand out from the project delivery which can inform future projects include the following.

- Government should maintain its right to manage the transport network around any PPP project.
- All parties to a project need to fully understand how Government's need to manage the whole transport network can affect individual projects.

[13] Ibid, p. 32

[14] NSW Auditor General 2006, op. cit, p. 7

Transferring risks to the private sector does not absolve Government of political and reputational risk

- Having a statistical evidence base on traffic flows and the road network is important to demonstrate if Governments management of the transport network has a material adverse effect on individual private projects.
- Late changes in project scope (eg the addition of pollution filtering technology) which when funded by the private sector through higher tolls can adversely affect demand and overall viability. Vehicle forecasts need to be recalculated for any material changes to assumed toll levels.
- Consistent with the finding of the NSW Audit Office, requiring bidders to compete based on the size of their upfront concession or 'Business Consideration Fee' has a range of risks and such fees should be limited.
- Demand forecasts can suffer from optimism bias. In this case the demand forecasts of both the Government and the private party overstated actual demand. Even when the toll price was zero traffic demand did not come up to forecasts, indicating that the forecasting process undertaken in the original feasibility study could have been more robust.
- There is still risk for the Government when undertaking a PPP, or any other approach where risk is transferred to another party, and that these risks should be managed.
- Consistent with the finding of the NSW Audit Office, requiring bidders to compete based on the size of their upfront concession or 'Business Consideration Fee' has a range of risks and such fees should be limited.[15]
- Privately funded projects that do not meet the expectations of the community can expose Governments to political risk.
- Risk management strategies should include risk to Government of private sector being unable to manage the risks it takes on.
- Assessment of project bids should include identification of key assumptions upon which success depends. Such critical assumptions should be subject to independent evaluation.

[15] NSW Auditor-General 2006, *Performance Report - Cross City Tunnel*, Sydney. p. 33

4 Melbourne's Spencer Street / Southern Cross Station Upgrade

An iconic design for the nexus of Melbourne's public transport system

Project summary

The Spencer Street Station upgrade, now the Southern Cross Station, was part of the Victorian Government's strategy to overhaul the Victorian rail system — the 'Revitalising Victorian Rail' program. The station's overhaul had been under consideration by the Victorian Government since as early as 1990.[16]

The primary objective of the redevelopment was to provide Melbourne's major transport hub with world class transport interchange facilities. It was also recognised that aesthetic features of the building's design were of high importance.

The upgrade was one of the first and largest PPP in Victoria. Construction commenced in 2002 after a competitive tendering process. The PPP was a BOOT arrangement, managed by the Southern Cross Station Authority (SCSA).

[16] Flagstaff Consulting Group 2001, *Spencer Street Station Redevelopment – Planning Study*

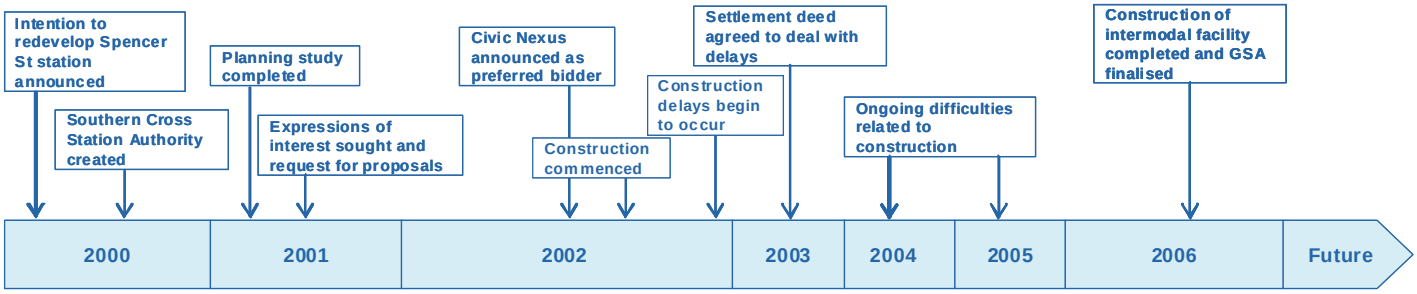
Table 5: Project overview of Melbourne's Southern Cross Station upgrade

Key features	Melbourne's Southern Cross Station Upgrade
Project specifications	Involved the design, construction, operation and maintenance of: • a transport interchange facility, including a 30 bay coach station; 800 car parking facility; and commercial development; and • required rail modifications and signal upgrades. Part of the project scope was to create a new iconic building in Melbourne, placing particular emphasis on design. Construction was required to have minimal impact on station operations.
Procurement strategy	The PPP was a BOOT arrangement, managed by the Southern Cross Station Authority (SCSA). The competitive tendering process to identified preferred private sector partner. Civic Nexus Pty Ltd (consortium) was the successful bidder.
Financial cost	$286 million

Delivery process

This project was one of the most significant infrastructure redevelopment projects ever undertaken in Victoria, and was undertaken in a way that enabled the station to operate as 'business as usual'. A summary of the timeline of events from planning to completion of the project is provided in Figure 4.

Figure 4: Timeline of milestones for the Spencer Street Station upgrade



Sources: Victorian Auditor General's Office (VAGO) 2004, (03/04, 04/05), Report of the Auditor-General on the Finances of the State 2003-04. VAGO 2005, Report of the Auditor-General on the Finances of the State 2004-05. VAGO 2007, Audits of 2 Major Partnerships Victoria Projects. Flagstaff Consulting 2001, Spencer Street Station Redevelopment – Planning Study.

Key project risks and risk allocation

At the planning phase of the project significant due diligence was performed, including an in-depth planning study and business case.

Under the project agreement all risks, where appropriate, were to be transferred to the private sector. Risks that were not taken on by the private sector were:

- 50 per cent of risk associated with pre-existing site contamination (contamination that wasn't previously identified); and,
- any financial costs associated with changes to the interpretation of *Land Tax Act 1958*.

Table 6 contains a high level summary of the risk allocation for the Southern Cross Redevelopment project.

Table 6: Risk allocation for the Southern Cross Station redevelopment

Key Risks	Risk allocated to Private	Risk allocated to State
Transport interchange facility - design, construction, finance and operation	Majority	Minimal
Commercial development – design, construction, finance, operation and integration	Virtually all	Virtually none
Rail and signalling infrastructure - construction	Virtually all	Virtually none

Source: VAGO 2007, Audits of 2 Major Partnerships Victoria Projects - Management of the Southern Cross Station PPP

The allocation of risk was seen as reasonable by the Victorian Auditor General's Office (VAGO) as was the effectiveness of contract management.[17]

Outcomes and value delivered

Indicators of Utilisation

The Victorian Government appointed an external consultancy group to assess current and future transport needs and capacities for the station at the planning stage. Peak hour passenger flow was estimated to grow to 30,000 in 2050 (350% increase from 2000). This forecast was used in specifications for the station.[18]

[17] VAGO 2007, *Audits of 2 Major Partnerships Victoria Projects - Management of the Southern Cross Station PPP*, p. 36

[18] Southern Cross Station Authority 2006, *Southern Cross Station Transport Interchange Facility – Services and Development Agreement – Civic Nexus (amended)*

The station's redevelopment was completed before the Melbourne Commonwealth Games and on all accounts the event patronage was successfully handled by the facility.

Direct and indirect benefits of project

Benefits, both direct and indirect, include:

- effective facilitation of intermodal transfers between rail, bus, tram and taxi – high user satisfaction;
- increased capacity, access and amenity for commuters through the provision of:
  - 800 secure parking spaces;
  - a sheltered pick up and drop off area;
  - *Disability Discrimination Act 1992 (Cth)* compliant facilities;
  - a 30 bay coach station; and
  - clear communication/information screens; and
- new commercial development providing retail services for commuters and general public.

Time and cost

The project experienced major cost overruns and time delays

This project experienced construction costs substantially above estimates and encountered technical and design challenges that posed timing challenges resulting in the project being completed 15-months after the originally contracted completion date.

As a result most parties experienced increased costs. A Global Settlement Agreement (GSA) was put in place to mitigate cost overruns associated with timing overruns. It also allocated additional costs to the appropriate parties.

The GSA included:

- a $8.5 million settlement payment to the developer for non-contractual claims for which they did not admit liability;
- relief of responsibility for the consortium to pay damages for not meeting construction milestones; and
- provision of a $20 million transfer to the consortium resulting from the Government agreeing to make the capital core service payment based on the original completion date rather than the actual project completion date.

The GSA did not appear to impose a greater sharing of risk than was intended under the original contract terms, but took a pragmatic view of the total project risk and reflected agreement from the parties on how best to

manage that risk. This included formalising Government responsibility for addressing contamination issues that arose.

The completion date was also extended by the GSA, and relieved private sector parties their obligations to pay damages for not meeting the original scheduled completion dates.[19]

The construction partner, Leighton Holding's loss was estimated to be $123m dollars.[20]

Legal proceedings associated with the project and additions to the project scope resulted in additional costs for both the Victorian Government and the consortium. The Southern Cross Station Authority (SCSA) incurred $135m in total costs, as at 30 June 2007, $32.25m of this amount was additional costs incurred through legal settlements.[21]

The main deviation from expected outcomes was the timing delay. However, the GSA did incorporate the removal of some works from the original contract. These included some of the rail modifications and signalling upgrade works. These were removed, as a result of the works proposed by the consortium not fulfilling the long-term requirements of the Government or the rail operators. As a result the Victorian Government received a credit.

Key success factors

All parties worked collaboratively to address significant project challenges

This project did deliver a spectacular and iconic building and from this perspective it can be considered a success. This was achieved by specifically seeking innovative design as part of the bid process.

Despite the difficulties with this project the Government and private sector maintained a cooperative approach for the life of the project. As a result, when problems did arise, they were able to be resolved in a reasonable manner with minimal impact on the project and to the mutual satisfaction of both parties.

[19] VAGO 2007, op. cit

[20] Ibid, pg.48

[21] Ibid

Key areas for improvement

Construction costs and technical difficulty were substantially under-estimated

The 'constructability' of the roof design proved to be a significant challenge for the developer, particularly with the budget it had allocated. It appears that insufficient consideration was given to this by all parties, which in many respects is only observed with the benefit of hindsight.

This highlights that it may be beneficial for Government to be more proactive in establishing the technical requirements of complex construction projects and to possibly seek independent views on the constructability of design. In this case, given the complexity of design, it could be argued that greater attention should have been given to how construction would take place and whether the contractor had the appropriate risk management processes to ensure they could deliver such a complex construction project.

While the successful bidder proposed an innovative design that met the needs of the redevelopment in terms of its 'icon' status, delivery of other aspects of the project were more challenging to complete. For example, rail works and signalling upgrades were ultimately completed by the Victorian Government.

The performance of the commercial development is also inconsistent with forecasts for both inside and outside spaces. This may be improved with greater involvement of expert retailers in the design and approval processes. It is also understood that the design of these areas are seen to be less aesthetic than the rest of the station development. This resulted in less favourable public opinion of the commercial development and detracted from the impact of the station development.

Lessons learned

This project highlighted the following key lessons.

