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CONTENTS

MESSAGE FROM 2013 HOST PARTNER......................................................................................................................................... 4

SYMPOSIUM PROCEEDINGS SUMMARY.................................................................................................................................. 6

Day 1, 30 September 2013: Cutting through the infrastructure impasse - ways and means ................................................. 6
Day 2, 1 October 2013: Improving on the 80/20 rule for infrastructure research ................................................................. 8
Day 3, 2 October 2013: Wicked problems - Dynamic solutions......................................................................................... 10
Day 4, 3 October 2013: Infrastructure and private capital. The perfect match - fact or fiction? ......................................... 12
Day 5, 4 October 2013: SMART - ASFA Investment Interchange - Infrastructure investment and super - the perfect match? ........................................................... 14

SEE YOU IN VIENNA, AUSTRIA IN 2014 ......................................................................................................................................... 17

WHAT THEY SAID ABOUT ISNGI 2013................................................................................................................................... 18

IN THE MEDIA................................................................................................................................................................. 20

ISNGI 2013 PHOTO GALLERY.................................................................................................................................................. 31

APPENDIX................................................................................................................................................................................. 37
MESSAGE FROM 2013 HOST PARTNER

The delivery of the International Symposium for Next Generation Infrastructure (ISNGI) 2013 Australia program has been an important global achievement for the infrastructure community. The significance and uniqueness of the Symposium is that it brought together four disparate groups - policymakers, academic researchers, business practitioners and the community - all of whom have an important stake in infrastructure and rarely have an opportunity for deep dialogue and knowledge exchange.

Many delegates noted the very influential, eclectic and multi-disciplinary groups of people the Symposium brought together. It was also noteworthy many thought this mix to be novel, innovative and confirmed that the future of infrastructure lies in these rich interdisciplinary settings.

All delegates are clearly committed to improving our individual and collective ability to undertake better infrastructure planning and development. Yet we are challenged by the modesty of conceptual frameworks, data, analytical tools and research to support these undertakings.

The societies in which we live however cannot wait for a new infrastructure science to emerge that will deliver the so-called ‘silver bullet’ solutions. Our goal from the 2013 Symposium has been to help empower governments and the community to plan and be front footed to change. This will entail the rigorous prioritisation of projects as part of the broader infrastructure system and to undertake quality community consultation on what matters to them.

The possibilities of developing an infrastructure science can only be realised from the process of doing: that is planning, designing, procuring, investing, constructing and renovating infrastructure. Having in place the ability to record and capture the lessons as they occur is fundamental, as well as the institutions to learn and disseminate these findings. The ISNGI community of experts is an important piece of the jigsaw for a more learned and professional global infrastructure community.

We heard from many experts that confirmed innovation and changing the framework in which we deal with infrastructure is critical to the Factor 8 grand challenge of the Symposium.

"What is required to design, develop and carry through the effective provision of Infrastructure to sustain the development of modern society?"... and

"Given that infrastructure is not an 'engineering artefact' but an 'agent of change', is it possible to imagine infrastructure systems that can meet the needs of twice today’s population with half today’s resources while providing twice the liveability?"

The language that resonated with many delegates such as ‘Infrastructure is Personal’ and to ask ‘What are cities for?’ are all good starting points for reframing of opportunities and problems.

People and therefore the community are essential ingredients to infrastructure. Yet this is often overlooked in planning. Engineering blueprints too easily draw attention to physical attributes of infrastructure rather than proper identification of the problem being addressed, the quality of service outcomes and how these impact the community.

Liveability, resilience and productivity together form some of the key drivers of change in our societies, and infrastructure decisions must be more accountable to these drivers. However, accountability can only be established with policymakers when stronger conceptual frameworks are available to connect how infrastructure actually makes a difference to economic and social outcomes. This is an important area of immediate focus for the ISNGI community.

…the academic leadership being shown by SMART and the University… is first class. Infrastructure challenges across the world will be easier to address with the types of applications we are seeing from SMART.

Hon Mike Baird, NSW Treasurer and Minister for Industrial Relations
The most reassuring aspect of the Symposium is the overwhelming support from sponsors, delegates, partners and the community for their willingness to generously contribute to changing the status quo in infrastructure.

Our respective societies have obviously achieved a great deal, but the ways and means of achieving the next tranche of progression will require from across the globe new approaches that are more cognisant of the scarcity of time, space, money and society’s tolerance for change. The ISNGI community is both necessary and fundamental as a place to nurture ideas, then improve, refine and test them to the betterment of all.

With Australia facing significant infrastructure challenges, and where governments have consistently overlooked important principles, SMART Infrastructure Facility is preparing a Green Paper entitled *Infrastructure Imperatives for Australia* to help inform a way forward. The Green Paper will be released in early 2014.

I would like to acknowledge our Platinum Sponsors for their leadership and support: National Australia Bank, Sydney Water, Association of Superannuation Funds Australia, The GPT Group, Federal Department of Infrastructure and Regional Development and PricewaterhouseCoopers. To our important Gold Sponsors: Lend Lease Corporation, New South Wales Department of Trade and Investment, and the Federal Treasury; we are most grateful for your support. I would like to acknowledge our Executive Sponsors: The Plenary Group, Wollongong City Council, Novotel Wollongong Northbeach, InStruct, Gti Media, McCullough Robertson, Internetrix.

Finally, I congratulate all the speakers and delegates on their very fine achievements and contributions. We look forward to building on our recent discussions to create very fruitful and purposeful collaborations. For those that were unable to attend your future participation is welcomed and encouraged. The 2014 Vienna International Symposium for Next Generation Infrastructure is much anticipated, and I wish my host partners, University College London, University of Oxford and TU Delft every success.

See you in Vienna 2014.

Garry Bowditch
Chief Executive Officer
SMART Infrastructure Facility

Watch ISNGI videos on our YouTube channel SmartTv1
Symposium Proceedings Summary

Day 1, 30 September 2013: Cutting through the infrastructure impasse - ways and means

Key Points

- The quality of Australia’s infrastructure strongly reflects the quality of government.
- There is considerable consensus among policymakers and practitioners regarding the major challenges for effective long term infrastructure planning and management.
- Greater focus and bold leadership is needed on better prioritising infrastructure projects, taking an integrated system-wide perspective to planning, reducing unnecessary regulatory impediments, facilitating more private sector capital and utilising more access charging to fund investment.
- Better network governance such as adopting corporatised frameworks for public assets has the potential to yield major efficiency and transparency benefits.

Themes and Objectives

- Efficient and high quality infrastructure is critical to Australia’s ongoing productivity performance and standard of living. However, Australian governments have typically been slow in delivering Australia’s big infrastructure requirements. While there have been some worthwhile advances in the policy and institutional frameworks governing the planning and prioritisation of new projects, there are still unnecessary delays (and excessive costs) in getting projects underway.
- If these issues are not addressed going forward, there was a strong sense that this could be diminishing our national confidence in ‘getting things done’ and impeding our ability to meet the important economic challenges ahead.
- Several major contributors to the ‘infrastructure impasse’ were identified, including:
  - Sub optimal project selection - There is still much work in improving the way projects are selected, with political influences often supplanting rigorous cost benefit appraisal, especially for some major new infrastructure investments.
  - A need for system-wide thinking - Planning frameworks systematically fail to consider infrastructure as a ‘system’. Without properly considering the full range of network interdependencies, relevant infrastructure decisions are more likely to be fragmented, lack proper coordination and be subject to unnecessary political interference.
  - The costs of infrastructure development are too high - Australian infrastructure costs rate among the highest in the world and this was perceived as contributing significantly to project delays and underinvestment in key areas. High costs were recognised as a favourable by-product of a strong economy and a requirement for more urbanised development but avoidable policy related rigidities were also major factors. This includes complex, lengthy and unpredictable approvals processes for major infrastructure projects.
  - Fiscal constraints need new approaches - There is a major shift underway in terms of how governments procure infrastructure. Tight budget limitations, a need to safeguard government credit ratings, and high development costs require alternative and novel funding models. This will ideally include ways of facilitating Australia’s large pool of superannuation funds, recycling capital from publicly owned brownfield assets, developing corporate bond markets and rethinking the appetite for government debt finance.
Reflections and Perspectives

- Discussants raised several central ideas and concepts regarding future infrastructure development and planning.
- A major issue was there appears considerable scope to improve the overall management of public infrastructure assets by treating them in a more integrated way. Many assets (such as roads) have no clear asset owner and are not carried on balance sheet like private assets. Importantly, this contributes to reduced transparency regarding the costs of funding and maintenance, and associated liabilities. Adopting a corporatised framework to manage public assets has the potential to yield major governance improvements and promote better allocative decision making.
- Australia's pool of superannuation funding is vast (at $1.6 trillion, the 4th largest in the world), exceeding the size of the national economy. Tapping into this capital was considered fundamental and our savings should be doing "double duty" to meeting the country's future infrastructure requirements and parallels were drawn to higher levels of infrastructure investment made by many overseas pension funds. Some important qualifications were noted however:
  - This included the high level of self-managed superannuation funds in Australia (at around $450 billion), which lacks the aggregate scale to match major infrastructure requirements (although the associated development of a corporate bond market could help).
  - There is also a need to recognise that sufficient liquidity is crucial for super funds to meet their fundamental purpose of providing an income stream for retirees — and this issue will only become more acute as the population ages.
- The ongoing growth of large Asian countries like China and India represents the largest external shock confronting Australia. This process, which has drastically raised Australia's terms of trade from historic averages, has a long way to run. In order to fully capitalise on the strong growth in Asia's middle classes, there are implications for productivity and infrastructure. In particular, developing a productive and resilient economy is pivotal.
- Further, Sydney and Melbourne, as Australia's largest and most international cities, need to increase their contribution to national productivity. This will mean improving the way these cities function and their ability to cater for a larger population base. Building new infrastructure will be needed but a key element will be to introduce appropriate infrastructure pricing and dealing with peak demand periods. This will clearly need strong political leadership.
- The advent of 'big data' is currently receiving considerable attention across many fields. For infrastructure, the instrumentation of networks and the addition of smart systems and processes can enable innovative analytic methods and generate substantial opportunities for driving efficiencies — including in areas we are yet to foresee. The explosion of big data represents an important development for infrastructure providers, funders and users which will be pivotal to optimising how networks operate.

