

# The SBEnrc

The Sustainable Built Environment National Research Centre (SBEnrc) offers a unique industry-government-research collaboration to improve Australia's built environment industry.

The SBEnrc has the broadest built environment research alliance in the country, with Core Members including John Holland Group, Aurecon, the Governments of Western Australia, Queensland and New South Wales, Curtin University, Swinburne University and Griffith University; all of which are represented on the Centre's Governing Board.

Three Research Programs

Program 1 -  
Greening the  
Built  
Environment

Program 2 –  
People,  
Processes and  
Procurement

Program 3 -  
Productivity  
through  
Innovation

# Public Private Partnership

## Welcome

**Professor Matthew Bailes**

Pro-Vice Chancellor (Research)  
Swinburne University of Technology

Former SBEnc Board Member



# Public Private Partnership

## Pinnacles & Pitfalls: A short overview

**Professor Russell Kenley**

Professor of Management , Swinburne Business School  
SBEnrc Program 2 Leader (People, Processes, Procurement)  
Project Leader 2.33 New Project Management Structures: Infrastructure  
Modelling (BIM) and Location (GIS)

# Types of PPP

## There is little agreement on what a PPP is!



Sustainable  
**Built Environment**  
National Research Centre



- In a variety of forms (as below)
- Each project is unique in its form of procurement
- Descriptors indicate the responsibilities provided by the private sector

1	Turnkey	10	Build-Develop-Operate
2	Design-Build	11	Build-Operate-Transfer
3	Design-Build-Maintain	12	Build-Own-Operate
4	Design-Build-Operate	13	Buy-Build-Operate
5	Design-Build-Operate-Maintain	14	Developer Finance
6	Design-Build-Finance-Operate-Maintain	15	Lease-Develop-Operate
7	Design-Build-Finance-Operate-Maintain-Transfer	16	Lease/Purchase
8	Operations-Maintenance	17	Enhanced Use Leasing of Underutilized Asset
9	Operations-Maintenance-Management	18	Sale/Leaseback
		19	Tax-Exempt Lease

- *“Public-Private Partnerships: Terms Related to Building and Facility Partnerships”, Government Accounting Office, April 1999. The National Council for Public-Private Partnerships was a resource used in developing the GAO report*

# A simple justification for PPPs

## Finance

- There was an international recession in 1990s:
  - Drive to reduce public debt
- *“The accounts do show that Australia is in a recession. The most important thing about that is that this is a recession that Australia had to have”* - Treasurer Paul Keating, November 1990.
- Imperative to transfer expenditure *off balance sheet*
- Financing through payments linked to operations
- Effect: Improve economy (and also government credit ratings)
- Can aid development

## Reducing size of public sector

- Public sector cost reductions
  - reduce size of public sector
  - remember Jeff Kennett?
- Outsourcing of Public Works Departments
- Consequence: Loss of internal capital works capacity
- Solution: Package projects for private sector management - PPP



# International context

**The whole world has adopted PPP  
for many public infrastructure and services**

*More Public-Private Partnerships Can  
Help Meet Development Challenges*

(Asian Development Bank, May 2014)



MOTORWAY NETWORK PLANNING IN POLAND



# UK: Private Finance Initiative (PFI)



Sustainable  
Built Environment  
National Research Centre

## From 1992



- In the UK the role for PFI is clearly about financing projects through partnership
- The private sector finances, builds & operates infrastructure
- public sector payments made over the concession life
  - (at least 25 years)
- Transfer of substantial risks to the private sector
  - payment is **only made if services are delivered** according to the requirements of the concession agreement



# Over 600 local authority PFI projects about £55billion since 1992

<http://www.pppforum.com/gallery>



- PFI part of the Government's infrastructure & services investment
- over 80 new or refurbished health facilities (2000-2015)
- over 120 new or refurbished schools (2000-2015)





## 50 major PFI transport infrastructure projects (2000-2015)

### *Plans to link up Birmingham tunnels hit by borrowing freeze*

(Birmingham Post Online May 2013)



*“If the highways PFI contract with Amey had not been signed it is doubtful we would even be carrying out this refurbishment”*

### *Vinci/Ringway selected for £800m Isle of Wight highways PFI*

(Construction News Online May 2012)



# US: Public Private Partnership (termed 3P)

- Creative government leaders develop partnerships with private contractors
- To provide more efficient essential services without increasing taxes