Governments should be more proactive in assessing the constructability of projects and ensuring the parties have the depth of required technical skills to resolve project challenges

- 'Constructability' of designs could arguably have been more fully analysed to ensure that relevant parties have the capacity to deliver projects as proposed. In this case, the engineering and construction of the iconic roof proved to be a considerable challenge.
- The complexity of the roof design was potentially underestimated by the private sector partner and its cost was higher than expected.
- Major project upgrades, on existing infrastructure that needs to remain operational, pose complex technical challenges.
- It is important to ensure that construction companies have a suitable team to perform all of the tasks and manage all of the risks that are accepted by them. Allocating additional technical skills to undertake the more complex aspects may have improved outcomes.
- The precinct development was generally well integrated and able to ensure that the project did not divide the city from Docklands. However, with the benefit of hindsight, the bus station design may have been more architecturally consistent with the rest of the development. This was not a requirement of the Governments project scope, and improved

precinct wide planning may have identified the merit of greater consistency.

- There are additional risks associated with ‘iconic’ projects and these risks need to be managed more intensively. ‘Icon’ projects are also likely to require more flexibility in contracting and funding arrangements to ensure that all project risks are managed.
- Construction risks need to be proactively managed by all parties.
- Governments should focus on the best risk adjusted cost outcome, not the lowest cost bid.
- Individual projects should be considered as part of a precinct development to ensure that they are well integrated with the site and respond to the needs of the precinct.
- PPP models can be very effective forms of delivery, even when major issues arise with the private sector party.

5 Sydney's Westlink M7

Project summary

A successful road project that delivered assets that linked strategic traffic corridors

Sydney's Westlink M7 (previously called the Western Sydney Orbital) is a 40 kilometre motorway that connects the M2, M4 and M5 motorways. It is a fully electronic, distance-based toll road. At the time, it was Australia's biggest urban road project. The Westlink M7 is part of the Auslink National Transport Link and as such received Commonwealth funding. It is considered to be a highly successful example of a true PPP.

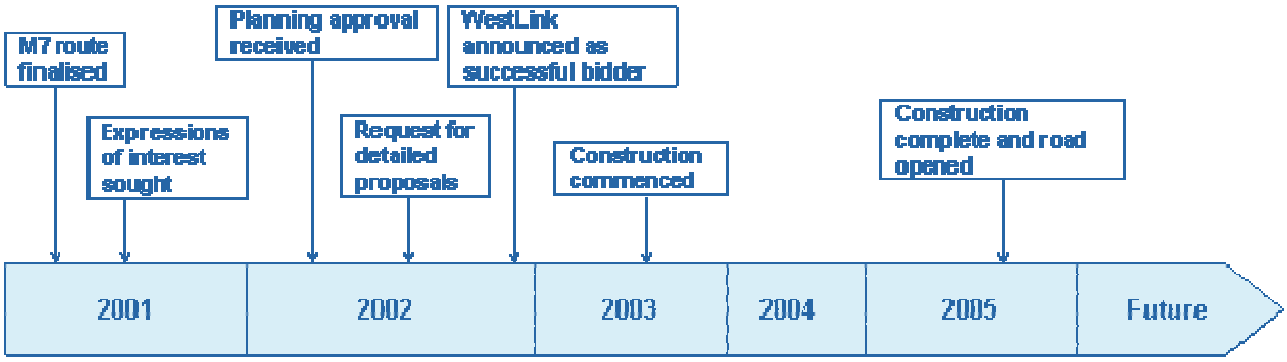
Details relating the project are outlined in Table 7.

Table 7: Project overview: Sydney's Westlink M7

Key features	Sydney's Westlink M7
Project specifications	Financing, design, construction, operation and maintenance of a 40 km long, four-lane, dual carriageway motorway between the M5 motorway in Prestons and the M2 motorway (via the M4 motorway), as part of the Sydney orbital freeway and motorway circuit. Financing, design and construction of associated improvements to surface roads and intersections. Construction of pedestrian and cyclist facilities. Development and delivery of electronic tolling system.
Procurement strategy	A BOOT PPP between the NSW Government and a consortium of private sector service providers. The successful bidder was WestLink Motorway Group, comprised of Transurban, Macquarie Infrastructure Group, Leighton Holdings and

Key features	Sydney's Westlink M7
	Abigroup.
Financial cost	$1.54 billion for design and construction of the Westlink M7 $690 million for connecting road works and financing $2.23 billion total cost

Figure 5: Timeline of milestones for the M7 Motorway



Delivery process

Inception, planning and approval

The planning of what was to become the Westlink M7 has a long history, with the concept of a north-south freeway in Sydney's west first raised in the 1960s. In 1974, the *Sydney Area Transportation Study* proposed the need for an outer-metropolitan highway and identified the corridor for its route. In 1993, the report *Liverpool to Hornsby Study Final Route* identified a preferred route to link the M5 to the F3.

In 1994, The Commonwealth Government announced the extension of the National Highway, identifying existing roads to link the F5 and F3 until a superior route was made available. The National Highway system is funded by the Commonwealth Government.

Action for Transport 2010 was released by the NSW Government in 1998, and provided an integrated transport plan for Sydney. This included the construction of the M7 by 2007. The M7 was to link sections of the National Highway to the north and south of Sydney and to provide a high quality orbital road linking major employment and residential areas.

A feature of the planning and inception stage for the M7 was the degree of community consultation that was undertaken. In 1998, consultation was undertaken regarding preliminary designs and features. Changes to the route aimed at minimising environmental impact were made as a result of these consultations.

It was not initially envisaged that the M7 would be a toll road. This possibility was raised by the Commonwealth Minister for Transport and Regional

Services in 1999. While the M7 was to form part of the National Highway system, and therefore funded by the Commonwealth, funding was not available in the short to medium term. As a result the RTA commenced exploration of tolling options and the impact a toll may have on traffic flows.

An Environmental Impact Statement for the M7 was publicly exhibited by the RTA from 8 January 2001 to 5 March 2001. Over 260 submissions were received. A number of modifications were made to the proposed route and design of the project. These were announced by the NSW Minister for Transport in November 2001.

Planning approval from the NSW Minister for planning was sought in September 2001 and granted in February 2002. Commonwealth approval from the Department of Environment and Heritage was received in July 2002. Approval was also required from a number of other NSW and local Government agencies with responsibility for heritage, water resources, utilities and planning.

Construction and operation

Registrations of Interest (ROI) were sought by the RTA in July 2001 from private sector parties interested in financing, designing, constructing, operating and maintaining the M7. ROI were received from three consortia by the end of August 2001.

After evaluating these ROI the RTA sought detailed proposal from all three interested consortia. Proposals were submitted by 19 March 2002.

After an interim evaluation report was prepared and the list of potential bidders was reduced to two, additional information was sought from remaining proponents. The WestLink Motorway consortium was selected as the preferred bidder as it represented better value for money.

The selection of the WestLink consortia as the preferred bidder was announced by the NSW and Commonwealth Ministers on 28 October 2002. Contracts were signed in February 2003 — within 17 months of the initial request for ROI.

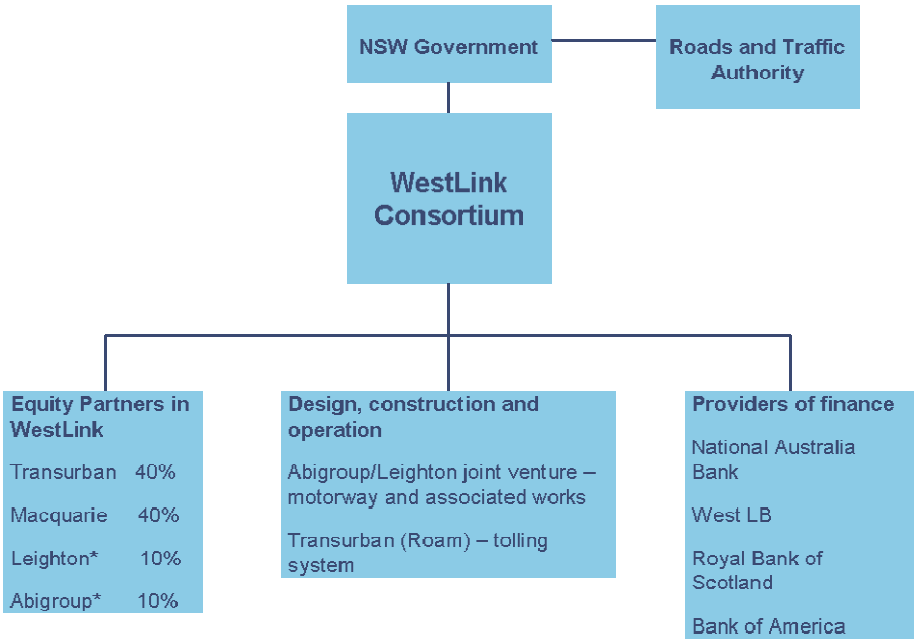
Major construction commenced on the Westlink M7 in July 2003. Construction of the motorway was completed in December 2005, eight months ahead of schedule. The M7 was opened to traffic on 16 December 2005.

Governance

The RTA coordinated the project's development, environmental assessment and planning approval phases. During the implementation phases, the RTA administered the project deed to ensure the consortium delivered the M7 according to the agreed scope and approval conditions.

It was the responsibility of the consortium to ensure that it was able to deliver the project, to specification, by ensuring it had access to appropriate financing and arrangements in place to construct and maintain the motorway, including the tolling system. A summary of the parties involved in the delivery of the project and their roles is provided in Figure 6.

Figure 6: Parties involved in the construction of the M7



Under the terms of the contract the consortium remains the owner of the M7 until 14 February 2037. At this time the ownership of the M7 will be handed over to the NSW Government.

Key project risks and risk allocation

Under the project deed the private sector consortium accepted the majority of the risks associated with the project, including:

- construction costs;
- traffic volumes or projected revenues below expectations;
- traffic management during construction;
- tax; and
- works or operational and maintenance activities may be disrupted by the lawful actions of other Government authorities.

The Project Deed expressly acknowledges that the RTA made no representations or promises concerning traffic levels. Independent traffic models were developed and tested by the consortium.

In some cases risks associated with the project were shared between the RTA and WestLink or allocated to the RTA. Essentially where delays or cost increases result as a result of requests made by the RTA, the costs were to be incurred by the RTA. If changes were made that resulted in savings the savings were to be shared equally by the consortium and the RTA. For example:

- changes in scope of work – if scope change initiated by the RTA it would pay additional costs, if initiated by WestLink cost incurred by WestLink unless otherwise agreed by the RTA. Similarly if scope

change, proposed by RTA, decreases scope or reduces costs RTA receives 75% of cost savings. If changes suggested by Westlink RTA to receive 50% of savings; or

- amendments or challenges to planning approval – if amended , and not as a result of a breach by WestLink, and changes to works are required costs to be borne by RTA as if change in scope initiated by the RTA. If legal challenge RTA to meet reasonable costs incurred by WestLink should work be halted.

However, while the consortium did hold the majority of the risk, they also receive most of the benefits if the project was a success. For example, early completion of the M7 entitled the operators to several months of additional toll revenue. It would also benefit from higher than project traffic usage.

Under the lease arrangements there are provisions to share the benefits of performance above projections. If toll and administration fee revenue is more than 5% higher than forecast six years or more after completion the RTA is entitled to a share of the additional revenue.