Industry, Policy and Research Implications

- In light of the major infrastructure issues facing Australia, participants raised some key areas for ongoing policy attention.
- There was a need for ongoing policy and regulatory reform processes, including where asset sales and greater cost recovery pricing were involved, to better inform the public of the potential economic benefits. In effect, this necessitates ‘bringing the community along’ and contesting simplistic arguments against worthwhile reforms. The issues surrounding a second Sydney airport highlight the fraught political environment which typically needs to be managed. It was noted that hypothecating divestment proceeds as part of a recycling capital program has been successful in NSW for tackling community opposition to sensible asset sales.
- Regulatory reform to introduce better price signals for infrastructure services was seen as a major ongoing challenge. There was considerable optimism that a new competition reform agenda would build on crucial infrastructure market development, including for roads, electricity and water, where a more forward looking framework was needed. Some speakers argued the political challenge is not so insurmountable as commuters are understanding the benefits of tolling.
Infrastructure planning is inherently long term and involves significant capital investment. It thus involves significant risk for government and private sector participants. The industry has moved forward on many of the issues raised during the symposium, but substantial areas for improvement remain. A more system-wide approach, better land use planning, and greater political willpower to take difficult decisions will be essential.

Day 2, 1 October 2013: Improving on the 80/20 rule for infrastructure research

**KEY POINTS**

- Infrastructure systems are characterised by deep interrelated connections and will require new data, tools and multi-disciplined approaches to better manage their impact on society.
- Big data has the potential to dramatically boost infrastructure network performance and ‘unlock’ new ways of optimising how cities function. “If only Sydney knew what Sydney knows”: capturing and utilising this latent information will be crucial for preserving its global city status.
- Data volumes are growing exponentially and infrastructure providers will increasingly be able to find signals and insight in unstructured and disparate data sources.
- Australia’s freight task is set to increase rapidly over next few decades. Freight networks have often been subject to more state-based rather than system-wide national planning. Greater attention is needed to preserve freight corridors as well as the ‘first and last mile’ of freight systems.
- A key part of any freight solution is benchmarking service delivery performance at world’s best practice.
- More demand for roads should not be met simply by building more roads. This was referred to as ‘dumb policy’, and a broad range of mass transit options like high speed rail should be considered.

**Reflections and Perspectives**

- Discussants emphasised that infrastructure shapes society and the economy on a broad scale and at a profoundly deep level. Networks are much more than physical systems and have crucial social dimensions as well.
- Modern infrastructure systems can be considered as ‘hybrid artefacts’ which are part engineering and part agents of socio-economic change. From this perspective, changes in the approach to network design and operation are required - especially to better anticipate perverse outcomes and design more effective and resilient infrastructure systems.
  - Communities and infrastructure adapt and evolve together and there are complex interactions and feedbacks between the two. These interactions have become more pronounced in recent decades as technology (eg mobile crowd sourcing applications) and political changes have fostered individual choice and new markets and devolved institutions and networks.
  - ‘Hard’ systems may show unexpectedly complex dynamics and ‘soft’ systems can quickly respond to disruptions in unpredictable ways. Importantly, because of the reflexive nature of systems, prediction is extremely challenging and may well be impossible.
- A major objective of infrastructure development is to design systems for resilience and growth. It is widely recognised that **greater connectivity** is a feature of modern networks. This makes networks more robust but less directly controllable. On the other hand, more centralisation allows greater control but increases the potential for failure.

- A number of dynamic factors affecting the adaptability of networks are particularly important: climate change, population growth, technology advances, changing consumer expectations and economic influences. Again, a better understanding of the prime causal relationships is needed, particularly in terms of the dynamics between human-technical-natural systems.

- **Electric vehicles** (EV) are a major area of emerging technology with key infrastructure implications. Widespread take-up of EVs is still many years away due to issues like ‘range anxiety’ and a requirement for a large (and expensive) charging network. It was emphasised that, due to the existing sunk networks supporting petroleum fuelled vehicles, EVs (or any other alternative energy) will not only have to prove superior but essentially ‘blow away’ the incumbent technologies; because petrol vehicles are continually making incremental advances in efficiency, it will likely be some time before there is another dominant car technology.

- Automated driving technologies will also influence road networks. These have considerable potential for making roads safer, optimising existing road capacity in conjunction with smart road technologies and allowing people to be more productive during their travel time, including during peak periods.

- Addressing **traffic congestion** in Australian cities poses a major economic policy challenge. Discussions emphasised that more demand for roads should not be met simply by building more roads. This was referred to as ‘dumb policy’, and a broad range of mass transit options like high speed rail should be considered. Among other benefits, this could reduce exposure to supply disruptions or price spikes in global oil.

- **Big data** can help cities meet future growth challenges. Discussants highlighted how cities could be transformed by this development as decision makers were able to identify patterns and act on new insights with the objective of optimising infrastructure systems. Because cities are fundamentally complex systems, big data and crowd sourcing can be illuminating in ways never before possible. It was argued that it was hard to think of a better area where academics, industry and government could work together to drive good decisions and promote liveable communities.

- Australia must pursue a **world-class freight logistics** network because of the distances between our major population centres and localised remote areas.

- Freight logistics is a complex issue involving technology, land use planning and economic policy perspectives. It is vital to get the price signals right to encourage an efficient expansion of the freight network and to overcome bottlenecks, particularly in Sydney and Brisbane where, for instance, the freight rail network is shared with passenger rail. There are a number of bottlenecks that need to be addressed immediately. One is the freight rail link into the Port of Brisbane and the other is at Port Botany.

- A key part of any solution is benchmarking service delivery performance at world’s best practice — something which is largely absent in policy dialogue. Without monitoring the performance of the freight network it is difficult to make progress to improve productivity and reduce costs. In this regard, the National Heavy Vehicle Regulator has a role to play, ensuring the continued efficiency improvements derived from B-Double and B-Triple trucks and large freight terminal centres at the edges of our major cities.

- Finally, several policy and governance areas were identified to improve freight logistics going forward:
  - The continued and enhanced role of Infrastructure Australia
  - Finalisation of the National Land Freight Strategy
  - Improved planning frameworks at state level
  - Progress of the National Transport Laws
  - Greater focus on the quality of infrastructure spending.
Day 3, 2 October 2013: Wicked problems - Dynamic solutions

KEY POINTS

- Infrastructure planning is essential to Australia’s future. The process must be better informed by ‘population geography’ (i.e. what is the size of future populations, their age structure and where will they live). More advanced land use planning approaches will help shape cities and help ensure more efficient settlement practices.

- Better infrastructure planning will be increasingly important to attract capital inflows to address Australia’s future gap of national savings and investment (i.e. current account deficit). ‘No country can expect another country to fund its current account deficit’.

- We tend to think more about what cities are and could be, rather than what they are for.

- Cities are not just places; they are ‘ecosystems’. We need different frameworks for thinking about how cities function and shift focus from mechanical mobility to ‘accessibility’ of services and opportunities.

- Infrastructure utilities must evolve dramatically. ‘Customers want outcomes not products’. There should be more scope for independent signals to enable innovation for meeting customer needs. A single market operator/designer regulatory model will need to adapt.

- Improving the governance of infrastructure networks will be absolutely critical for future infrastructure planning and design. No one governance solution will be optimum for all. A major issue is to enhance the resilience and adaptability of networks, especially in the face of challenges such as climate change, energy security and civic health.

- Disruptions to infrastructure networks and facilities represent a clear and present national security issue. Cyber threats on top of threats to physical security can potentially amplify the level of overall risk. Private ownership of infrastructure is raising concerns about how to address and respond to national threats.

Reflections and Perspectives

- Discussants spoke at depth on the need to adopt new frameworks for thinking about cities.
  - We tend to think more about what cities are and could be, rather than what they are for. Another blind spot is an inclination to consider infrastructure as simply ‘hard’ assets and underplay the crucial social dimensions. Accessibility (i.e. the ability for people to interact positively) is central to the role of cities. This needs to be at the forefront of our planning and design frameworks and a trans-disciplinary approach is needed.
  - Design thinking needs to take a long term perspective, perhaps in the order of 100 years. While political cycles tend to stand in the way of longer term planning, an overarching vision which could guide future infrastructure thinking would help. Indeed, politicians need to get into a mindset that they have a period of ‘stewardship’ over a country’s infrastructure.

- Computational techniques utilising large data sets offer enormous potential for understanding complex systems (e.g. transport flows, spread of infectious diseases). Large evolving synthetic information resources are a particular application of big data. These can offer many layers of services for policymakers (including real time analysis), and it is important that these are responsive to actual evidential policy formulation.
Modern infrastructure networks are so complex that to develop them efficiently and sustainably with the natural world, new approaches to research, policy, investment and execution will be essential. Knowledge of infrastructure systems in an engineering sense is relatively mature. In contrast, multidisciplinary systems design and governance are less well developed. We need to find ways of bringing together knowledge from different aspects of infrastructure governance which can facilitate effective responses to such factors as:
- Adaptation and mitigation to climate change
- Energy and water security
- City and national infrastructure
- Public health.