3P is a good way to retain heritage buildings and upgrade aging transportation services: Union station Washington DC (1980s; \$160m; USDoT, DoC, Amtrak, private developers)



# Australasian context

**Australia has a love affair with PPP**



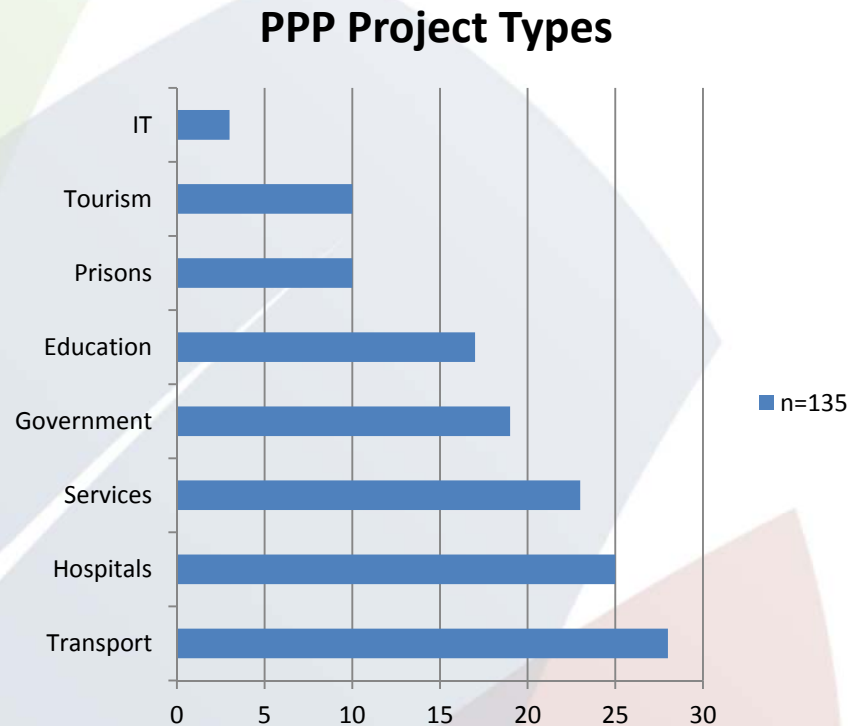
**New Zealand prefers Alliances**



# Infrastructure Australia

## There have been 135 PPP projects: 1987-2014

[http://www.infrastructureaustralia.gov.au/public\\_private/](http://www.infrastructureaustralia.gov.au/public_private/)



- Victoria:46; NSW:34; QLD:16; WA:11

- *Education*: school buildings & facilities; university buildings & accommodation
- *Government*: law buildings; department offices; social housing
- *Transport*: road, rail, tunnel, interchanges
- *Hospitals*: new, refurbishment; expansion
- *Services*: water & waste treatment; pipelines, irrigation
- *Prisons*: new, refurbishment, expansion
- *Tourism*: convention centres; sports facilities
- *IT*: communications & surveillance

# Sydney Harbour Tunnel

First Significant Australian privately financed infrastructure project



**Sustainable  
Built Environment**  
National Research Centre

**Client: RTA**



Build-Own-Operate-Transfer 30 years  
 Joint Venture: Kumagai Gumi (Japan) & Transfield (Australia)  
 \$670m contract to opening 1987-1992

**TUNNEL BORING MACHINES** northwestrailink  
FACT SHEET

**4** tunnel boring machines (TBMs) in the ground from second half of 2014  
**15** kilometres of twin tunnels from Bella Vista to Epping – Australia's longest rail tunnels

**How does it work?**

- Grippers extend out to the rock surface, allowing the front shield and cutting head to move forward. Rock is crushed by high strength alloy steel discs on the cutterhead.
- Crushed rock is scooped into the machine's head and on to a conveyor belt.
- The conveyor moves the rock through the machine shield and out of the tunnel behind it.
- Pre-cast concrete ring segments are delivered to the ring building area.
- Concrete ring is built by putting together the pre-cast segments using a special lifting device.
- The completed ring, about 1.7m long, is connected to the previous concrete ring then pushed out the back of the shield section.
- The gap between the concrete ring and the rock is filled with grout – this helps keep water out of the tunnel.
- The machine moves forward about 1.7m and then the process starts again.