In terms of process, the private sector partner for this project learned valuable lessons on communicating with the public from other less successful road projects. It engaged in extensive market research that ensured it understood its potential customer base and devised pricing strategies around this. For instance:

- to encourage use by freight vehicles, differential pricing was not used for cars and freight vehicles;
- infrequent users were able to pay for one-off use within 24 hours to avoid having to purchase credit cards; and
- a toll free period was offered to encourage use.

Outcomes and value delivered

Utilisation

Reporting from both Transurban and Macquarie Infrastructure Group (MIG) on vehicle usage of the M7 is summarised in Table 8.

Table 8: Traffic usage for Westlink M7

	September Qtr 2008	September Qtr 2007	% change
Average daily revenue - net GST (Transurban)	429,533	381,742	12.5
Average daily revenue - GST inclusive (MIG)	495,033	446,019	12.5
Average workday trips	133,689	126,135	6.0
Average daily trips	119,592	112,145	6.6
Average daily tolled VKT	1,528,351	1,435,529	6.5
Average daily total VKT	1,837,026	1,736,356	5.8

Sources: Transurban and Macquarie Infrastructure Group

Benefits of operation

A number of social, environmental and economic benefits of the Westlink M7 have been identified by the RTA. They include:

- safer and more efficient road transport for both passenger vehicles and freight in western Sydney;
- good access to employment opportunities for the people of western Sydney by linking existing / future industrial and residential areas;
- stronger economic growth within western Sydney by encouraging further investment in the area due to potential savings in transport costs;
- 1500 jobs during construction alone and encouraging further employment opportunities in western Sydney;
- reduced numbers of heavy vehicles using local roads, resulting in better air quality and less noise in key residential areas;
- improved access to other growing cities and regions, including the Central Coast, Newcastle, Canberra and the Illawarra; and
- faster travel times between key western Sydney suburbs.[22]

[22] Roads and Traffic Authority, http://www.rta.nsw.gov.au/constructionmaintenance/completedprojects/westlinkm7/benefits.html accessed on 7 November 2008.

It is considered that the M7 has provided significant economic benefits to the Australian economy by increasing the efficiency and productivity of the freight and distribution industries. Business has been quick to realise the benefits of Westlink M7. Major companies such as Woolworths, Coles, Coca Cola, TNT, Bluescope Steel and LG Electronics have already relocated to industrial areas close to the M7 to take advantage of proximity to the motorway.[23]

Infrastructure Partnerships Australia's M7 case study highlights market research conducted by CB Richard Ellis which concluded that the Westlink M7 is responsible for the huge surge in industrial development in Sydney. Across Sydney more than 2 million square meters of industrial land is being developed in 285 separate projects. Two thirds of this development is occurring in the M7 corridor.[24]

In December 2005 the NSW Government announced the release of land at the M7 / M4 intersection for employment purposes. Known as the Western Sydney Employment Hub, this industrial precinct will be the biggest in Australia and is expected to create up to 36,000 jobs when fully developed.

Westlink M7 also links the two largest residential developments in NSW – the north-west and south-west growth centres.

By providing improved transport efficiency the Westlink M7 should improve air quality in Sydney by reducing interrupted progress of heavy vehicles.

Cost – Benefit Analysis

The RTA evaluated the likely economic performance of the project taking account of initial and recurring capital costs, operation and maintenance costs, road user benefits (savings in vehicle operating costs, travel time savings, and savings in accident costs), pedestrian benefits and environmental externalities. The results of these evaluations are summarised in Table 9.

Table 9: RTA estimates of likely economic performance of Westlink M7

Discount rate	PV of costs	PV of benefits	NPV	Benefit:cost ratio		NPV / initial capital cost
				Benefits – O&M / D&C	Benefits / D&C + O&M	
4%	$2,014 m	$10,450 m	$8,437 m	5.7	5.1	4.7
7%	$1,750 m	$6,374 m	$4,625 m	3.6	3.4	2.7
10%	$1,607 m	$4,332 m	$2,725 m	2.8	2.7	1.8

Source: RTA 2003, Westlink M7 motorway: Summary of contracts, p. 5.

[23] Infrastructure Partnerships Australia, *Case Study: Westlink M7*.

[24] Ibid.

Time and cost

The Westlink M7 was delivered on budget. It was estimated that design and construction of the motorway would cost approximately $1.54 billion and that with the inclusion of connecting roadworks and financing the entire project would cost $2.23 billion. The Commonwealth Government provided $356 million towards the project. Remaining costs were met by the private sector consortium.

Westlink M7 was delivered eight months ahead of schedule. This enabled operators to open the motorway early and to begin receiving toll receipts.

Transurban, a member of the WestLink consortium, was also responsible for the delivery of the tolling system and delivery of customer service through a company within the Transurban Group, Roam. The electronic tolling system was also delivered ahead of schedule as it was operational 2 months prior to the completion of the motorway.

Key success factors

Successful community engagement, targeted pricing to reflect customer base, and provision of infrastructure to link strategic corridors

Thorough and comprehensive planning of the project, planning of the M7 route started many years before the project commenced. Strong patronage also indicates that the project met an identified need.

Responsive and successful community relations were a hallmark of the Westlink project through all stages. Prior to construction five Community Liaison Groups (CLGs) were established to ensure that the members of the community closest to the construction were fully informed and to assist in mitigating any adverse impacts. There were over 120 CLG meetings that contributed to a better project.[25]

The introduction of a toll system that met the needs of the road operator and was also considered ‘fair’ by road users. The toll on the Westlink M7 is the only distance-based electronic toll in Australia. Under the project deed with the RTA the elements of the tolling system were specified. This included a set ‘per kilometre’ rate and a cap on total toll that could be charged. Both increase with CPI on a quarterly basis.

Furthermore Roam, Transurban’s tolling business, developed its business plan using comprehensive market research and community and stakeholder consultation to ensure needs were understood and met. Products and pricing were publicly released two months prior to the motorway opening and received endorsement from the NRMA.[26]

The relationship between Government and the private sector also worked well. Project specifications and expectations were clear and private sector

[25] Ibid

[26] Ibid

partners were given sufficient flexibility to manage project and associated risks with limited involvement from Government.

The M7 is also considered to be a success from a design and engineering perspective. The M7 it is a roadway made of simple, well-designed and executed elements that is consistent for its entire 40-kilometre length. It is considered that this is because design was integrated in the bid and urban design was specified alongside engineering, management and legal requirements. Design became a serious pursuit, requiring serious commitment from the proponent.[27]

Key areas for improvement

This project had a long inception period. It is possible that the needs of the community and benefits of project could have been realised much earlier with shorter period between inception and construction.

Lessons learned

Strategic road project, advantages of a Greenfield site, and good community liaison helped project success

Key lessons include the following.

- The relationship between (co-funding) State and Federal Government agencies appeared generally collaborative and flexible and this helped make for a successful project. For instance, the agreed redirection of surplus funds to investments in access roads helped to improve utilisation.
- Private sector parties can bring innovative ideas to projects, such as the design for the intersection with the M4, which was superior to prior designs.
- Extensive market research was important to help sell the project to the client base, as well as ensure that the pricing strategy suited their expected use patterns (i.e. allowing infrequent users to pay toll within 24 hours rather than signing up to credit arrangements, having a toll free period, and offering undifferentiated pricing for trucks to encourage their use).
- Effective stakeholder engagement by both the Government and the private sector partner should be key part of project planning and delivery.
- Large greenfields projects offer opportunities to obtain economies of scale, and allow concurrent construction of various project segments.
- Projects with predictable site access and standard construction techniques are more likely to achieve successful outcomes.
- Projects that provide a missing link in a strategic corridor have more likelihood of success than those that do not.

[27] Mould P 2007, Review of Westlink M7, Architecture Australia, http://www.archmedia.com.au/aa/aaissue.php?issueid=200701&article=11&typeon=2, accessed 7 November 2008.

6 NSW schools projects I & II

Project summary

Successful use of PPP for social infrastructure

The NSW Schools Project was the first social infrastructure PPP in NSW and the first schools PPP in Australia. This project involved two contracts to finance, design, construct and maintain a number of schools to standards specified by the Department of Education and Training (DET). The first contract was for nine schools and the second was for ten. Separate procurement processes were used to identify a private sector partner for each contract.

The key features of the projects are summarised in Table 10.

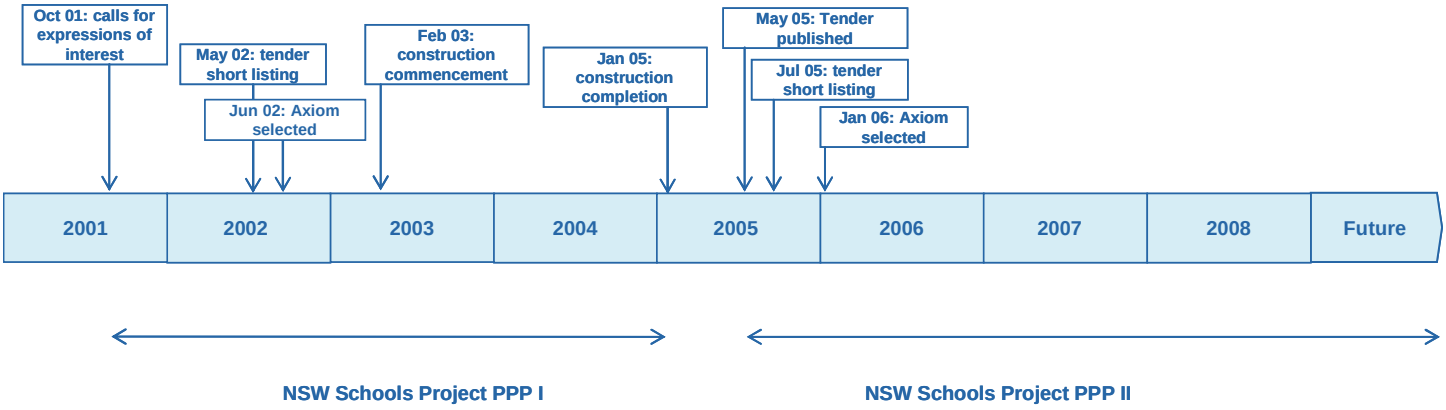
Table 10: Project overview: NSW schools project

Key features	*Sydney's Schools Projects*
Project specifications	The first contract required the construction of: • six primary schools (Dapto, Kellyville Ridge, Sherwood Ridge, Ironbark Ridge, Shell Cove, Woongarrah); • two secondary schools (Glenwood and John Edmondson); and • one special needs school (Tallowood). The second contract required the construction of: • seven primary schools (Hamlyn Terrace, St Marys ADI, Ashtonfield, Second Ponds Creek, Tullimbar, Elderslie Infill, Middleton Grange); • two secondary schools (Kelso, Rouse Hill); and • one special needs school (Halinda). Under the terms of the contracts, the contractor was

	required to provide all the schools' buildings, fixtures, fittings, equipment, electrical goods, furniture, grounds, playgrounds, paths and gardens. The contractor was also required to maintain the buildings, equipment and grounds for each facility.
Procurement strategy	This project was a PPP involving private sector financing and ownership of the assets for 30 years. It also involved the delivery of some services associated with the asset, and payment is made by Government for these services. Initial capital cost is borne by private sector and progressively reimbursed through these payments. The DET and NSW Treasury are among the first in NSW to use this approach. Successful bidders for the first contract were Axiom Education, comprising: • ABN AMRO (financiers); • Hansen Yuncken (design and construction of the primary schools); • St Hilliers (design and construction of the high schools); • Spotless (facilities management); and • Perumal Pedavoli (architects). Successful bidders for the second contract were Axiom Education, comprising: • ABN AMRO & Babcock and Brown (financiers); • Hansen Yuncken (design and construction of the primary schools); • St Hilliers (design and construction of the high schools); and • Spotless Services (facilities management). At the end of the 30 year contract, operation of the schools will be handed-over to the NSW Government.
Financial cost	Estimated cost of the first contract was $137 million. Estimated cost of the second contract was $178 million.