No one governance solution will be optimal for all. Finding a balance between the responsibilities of local and national authorities will be a major policy challenge.

There were a range of views regarding how next generation utilities are likely to transform in the future and what might be the major challenges for policy and regulatory settings.
- In electricity markets the development of wind generation and rooftop solar will continue to place pressures on network planning. There will almost certainly be a mix of generation technologies in the foreseeable future (as opposed to one dominant technology). Regulators and policymakers will need to allow for more contestable metering, support for new retail relationships with customers, greater access to customer data and the emergence of storage technologies. This will require responsive and smart regulation.
- Increased ‘peakiness’ of electricity demand, ageing network infrastructure and tight reliability requirements have also driven significant increases in electricity distribution costs. Grid capacity utilisation has fallen, but not on the hottest and coldest of days. Consumers are highly driven by reliability.
- The terms ‘utilities’ and ‘infrastructure’ tend to have passive connotations. In the future, providers will need to be more innovative and customer focused.

Considerable discussion centred on the national security risks presented by disruptions to existing and future infrastructure networks. There was a strong consensus that these dangers needed to be elevated in the broader policy and community consciousness. Many relevant ‘tail risks’ are currently underestimated. Some key national security issues were examined including:
- Cyber threats on top of physical dangers to networks were effectively amplifying overall risks. There is currently not enough information on the likelihood or severity of potential cyber dangers. The nexus between the physical and intangible infrastructure should be a core area of risk assessment.
- Infrastructure as a system needs to be considered as part of a larger system like energy. Whole-of-supply-chain risks are pertinent, particularly as resource systems are increasingly global.
- There will always be threats and it is impossible to guarantee networks are 100% safeguarded. However, it is important to ensure that systems are resilient. Increased private sector involvement in infrastructure provision raises different security challenges, including the adequacy of controls and safeguards entrusted to private operators.
- Speakers also emphasised that broader perspectives and active policy attention were necessary on the security implications of infrastructure. It is impossible to achieve acceptable levels of national security without global security. Indeed, we all share a global infrastructure and the sources and consequences of threats are often global.
**Reflections and Perspectives**

- There are many areas where **research into infrastructure issues** has the potential to yield significant practical policy lessons. Many of these go beyond conventional disciplinary boundaries.

- Infrastructure needs are essentially driven by settlement patterns and, conversely, decisions on infrastructure influence where people live and work. Little research attention has been applied on these respective effects which essentially combine the economics of cities with the economics of infrastructure.
  
  - Australia’s urban form has changed dramatically in the last 40 years. There has been excess dispersion in our cities as a consequence of two main effects. Tax subsidies for housing and land have encouraged excessive land holdings. Also, there has been a tendency to under-price resources such as roads which are complements to urban dispersion. Policies have then basically fought against this dispersion, principally in the form of land use controls (e.g. land releases and developer charges).

  - Working Australians have two main assets: their jobs and their houses, both of which are location dependent. Changes in road pricing, for instance an effective congestion charge, will alter house prices and raise transport costs. This will give rise to wealth effects which effectively alter the net income of jobs and need to be considered alongside the benefits of reduced commuting.

- Policymakers will ideally want to know more about how infrastructure decisions alter economic outcomes in the long run. There is reasonably good data on many of the issues but a tendency to think about them in a siloed form.
Governments are recognising that it will be increasingly difficult to finance the nation's infrastructure from their own balance sheet. Harnessing the capital available from Australia's superannuation funds represents an enormous opportunity. Super funds are well suited to large, stable low risk asset investments.

There are some key challenges and hurdles:

- Achieving better certainty of returns is important for attracting more private/superannuation investment. Australia's toll roads are small by world standards (sections of roads rather than bigger road networks). Patronage forecasting is more reliable on a network, less reliable on part of a network and much less reliable on a single motorway.
- There is a fundamental issue with the patchwork of toll roads in Sydney and Brisbane, with unit price differences of up to 40 times. This makes it difficult to forecast patronage and difficult for users to evaluate value.
- Australian super funds are well placed to increase the level of domestic investments. They have a better understanding of the economic and policy environment. There are also no cross country risks as well as certain withholding tax benefits. However risk correlation with current domestic asset holdings is higher and needs to be considered within the context of overall portfolio risks.

Many ideas for increasing private capital in infrastructure were floated:

- Promotion of a long term corporate bond market as being essential
- De-politicising project selection processes
- Introducing greater user charging
- Ensuring regulatory frameworks are clear and predictable
- Promoting a more sophisticated discussion with the community on the benefits of access charging, tolling, privatisation and private sector service provision
- Governments' needs to tailor their asset sales to suit the type of buyer, e.g. Super funds seek safe low-risk long-lived assets.

There is a general consensus that governments are paying too much for infrastructure — that is, costs are being unduly inflated.

The cost picture is complex, with myriad issues at play:

- There have been increases in the costs of physical assets, including steel, cement, bitumen, energy etc, and skilled labour. Much of this inflation has been due to the investment phase of the mining boom. There has also been more brownfield project investment in urbanised areas which is more expensive.
- Amplifying these cost increases have been various policy-related factors. These involve higher bid costs and regulatory costs, where specifications and standards have essentially crept higher.
- The timing of large public capital works has also been questioned, especially in relation to the mining boom. Issues of building 'too much, at the wrong time' raised important issues regarding the macroeconomic effects of government capital programs.

In order to maximise the value of taxpayer spending on infrastructure (particularly in light of major fiscal constraints), each of these issues will require renewed focus. The SMART Infrastructure Facility is currently undertaking a key study into the drivers of Australian infrastructure costs to inform industry and policymakers.
Day 5, 4 Oct 2013: SMART - ASFA Investment Interchange - Infrastructure investment and super - the perfect match?

KEY POINTS

- New international entrants to the infrastructure market in Australia are beneficial to building greater capabilities for cost effective delivery of major projects. A significant impediment to this is the absence of a long-term national pipeline of projects and a consistent track record from government in delivering them to market.
- $80b of investment globally looking for investment opportunities, there is no shortage of capital for infrastructure.
- Superannuation funds must become more active participants in infrastructure funding and financing reform to better shape outcomes for their members. A number of issues related to the need to maintain high levels of liquidity in the large funds, and the problems with aggregating Self-managed Super funds, need to be resolved to increase superannuation investment in long-loved infrastructure assets.
- The G20 and Australia’s host role for 2014 represents a unique and strategic opportunity for infrastructure investors to address long-term capital issues.
- The quality of infrastructure planning and funding current account deficits between nations will be increasingly connected. No nation can assume another will fund its debt.
- The three key enablers for infrastructure funding from the private sector are well known but not enough is being done to address them:
  - Development of a long term bond market
  - Long term planning commitments across government for infrastructure provision
  - Improved cost benefit analysis for project prioritisation
- Australia’s previous leadership in PPPs (Public–Private Partnerships) is no longer evident. Major reforms and cultural change in government procurement is required; especially with respect to risk allocation to private sector.
- International experience suggests centralised high competency agencies in government are the best way to attract private capital by guaranteeing sensible and predictable policy settings and project execution capabilities.

Reflections and Perspectives

- Addressing an audience of infrastructure policy representatives from around the world, Chairman of the SMART Infrastructure Facility Advisory Council Dr Ken Henry AC called on the Government to develop a national approach.
  
  "What will it take in order for Australia to develop a robust long-term pipeline of infrastructure projects?" Dr Henry asked.
- ASFA Director of Investments, Mr Gordon Noble, made the point that with governments around the world increasingly turning to the private sector to fund infrastructure, now is an opportune time to break the impasse and create a pathway to facilitate this investment;
“One of the key challenges the investment community faces globally is its all-too-often passive culture. With super funds showing more interest than ever before in investing in infrastructure projects and governments increasingly willing to let the private sector step in, now is the time to start a dialogue about how this can be modelled in a way that delivers the best outcomes for fund members.”

- The term “PPP” has been used to describe numerous arrangements in which the public and private sector work together to achieve an outcome. PPPs generally involve:
  - The design, construction and management of large infrastructure projects, such as toll roads.
  - Contracts generally bundle the design, construction and ongoing maintenance of services (such as transport services) into a single long-term whole-of-life agreement between the private sector and the local, state or federal government.

- In Australia, there are basically two types of PPPs used:
  - A ‘social infrastructure’ model where the government pays a service fee to the private sector entity that built the school, hospital, prison etc.
    - The social infrastructure model is widely used in the UK.
  - An ‘economic infrastructure’ model where the private entity is granted the right to charge users of that infrastructure directly (ie via a toll).
    - Generally, there are rules placed on the allowed starting level and escalation of tolls by the government. This transfers significant risk onto the private sector.

- Several international experts, including from the UK, France and South Korea outlined their country’s experience with major infrastructure investment and the role of PPPs.

- Governments in Asia that organise themselves with PPP expertise in a central agency structure have the best potential to attract private capital and increase confidence that there will be less interference to the operation of the concessions. Transparency and consistency of regulatory matters in infrastructure and is important to support anti-corruption, predictability and policy credibility.

- Canada has had considerable success through their dedicated PPP agencies in getting projects to market (averaging 16-18 months) and having a clear pipeline of approved projects and with committed timetables for delivery.

- In South Korea the PPP market is trending down as the national infrastructure gap has been addressed and population growth has slowed. Private capital played an important role in relieving governments of capital expenditure commitments so they could redirect public money elsewhere.

- In France, PPPs are used extensively to fund major highways under a concession-type arrangement. This is quite a common arrangement and used in Chile, the UK, South Korea and Australia;
  - The concession/toll system in France is widely accepted and works well to fund ongoing maintenance of road networks. However, there remains a quantum of public subsidy to support the initial construction phase.

