Victorian Infrastructure Report Card

Prof John L Wilson
Engineers Australia Infrastructure Spokesman
Swinburne University of Technology

**Victorian Infrastructure Report Card**

**RA\textsuperscript{T}INGS SUMMARY**

<table>
<thead>
<tr>
<th>Letter grade</th>
<th>Designation</th>
<th>Definition*</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Very good</td>
<td>Infrastructure is fit for its current and anticipated future purposes</td>
</tr>
<tr>
<td>B</td>
<td>Good</td>
<td>Minor changes required to enable infrastructure to be fit for its current and anticipated future purposes</td>
</tr>
<tr>
<td>C</td>
<td>Adequate</td>
<td>Major changes required to enable infrastructure to be fit for its current and anticipated future purposes</td>
</tr>
<tr>
<td>D</td>
<td>Poor</td>
<td>Critical changes required to enable infrastructure to be fit for its current and anticipated future purposes</td>
</tr>
<tr>
<td>F</td>
<td>Inadequate</td>
<td>Inadequate for current and anticipated future purposes</td>
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</table>

* Fitness for purpose is evaluated in terms of the needs of the community, economy and environment using criteria of sustainability, effectiveness, efficiency and equity.

**Infrastructure RATINGS**

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Infrastructure Planning and Context
- Future planning
  - Future population estimates
  - Future land use plans
  - Long lead times
  - Funding $$$
- Growing population
  - Victorian population increasing 2%pa
  - Melbourne population 3.9M in 2009, 5M in 2025?
  - 60% of new residents greater than 20km from CBD
- Existing infrastructure
  - Ageing ranges from 1-100+ years
- Service level
  - Meets society’s expectations
  - Demand < capacity
  - Enjoy the benefits or suffer the consequences

Transport - Roads

Road Network 197,000 km
- Municipal 134,000km
- Non-arterial State 40,000km
- Arterial State 22,300km
- National Highways 1010km
- Private Toll roads 22+39=61km

Possible Solutions
- Integration of transport modes
- Park and ride
- Removal of urban rail crossings
- Congestion tax and user pays
- Intelligent transport systems
- New strategic arterial links
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Transport - Rail
- Report Card Rating 2010
  - Rail Overall (D)
  - Rail Freight (D)
- Sustainability Issues
  - Fragile and tired system
  - Rail track, rail network, rolling stock, rail crossings, signalling
  - Congestion with only 10% patronage
  - Frequency of service
  - New outer suburbs not connected
  - Rail gauge and connectivity
  - Poor freight movement

Rail Solutions – System Modernisation
- Less spin and significantly more funding $$$
- Increase the frequency and level of service
- U/G loop a major constraint
- Rail network improvements and expansion
- Expand the rolling stock and staff
- Modernise the signalling and control systems
- Level crossing removal
- Effective integration of public transport modes
- Metro vision
  - Suburban rail versus Urban Metro
  - Passengers will not need a timetable
  - Turn up and in ‘x’ minutes a train will arrive
  - Trains run reliably, high frequency and high capacity

Recent Transport Planning
- Bracks/Brumby Government 1998-2010
  - Some 5 transport plans
    - Culminated in the 2008, $38B Transport Plan
    - Abundance of plans but short on delivery $$$
- Bailleu/Napthine Government 2011+
  - Review of transport projects $$$
    - $5B regional rail project
    - $9B east-west road tunnel
    - $5B west-SE metro rail tunnel
    - Hoddle St congestion project shelved
    - Doncaster rail link project raised again
    - So many plans and reviews reeks of an inefficient infrastructure planning framework
    - Short political cycles
    - Planning rich, Delivery poor
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Recent Transport Planning

- Advisory body similar to ‘Infrastructure Australia’
  - Blend of private and public sector experts

- Co-ordinated long term planning of infrastructure
  - Vision plan for next 50 years
  - Coherent plan removed from the political cycle

- Pipeline of prioritised projects with recommendations of the funding mix

Infrastructure Victoria

- Long term integrated planning for infrastructure currently difficult
  - Many portfolios and Government agencies
  - Short term political cycle
  - Vision and priorities lack clarity eg. Avalon Rail Link

- Establish ‘Infrastructure Victoria’ as an advisory body similar to ‘Infrastructure Australia’
  - Blend of private and public sector experts
  - Provide and co-ordinated long term planning of infrastructure
  - Vision plan for next 50 years
  - Provide clear objective advice on infrastructure priorities for the State
  - Pipeline of prioritised projects with recommendations of the funding mix

- Many existing examples of such Authorities
  - Infrastructure UK
  - Infrastructure Canada
  - Infrastructure Australia
  - Infrastructure NSW (new!)

Funding Challenges

- Victoria has a backlog of infrastructure projects in the order of $100B+

- Government has $ AAA rating

- Funding Paradox
  - We have a profound disconnect between aspiration and reality!