A timeline of the key events in the planning, construction and management of these two projects is provided in Figure 7.

Figure 7: Timeline of events for NSW schools project



Source: PwC

Delivery process

Inception and planning

In mid-2000 DET started to explore the possibility of a PPP to deliver a number of schools to:

- draw on recurrent rather than capital spending to help smooth expenditure;
- allow faster delivery of schools;
- generate cost savings;
- provide for innovation and more efficient use resources; and
- simplify management as 'facility management' could be responsibility of a single entity.[28]

In 2001, prior to the first contract, the DET commissioned consultants to examine the procurement of nine new schools using a PPP, prepare an economic appraisal, prepare a feasibility assessment, and a preliminary public sector comparator to assess traditional procurement. The results of these studies indicated that over the 30-year period, savings in the order of 7-10% were achievable in new schools construction, fit-out and operations. It was concluded that a PPP was likely to be affordable and deliver value for money.

A comprehensive study of other options was not undertaken. This was redressed in preparation for the second contract. In 2005, a consultant was engaged to examine four alternative procurement models before a preferred

[28] NSW Audit Office 2006, *Performance Audit - The New Schools Privately Financed Project*, p. 17

method was chosen. Models were subject to qualitative rather than quantitative assessment.

During the planning and negotiation period for the first contract, a number of changes were made to the list of schools due to several factors arising from council approvals, stakeholder consultation and timing of construction. While some changes were minor, such as a name change, others included the removal of certain schools from the list which were then substituted with new schools in different locations. It was considered that this affected the competitive process for both contracts.[29]

Approval, construction and operation

First contract

ROI were sought in October 2001, seeking information on design, construction, facilities management, finance and broad proposals for project organisation and management, service delivery and innovation. Eleven ROI were received. These ROI were evaluated and in March 2002, the four shortlisted parties were asked to submit detailed proposals.

None of the submitted proposals were assessed as fully satisfying all requirements. However, two proposals were identified as having potential to provide value for money and in August 2002 they were requested to submit best and final offers. Issues requiring clarification were identified to assist in this process.

Final submissions were made in November 2002 and in December 2002 the NSW Treasurer announced the selection of Axiom Education as the preferred bidder. Contracts were finalised by April 2003.

Axiom Education was required to undertake planning, design and facilitation of the construction of the required infrastructure and to obtain all planning approvals and licenses required to complete the project. Target dates were set for obtaining approvals for each school. Construction commenced in February 2003 and all schools were completed, on time, with all schools constructed and operational by January 2005.

Axiom Education also agreed to provide service to maintain all nine schools until December 2032.

Second contract

In May 2005, the DET sought Expressions of Interest (EOI) for the second “New Schools” project. Five consortia responded. These EOI were evaluated and detailed proposals were sought in July 2005 from three of the consortia. An addendum to the request for proposals was issued in September, it sought ‘variant’ proposals for an additional secondary school with either all or only

[29] Ibid, p. 22

seven of the nine original schools. Final proposals were submitted by end October 2005. Axiom Education was identified as the preferred bidder in November 2005, with further negotiations to resolve issues identified in the proposal. Axiom Education was announced as the preferred bidder in December 2005.

The facilities management services required to be performed by Axiom Education for the second contract were similar in scope to those of the first contract.

Governance arrangements

Each of the projects was overseen by a steering committee, chaired by DET comprising staff from DET, NSW Treasury, NSW Treasury Corporation and the Department of Commerce, with the assistance of specialist consultants. In addition, a probity auditor was engaged to provide additional assurance that the processes were conducted in a fair and equitable manner.

Key project risks and risk allocation

The Government remains the owner of the schools and retains risks associated with student demand and residual value risk.[30] DET developed a risk matrix to determine the appropriate allocation of project risks between the public sector and the private sector. This is summarised in Table 11.

[30] Ibid, p. 8

Table 11: DET's risk matrix

Type of risk	Details of the risk	Risk borne by
Design	Buildings, fixtures, fittings, equipment, electrical goods, furniture, grounds, playgrounds, paths and gardens	Private sector
Delivery	To cost and to time	Private sector
Operating	Day-to-day risks of operating the facilities	Private sector
End of contract delivery	Making schools available at an acceptable standard when required for the purpose of education delivery	Private sector
Interest rate	Changes of the interest rate	Private sector
Inflation	Contract is structured with a payment mechanism linked to the CPI	Government
Demand	Number of pupils attending school	Government

Source: PwC, based on Auditor General's Performance Audit

The NSW Auditor General found that DET identified the allocation of risks between the public and private sectors most likely to deliver better value for money.[31]

Outcomes and value delivered

Indicators of utilisation

The first NSW schools project allowed DET to cater to around:

- 2000 high school students;
- 3800 primary school students; and
- 85 students with special needs.

The schools are staffed in the same manner as other Government schools and core education services are provided by the Government, with the school Principal having complete control of the school facilities.

All indications are that the private sector partner is delivering services in an efficient and effective manner. Users are satisfied with facilities and service provided. This is despite initial concern expressed by stakeholders about pursuing private sector involvement. In conducting its post implementation review NSW Treasury received submissions from teacher and public service

[31] Ibid, p. 20

associations indicating satisfaction with resources provided and responsiveness in relation to facilities management.[32]

Direct and indirect benefits of operation

Innovation

A major reason for adopting the PPP approach was the possibility of allowing the private sector to explore new school designs and service provision. This was not realised in term of design, possibly due to the nature of DETs specifications, which were quite detailed. However, some innovations were achieved, such as third party revenue from childcare facilities adjacent to schools.

The PPP model allowed DET to bundle the construction and operation of a group of new schools. This delivered service and construction innovation. Important economies of scale were achieved during the construction phase through reduced management fees. Moreover, the nature of this bundling over a 30 year period also necessitated the interaction of builders, designers and operators. This interaction does not easily occur under traditional delivery and it allowed for greater efficiencies to be achieved. [33]

In order to adequately manage the schools' facilities, Axiom Education provided each school with an on-site manager. This was not a DET requirement and has been considered a key success of the projects.[34] The on-site manager performs general maintenance and is a single point of contact with the contractor and sub-contractors.

In addition to the school facilities, many of the school sites also support privately run childcare centres.[35]

Faster delivery and reduced costs

Faster delivery has allowed DET to meet the growing demand for education in newly urbanised areas. The PPP model allowed DET to bring forward the completion of the nine schools included in the first contract by two years and of the ten schools in second contract by, on average, two to three years.[36]

Financially, the projects delivered and acknowledged to have achieved total savings, compared to the cost of construction under a 'traditional approach',

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[32] NSW Treasury 2005, *New Schools Privately Financed Project Post Implementation Review,* pp. 8-9.

[33] Ibid, p.49

[34] Ibid, pp.1-2

[35] Infrastructure Partners Australia, *Case study New Schools Project I*

[36] New South Wales Treasury 2005, op.cit., p. 7

of 7% for projects included in the first contract and 26% for projects included in the second contract.

The PPP approach was also a strong success in regard to the total asset management approach of the NSW Government, under which the Government had to acquire, maintain and upgrade physical assets to provide services to the community.

Finally, the Government's repayment of the capital costs is under a 30-year finance lease which allows DET to allocate its budget to maintaining other existing assets.

Unanticipated benefits

Under the contract the private sector partner was required to provide a single point of contact for facilities management issues. This was done through the establishment of a help desk and employment of on-site managers to respond quickly to questions or requests for assistance from the schools. This had the benefit of relieving school Principals and teaching staff from facilities management tasks.

Time and cost

The estimated cost of the first contract was $137 million and for the second contract, $178 million. Both contracts were delivered on budget.

Part of the rationale for pursuing a PPP was that it would enable DET to better manage its capital and renewals spending, by spreading building costs related to the schools in this project over 30 years. It was argued that this would assist DET to manage a shrinking capital allocation for schools. However, the Government reduced capital allocations to DET to equal PPP construction costs but allowed DET to retain any capital savings.[37] Consequently, from a whole-of-Government perspective, this PPP generated some small savings whilst also avoiding the development of backlogs in maintenance requirements.

Lessons we also learned from the first bid process. The cost of establishing the first contract reached $3.5 million, while the costs associated with the second contract were approximately $2 million.

The new schools were delivered either on or ahead of schedule. The PPP model allowed DET to bring forward the completion of the first nine schools (compared to 'traditional' delivery) by two years and of the following ten following schools by two to three years, on average.[38] In addition, construction time for each school was some three months faster than usually achievable using traditional design and construction contracts.

[37] NSW Auditor-General 2006, op. cit., p. 20

[38] New South Wales Treasury 2005, op. cit., p. 7

However, some delays occurred during the first project bid process.[39] These were, in part, due to the non-compliance of private sector bids at Request for Detailed Proposals stage, and the inclusion of a Best and Final Offer process. Financial close was reached in March 2003, seven months later than originally anticipated.

Delays caused some concern that the process may be terminated because it would no longer be feasible to deliver and open the schools according to the announced timelines. There was also feedback from bidders that they were expected to meet tight timeframes throughout the bid process, while Government took extended periods to evaluate bids and announce decisions. These time delays were partly attributable to the learning process of being a first for DET and social infrastructure.[40]

Estimates of net benefits

In each case, the cost of the public sector comparator (PSC) exceeded the net present cost of the private sector bid. Table 12 illustrates the PSC results versus the private sector bid for both contracts.

Table 12: Value for money comparison for contracts 1 & 2

	Project 1		Project 2	
	PSC (most likely case)	Private sector bid	PSC (most likely case)	Private sector bid
Net Present Cost	$141.8m	$131.4m	$235.3m	$177.5m
Estimated saving		7.3%		24.6%

Source: PwC, based on data from NSW Auditor General report

Key success factors

DET clearly defined the business case and project objectives, including the allocation of risks between private and public sectors. This allowed it to establish that the project was affordable and maximised the prospect of achieving value for money.[41]

A tender process was undertaken by DET to identify a preferred private sector partner. The competition between bidders was maintained and processes were mostly transparent, keeping the market well informed.

[39] Ibid, p. 8

[40] NSW Treasury op. cit, p.64

[41] NSW Auditor General 2006, Ibid, p. 4

Certainty was provided to bidders through the detailed specification of building requirements and external experts used to assist in the evaluation of bids.[42]

A sound performance monitoring and reporting system was put in place. Performance incentives were designed to encourage good performance, with appropriate benchmarks. DET required the contractor to develop sound self-monitoring procedures for its operational activities including; record-keeping requirements, "help desk" requirements and routine monthly reporting requirements. DET maintained the ability to intervene in the case of poor contractor performance.[43]

This project represents a successful alternative to traditional construction contracting. It imposes much more risk on the contractor, but also gives the contractor the opportunity to have a greater control of aspects of the construction process and to innovate with appropriate construction and procurement techniques.