- Australia originally established infrastructure as a unique asset class. However it was argued that pension funds have not been particularly helped by PPPs. This was mainly because the equity size for projects has been too small. In some jurisdictions like Australia, this has been further exacerbated with very high bid costs. For example, Australian toll roads are too short and too small to attract and sustain long-term critical players in the funding space.

- The discussion focussed on the main advantages of PPPs. The consensus view among the international experts was that PPPs:
  - Generally provide better value for money to the taxpayer because private sector finance forces construction and maintenance efficiencies (since the private sector has ‘skin in the game’).
  - There is better monitoring of milestones and project outcomes because more attention is paid to the incentives placed on parties and written up in the PPP contracts.
The NSW unsolicited bid process has been advocated to be a high quality benchmark for future private sector innovation and funding for other jurisdictions.

The three key enablers for infrastructure funding from the private sector are:

1. Development of a long term bond market
2. Long term planning commitments across government for infrastructure provision
3. Improved cost benefit analysis for project prioritisation

Along with these enablers, procurement reform is also required to address investor concerns on patronage and demand risk. Reducing investor risk through mechanisms such as guarantees on revenues is desirable and requires further development by government.

 Establishment of a long term bond market will be a strong complement to governments that are seeking to recycle mature assets, and better enable banks to roll over infrastructure debt into infrastructure bond vehicles. This is also beneficial with possible Basle III constraints.

The G20 and Australia’s host role for 2014 represents a unique opportunity for infrastructure investors to address long-term capital issues.
SEE YOU IN VIENNA, AUSTRIA IN 2014

INTERNATIONAL SYMPOSIUM FOR
NEXT GENERATION INFRASTRUCTURE

AUSTRIA 2014

Monday 29 September - Thursday 2 October
International Institute for Applied Systems Analysis
Laxenburg, Austria

University College London
Dept. of Science, Technology, Engineering & Public Policy

University of Oxford
Environmental Change Institute

Delft University of Technology
Next Generation Infrastructures

University of Wollongong
Smart Infrastructure Facility

Arizona State University
WHAT THEY SAID ABOUT ISNGI 2013

SMART is playing a leadership role and indeed potentially a leadership role across the globe, as infrastructure is not just important for Australia. They’re taking a leadership position and bringing partners together to discuss and debate issues and opportunities.

Mr Rick Sawers, Group Executive, NAB

SMART is the bridge between industry and academia. I’ve been working with SMART on the relationship between population, land use, liveability and transport. We need that information to make smart decisions about the future. Having that academic ability, working with the people that have practical delivery of infrastructure systems, will help us develop products and systems that will help us make better decisions in the future.

Mr Les Wielinga, Director-General (retired) Transport for NSW

What has been missing around the infrastructure debate is a place where you can have an independent discussion; where stakeholders can come together and drive forward an agenda. We see SMART as playing a critical role towards that and so our partnership with SMART is not just about one event but how we partner in the future - this conversation isn’t just about today, it is going to go forward over the next few years.

Mr Gordon Noble, Director, Investment and Economy, ASFA

This symposium is evidence that SMART is moving towards success. It is involved with universities across Australia and has a significant global presence, and there is a timetable and pathway for the next few years. SMART is a genuine global player.

The Hon Nick Greiner AC, former Premier, NSW

Best organized with most service for participants to get the most out of the Symposium. Excellent networking opportunities. New perspectives – particularly regarding Australian infrastructure. Very much looking to seeing and participating in the evolution of international community for Next Generation Infrastructure.

Dr Theresa Brown, Sandia National Laboratory

Great to see researchers rubbing shoulders with industry – this is so important if we are to make progress in solving our infrastructure problems and achieving a sustainable society.

Mr Rick Walters, ISCA

Great Symposium, great progress, great job.

Prof Chris Barrett, Virginia Tech

We don’t often take the time to think in a sustained manner holistically about issues such as these, so this is a great event. It is important to get different kinds of people together, from both sides of the issue and not just solve problems, but to think more creatively.

Prof Adjo Amekudzi, School of Civil & Environmental Engineering, Georgia Institute of Technology, United States of America

What is most important is to do the research so that you understand the key issues and quantify these things, without quantification you can make any argument you want. A lot of people need to be doing this research so it can be clearly and transparently debated. This networking opportunity is one of the strengths of SMART.

Prof Warwick McKibbin, Australian National University

Infrastructure solutions cannot be easily transferred from one country to another, it is important that we learn wisely from events like ISNGI, and that we tailor make these events for different setting, different countries but by making these events international, we will accelerate the learning process.

Prof Margot Weijnen, Delft University of Technology, Netherlands

This is a great initiative. I fully endorse SMART as a way we can get better value for our investments.

Mrs Heather Ridout AO, Board Member, Reserve Bank of Australia

This conference is a good chance to share knowledge on infrastructure development as well as an opportunity to extend international networks with infrastructure experts.

Dr Kang Soo Kim, Executive Director, Korean Development Institute (KDI), Republic of Korea

The way SMART is engaging with politicians, industry and academia and not just doing things on their own means it is a very strong Facility that is moving forward.

Prof Nick Tyler, University College London
Most of what we depend on in our cities and in the way we live in developed and developing countries is good science, good technology and good engineering but we enact it with policy and if you don’t connect one with the other, you don’t end up with a decent place to live. To be able to collaborate and learn from each other is crucial and this Symposium is absolutely the best way of getting people from all walks of life in the room together to discuss the issues, and all aimed at a level of liveability and making sure we live in a better way than we do now.

Prof Brian Collins CB, UCL Centre of Engineering Policy, Faculty of Engineering Sciences, University College London

We’ve been working with SMART and the University on a range of projects and we are now looking at the deep seated review of the costs of infrastructure for QLD. SMART is world’s best practice and is leading the way in providing research and outcomes that are practical and pragmatic which is very important. Conferences like this, providing an opportunity to mix with other people facing the same issues and challenges is really beneficial.

Mr David Edwards, Director General Queensland Department of State Development, Infrastructure and Planning

SMART is bringing the different players together and it is rare that happens effectively. The fact that SMART has the international collaborations to bring world thinking to these issues, not just Australian, is a huge advantage.

Mr Philip Marcus Clark AM, Australian Government Education Investment Fund Advisory Board

It’s essential that we learn what is going on in other countries, such as the debate on infrastructure bonds, to help with our infrastructure challenges. SMART has shown leadership in maintaining a communication dialogue with politicians and this work they are doing in regard to the cost of infrastructure is so important.

Mr Matthew Canavan, Senator-Elect for Queensland

We need days like today to get people together to talk about the issues, so we get one view and move forward and hopefully get efficient infrastructure built.

Mr Phil Gaetjens, Secretary NSW Treasury

Infrastructure is a global issue and we have a lot to learn by sharing things globally. At Oxford, we have been looking out around the world to try and see potential partners, collaborators, who are working on the same type of problems as us so we can learn and collaborate together. We had heard of SMART and hence invited them to join the Advisory Board of our UK Infrastructure Transitions consortium.

Prof Jim Hall, University of Oxford

ASU are proud to be host partners of ISNGI. This symposia series is targeted at bringing together different sectors, disciplines and looking at not just engineering perspectives but also from a social and behavioural perspective. And in bringing this all together the SMART Infrastructure Facility has been able to do that quite successfully and hopefully the symposia series will launch a new way of thinking about infrastructure as an agent of change.

Prof Ram Pendyala, Arizona State University

The ISNGI 2013 event is precisely the kind of leadership that the best kinds of universities provide.

Mr Tim Williams, CEO, Committee for Sydney
IN THE MEDIA

Excessive: The NSW and Queensland governments are investigating why road and rail projects are so expensive to build in Australia amid concerns local infrastructure is "over-engineered" and could be built for less.

Construction costs soared about 20 per cent to 30 per cent in the mid to late-2000s. SMART Infrastructure group has been hired to examine why costs have increased.

"The impact of the recent poor resources boom equipment and labour was not seen rapidly but has started to appear in the full cost of infrastructure," Mr Bowditch said.

"If we don't see the back of contractors who claim the ACCC should not get involved in the debate over congestion charging."

"If we don't talk about something, we're going to have a problem in every city at the moment. It's projected to get worse everywhere and when you build a new road, you don't always get more cars because you attract more cars."

The ACCC's "Red Shirts" in Melbourne on Monday call for action on infrastructure, arguing governments should speed up privatisations, address the country's high cost structure, and develop consistent rolling programs of projects.

News p2

Reyes Wiggins

The NSW and Queensland governments are investigating why road and rail projects are so expensive to build in Australia amid concerns local infrastructure is "over-engineered" and could be built for less.

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News p2
Build faster, bring costs down: Baird

Jeremy Wagstaff

The public sector and industry in NSW are being urged to build infrastructure projects faster as the state government investigates how to cut the costs.

"The procurement process is currently undertaking shows that scrapped projects in the past are no longer the most cost-effective way to do things," NSW Treasurer Mike Baird said at the Australian Financial Review at the University of Wollongong’s symposium for small and medium infrastructure projects in Sydney.

"What’s missing more broadly across the public sector is the understanding that going fast is money,” Mr Baird said, adding governments needed to work with industry to reduce the time taken to build projects.

There’s little from industry that there is a capacity to bring down that cost and that is something that we’ve been trying to improve.

Mr Baird acknowledged that better long-term planning, such as setting aside conditions for the development of road and rail projects, could help cut costs by reducing the need for resuming land and developing infrastructure.

The NSW Coalition government’s proposed $2.2-billion WestConnex road project, which will run through heavily urbanised neighbourhoods in Sydney, will create Australia’s largest road tunnel.

The government will encourage private-sector participation on WestConnex, which will cost $1.8 billion in state funding and $3.5 billion in federal funding to build the first section and ramp up to the total $4.5 billion in total costs.