**49** hardened steel cutters on each cutting head  
**6m** internal tunnel diameter  
**15** people work on each TBM at any one time  
**24/7** around-the-clock operation underground

**120m** of tunnel cut every week, on average  
**60%** boring through Sydney sandstone, the rest shale  
**1,000** Olympic swimming pools or 2.8 million tonnes of crushed rock generated by tunnelling

**Surface level**  
**27m** (Average tunnel depth)  
**63m** (Maximum tunnel depth)

**How big is it?**

Length: 140m  
 Weight: 1,000 tonnes  
 = 600 Holden Commodores

**Size and scale of a TBM in action**

**How it works diagram:** Bella Vista TBMs 1 and 2 start here (Travel 9km to Cherrybrook), Showground TBM operations support, Cherrybrook TBMs 3 and 4 start here (Travel 6km to Epping). Locations: Norwest, Castle Hill.

**Internal components diagram:** Spoil conveyor, Ring build area, Gripper, Cutterhead, Precast segments, Shields.

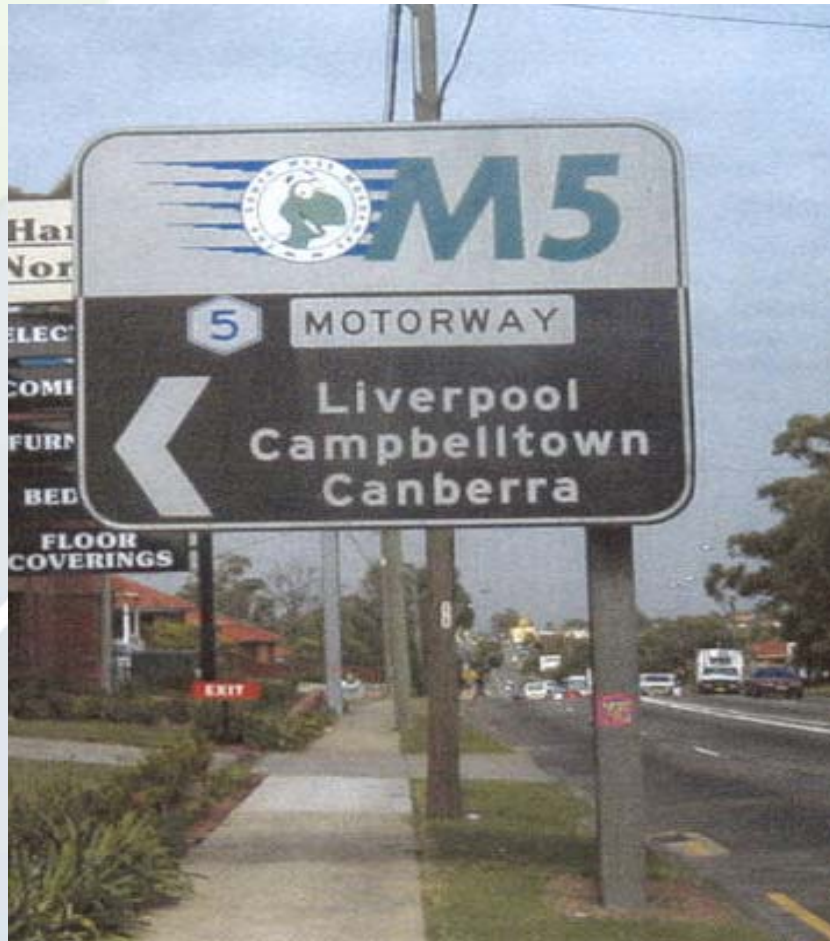
**Internal layout diagram:** Electrical and hydraulic systems, Meal room/toilets, Operator, Grouting pumps.