The nine new schools completed under the New Schools Project have become, for both the Government and Axiom Education, a successful 'model' to delivery of new schools.

In order to control the risks, Axiom Education developed a "best for project" approach to ensure that the client expectations were exceeded and a fast track design and construction approach instigated.

Key areas for improvement

Bidder engagement processes are important to clarify expectations of the Government. Specifications should also be outcomes focused and not micromanage processes

Project specification was clear but better communication with bidders through the bid process would have provided greater certainty. During the bid phase for the first contract, a number of significant changes were made to key project deliverables. This appears to have affected the competitive process for both contracts. Furthermore, the post implementation review of the first contract reported that probity concerns could have limited DET's communications with bidders. This could have contributed to the delays in negotiating the first contract.[44]

It should be noted that lessons were learnt from the first contract and as a result the bidder engagement strategy was employed for the second contract. This aimed to ensure that bidders had a better understanding of DET's requirements, without compromising probity.

One of the benefits of using a PPP approach was the possibility of innovation in design and service delivery. A number of innovative solutions were successfully implemented although not in the area of design. This was partly due to the specific nature of DET's requirements. It has been

[42] Ibid, p.5

[43] Ibid, p.2.

[44] NSW Auditor General 2005, Op. cit, p26

suggested future projects could seek to better reconcile minimum requirements with design innovation.[45] A level of flexibility was introduced for the second contract, which allowed certain 'inputs' to be redefined or replaced with 'outcomes' or 'outputs'.

One of the challenges encountered in this project was the need to obtain local council planning approval for projects that the State Government had committed to. In some cases this resulted in protracted and complicated planning approvals processes, particularly regarding the negotiation of the appropriate level of contribution for public amenities and services (Section 94 contribution). Some budget allocation was allowed for the Section 94 requirements of local councils however, in some cases, there was dispute over what were 'reasonable' requirements.

[45] NSW Treasury, Op. cit, p. 7

Lessons learned

Engage with bidders early and often. Manage approvals processes as swiftly as possible

Lessons from this project include the following.

- It is important to properly advise bidders of all project requirements. A bidder interaction component was built into the second contract for the new schools project, as private sector understanding of DET requirements was insufficient for the first contract.
- The first contract was unnecessarily complex and the KPI regime was simplified for the second contract, which reduced transactions costs.
- Private sector delivery can provide innovative outcomes, such as third party revenue from childcare facilities adjacent to schools.
- Setting up public sector facilities in new development areas leaves the State with unavoidable utility risk and a reliance on the private sector to develop around them.
- State projects that require local council approval expose the State to local council demands that can be time consuming to resolve.
- The planning process can result in public facilities being allocated the less desirable pockets of land. The additional construction costs required to get them to a level that the community is expecting should be factored into total project costs.
- PPPs can be used to successfully deliver social infrastructure, reducing both the cost and time taken to deliver.
- Clear guidance and understanding between all parties on the technical requirements of projects is important.
- To encourage innovation, technical requirements and KPIs should be as simple as possible, being outcomes focused rather than micromanaging the delivery process.
- Bidder engagement sessions can prove a valuable tool in encouraging innovation by clearly articulating required outcomes.
- Cooperative relationships between State and local council approval authorities improve project outcomes.
- Need to establish early on in the process what are ‘reasonable’ demands for local councils to make of State projects during approval.

7 Melbourne CityLink

Project summary

Motorway with pathfinder status in terms of size and use of electronic tolling

Melbourne CityLink was the largest urban infrastructure project in Australia at the time of its completion. It was one of the first fully electronic toll roads in the world. It joins the centre of Melbourne to four of the city's freeways. The project was designed to redirect the large volumes of passenger and freight traffic from on inner city roads, a result of the termination of four freeways on the fringes of the CBD.

The contract was awarded to Transurban in 1995. The Western Link section opened to traffic on 15 August 1999 with tolling commencing on 3 January 2000. The Southern Link opened and tolling commenced on 28 December 2000.

CityLink is arguably one of the most successful PPPs that has been undertaken. It provided a pathfinding benchmark for PPPs in Victoria, as this was the first time the private sector had owned and managed road infrastructure in that State.[46] This project provided a number of lessons for the Victorian Government and subsequent PPPs have benefitted from this.

The key features of the project are summarised in Table 13.

[46] Infrastructure Partnerships Australia, Case Studies 'Citylink, Melbourne' p. 6.

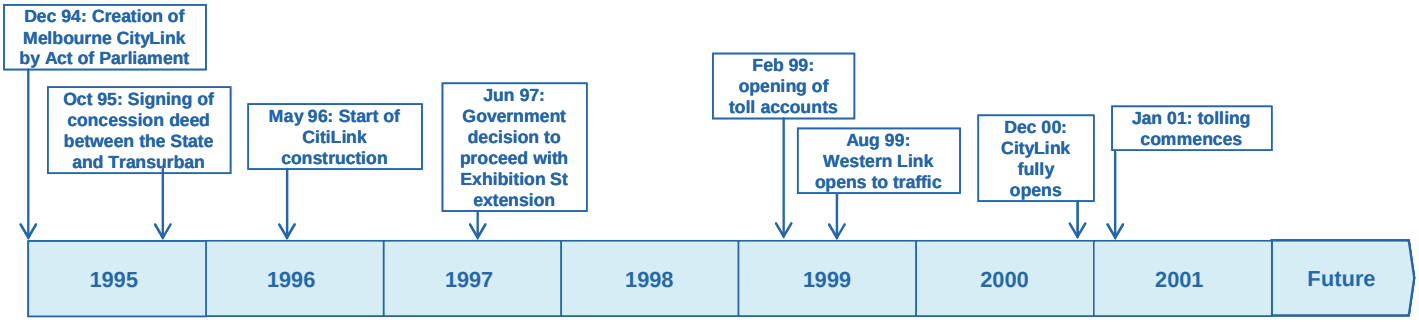
Table 13: Project overview: Melbourne CityLink

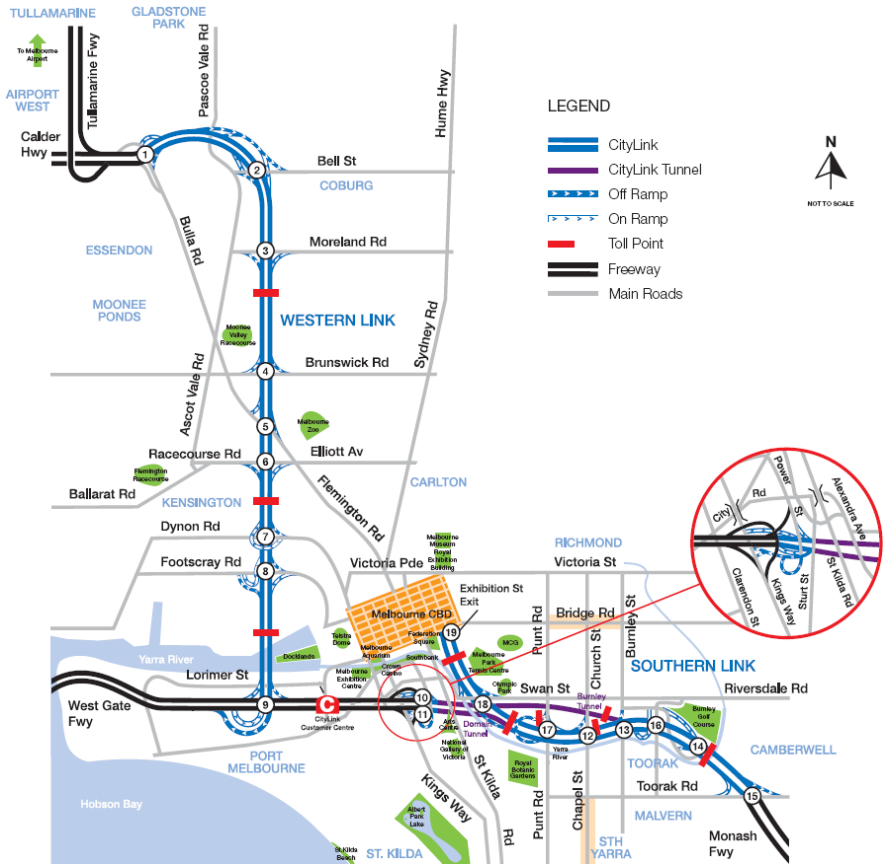
Key features	Melbourne CityLink
Project specifications	The Melbourne CityLink links the Tullamarine, West Gate and Monash freeways to Melbourne airport, port and industrial centres. CityLink by-passes the CBD, and uses electronic tolls. The project involved the construction, operation and maintenance of two sections. The **Western link** comprising 13.4 kilometers of new and upgraded freeway which included: • Upgrade of the Tullamarine Freeway to eight lanes between Bulla Road and Flemington Road; • a six-lane elevated road through West Melbourne; and • a connecting bridge over the Yarra River to the West Gate Freeway. The **Southern Link** comprising 8 kilometers included: • two three-lane tunnels (the 3.4 kilometre Burnley Tunnel and the 1.6 kilometre Domain Tunnel); and • an upgrade to the existing freeway to five and six lanes between the city and the city end of the Monash Freeway. An additional extension called the Exhibition Street extension was added in 1997 to create a direct link between Exhibition Street and the Monash Freeway (See map below).
Procurement strategy	The Melbourne CityLink project was designed using the BOOT model. A contract was entered into between the Victorian Government and Transurban CityLink Limited (Transurban) in October 1995. Transurban was required to design, build, finance, operate, levy tolls and maintain CityLink for a period of 34 years ending on 14 June 2034. To date, three different authorities have been in charge of the project: • Melbourne City Link Authority was in charge of developing the project between December 1994 to February 2002; • Office of the Director, Melbourne City Link replaced the Melbourne City Link Authority up until June 2004 when the focus moved to contractual management, and customer services tolling products, and a major review of public safety and traffic management aspects was undertaken; and • VicRoads has been responsible since June 2004. It has implemented additional customer services

	improvements such as the 'late toll invoicing', allowing motorists who use CityLink and who have not registered to be issued with an invoice (instead of a fine).
Financial cost	$2 billion

A summary of the timeline of events is illustrated in Figure 8.

Figure 8: Timeline of events of the Melbourne CityLink projects





Delivery process

Inception, planning and approval

The concept of creating a road that would connect Melbourne's major freeways was explored as early as the 1950s. In 1987 the Melbourne Arterial Road Access Study and the National Roads Strategy – Victoria both advocated the Southern and Western links. Environmental impact studies were undertaken in the late 1980s.

The inception and planning of CityLink occurred at a time when the Victorian Government was experiencing extreme financial pressures. It had limited funding available and was therefore interested in options that limited its exposure to the risk of project over run.

Expressions of Interest from private sector partners were sought in May 1992. This process produced a short-list of two bidders by September 1992. The project was placed on hold by the newly elected Government in October 1992 and was re-launched in May 1994. The project brief was issued to the two shortlisted bidders in September that year.

Submissions from private sector parties were received in January 1995 and the preferred bidder, Transurban, was announced in May 1995. Also announced at this time was the intention of introducing electronic direct tolls. The contract process was finalised in December 1995.