"We expect future private-sector investment such as infrastructure funding to be an increasing factor in the state’s economy,” he said, adding that the proposed model would create a business case for a private sector model.

From left, Henry Ergas, Shirley Stoddard, Rick Stainton and Nick Grogoz at the Infrastructure Business and Policy Dialogue at the MUE Centre in Sydney. PHOTO: NEC NEWS

Australian Leader Stresses Infrastructure Key To Productive Growth

INTERNATIONAL BUSINESS TIMES

By Sunny Stewart | October 1, 2013 3:56 PM EST

"Infrastructure is a key enabler of productivity growth,” Rod Sims, chairman of Australian Competition and Consumer Commission (ACCC), said. He stressed this statement to the delegates who attended the inaugural session of the International Symposium for Next Generation Infrastructure at the University of Wollongong. Sims discussed the essential need for effective regulation of infrastructure for Australia to reach its potential.

"For infrastructure to play its full role in driving productivity growth, we must get at least three things right,” Sims pointed out.

Elaborating further on three important things, he observed, "First, we need to make the right investment decisions, with the highest cost benefit ratios. In Australia, we do not always do this to our cost," he said.

"Second, we need an efficient investment system that rewards according to appropriate regulatory rules and standards.

"Third, we need the right price signals and incentives to make the best use of existing and new infrastructure. As everyone involved in infrastructure knows, pricing and incentives are fundamental," he noted.

The ACCC chairman also observed that an efficient infrastructure is important to Australia’s productivity performance. Partners to the event are the University College London, Arizona State University, University of Oxford and Delft University of Technology.

The Australia 2013 symposium is being hosted by SMART in Sydney and Wellington Sep. 30-Oct. 4, 2013. It will be followed by further annual symposia, which will be held in Europe and the U.S.

At the session held at the University of Wollongong, delegates will discuss key questions that deal with the design of more liveable cities so to cope with a predicted global population of 9.6 billion by 2050. It will address issues on creating regenerative infrastructure that adopting to its environment and is resilient to natural disasters. It will also discuss implications of the autonomous vehicles and transport automation. The symposium will also debate on the governmental involvement in the development and maintenance of infrastructure.

To contact the editor, e-mail: editor@btimes.com
Sims argues for road charging reform

September 30, 2013

Charging reform is essential to efficient road infrastructure investment, according to the head of the Australian Competition and Consumer Commission (ACCC).

ACCC Chairman Rod Sims wants a closer link between road users and the cost of using certain roads, along with a regime that recognises future needs rather than reflecting past use.

In a speech to the University of Wollongong’s SMART International symposium on future infrastructure today, Sims highlights a familiar argument from national regulators.

This effectively rejects the simple means of revenue-raising preferred by the road transport and logistics industry as not reflecting complex building and maintenance realities.

“We have a number of important freight transport link roads where there can be limits on their use by heavy vehicles,” Sims says.

“This can reflect the fact that the trucks that use the road are not charged sufficiently to cover the damage they do to the road and, if they were, the funds raised would not go to those responsible for maintaining or upgrading the road.

“Making this problem worse, the charges trucks pay reflect past road spending.

“There is no mechanism to approach users to suggest they pay for road usage in return for particular roads being built or upgraded.

“Standard regulatory practice could address this.

“In rail and energy, for example, user charges are set on the basis of a future build and spend program; what you pay is linked to what you get.

“These issues are being examined by the Heavy Vehicle Charging and Investment Reform group, which is a Commonwealth and State initiative that importantly involves local government too.”

On congestion charging, Sims tackles the political line of community opposition to the impost, while acknowledging that it remains “controversial”.

“The community largely now accepts that it needs to directly pay for certain toll roads,” he says.

“It does not seem a large stretch to move from paying for which road you use to paying according to when you use it.

“We can solve congestion via traffic queues or congestion charges.

“Trying only to build more roads to reduce congestion is not likely to work.

“Congestion charging would also be a more equitable way to fund new or upgraded roads.”

While happy to prosecute arguments unpopular with the road lobby, including that underinvestment in rail may distort competition between the modes, Sims was also happy to criticise rail and shipping structures.

He sees the flagship Hunter coal supply chain’s vertical separation as meaning the Australian Rail Track Corporation “does not necessarily have the incentive to do its maintenance so as to optimise train speeds and so use of the network.

“The ACCC is encouraging the ARTC and the above rail operators to devise and agree appropriate incentive mechanisms.”

He also questions the acceptance of shipping alliances, or “conferences”, in Australia’s seaborne trade, when they have been rejected elsewhere, and the need for a permit regime for international ships in coastal trade at a time when the mode itself is waning.
Singular challenges ahead of Australia

AN International Symposium for Next Generation Infrastructure hosted by the SMART Infrastructure Facility at the University of Wollongong last week heard Australia has some unique infrastructure requirements that require careful long-term planning.

SMART’s Advisory Council chairman Dr Ken Henry spoke as an adviser who had previously recommended Australian governments regularly publish projections over 40 years of population geography.

The former special adviser to the prime minister said the less politicians considered such issues now, the larger and more significant the effect would be on future governments.

“We need the ability to do better in long-term projections,” he said.

“And that also relies on the analysts having the capacity to make such population geography projections accurately and in a robust manner. And, if so, do they have the capacity to make projections about the sorts of infrastructure investments that would need to be made if Australia was going to ensure the livability of the communities in which larger populations were going to live? I think the answer to that question... is that we have a bit of an idea, but that is all.”

Collaboration between demographers and policy-makers was required if governments were to get the information they needed to make better decisions.

Dr Henry said Australia faced enormous challenges over the next 40 years that were different to those of many other industrialised countries for several reasons.

About 60 per cent of its exports were mineral resources and 75 per cent of exports went to Asia. While Australia was one of the most urbanised nations on Earth, it was also one of the most scarcely populated, which created infrastructure problems.

That was why Australians would always be interested in better, faster and more reliable means of getting from one place to another, such as a very fast train.

Dr Henry said another thing that distinguished Australia was its very high rate of population growth.

“In the 40-year period from 1980 to 1990, the average annual rate of population growth in Australia was 1.8 per cent a year, which is about four times the rate of population growth in China,” he said.

“The Australian population, according to the most recent official projections, is going to be 62 per cent higher in 40 years than today, which is a compound growth rate of about 1.3 per cent per annum. But, in the last several years, Australian population growth has actually averaged 1.8 per cent. My own feeling is that the Australian population could be well bigger than what that present official projection suggests. There is no other country... that has a population growth rate near that. So this characteristic of a rapidly growing population in a country that is already industrialised is something that poses significant and unique challenges for us.”

Dr Henry said many unique questions needed to be asked about infrastructure demands when a fast-growing population was combined with an already ageing population in a highly urbanised country with large distances between major centres.
New order offered for investment

GREG ELLIS

THE International Symposium for Next Generation Infrastructure hosted by the SMART Infrastructure Facility at the University of Wollongong tackled plenty of important issues last week.

Among them were how fiscal constraints facing governments across the globe had led to a new consideration of infrastructure as pension funds actively sought investment opportunities. But despite strong potential, delegates were told impediments to investing in infrastructure still existed.

Superannuation body, ASFA Investment, has actively sought a global dialogue on the obstacles preventing pension fund investment in infrastructure.

It has partnered with the SMART research-based infrastructure facility to host an ideas interchange on “Infrastructure investment and super – the perfect match”.

At the dinner ASFA Investment investments and economy director Gordon Noble invited NSW Minister for Finance and Services Andrew Constance to speak.

Mr Constance acknowledged the role super funds could play but said governments could not tell them to invest and had to provide attractive risk returns.

He described SMART’s symposium as tremendous. “It is dialogue which certainly from a government perspective we are very keen on,” he said. “If I was to look forward, in terms of the role of state government in the future, I see it being incredibly different. I see an incredible future in terms of the role of information technologies, and I see an incredible role in the future in the way state governments support our community, particularly when it comes to the infrastructure space.

“There is a real opportunity over the next 10 years for us to completely recast state government. But it does present us with some enormous challenges in terms of Commonwealth and state relations.”

Mr Constance said minimising duplication and combining state and federal funds on projects were among those.

He said it was very important to be mindful of such issues when it came to infrastructure. The bottom line was that governments could not go it alone.
Get focus on infrastructure right: Henry

Jenny Wiggins

Former Treasury secretary Ken Henry has accusing governments of lacking courage to make infrastructure investment decisions based on rigorous financial analysis, claiming they instead mirror their political masters.

Dr Henry, who is chairman of the University of Wollongong’s SMART infrastructure group, told The Australian Financial Review governments were not undertaking sufficient cost-benefit analyses when planning projects.

"Governments are making decisions based on short-term political benefit rather than looking long-term at what’s in the national interest," he said, adding they needed to make "brutal assessments" of high-priority projects.

Governments were too reluctant to finance projects using public debt, he said. "In many cases, it makes perfectly good sense for public debt to be raised to invest in public infrastructure." Dr Henry's comments come amid debate over Australia's high infrastructure borrowing.

With demand for infrastructure projects, "Hurry" Henry Ergas telling SMART's infrastructure symposium in Sydney that poor project analysis and too much emphasis on tunneling underground had created "extraordinary" costs in Australia.

"Often there are real problems in the quality of appraisals," said Professor Ergas, professor of infrastructure economics at SMART and who was also at the university's Business and Policy Dialogue in Sydney on Monday.

Professor Ergas said that while spending on infrastructure was relatively high, at around $350 billion per person in recent years, Australia was not choosing the right projects to invest in. "Our problem is not that we spend too little," Professor Ergas said. "It's that we don't spend well."