- Need clarity around investment conditions
  - Pipeline of infrastructure projects
  - Stable taxation rules
  - Appropriate Risk allocation
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**Funding Challenges**
- Currently Victoria has a backlog of infrastructure projects in the order of $100B+
  - Maintenance and renewal of existing infrastructure
  - Transformational new infrastructure projects
- Government has $ AAA rating
  - Cannot rely solely on government funding
  - Reluctance to utilise public debt funding
  - Limited infrastructure funds in the annual budget
- Funding Paradox
  - We are reluctant to increase public debt
  - We baulk at raising taxes or applying an infrastructure levy
  - We are against ‘asset recycling’ or ‘asset transfersale’ to the private sector
  - But we want better infrastructure!
  - We have a profound disconnect between aspiration and reality!
- Need clarity around investment conditions
  - Pipeline of infrastructure projects
  - Stable taxation rules
  - Appropriate Risk allocation

**Funding Options - 1**
- State Borrowings
  - Not all debt is bad!
    - Good debt: Long term investment for the benefits of future generations
    - Bad debt: Borrowing to meet recurrent expenses
- Government Bonds:
  - Low interest rates
  - Ideal for projects with a high net public benefit but insufficient revenue stream for private investment eg. Public transport
  - Ideal for Superannuation Funds $1.3 trillion
- Asset sales and asset recycling
  - Sell existing public assets?
  - Value for money??

**Federal Budget 2012/13**

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<thead>
<tr>
<th>Sector</th>
<th>$Billion</th>
<th>%</th>
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<tr>
<td>Public Services</td>
<td>22</td>
<td>6%</td>
</tr>
<tr>
<td>Defence</td>
<td>22</td>
<td>6%</td>
</tr>
<tr>
<td>Education</td>
<td>30</td>
<td>8%</td>
</tr>
<tr>
<td>Health</td>
<td>61</td>
<td>18%</td>
</tr>
<tr>
<td>Social Security and Welfare</td>
<td>132</td>
<td>35%</td>
</tr>
<tr>
<td>Payment to States (GST)</td>
<td>51</td>
<td>14%</td>
</tr>
<tr>
<td>Other</td>
<td>60</td>
<td>16%</td>
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<tr>
<td><strong>Total</strong></td>
<td>376</td>
<td>100%</td>
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Federal Gov’n Revenue $376B cf Victorian Gov’n Revenue $50B

**Government Debt (Argus 11/7/2012)**

- Australian GDP $1500B
- Government Debt low but increasing

*Graphs and data from various sources.*
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Funding Options - 2

- Recurrent funding
  - Taxes
  - Value capture
  - Special Levy
  - Sovereign wealth fund

- Private finance
  - PPPs
  - Expensive
  - ‘Off the books finance’
  - ‘User pays’
  - ‘Availability’ payments

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Funding Crisis and Options

- Public Debt and Government Bonds/Debentures
  - Good debt: Long term investment for the benefits of future generations
  - Bad debt: Borrowing to meet recurrent expenses
  - Government Bonds: ideal for projects with a high net public benefit but insufficient revenue stream for private investment eg. Public transport

- Gov’n Asset Recycling
  - Sell existing public assets? Value for money??

- Superannuation Funds
  - $1.3 trillion of super funds, likely to triple over the next 20 years, ideally suited to the long term investment nature of infrastructure
  - Risk profile must be low

- Sovereign Wealth Fund
  - Infrastructure Futures Fund? or Infrastructure Levy?

- Private Sector Funds
  - Private sector raises capital to fund infrastructure development

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Procurement and Operational Options

[Construction and Operation Risk]

1. Government owns and operates the asset
   - Greenfield development
   - Higher risk and high debt for Gov’n, but long term benefit
   - Ideal for capturing tangible and intangible Benefits

2. Government owns and operates the asset and then sells to the private sector
   - Greenfield to Brownfield transaction
   - Gov’n pays for the risk, transfers viable business to Private sector

3. Private Sector owns and operates the asset
   - Greenfield development
   - High risk and high debt for Private sector

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Issues

- Infrastructure ‘barely adequate’
- Population is growing
- Infrastructure is ageing
- Infrastructure procurement is political and short term
- Funding is perceived to be tight, projects stalling
- Disconnect between peoples aspirations and reality
- Government protecting ‘AAA’ rating
- Preference for expensive ‘off the books’ procurement
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Recommendations

- Infrastructure Victoria
- Long term integrated planning
- Plan for population growth
- Pipeline of prioritised projects
- Increase quantum of funding
- Blend of Gov’t and Private funds
- Super funds, infrastructure bonds
- Project Procurement
- Invest in project planning and consultation
- Delivery models must allocate risk appropriately
- Construction is expensive in Australia

INFRASTRUCTURE RATINGS

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Collaborative Research Opportunities
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- **UK Engineering and Physical Sciences Research Council (EPSRC)**
  - Expert panel of industry and academics
  - 2009 review and recommendations
- **Selection of Recommendations**
  - Shared research needs and vision between academia and industry
  - Strong collaboration between academia and industry, particularly contractors
  - Industrial fellowships 50% academia/industry
  - Increased number of Post Docs / Research assistants

Collaborative Research Opportunities

- **Overall observations**
  - Construction industry is a short term project based industry
    - Funding is a challenge
    - Project levy for ‘public good’ research funding?
      - ACARP a good model from the coal industry
  - University provides industry skill base
    - More opportunities for U/Gs cf P/G Masters and PhD graduates
  - Infrastructure research of critical importance
    - Research often seen as ‘non-frontier’
    - Mature industry, infrastructure often ‘invisible’
    - Perception limited research needs but actually of critical importance
  - Collaboration between universities and industry vital
    - Strategic testing and strategic consulting vital to build trust and develop credibility for longer term research opportunities

Collaborative Research Opportunities

- **Future research challenges**
  - Sustainable construction and infrastructure
    - Life Cycle Analysis approach
  - Resilient infrastructure
    - Natural and manmade hazards
  - Monitoring existing infrastructure
    - Field data and performance monitoring
  - Novel materials and novel use of materials

Swinburne Advanced Technology Centre

Smart Structures Laboratory