The project was subject to a number of economic studies, testing different assumptions, which naturally resulted in a range of different estimates from the economic NPV of the CityLink project.[47] A final estimate of expected net economic benefits of $1,285 million was realised six months after the Victorian Government had entered into the CityLink contracts.[48]

All of these economic studies delivered favourable results for the CityLink project. However, it appears that contract negotiations were concluded prior to a final assessment of project benefits.[49]

The *Melbourne City Link Act 1995* was passed by the Parliament in December 1995 and incorporated the main contractual document for the arrangements (the 'Concession Deed').[50] The Concession Deed detailed the risk sharing arrangements, toll levels, control of the property, rights to cash flows, concession fees, and the length of the concession period.

Under the Concession Deed, the State has the right to terminate the arrangement at either 25 years and 6 months, 27 years, 29 years, 31 years or 33 years after the date of the Link's construction if Transurban investors achieve a real internal rate of return (after tax) of greater than 17.5 per cent, and the initially contemplated project debt facilities have been fully repaid.

In June 1997, the *Melbourne City Link (Further Amendment) Act (Vic) 1997* was enacted to facilitate the construction and operation of the project following the Government decision to proceed with the Exhibition Street project.[51]

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[47] E W Russell, E Waterman, and N Seddon, Audit Review of Government Contracts: Contracting, Privatisation, Probity and Disclosure in Victoria 1992-1999, An independent report to Government, Vol.2, May 2000, p.91.

[48] Allen Consulting Group and Cox, '*The Economic Impact of City Link: Transurban Project* 1996.

[49] E W Russell, E Waterman, and N Seddon, Audit Review of Government Contracts: Contracting, Privatisation, Probity and Disclosure in Victoria 1992-1999, An independent report to Government, Vol.2, May 2000, p.92.

[50] Parliament of Victoria, 'Public Accounts and Estimates Committee, Seventy First Report to the Parliament, Report on Private Investment in Public Infrastructure', October 2006.

[51] Report on Ministerial Portfolios, May 1999, p.125.

The Third Amending Deed provided for the continuation of works by Transurban at the Punt Road end of the extension while negotiations were being finalised to facilitate the integration of the extension project with the City Link project.

The Fourth Amending Deed provided for various conditions precedent to be satisfied before the required amendments to the Concession Deed come into operation to facilitate the implementation of the extension project.

Construction and operation

Construction on the CityLink project commenced in May 1996 and the decision to proceed with the Exhibition Street extension was announced in June 1997. The Exhibition Street project was separated in two parts:

- Section 1 (the Punt Road end), was developed by Transurban for inclusion in the existing CityLink project; and
- Section 2 (the City end) comprised of works outside the defined project area. The Victorian Government took responsibility for designing and constructing this section and Transurban was responsible for operating this section.

In February 2001, a ten-metre section of wall moved and incurred a significant inflow of water in the Burnley tunnel, which required the tunnel to be closed for one week. Repairs to the tunnel were completed by Transurban in June 2001. The Public Safety Review reported that VicRoads traffic diversion plans operated successfully during the closure, allowing vehicles to bypass the closed Burnley Tunnel with the least possible disruption.

Tolling was introduced in a staged fashion as different sections of CityLink were completed an open to traffic. In November 1998 Transurban released its toll products to the public. Government legislation was introduced in December 1999 to prevent the misuse of private information (submitted to the toll operator to open a toll account) and to protect CityLink users from tolling errors. Tolling commenced in the Western Link in January 2000 and introduced across the network of roads throughout the year, as sections were opened.

Key project risks and risk allocation

The principle applied by the Government is that the party best able to control or manage the risk should bear that risk. In the Melbourne CityLink case, most of the risks were transferred to Transurban, which is generally recognised as a key success factor.[52]

[52] E W Russell, E Waterman, and N Seddon, Audit Review of Government Contracts: Contracting, Privatisation, Probity and Disclosure in Victoria 1992-1999, An independent report to Government, Vol.2, May 2000, p.83.

This project also contained risks associated with the fact that a number of 'firsts' were being undertaken. This was one of the first major road infrastructure PPPs in Australia and it was the first time that a fully electronic tolling system was to be implemented. While the financial risks were largely borne by the private sector there was still risk to the Government if the project was not successful.

Transurban assumed the construction risk of the CityLink project (including the Punt Road end section of the Exhibition Street extension). As such, when a problem arose in 2001 within the Burnley Tunnel (due to an arch failure), Transurban was required to bear the costs of all repairs. The Victorian Government assumed the construction risk of the section 2 of the Exhibition Street extension.

Transurban assumed the operational risk borne by the electronic toll collection system. Financiers to the project were acutely concerned about the risks as there is no back-up system to collect revenue if the e-toll system has an outage or fails. It also assumed the traffic/demand risk. This is a key risk as the whole financial viability of the project depends on toll revenue, and revenue projections were based on traffic volume estimates.[53]

The Victorian Government assumed responsibility for actions it may take that would "materially adversely impacts on the project" through:

- Agreed traffic management measures - the Victorian Government agreed to pay compensation to Transurban under certain circumstances which "materially adversely impacts" on the project; and
- Financial responsibility - the Victorian Government agreed to assume responsibility for any "outstanding project debt" that would remain in the event where the contract would be terminated due to the Government's action which would prevent Transurban from delivering or operating CityLink.

The Melbourne City Link Authority and Transurban nominated an Independent Reviewer to act as a check on the quality of construction, design and implementation.

The Victorian Government successfully transferred much of the financial risk to the private sector. However, it did this in a manner that allowed it share in financial benefits of the project. That is, should the private sector operate generate revenues in excess of those forecasts the Victorian Government will receive a share of this revenue.

[53] Report on Ministerial portfolios, May 1999, p.138.

Outcomes and value delivered

Utilisation

By June 2003 CityLink had over 650,000 customer accounts[54], plus a million infrequent users without accounts. In total, motorists were using the toll road for more than 700,000 transactions a day.

For the quarter ended 30 September 2008, Transurban reported that average daily revenue of the CityLink net of GST was $958,762, an increase of 8.8 per cent relative to the prior corresponding period.[55]

Direct and indirect benefits of operation

Citylink has been identified as delivering the following key benefits:

- reduced travel time - faster connections between Melbourne's suburbs and the CBD, the airport and Australia's largest seaport. CityLink provides travel time savings in the order of 10 to 20 minutes when compared to alternative routes;
- travel time certainty for freight operators and commuter traffic as a result of full electronic tolling;
- savings for motorists – less congestion means less wear and tear on vehicles and fuel savings for motorists;
- as a result of traffic being diverted around the CBD, new parts of the city around the Yarra River and Port Phillip Bay have been developed;
- reduced greenhouse emissions - vehicles travelling on cashless toll roads produce lower volumes of greenhouse gases than if they used alternative routes where congestion and traffic lights create stop/start traffic conditions;
- CityLink, in conjunction with the Western Ring Road, has played a material role in the repositioning of Melbourne's north-western suburbs. The north-western suburbs have benefited via improved accessibility and have developed at an improved pace; and
- jobs provision has grown strongly in Melbourne's north-west and there is some evidence that the quality of jobs is also improving.[56]

[54] See http://www.roadtraffic-technology.com/projects/melbourne_citylink/ (Accessed December 2008).

[55] ASX release, Transurban, Traffic and revenue data for September Quarter 2008.

[56] IPA, ibid, pp. 6-7

Time and cost

The Melbourne CityLink project cost around $2 billion, with $1.8 billion being financed by the private consortia and $266 million of associated works and other costs being financed by the State.[57]

The project is widely recognised as having been delivered without significantly adding to Government debt.[58] The Victorian Government had contributed approximately $346 million, or 14.7% of the total project cost. Works associated with the project was valued at $170 million and incurred additional expenditure of $176 million.

The CityLink project is considered to have been delivered well ahead of the time it would have taken if delivered by the public sector.

However, the implementation engendered time slippages:

- In 1996, the negotiations between the Government and Transurban were extended due to a change in the project scope (the Exhibition Street extension project). [59]
- The finalisation of the financial close was delayed by a year and occurred in December 1999. The audit attributed the delay to different factors. It appeared that Transurban took a greater than anticipated period to finalise financing arrangements. Moreover, in June 1998, Transurban had a dispute with its contractors constructing the Western Link which resulted in a global settlement in December 1998.[60]

Estimates of net benefits

Feasibility analyses undertaken prior to construction estimated that the project would deliver gains within a very wide band:

- Western & Southern Bypasses IDC estimated a NPV of $1.7 billion, based on estimates of a range of environmental and social benefits;
- VicRoads estimated net savings of $3.7 billion, of which 80% was attributable to savings to business, and 20% was savings to consumers;
- VicRoads updated this study without the Burnley Tunnel resulting in a reduction of NPV to $254 million. Another update in 1994 to incorporate the upgrading of the Tullamarine Freeway evaluated the NPV to $522 million.

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[57] Parliament of Victoria, 'Public Accounts and Estimates Committee, Seventy First Report to the Parliament, Report on Private Investment in Public Infrastructure', October 2006.

[58] E W Russell, E Waterman, and N Seddon, Audit Review of Government Contracts: Contracting, Privatisation, Probity and Disclosure in Victoria 1992-1999, An independent report to Government, Vol.2, May 2000, p.89.

[59] Report on Ministerial Portfolios, May 1999, p.123.

[60] Report on Ministerial Portfolios, May 1999, p.133.

Key success factors

Private sector took on considerable risk and for the most part managed that risk well

The allocation of risks between the private sector and Government effectively protected the Government. This is evident from the incident with the Burnley tunnel. Risks associated with construction were effectively transferred to the private sector and as a result the associated costs were also borne by the private sector.

An important factor to the success of this project is the maintenance of a cooperative and collaborative approach between the private sector and Government. There were a number of amendments to the Concession Deed throughout the life of this project. This included the addition of a major piece of work, the Exhibition Street extension. These changes did not cause major disruption to the project. The good working relationship between both parties ensured there was the required flexibility to ensure successful completion of the project.

Furthermore, this project was specified and designed to meet the existing needs. The need for the CityLink was identified and a reasonable amount of time was taken in planning the project, which appears to have contributed to the success of the project. This attention to planning and designing a project to address the existing problem continued throughout the life of the project, as evidenced by the inclusion of the Exhibition Street extension.

Key areas for improvement

Need to recognise problems early on and address them, including with respect to construction challenges and responding to community concerns

There were wide fluctuations in the expected returns of the project. While all economic studies were favourable to the project, contract negotiations were concluded in advance of final assessment of the project.[61]

An independent audit review recognised that there was less emphasis on due process, due to the desire for rapid implementation. The study adds that "*this highlights the need for government to balance the risks of extremes on a continuum between 'paralysis by analysis' and 'action with diminished accountability'.* [62]

The contractual "agreed traffic management measures" allowed notably for the compensation of Transurban if its revenue is materially affected by the construction of a freight rail link to Melbourne Tullamarine Airport. These contractual arrangements led to many disputes between Transurban and the Melbourne CityLink Authority. This indicates the importance of ensuring that any concessions provided to private sector partners do not limit the Government's options to address future infrastructure needs.

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[61] E W Russell, E Waterman, and N Seddon, Audit Review of Government Contracts: Contracting, Privatisation, Probity and Disclosure in Victoria 1992-1999, An independent report to Government, Vol.2, May 2000, p.92.

[62] Ibid. p.90.