As well as having an expensive process for project approvals, including environmental approvals, Australia spent too much money on "extreme solutions" such as underground road tunnels to minimize community opposition to infrastructure projects and because projects were not planned far enough in advance, he said. "US cities spent far less on building tunnels."

Dr Henry said Australia could solve some of its growing congestion problems by charging for access to existing infrastructure. He pointed out NSW truck drivers were not allowed to drive across wooden bridges in rural areas.

"I would like to see a system in which a truck driver pays a fee and that fee automatically goes into the account of the local government," Dr Henry said. "That would free up a lot of the road network in NSW that is presently just not there for road transport."

"We need to have better projects." Dr Henry said.

Ken Henry has criticized lawmakers' tendency to support projects based on 'short-term political benefit'.

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Infrastructure 'is personal'

GREG ELLIS

A WORLD First International Symposium for Next Generation Infrastructure was launched on Monday at the University of Wollongong, attracting national and international publicity.

The program was launched in Sydney with NSW Treasurer and Minister for Industrial Relations Mike Baird speaking about the O'Farrell government's view on public-private partnerships.

But in Wollongong on Wednesday, Dr Ken Henry took everyone back to school and got personal in his keynote address at the symposium dinner.

The former special adviser to the prime minister and secretary to the treasurer said in many areas of infrastructure, Australia had little reason to be proud.

Dr Henry said Australia was not very good at long-term planning or national approaches to thinking that required Commonwealth and state and territory governments working together.

Nor was it very good at consistently applying rigorous analytical techniques to the assessment of infrastructure projects, or adopting infrastructure systems rather than looking at them on a project-by-project basis.

The nation's thinking on the way in which infrastructure should be funded, and pricing infrastructure appropriately were also lacking.

Dr Henry said part of the solution was to remember that infrastructure was personal.

He spoke of his childhood in Taree and attending a relatively new high school that was not built large enough to accommodate all the students without demountables.

He went back many years later to find the opposite problem. Large brick buildings that could easily accommodate about 500 children but the campus now only had about 800 students.

He wondered whether today's thinking about infrastructure requirements would be any better than those of the past.

Dr Henry said over the next 40 years, according to the latest official projections, Australia's population would grow by more than 60 per cent but the population aged 65 plus was growing by 170 per cent to 8.1 million.

He then wondered if anyone had had any idea where those additional 5.1 million people were going to live and how governments were going to provide the infrastructure to satisfy their needs.

He said a demographer had told him that 4 million additional Australians would live along the coast between Sydney and Brisbane in places that were now small settlements rather than well-serviced infrastructure.
WestConnex could be exemplar, cure-all

WestConnex, the new motorway planned for Sydney, can transform the future shape and function of the rapidly growing global city. Rather than being just another mega transport project, WestConnex has the potential to be a catalyst for new communities and employment to help make the whole nation richer, smarter, greener, healthier and happier – if it prioritises infrastructure.

The project has the potential to be a catalyst to help make the nation richer, smarter, greener, healthier and happier – if it prioritises infrastructure.

WestConnex motorway bypasses 52 traffic lights and saves 40 minutes on a trip from Parramatta to Sydney Airport. Once completed, the motorway will attract significant new demand and eventually traffic congestion will erode the benefits for building it in the first place. The track record for Sydney is not good; major motorways M1, M2, M4 and M5 all originally demonstrated great benefit to customers but now have 10 peak hours a day or more. Slow speed and uncertain travel time is the norm. The question is not if but when WestConnex will join this troubled list of roadways.

There is much that State and Federal infrastructure agencies can do to fix the problem. WestConnex could be an exemplar to all future infrastructure projects by enshrining customer service benchmarks. That means WestConnex customers would have long-term certainty and globally competitive travel time during peak periods of the day.

To sustain these benchmarks, the business model will require a much deeper strategic partnership between government, community and the ultimate owners of the motorway to help shape travel behaviour and manage excess demand. Using tolls to fund WestConnex is reasonable but without service benchmarks customers are not assured of value for money; a toll becomes just another tax.

Land use along the WestConnex corridor has the potential to rewrite massive urbanisation strategies, creating higher density communities with world-class amenities. The uplift in land value from the new infrastructure can be an important source of new funding with less reliance on tolls as the principal source of revenue. The Hong Kong MTR has a strong track record of capturing value from infrastructure provision.

It is critical for planning agencies to frame infrastructure investment in an international context by establishing data to benchmark city infrastructure performance against best-of-breeds jurisdictions. These metrics would inform and help filter all new infrastructure investments funded by the Commonwealth and the states.

The infrastructure challenges in Australia are well documented; there are no silver bullets, just some fundamental principles that are constantly neglected.

The Prime Minister will be well on the way to becoming a successful “infrastructure Prime Minister” if he demonstrates that strengthening the institutional capabilities for planning and prioritising infrastructure is as important as building a major road. A first step for the Abbott government’s reform of Commonwealth-state relations is for Infrastructure Australia to be an adviser to all governments. This will help strengthen its role with the Council of Australian Governments by building a broader level of trust and credibility as a partner in infrastructure investment processes.

Service benchmarks for infrastructure, pricing reform, better planning and zoning can all support more efficient and effective outcomes for cities and regions. Australia cannot resort back to the old way of hoping more money will solve the problem. We must learn to plan and ensure our cities have the amenity and functionality to compete with Asia and the rest of the world.

* Garry Bowditch is CEO of the University of Wollongong’s SMART Infrastructure Facility
**Asciano mulls terminal bid**

Jenny Wiggins

Port and rail group Asciano has confirmed it is participating in a bid to operate the Moorebank intermodal terminal in south-western Sydney, but cautioned it may be hard to generate financial returns from freight rail networks without government intervention.

"We haven’t seen the expressions of interest, but we’re keen to see that being put work with the Moorebank intermodal company and how potential participants see what is the best economic outcome and logistical outcome," Asciano’s director of strategy and business development, Mr Vitlich, told The Australian Financial Review.

Kerry Schott, chair of the Moorebank Intermodal Company, which is overseeing the development of an open-access freight terminal for the federal government, said last month she was hopeful the private sector would pay for a new terminal ahead of calling for expressions of interest from consortia later this year.

Consortia are expected to submit plans outlining how they would develop rail connections from Port Botany so boxes can be transferred directly to Moorebank to be sorted.

Only 14 per cent of boxes arriving on ships at Port Botany are currently transported out of the port on the rail, the rest being put on trucks, according to NSFW Ports.

But Mr Vitlich said freight forwarders like Toll Holdings and Linfox as well as customers like Woolworths and Coles may need some kind of incentive to use rail networks when Moorebank is developed, because it was cheaper for companies to transport goods by road.

"There is going to have to be a bespoke solution from an Australian perspective in order to ensure that the volumes that are driven through Moorebank are sufficient to make it economic."

Asciano estimates that it will cost between $500 million and $1 billion to develop the terminal and rail link to Port Botany, depending on the design.

"Moorebank is possibly premature, just from a volume perspective, so it is going to be critical to ensure that the volumes that are driven through Moorebank are maximised," Mr Vitlich said, adding that the challenge for the private sector in analysing the potential of the proposed terminal was figuring out its growth profile and potential returns. "There is no doubt that, in the not too distant future, the volumes will be there," he said.

"This is always the $64 million question, do you start and build it now, and the other one is, Or do you plan it, put it aside and wait until the breaking point and introduce it?"

Asciano would be watching the government’s response to private sector proposals closely, he added.

"There is going to be an interesting legislative process as to what the government will do. Will they impose a tariff on trucks leaving Port Botany? Will they impose regulation? They’re all the things that we’re very keen to understand."

Dom Figliomeni, chief executive of Port Kembla Port Corporation, told the University of Wollongong’s infrastructure symposium that government legislation or "some sort of charging mechanism" may be needed to encourage more boxes onto rail, and cautioned that some commodities would never be suited to being transported on rail.

Port Botany’s landside improvement strategy, which imposed regulatory incentives for stevedores and transport carriers to improve turnaround times and reduce late arrivals, had "worked well", Mr Figliomeni said.

Consortium bidding to design and build the Moorebank terminal will be asked how much financing they would provide, and how much financing - if any - the federal government should provide. They will also be asked whether they would accommodate interstate freight and provide access to Qube Logistics. Qube, which owns private land at Moorebank next to the government’s proposed site, has argued it can build a freight terminal faster and more cheaply than the government, and operate it more efficiently.
Back-to-basics call for infrastructure

Mark Ludlow
Queensland Transport Minister Scott Emerson said state governments had to stop gold-plating major infrastructure projects, to curb construction costs.

Mr Emerson agreed with concerns raised by industry experts earlier this week about the over-engineering of infrastructure projects that had driven up costs. "I think it's beholden on state and federal governments to try and drive down costs on infrastructure projects to get the best value for taxpayers' dollars," Mr Emerson told The Australian Financial Review.

"I think there has been an element of gold-plating of projects. It's about trying to do things smarter."

There has been a push in recent years to rebuild bridges and roads to a higher standard following natural disasters in Queensland. But Mr Emerson admitted specifications for some infrastructure projects had contributed to an escalation in costs.

"Is it sensible to have specifications for concrete piping for monsoonal conditions in Far North Queensland the same for western Queensland? They are vastly different conditions," he said.

"We've tried since we've come into office to review our specifications to see if we can deliver projects more efficiently to take out gold-plating."

The Queensland and NSW governments have hired the University of Wollongong's SMART Infrastructure group to examine why costs have increased. The investigation will examine the cost impact of changes to technical standards and inappropriate regulatory incentives that create over-engineered assets.

Infrastructure Association of Queensland executive director Roger Black said cost savings could be achieved by scaling back the specifications for major projects that are often over-designed by engineers. He cited a bridge duplication in Queensland a few years where the new bridge costs three times as much as the original.