**Logos:** NSW, THIES, Transfield, NSW Transport for NSW

## M5 Toll Road

\$315m contract to opening 1991-1992 (completed months in advance)  
Build-Operate-Transfer agreement Interlink Roads

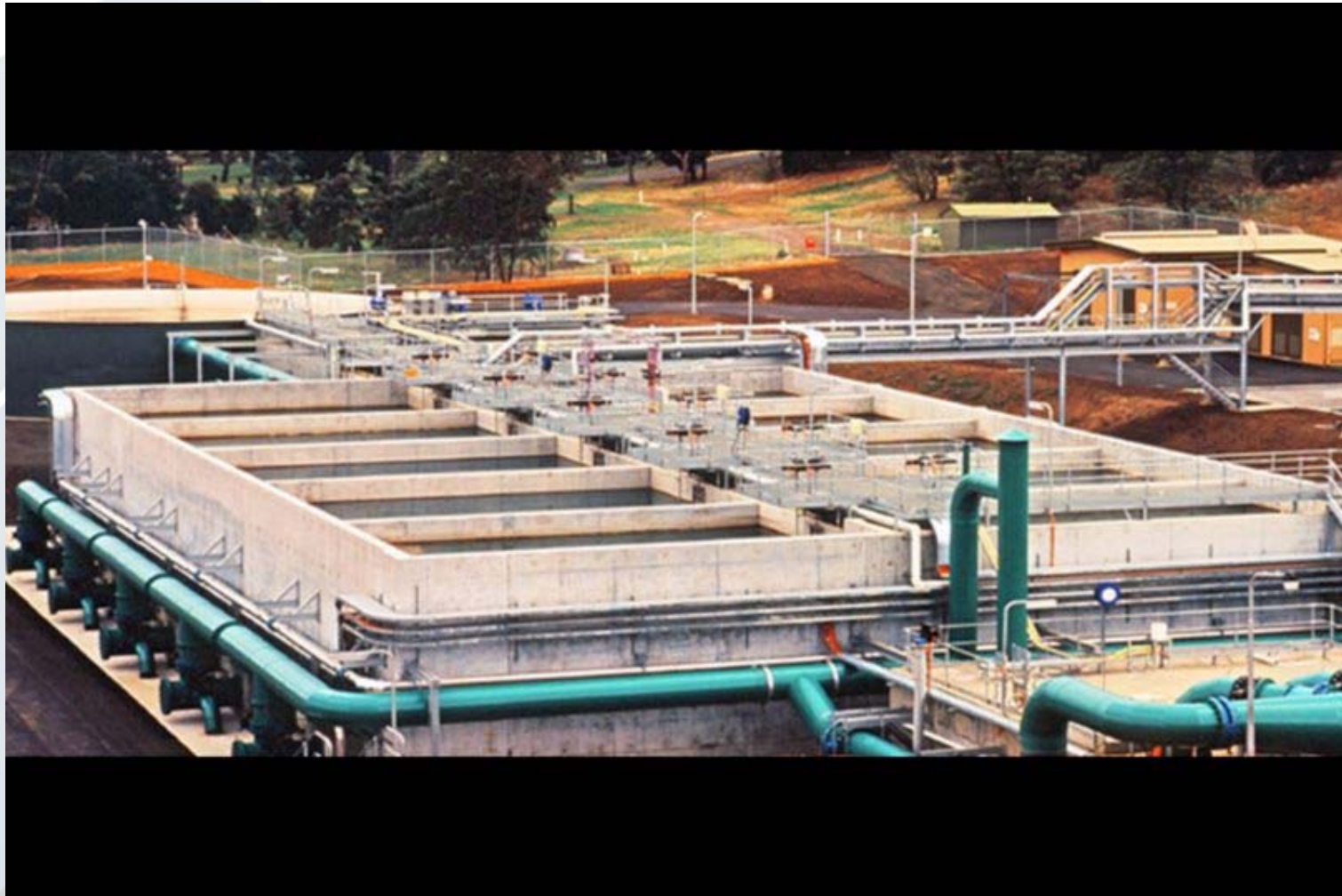
Transfield lease expires December 2026



# Yan Yean Water Treatment Plant

First Victorian & First Australian water sector PPP:  
\$25m contract to opening 1993-1994

Melbourne Water & TRILITY (waster assets) as sole operator  
Design-Build-Finance-Operate-Maintain



**Prospect Water Treatment Plant**  
\$200m contract to opening 1993-1996  
25-year Build-Own-Operate-Transfer

Sydney Water Corporation and the Prospect Water Partnership  
(Lyonnaise des Eaux , Unisuper & Lend Lease consortium members;  
operated by Degrémont)