In relation to the application of a toll, initially there were no consumer protection measures or monitoring involved in the project. While the arrangements for setting tolls are working effectively and the State exercises effective oversight of the operator's toll setting processes, the State did not determine if Transurban was imposing the correct tolls on users. [63]

This project also highlighted the importance of stakeholder engagement. While there were no adverse outcomes as a result of consultation the CityLink project provided the Victorian Government with an understanding of how important community consultation is. For example, during the construction phase it became apparent that certain design features, aimed at reducing noise from the motorway, would have a visual impact on local residents. Only through consultation was it revealed that residents valued 'visual amenity' more highly than the reduction in noise eliminating the need for certain features of the road design.

Lessons learned

This project provided an indication of the importance of:

- Projects that have elements that are being developed for the 'first time' will face unique challenges. These include technical challenges, such as those relating to a fully electronic tolling system, as well as stakeholder and community resistance to the use of new technologies (concern about back up systems and contingencies, reluctance from financiers etc.).

- The collaborative relationship between the parties provided an important degree of flexibility, allowing for a series of Concession Deed amendments over the project life. This made it possible to successfully accommodate changes in project scope, such as the addition of the Exhibition Street extension.

- Allowance in the contract for Transurban to receive compensation if revenue was 'materially affected' by the construction of a freight rail link to Tullamarine Airport led to contractual disputes between Transurban and the Melbourne CityLink Authority.

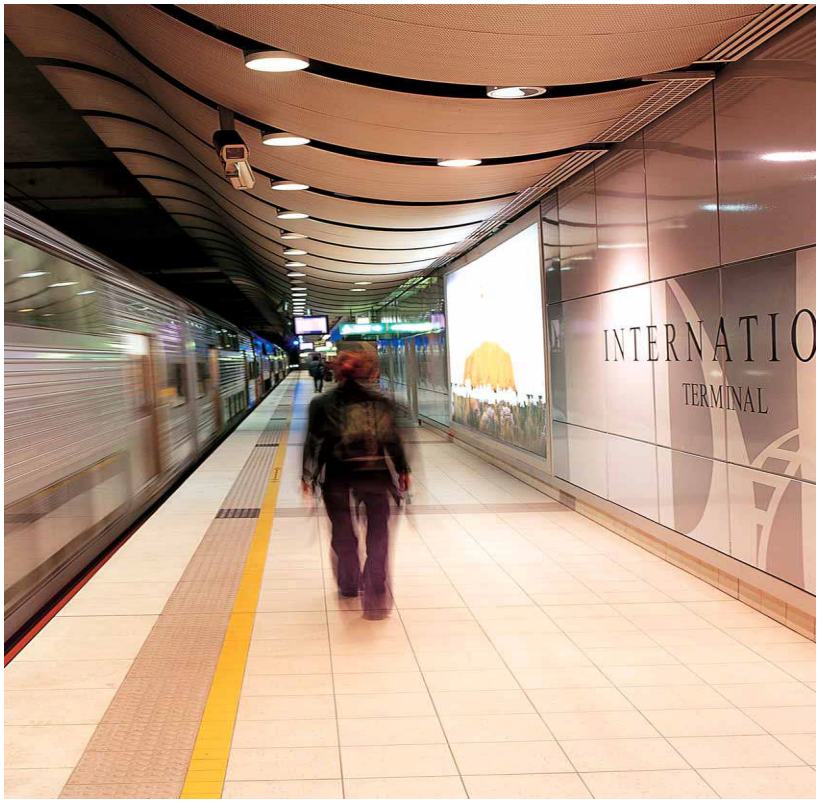
- Some construction companies can be slow to fully analyse problems that may exist in components of projects. There may also be some delays or reluctance about informing Government of such problems until solutions are developed. The issues with Burnley Tunnel had some of these features.

- Community consultation during all phases is essential to ensure that the right amenity issues are addressed as part of the project design. In this case, noise issues were addressed using high noise walls when the community valued their view more than disliked the noise.

[63] Auditor General Victoria, 2003. Report on Public Sector Agencies, Results of Special Reviews, p.53.

- Major projects may benefit from having an independent reviewer to check on the quality of construction, design and implementation.
- Collaborative relationships and clear contractual obligations between parties are essential to effectively managing unexpected events.
- It is difficult to predict future infrastructure needs. Where possible, Governments should avoid making concessions that limit their options to deal with future infrastructure needs.
- Governments need to maintain the ability to address future infrastructure needs. This may require offering compensation if existing projects are adversely affected by future investments.
- Innovative aspects of a project that affect users need to be well designed and communicated to stakeholders.
- Community consultation should be an essential part of project development and implementation. Consultation should also be undertaken by parties that are experts at consulting with the public.

8 Sydney's Airport Link Railway



Project summary

A strategic rail link to service long term needs

The Sydney's Airport Link Railway (also called the New Southern Railway project) is a 10 kilometre underground two-track railway which was designed to provide rail services between Sydney's Kingsford Smith Airport and the Central Business District. It involved the construction of four new underground stations located at the international and domestic airport terminals, as well as Mascot and Green Square.

The project was announced in 1994. The NSW Government contributed $470 million and a private consortium, Airport Link Company ('ALC'), spent $125 million for the construction and operating costs for the four new stations under a BOOT arrangement with a 30-year leasehold.

With passenger numbers being significantly lower than expected and revenues well down as a consequence, ALC went into receivership within 6 months of the lines commencement of operations in 2000. The nature of the contract and the allocation of risks left the NSW Government with substantial financial responsibilities. The NSW Government spent $800 million to extract itself from the contract that stipulated 48,000 passengers per day and bound it to making up shortfalls in revenue below forecast levels.

Overall the Airport Rail Link is a PPP which is generally considered to have had a range of challenges. However, the rail line continues to operate without significant interruptions and provides considerable value to NSW (albeit at lower patronage than original forecasts). The four stations have passed from the hands of the receiver (McGrath Nicol) to two trust funds (Westpac Essential Services Trust and Capital Partners) who now own the

remainder of the 30 year leasehold. The key features of the project are summarised in Table 14.

Table 14: Project overview: Sydney's Airport Link Railway

Key features	Melbourne CityLink
Project specifications	A 10 kilometre underground two-track railway which provide rail services between Sydney Kingsford Smith Airport and the CBD. It includes four underground stations (international and domestic airport terminals, Mascot and Green Square) which are serviced by the East Hills Line services. The project specifications included a 4 km rock tunnel, a 6 km soft ground tunnel, 4 underground stations and an interchange station. The tunnel has an external diameter of about 11m and comprises 2 railway tracks. The rock tunnel was excavated by 2 road headers, one used in sandstone and the other used in soft shale. The soft ground tunnel was excavated by a slurry tunnel boring machine (TBM) through complex geology consisting of soft alluvial soils and marine deposits to 30 m depth. The Airport Link runs south from platform 23 at Central station across a viaduct to the tunnel portal beneath Prince Alfred Park near Chalmers Street. The tunnel roughly follows George Street underneath the suburbs of Redfern and Waterloo. At Green Square station, beneath the intersection of Botany Road, Bourke Road and O'Riordan Street, the line continues beneath Bourke Road to Mascot station, a block south of Gardeners Road. From Mascot, the line roughly follows O'Riordan Street before turning sharply to the west once underneath Kingsford Smith Airport. The line runs westward under the Domestic terminal and the International terminal before continuing north-west underneath the Cooks River to reach the surface at Wolli Creek. At Wolli Creek, the Airport Link joins the East Hills line. The line is two tracks for its entire length.
Procurement strategy	The Airport link project was a BOOT scheme, with assets transferred back to Government after 30 years. Under the terms of the Original Stations Agreement: • ALC was to design, construct, finance, lease and then operate and maintain four stations (Green Square, Mascot, Domestic and International Terminals at Sydney Airport) for a 30 year concession period following their practical completion and the practical completion of the New Southern Railway connecting them to the State Rail Authority ('SRA') network; • SRA was to lease the station strata to ALC for the 30 year concession period prior to their reversion to SRA at the end of the concession; • SRA was to provide train services to the stations; and • Revenues generated by the stations business were to be distributed between the parties. The NSW Government also funded the construction of tracks and tunnels and owns the Wolli Creek interchange stations, tunnels, tracks, catenary, signalling and communication systems.
Financial cost	$920 million financed by: • the NSW Government for $700 million • the National Australia Bank for $190 million • shareholder equity for $30 million

Delivery process

A PPP was used to build the railway in an attempt to reduce the construction cost of the lines. Under the deal, the NSW Government would pay to build the line, while a private company, ALC, would pay to build and operate the stations.

Planning through to construction and operation

The project was a major financial commitment and was never able to be funded at no cost to Government

The history of the project started in 1915 when predictions of urban consolidation highlighted the potential benefit of a city to airport rail link. In the 1980s the idea grew momentum and several options were considered, including a metropolitan rail line, bus services, and light rail. After the rail option was chosen, 5 routes were assessed for their feasibility and the current route chosen. Even at this early stage, the project was envisaged as posing ‘no cost to government’.

The project eventually arose in 1990 as an unsolicited bid by a consortium comprising CRA Ltd, Qantas, and Westpac.

The State Government subsequently called for open tenders and received four bids. The two shortlisted tenders (CRI and Transfield/Bouygues) were encouraged to form a single consortium, which was named the Airport Link Company, which re-bid for the project in 1993. The consortiums’ bid was accepted and the final contracts were signed in February 1995.

At several stages in the early planning phase, NSW Treasury modelling showed that the project was going to require substantial Government funding. The investment funds of the private consortium were in the order of the cost of the required station boxes, and the Government funded the remainder of costs for the tunnels and track. The $700 million cost of the State Government’s commitment consumed all of the capital expenditure budget for SRA for the following 4 years.

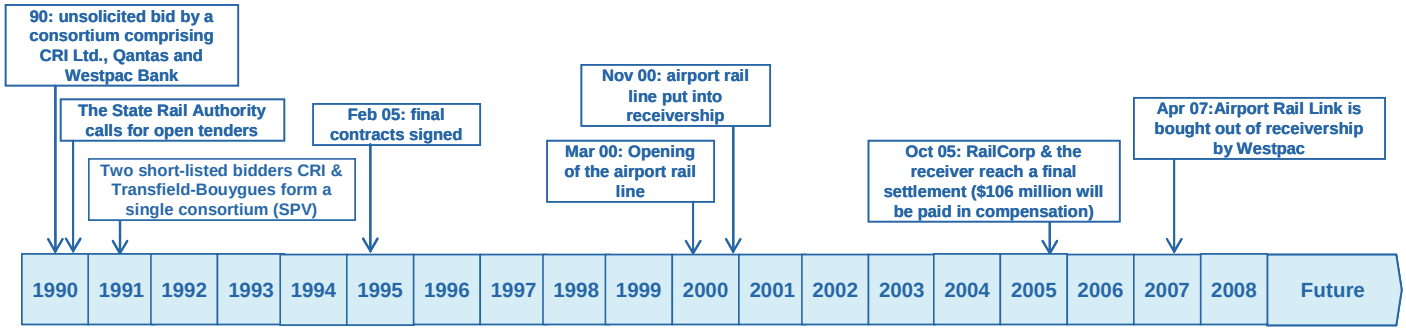
Two contracts were developed for the project. These included a PPP concession on the stations, and a design, construct and maintain contract for the tunnel.