"It is definitely a way of bringing down costs," Mr Black said. "Getting specifications which are relevant to the projects is a way of sharpening costs and making them more affordable and more deliverable."

Mr Emerson said the state will also be forced to turn to the private sector to fund major projects after a redirection of funding away from urban rail by the Abbott government. He said the new rail project to replace the Cross River Rail, dubbed the Brisbane Underground, could be opened up to the private sector to help with funding.
Energy policy ‘flip flops’ pushed up gas prices: expert

Jenny Wiggens

Government “flip flops” on renewable energy policy have pushed up gas prices by deterring investment in alternative energy sources, according to director of the government-funded Carbon Market Institute, Les Hooking.

“There was supposed to be this transition from fossil fuels to renewable energy over a period of time and the most adequate way of doing that was through gas,” Mr Hooking, who is also a non-executive director at energy utility AGL, told The Australian Financial Review at the University of Wollongong’s infrastructure symposium.

“Now all of a sudden access to gas has become a problem in NSW, the price of gas has gone up.

“We’re getting to a point where fossil fuel is still the most effective way of delivering the energy and renewable energy is adding cost that so it’s economically not adequate, and transition through gas to other alternative sources is being stymied.”

The Carbon Market Institute is funded by the Victorian government with the aim of helping businesses adjust to a lower carbon economy.

Mr Hooking also hit out at regulators, arguing they were not giving newly privatised utilities enough scope to make the most of innovative products that could reduce energy costs, such as smart meters.

“We’re going to move into the new world at the pace of the slowest performer.

AGL’s head of economic policy, Timothy Nelson, also complained about onerous regulation, telling the symposium that current regulations were “impeding innovation”, and that the energy group could not effectively market new products with “time of use” pricing.

If regulators allowed utilities to charge different prices at different times of the day, they would be able to

We’re going to move into the new world at the pace of the slowest performer.

Les Hooking, Carbon Market Institute

“substantially” reduce some customers’ bills, Mr Nelson said.

“In Victoria the infrastructure [for smart meters] got rolled out and yet the retailers got told there was a moratorium on actually having time of differentiator tariffs, which is the whole point of rolling it out in the first place.

“I think until you see the community collectively point to a vision of what they want in 10 or 20 years’ time or how they get their electricity, and politicians remove themselves from the day-to-day cycles, it’s going to be very difficult to see innovation.”

David Swift, acting chief executive of the Australian Energy Market Operator, acknowledged that regulators needed to figure out how to move from regulating assets “supporting innovation”.

Mr Hooking also warned that utilities needed to be aware they could face increasing competition from technology groups like Microsoft and Google, which has started investing in wind farms and solar power.

“We have common customers and it’s a matter as to who can deliver to the customers what they value.

“That value might be easier to deliver via a Google or a Microsoft, or somebody with a better billing system than the existing utility.”

Mr Hooking stressed that while he did not want to be alarmist, it was possible that service providers could start to infuriate utility markets.

“I think we should be mindful of the fact that if we don’t do it right, then you will be disintermediated from your customer by better services.”

Alexander Koch, a partner at Boston Consulting, said utility providers needed to be aware that homes could soon be energy self-sufficient by using batteries, generators and solar panels.

“Imagine a self-sufficient customer,” he said. “It will change the way we price electricity.”

Another highlight on the Wednesday night is a QPT symposium dinner with Ken Henry delivering the keynote address.

Dr Henry was a special adviser to the prime minister in 2011-2012 and was responsible for leading the development of the Australia in the Asian Century White Paper.

He was secretary to the Treasury from 2001 to 2011 and chaired the Review into Australia’s Future Tax System in 2009.

SMART chief executive Garry Bowditch said the symposium followed a national summit on infrastructure at Parliament House two years ago.

“But now we have really stepped out with a week-long program that involves every aspect of infrastructure planning and development,” he said.

“And we have very significant international institutions coming to join us in that conversation.

“This is a confirmation from the world community that UOW and SMART are getting their intellectual stride in terms of being able to show both the leadership and the research to support serious long-term planning not only for Australia but the rest of the world.

“That is why they are coming from Oxford, London, New York and Washington. This is pretty good for Wollongong … which has again been able to have the university as a global ambassador within the region.”

Mr Bowditch said to have so many global experts in their fields in one room was a great way for them to help each other.

“We are very much there to exchange ideas and knowledge and to challenge each other so we can assure that SMART is completely at the cutting edge of both thinking and conceptual development,” he said.

“It is also a chance for us to share our knowledge with the world, and clearly they have come to do that.

“They recognise that UOW and SMART are quite out there on this and we intend to stay there.”

Experts fly in for UOW think-tank

By OCEAN ELLIS
Sept. 23, 2013, 4 a.m.

Keynote address: Dr Ken Henry.

The SMART Infrastructure Facility at the University of Wollongong will host its first International Symposium for Next Generation Infrastructure next week.

The Wollongong event is billed as a highlight on the international infrastructure calendar.

It is part of a co-ordinated global infrastructure research program focused on long-term infrastructure and land use planning.

The event will feature NSW Treasurer and Minister for Industrial Relations Mike Baird speaking at a luncheon on Monday after an infrastructure risks and funding panel featuring former NSW premier Nick Greiner.
Choice restricts infrastructure investments: ASFA

30 Sep 2013
By Wouter Klijn

The change of superannuation fund legislation has changed the way funds invest, limiting diversification and lowering risk-adjusted returns, according to the Association of Superannuation Funds of Australia (ASFA).

This is mainly due to the requirement to transfer account balances to other funds within 30 days, which places limitations on the amount of investments held in illiquid assets.

"If Australian superannuation funds were not required to limit their illiquid investments, then it is likely we would see at least some funds change their asset allocation," ASFA investments and economy director Gordon Noble will argue in an address to the International Symposium for Next Generation Infrastructure in Wollongong this week.

"We do not know how many superannuation funds would change their investment strategies, and by how much, but we do know that there would be change.

"The fact that some funds would change their asset allocation can be seen as the explicit cost of having choice.

"This is not to suggest that we should not have choice of funds, but we need to recognise that it does potentially have a cost in terms of diversification and risk-adjusted returns."

Noble's comments are in response to ongoing criticism that super funds should invest more in infrastructure projects.

But he pointed out there were various challenges to doing so, not only in terms of liquidity requirements, but also due to a lack of well-structured deals.

"We need to have the right assets at the right price to invest," he said.

"In the past, as government budgets have waxed and waned, there have been projects that have been built by government that could have involved infrastructure investors.

"We have also had a number of toll road projects that have been disasters for superannuation funds, which has undermined confidence in PPP (public-private partnership) models."

The International Symposium for Next Generation Infrastructure will be held from 1 to 4 October at the University of Wollongong.
ISNGI 2013 PHOTO GALLERY

[From left] Prof Jim Hall, Oxford, Prof Paul Wellings, Vice-Chancellor, University of Wollongong, Prof Pascal Perez, Research Director, SMART

Dr Ken Henry AC, Chairman, SMART Advisory Council

Ms Shirley Int’Veld, SMART Advisory Council Member

Mr Tony Shepherd AO, Business Council of Australia

Mr Rick Sawers, National Australia Bank

[From left] Director’s General panel members Mr Rod Hook, Mr David Edwards, Mr Philip Gaetjens, Mr Les Wielinga

Mr Rod Sims, Chairman, ACCC

Mr David Marchant AM, Lend Lease

[From left] The Hon Nick Greiner AC, Former Premier, New South Wales, Prof Paul Wellings CBE, Vice-Chancellor, UOW, Hon Mike Baird MP, NSW Treasurer and Minister for Industrial Relations

Dr Ken Henry AC and the Hon Mike Baird MP, NSW Treasurer and Minister for Industrial Relations

Mr Gordon Noble, Director, Investment and Economy, Association of Superannuation Funds

Business and Policy Dialogue Attendees
[From left ] ISNGI Host partners: Mr Garry Bowditch, CEO SMART, Prof Brian Collins, UCL, Prof Judy Raper, DVC UOW, Prof Margot Weijnen, Delft UT, Prof Pascal Perez, SMART Research Director, Prof Ram Pendyala, ASU, Prof Jim Hall, Oxford

Lord Mayor Gordon Bradbery, Wollongong City Council, welcomes ISNGI delegates

Prof Margot Weijnen, Delft University of Technology

Mr Michael Kilgarriff, CEO Australian Logistics Council chairs Freight Logistics Leadership Forum

[From left ] Leadership Forum panel members, Mr Murray Vitlich, ASCIANO, Mr Andrew McCusker, SMART, Mr Don Figliomeni, NSW Ports – Port Kembla Operations

Dr Don Hillebrand, Argonne National Labs, Chicago

[From left ] Big Data Leadership Forum panel members Mr Martin Stewart-Weeks, CISCO, Ms Catherine Caruana-McManus, IBM, Mr Chris Kearney, TomTom, Mr Les Wielinga, SMART Advisory Council

Ms Catherine Caruana-McManus, IBM

Mr Steven Turner, GPT

Dr Theresa Brown, Sandia National Laboratories

Mr Les Wielinga, former DG Transport for NSW and SMART Advisory Council Member
Prof Ram Pendyala, Arizona State University

Prof Jim Hall FREng, University of Oxford

Prof Pascal Perez, SMART

Plenary Session

Mr Les Hosking, SMART Honorary Professor chairing the Leadership Forum on next generation utilities

SMART researchers demonstrate the SMART Infrastructure Dashboard

Prof Ed Blakely, University of Sydney

[From left] Next Generation Utilities panel members: Mr Alexander Koch, Boston Consulting Group; Mr Kevin Young, Sydney Water; Mr Timothy Nelson, AGL; Mr David Swift, AEMO.