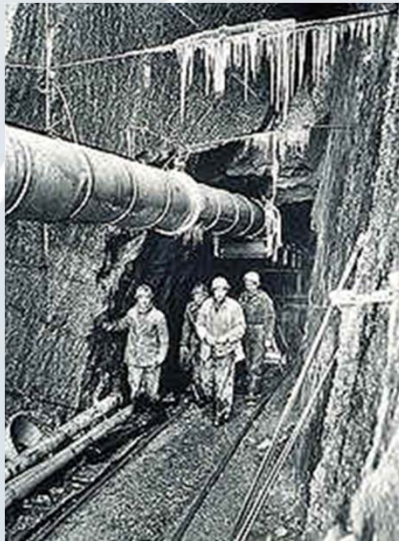
# Blue Mountains Sewage Transfer Tunnel

\$80m contract to opening 1996

## Comparing two project schemes

### Snowy Mountain Scheme (1949-1974)

- Government consortium: Australia, NSW, Victoria **carries the risk**
- Snowy Mountains Hydroelectric Authority (Snowy Hydro)
- Authority design-build-operate
- Government funded \$820m



### Blue Mountains Tunnel (1996)

- Build-own-operate-transfer (to leasing company for 35 years)
- Blue Mountains Sewage Tunnel Consortium
- Joint venture: McConnell Dowell & Obayashi Corp
- **all construction risk carried by joint-venture**
- financed by Japanese banks
- incentive to complete on time: contract includes facility to on-sell to superannuation fund to operate at construction price \$80m
- SFMCSA leasing to Sydney Water



## Melbourne City Link

\$1.8b Build-Own-Operate-Transfer 34 year concession



Sustainable  
Built Environment  
National Research Centre

**Concession extended many times!**



Transurban Consortium led by Obayashi Corp & Transfield Holdings  
from contract to opening 1996-2000



## Latrobe Regional Hospital

\$56m contract to opening 1997-1998

Australian Hospital Care: Design-Build-Own-Operate 20 year contract  
Client: Department of Health, Victoria

- 257 bed Victoria's first privately operated fully integrated acute / sub-acute facility
- Australian Hospital Care
- The Victorian Auditor General:
  - the privatisation tender process “allowed an unsustainable bid price to succeed”
- hospital since returned to government ownership and operation



- Silver Thomas Hanley undertook the briefing, documentation and design

## Sydney Olympic Village – a uniquely successful Olympic afterlife!

Client: Olympic Co-ordination Authority

Mirvac Lend Lease Village Consortium: Mirvac, Lend Lease, Civil & Civic, ANZ, Westpac

Design-Finance-Build-Reconfigure-Market-Sell

\$590m contract to opening 1997-2000

Share Net Proceeds of Sale

- consortium built in Newington
  - 900 townhouses
  - 700 apartments
  - 300 modular homes.
- Newington was sold into private ownership
- 2011 census 5,320 people; successful conversion of Olympic Village



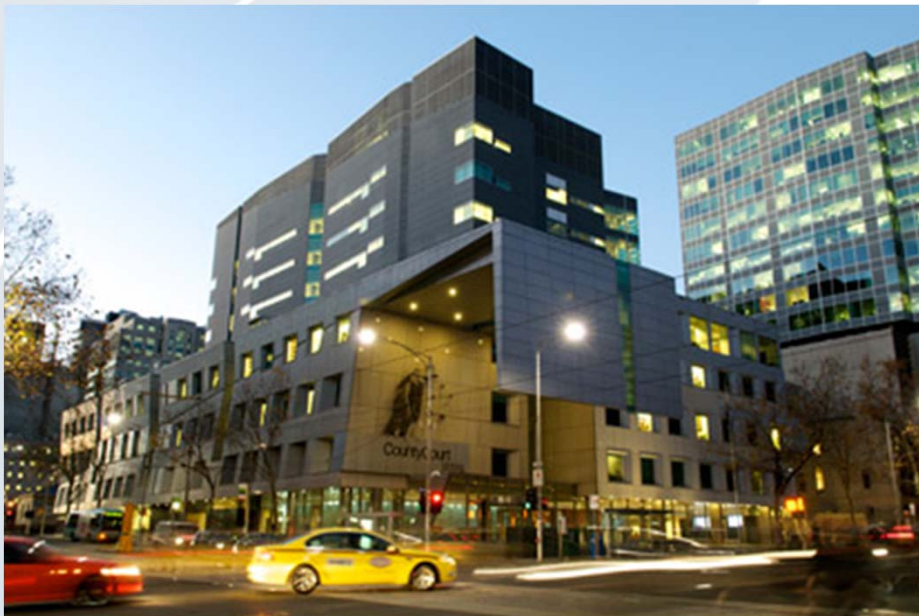
# Victoria County Court

\$195m contract to opening 2000-2008

Client Group: DoJ, CC, JCO, VP, VGRS, CV

Liberty Group: ABN AMRO, NM Rothschild & Sons (financiers), Multiplex (construction), Honeywell (facility services)