The contracting arrangement were drawn together just prior to a NSW Government State election, and the Government was keen to sign the contract before the election period. This hastened the contracting period, and ultimately signed up the new Government to a project that it did not develop. The new Labor Government also made amendments to the contract, such as the addition of the Wolli Creek station, which did not appear to be subject to additional substantive cost benefit analysis.

The planning process also gave rise to the need to make various amendments to satisfy fire standards for the tunnel, which imposed additional costs on the project.

A timeline of events throughout project delivery is shown in Figure 9.

Figure 9: Timeline of events of the Sydney Airport Rail Link



The financial viability of the project was predicated on passenger estimates and train reliability guarantees that later proved to be optimistic.

Under the funding arrangements, profits for the consortium were pegged closely to patronage. According to the contract, the consortium received:

- 100% of cash flows from fare supplements (the premium charged above normal CityRail fares) until they recovered their initial investment,
- 80% of fare supplements until they earned a rate of return of 15% on the initial (already repaid) investment, and
- 20% on additional surplus cash thereafter capped to a 22% real rate of return.[64]

The details of the Feasibility Study indicated that if patronage had been in line with expectations, it would have taken between 3 and 4 years for the consortium's investment to be repaid in full. The NSW Government would break even after 23 years, and would derive an internal rate of return of 2% per annum, compared to 21% for the consortium.[65]

The line opened on 21 May 2000, three months ahead of the Olympic Games. The two new stations built for the airport's International and Domestic Terminals featured larger lifts and wider ticket barriers to cater for passengers with baggage.

In conjunction with the construction of the new line, the section of the East Hills Line between Wolli Creek Junction and Kingsgrove was expanded. Once this was opened, the running patterns of the trains on the lines changed. The "flying junctions" interchange near Central Station was altered to give the Airport Line its own platforms (21 & 23) at Central. Local (all stations) trains generally were timetabled to run from East Hills via the airport, peak hour express trains from Campbelltown run along the original

[64] Walker and Walker 2000, '*Privatisation: sell off or sell out: the Australian experience'* Sydney University Press p. 207.

[65] Ibid, p. 207

route via Sydenham, taking the express tracks between Kingsgrove and Wolli Creek Junction.

Key project risks and risk allocation

The contractual arrangements set up scope for contract failure which did not take long to emerge

Despite the State's intentions to transfer funding costs to the private sector, the State Government carried a greater burden of the project risks throughout the delivery process than has been the case for other PPPs examined in this review.

- In the **pre-design** stage, the SRA took all approval risks, which were complex given that the project passed through five local council areas as well as Commonwealth territory at the airport. To overcome the complexity of the approvals process under the then State environmental legislation, the Minister of Planning streamlined the decision-making process and formulated a new State Environmental Planning Policy.
- At the **design** stage, the SRA carried the risk associated with delays or costs associated with dealing with the Federal Airports Corporation. The ALC took the risk of providing full designs for tracks, tunnels and station infrastructure for a lump sum price.
- At the **construction** phase, SRA bore the risks of site accessibility within an agreed time, and purchased land along the track route. SRA also bore risk of force majeure claims by ALC and of general industrial disputes aimed at Government policy. ALC took the construction risk of delivering the stations, tracks, tunnels and associated infrastructure on time and within a lump sum price to an agreed level of quality. [66] However, escalation clauses shifted the risk of increases in levels of inflation and construction-related costs for tunnels and the railway line extension to the State Government.[67]
- At the **operational** phase, SRA took the risk of operating trains, selling tickets and meeting agreed service standards. SRA also carried the risk of changes in requirements and changes in the law or Government policies which would have affected patronage.

Two of the key risks that contributed to the outcomes of this project were the setting of KPIs in the contract and the fee arrangements.

First, the SRA contractually agreed to quality related KPIs that it ultimately did not meet. For instance, SRA was required to provide:

- certain types of (good quality) trains of certain size and stock;
- trains that did not have graffiti; and
- on time running.

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[66] Loosemore, M. 2007. Risk allocation in the private provision of public infrastructure. *International Journal of Project Management*, 25/2007, p73

[67] Walker and Walker, 2000, p. 206.

Second, the fee arrangements between the consortium and the SRA which exposed the SRA to **patronage and interest rate risks**, which ultimately undermined the financial feasibility of the project.

The impact of the allocation of patronage risk was experienced early in the project. Six months after the line was opened, passenger rates were only 12,000 per day, which was suspected of being due to the $10 premium rail fare being well above the price of alternative modes of transport including taxis (when 2 or more passengers were travelling). The rail services also made no allowance for baggage room and, being part of the existing rail network, tired travellers were thought to be put off train travel on crowded commuter services. Travel time savings were also negated by the newly built Eastern Distributor road which reduced the time to travel from the city to the airport to 15 minutes.[68]

Under the contractual arrangements:

- ALC had to pay a network access fee and a service fee to SRA, which were based on net revenues generated by ALC and determined on a five yearly basis (i.e. reduced ALC net revenue meant reduced revenue to SRA);
- SRA earned first revenue from ticket sales to users of the railway (i.e. reduced patronage meant reduced revenue to SRA); and
- With the access fee contingent on the debt being paid off, SRA also had exposure to interest rate risks.[69]

Ultimately the contract between the parties was ineffectual in meeting the needs of both parties. The parties were in dispute and held intractable positions on the nomination of the independent arbiter and independent valuer, which meant that the resolution mechanisms within the contract could not be activated.

Outcomes and value delivered

Cost benefit analysis of the Airport Rail Link prior to its operation suggested that the cost benefit ratio was 1.7, assuming a discount rate of 7%.[70]

This was based on assumptions about the benefits of the Airport Link Railway including:

- the ability to delivery rail services to 46,000 passengers per day;
- a 25% reduction in road traffic between the city and the airport;
- urban consolidation; and

[68] Loosemore 2007, p. 74.

[69] Ibid, p. 74.

[70] Walker and Walker 2000, p. 205.

- increased rail network capacity, which was expected to prevent the need for another planned rail extension.[71]

Time and cost

Initial costs and subsequent variations increased costs were above original expectations. From a time perspective, the project was delivered more effectively

The contract price was initially valued at over $650 million, $484 million for tracks and tunnels (funded by SRA) and $128 million for the stations (private sector). However, due to major changes in scope, the project finally cost $920 million. This was not wholly unexpected with NSW Treasury and the SRA warning in 1994 that contrary to original cost predictions, the project would probably cost about $400 million of public money in the first decade.

A special tax concession was necessary to improve the financial feasibility of the project.

From the outset the Airport Rail Link did not meet its patronage forecast. In November 2000 ALC defaulted on senior debt payments to the National Australia Bank (NAB) and NAB appointed receivers and managers on 30 November 2000. In accordance with the contractual terms, ALC made performance claims under the Original Stations Agreement of approximately $10 million per quarter plus interest. In addition, ALC served a number of default notices on SRA commencing the termination process under the Original Stations Agreement. The Receiver pursued the original claims and default notices and issued further claims and default notices on a regular basis.[72]

In the end, all parties incurred a financial loss. The contract was eventually renegotiated, including new KPIs which triggered payments or credits for KPI performance rather than contract default.

In terms of timeframe, construction of the tunnel was done on time, despite its complexity and challenges. There was a delay in ‘practical completion’ of approximately 6 weeks, as SRA required additional time to provide surety that the new line was ready to be brought into operational service.

Key areas for improvement

Better specification of risks and more achievable KPIs

The key causes of the value lost from the Airport Rail Link include the following.

- Inappropriate distribution of risks associated with revenues and patronage rates. For this project, the State agreed to assume demand risk which is unusual for an economic infrastructure project. Due to the long time frames of PPP projects such as this, revenues and patronage

[71] Loosemore 2007, p. 72

[72] Restated Stations Agreement (2005) New Southern Railway, New Southern Railway Settlement Deed Global Amending Deed, Deed of Release.

rates are extremely difficult to predict in advance. In this case, the Government took most of this risk, agreeing to compensate the private consortium for any shortfalls in patronage levels.

- Inappropriate structuring of funding arrangements. The Station Usage Fee (SUF), which the ALC is reliant on for revenue, is set by ALC and was not subject to regulation by the Independent Pricing and Regulatory Tribunal (IPART). The fee is a flat fee for entry to or exit from an Airport Line station regardless of the length of train journey. Given the price sensitivity of passengers to rail fares, this arrangement exposed all parties to considerable patronage risk.

- The financial model used for the project was not sufficiently robust to deal with the challenges that emerged. For instance, there was no ramp up period to allow for gradual and incremental use by passengers. There was no debt service reserve amount to cushion the impact of delays. The model also reflected optimistic operating costs as well as forecasts for passenger revenue.

- Demand forecasts should have better reflected transport alternatives and the price sensitivity of rail demand.

Lessons learned

Projects should be subject to robust CBA. If projects are ultimately designed to deliver long term gains, funding arrangements should reflect that

- It is important for Governments to independently assess whether the cost of projects can be fully privately funded (and reimbursed through user charges). Initially promoting the project as having 'no net cost to Government' created public expectations that could not be fully met.

- Initial cost estimates of the project understated the likely cost of upgrading the network and the fleet to make it fit for purpose, and upward revisions created some public scepticism about the project.

- The contract between the parties was possibly insufficient for resolving all the complex challenges that would arise. This may be partly due to the relatively short period utilised to develop and execute the contract.

- The major State Government financial commitment to the project locked up available capital expenditure for rail over the next 4 years, and the opportunity cost of this was not fully considered.

- Changes to the project scope through the inclusion of major extra components (eg new stations) should occur only after undertaking revisions to the economic cost benefit analysis (CBA) to test merit.

- Private sector acceptance of financial risks does not fully absolve the Government of responsibility to ensure the viability of the financial model used. There is merit in Government fully assessing the achievability of key assumptions such as patronage forecasts (including ramp-up assumptions) and operating cost estimates to assess whether cashflows are adequate to service debt obligations.

- The State Government contractually committed to KPIs that proved difficult to meet, which led to claims for non performance.

- Seemingly strained relationships between financiers, operators and the State Government prolonged the period of contract renegotiation along with intractable positions on issues, led to a longer dispute resolution and arbitration process.
- The State Government was able to provide additional funding for the project by diverting a proportion of the existing train fare from passengers travelling to and from the Airport Link Stations, provided ongoing financial support without committing the State to a large upfront payment.
- Contracts should not expose Governments to excessive risk if private partners are unable to fulfil their contractual obligations.
- Some infrastructure projects have good long term merit from a strategic transport planning perspective but are difficult to justify by current travel patterns. Funding arrangements for such projects should reflect this without expecting current users to pay for gains for future users.
- Governments should more closely assess their ability to regularly meet KPIs as repeated under performance may trigger claims.
- KPIs in PPP contracts should be structured to provide credits or payments between the parties in the event of good performance or under performance. Moderate under performance should not trigger contract default.
- Governments should ensure that they maintain the right to deliver public services irrespective of the contractual status of PPP contracts for infrastructure projects.
- In the event of contract failure, all parties are likely to experience some financial costs.
- Where demand is critical to project feasibility, a stronger focus on fare levels / pricing is required to ensure it encourages utilisation.
- Plan early the environmental assessment process for new projects to avoid having to formulate new Government planning policies to accommodate project specific complexities in the approvals process.

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