Miss Shiva Pedram, SMART PhD Candidate

Ms Pamela Sydelko, Argonne National Laboratories, chairs National Security Leadership panel

[From left] National Security panel members: Mr Christopher Joye, Australian Financial Review; Prof Brian Collins CB, UCL; Dr Theresa Brown, Sandia National Laboratories; Mr David Brannegan, Argonne; and Prof Chris Barrett, Virginia Bioinformatics Institute, Virginia Tech.
Leadership Forum panel on superannuation fund investment into infrastructure

Mr Chris Lock, Deputy DG, Transport for NSW
Senator-Elect for QLD, Mr Matthew Canavan

Prof Toshiyuki Yamamoto, Nagoya University with ISNGI Project Director Michael Grainger

Team SMART
GPT Symposium Dinner

TEDxU Livestream Viewing
ISNGI Australia 2013 is proudly endorsed by:

ISCA Infrastructure Sustainability Council of Australia
National Center for APEC
Australian Government Attorney-General’s Department
CSIRO
IPFA International Project Association
Consult Australia
Property Council of Australia
Australian Logistics Council
IAQ Infrastructure Association of Queensland
La CAMARA
iCEx green building council australia

ISNGI Australia 2013 Associate Partners:

Australian APEC Study Centre at RMIT University
Centre for Infrastructure Research, University of Auckland, New Zealand
Energy Pipelines Cooperative Research Centre
Faculty of Engineering, Pontificia Universidad Católica de Chile
Institute of Transport and Logistics Studies, The University of Sydney
School of Architecture & Design, RMIT University, Australia
Southwest Jiaotong University, China
United States Studies Centre at the University of Sydney
Universidad Francisco de Vitoria, Spain
University of South Australia
University of Southampton, UK
Virginia Bioinformatics Institute at Virginia Tech, USA
### APPENDIX

#### ISNGI Speakers (A - Z)

<table>
<thead>
<tr>
<th>NAME</th>
<th>ORGANISATION</th>
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<tbody>
<tr>
<td>Prof Adjo Amekudzi</td>
<td>School of Civil &amp; Environmental Engineering, Georgia Institute of Technology, United States of America</td>
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<tr>
<td>Prof Chris Barrett</td>
<td>Scientific Director, Virginia Bioinformatics Institute, Virginia Polytechnic Institute and State University, United States of America</td>
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<tr>
<td>Mr Garry Bowditch</td>
<td>Chief Executive Officer, SMART Infrastructure Facility, University of Wollongong</td>
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<tr>
<td>Mr David Brannegan</td>
<td>Director, Infrastructure Assurance Center at Argonne National Laboratory</td>
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<tr>
<td>Dr Theresa Brown</td>
<td>Distinguished Member of Technical Staff, Sandia National Laboratories, United States of America</td>
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<tr>
<td>Prof Laurie Buys</td>
<td>Professor, Social Change, School of Design, Creative Industries Faculties, Queensland University of Technology</td>
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<td>Mr Matthew Canavan</td>
<td>Senator–Elect for Queensland, Australia</td>
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<td>Mr Joseph Carrozi</td>
<td>Partner, PwC</td>
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<td>Ms Catherine Caruana-McManus</td>
<td>Smarter Cities Executive, IBM Australia</td>
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<tr>
<td>Prof Brian Collins CB</td>
<td>Professor of Engineering Policy, and Director, UCL Centre of Engineering Policy, Faculty of Engineering Sciences, University College London, United Kingdom</td>
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<td>Ms Clara Cutajar</td>
<td>Partner, PwC</td>
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<td>Mr David Edwards</td>
<td>Director-General, QLD Department of State Development, Infrastructure and Planning</td>
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<td>Prof Henry Ergas</td>
<td>Professor of Infrastructure Economics, SMART Infrastructure Facility, University of Wollongong</td>
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<td>Mr Dom Figliomeni</td>
<td>Chief Executive Officer NSW Ports- Port Kembla Operations</td>
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<td>Mr Philip Gaetjens</td>
<td>Secretary, NSW Treasury</td>
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<td>Mr John Gardiner</td>
<td>Honorary Professorial Fellow, SMART Infrastructure Facility, University of Wollongong</td>
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<td>Mr Andrew Hagger</td>
<td>Group Executive, NAB Wealth, National Australia Bank</td>
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<td>Prof Jim Hall</td>
<td>Director, Infrastructure Transitions Research Consortium, University of Oxford, United Kingdom</td>
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<td>Prof Graham Harris</td>
<td>Honorary Professor, Infrastructure and Environmental Systems, SMART Infrastructure Facility, University of Wollongong</td>
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<td>Dr Ken Henry AC</td>
<td>Chairman, SMART Infrastructure Facility Advisory Council, University of Wollongong</td>
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<td>Dr Don Hillebrand</td>
<td>Director, Energy Systems Division, Argonne National Laboratory and President, SAE International, United States of America</td>
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<td>Mr Patrick Holland</td>
<td>Partner, McCullough Robertson Lawyers</td>
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<td>Mr Rod Hook</td>
<td>Chief Executive Officer, SA Department of Planning, Transport and Infrastructure</td>
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<td>Mr Les Hosking</td>
<td>Honorary Professor, SMART Infrastructure Facility, University of Wollongong</td>
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<td>Prof Edward J Blakely</td>
<td>Honorary Professor, Urban Policy &amp; disaster recovery expert, United States Studies Centre, University of Sydney</td>
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<td>Mr Christopher Joye</td>
<td>Australian Financial Review</td>
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<td>Mr Chris Kearney</td>
<td>Vice President Asia Pacific, TomTom</td>
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<td>Mr Michael Kilgariff</td>
<td>Chief Executive Officer, Australian Logistics Council</td>
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<td>Mr Alexander Koch</td>
<td>Partner &amp; Managing Director, The Boston Consulting Group</td>
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<td>Mr Chris Lock</td>
<td>Deputy Director General, Transport for NSW</td>
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<td>Mr Martin Locke</td>
<td>Partner, PwC</td>
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<td>Prof Charles Macal</td>
<td>Senior Systems Engineer and Director, Decision and Information Sciences, Argonne National Laboratory, United States of America</td>
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<td>Mr Philip Marcus Clark AM</td>
<td>Chairman, Australian Government Education Investment Fund Advisory Board</td>
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<td>Mr Andrew McCusker</td>
<td>Director, Rail Logistics Group, SMART Infrastructure Facility, University of Wollongong</td>
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<tr>
<td>Prof Warwick McKibbin</td>
<td>Chair, Public Policy, Adjunct Professor, Australian Centre for Economic Research on Health, Centre for Applied Macroeconomic Analysis, Crawford School of Public Policy, Australian National University</td>
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<td>Mr Chris McLean</td>
<td>Partner, PwC</td>
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<td>Mr Peter McVean</td>
<td>Honorary Professorial Fellow, SMART Infrastructure Facility, University of Wollongong</td>
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<td>The Hon Mike Baird MP</td>
<td>NSW Treasurer and Minister for Industrial Relations</td>
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<td>Head of Economic Policy, AGL</td>
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<td>Mr Gordon Noble</td>
<td>Director, Investment and Economy, ASFA</td>
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<td>Mr Paul Oppenheimer</td>
<td>Managing Director, The Plenary Group</td>
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<td>Dr Ian Oppermann</td>
<td>Director, Digital Productivity and Services Flagship, CSIRO</td>
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<td>Mr Joe Owen</td>
<td>Senior Research Fellow, SMART Infrastructure Facility, University of Wollongong</td>
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<tr>
<td>Prof Ram Pendyala</td>
<td>Professor, Transportation Systems, School of Sustainable Engineering and the Built Environment, Ira A. Fulton Schools of Engineering, Arizona State University, United States of America</td>
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<tr>
<td>Prof Pascal Perez</td>
<td>Research Director, SMART Infrastructure Facility, University of Wollongong</td>
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<td>Mr Rick Sawers</td>
<td>Group Executive, Product &amp; Markets, National Australia Bank</td>
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<td>Dr Richard Sharp</td>
<td>Principal, ARUP Australasia</td>
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<td>Mr Patrick Sieb</td>
<td>Executive Director, Macquarie Capital – Infrastructure Group</td>
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<td>Mr Rod Sims</td>
<td>Chairman, Australian Competition and Consumer Commission</td>
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<td>Senator Arthur Sinodinos AO</td>
<td>Assistant Treasurer</td>
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<td>Dr Kang Soo Kim</td>
<td>Executive Director, Korean Development Institute (KDI), Republic of Korea</td>
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<td>Mr Martin Stewart-Weeks</td>
<td>Director, CISCO</td>
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<td>Mr David Swift</td>
<td>Acting CEO, AEMO</td>
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<td>Ms Pamela Sydelko</td>
<td>Deputy Associate Laboratory Director - Energy Engineering and Systems Analysis</td>
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<td></td>
<td>Argonne National Laboratory</td>
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<td>Prof Nick Tyler CBE</td>
<td>Chadwick Professor, Civil Engineering, University College London, United Kingdom</td>
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<td>Mr Murray Vitlich</td>
<td>Director Strategy &amp; Business Development, ASCIANO</td>
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<td>Prof Margot Weijnen</td>
<td>Founding and Scientific Director, Delft University of Technology, Netherlands</td>
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<td>Ms Jennifer Westacott</td>
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<td>Mr Les Wielinga</td>
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<td>Dr Tim Williams</td>
<td>Chief Executive Officer, Committee for Sydney</td>
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<td>Prof Toshiyuki Yamamoto</td>
<td>Professor, EcoTopia Science Institute, Nagoya University</td>
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<td>Mr Kevin Young</td>
<td>Managing Director, Sydney Water</td>
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