Design-Build-Finance-Operate (management services, security & IT systems)  
20 year Contract  
plus 99-year lease of the crown land  
plus the court building remains their property



## **Southern Cross Station & Transport Exchange**

Design-Build-Finance-Operate-Maintain 30 year Contract

Civic Nexus: ABN Amro, Leighton, Daryl Jackson Architecture, Nicholas Grimshaw and Partners, Honeywell, Delaware North  
\$309m contract to opening 2002-2006



# Victorian Desalination Plant

\$5.7b contract to opening 2009-2012

Client: DSE AquaSure Consortium: Suez, Degrémont, Thiess, Macquarie



Sustainable  
**Built Environment**  
National Research Centre

**30 year concession**



Build-Operate-Maintain: desalination plant, the 84 kilometer transfer pipeline, delivery of power supply for the project, operations and maintenance, and the purchase of renewable energy credits



# Hopkins Correctional Centre (Ararat Prison)

## Design-Build-Finance-Maintain 30 year Concession

\$394m initial contract July 2010, revised 2012

### Aegis Correctional Partnership (ACP):

- Bilfinger Berger Project Investments
- Commonwealth Bank
- St Hilliers Construction
- Hawkins Construction
- Programmed Facility Management.
- First Victorian social infrastructure project procured in National PPP Guidelines (2008)



### Reboot:

#### *Builders Win as Ararat Prison Project*

*Gets New Start* Peter Rolfe, Herald Sun, August 03, 2012 8:30PM

- Builder St Hilliers Construction Pty Ltd went into liquidation in May 2012
- August 2012 re-financing agreement for stalled \$400 million
- Commonwealth Bank & Bendigo and Adelaide Bank
- Rescue deal means hundreds of subcontractors were paid



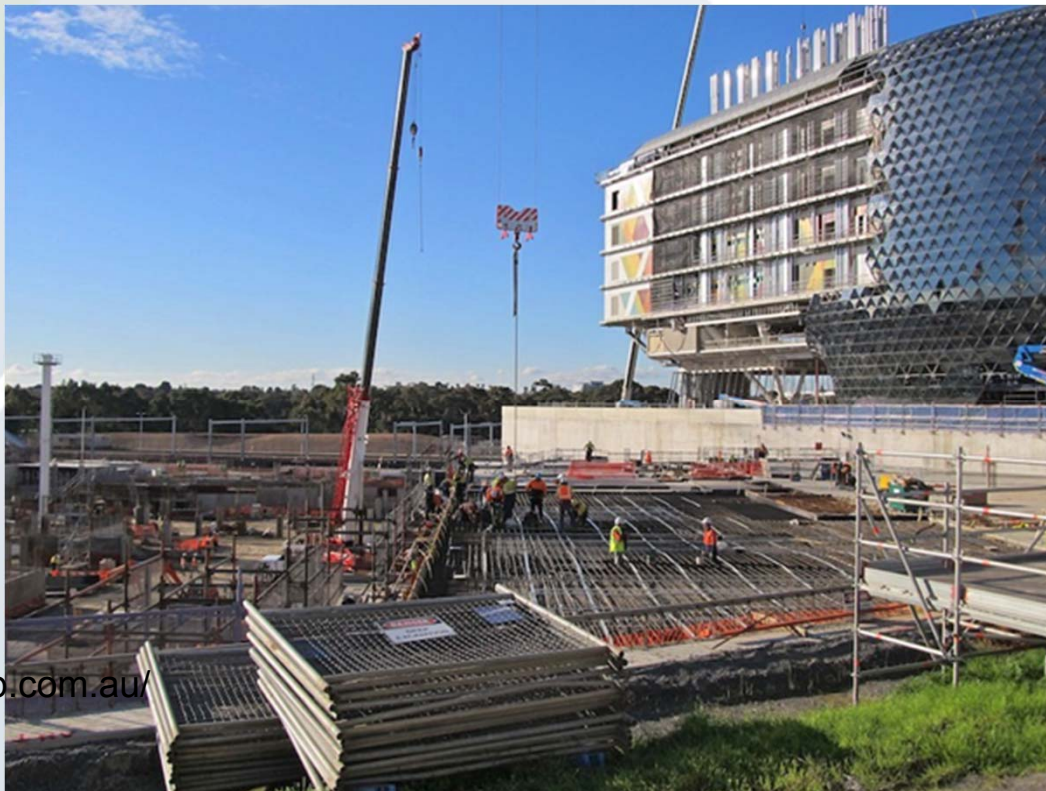


# New Royal Adelaide Hospital

PPP: Design-Finance-Build-Operation-Maintenance 30 year contract

SA Health Partnership Consortium: Macquarie (finance) Hansen Yuncken (design)  
Leighton (construction) Spotless (maintenance)  
HYLC Joint Venture: Hansen Yuncken & Leighton  
\$1.85b contract to opening 2011-2016

- Client: Government of South Australia
- To build and manage the non-clinical services of the new Royal Adelaide Hospital



But, there are still Alliance structures without Finance

## Moreton Bay Rail

\$1.47b TrackStar Alliance: integrated infrastructure delivery business

QTMR, Hassell, Thiess, Aurecon, AECOM

- **Funding:** Australian Government \$742m + \$120m land; Queensland Government \$300m; Moreton Bay Regional Council \$105m
- **2011:** Develop detailed design, procurement for construction and acquisition last properties.
- **2012–2016:** Preconstruction activities and construction.
- **2016:** Finalise construction and commence rail services (weather permitting).



# Some issues of perception

## Projects fail?

- Failure rate of PPPs in Australia is only 12%\*
- Failure means not meeting **Investors** objectives – a financial indicator only, not a service indicator
- PPP projects do not fail the community

## Poor value for money?

- Public perception is of poor value for money
- Partnerships Victoria guidelines ensures value for money with Public Sector Comparator

\* Regan, et al. (2013) Public-Private Partnerships: Capital Market Conditions and Alternative Finance Mechanisms for Australian Infrastructure Projects. Journal of Infrastructure Systems, 19 (3).

# Alternatives to Alliances and PPPs

## Collaborative Working Approach (CWA)



Sustainable  
**Built Environment**  
National Research Centre

2003-2006 (NZ)



- 2003 Construction of New Zealand prisons, Northland, Wiri, Spring Hill and Otago
- CWA was used for Wiri, Spring Hill and Otago
- A hybrid form of CWA was used for Northland and it was key to overcoming some issues that were threatening to disrupt progress with that project.
- CWA joint risk allocation and management where problems are resolved collaboratively
- High levels of transparency in relation to costs have been achieved at the project level consistent with the "open-book" philosophy that underpins CWA



# Public Private Partnership

## Why industry plays

**Damon Hancock**

Senior Commercial Manager,  
Industry Participant, PPP Projects

Nomad Consulting



Sustainable  
**Built Environment**  
National Research Centre



# Public Private Partnership

## Public value in PPPs

Ray Winn

Director, Performance Audit  
Victorian Office of the Auditor General

# Public Private Partnership

## PPP project internals

**Raphael Düa**

Former Project Director of several PPP projects  
Forensic consultant to PPP projects  
Director Micro Planning International  
Provider of X-Pert Scheduling and EVPM software

# Public Private Partnership

## Future directions

**Dr Keith Hampson**

Chief Executive Officer, SBEnrc 2010-  
Former CEO for CRC Construction Innovation 2000-2009



# Public Private Partnership

## Panel Discussion

**Professor Michael Gilding**

Executive Dean, Faculty of Business & Law



# The SBEnrc

The Sustainable Built Environment National Research Centre (SBEnrc) offers a unique industry-government-research collaboration to improve Australia's built environment industry.

The SBEnrc has the broadest built environment research alliance in the country, with Core Members including John Holland Group, Aurecon, the Governments of Western Australia, Queensland and New South Wales, Curtin University, Swinburne University and Griffith University; all of which are represented on the Centre's Governing Board.

Three Research Programs

Program 1 -  
Greening the  
Built  
Environment

Program 2 –  
People,  
Processes and  
Procurement

Program 3 -  
Productivity  
through  
Innovation