

Submission
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ENGINEERS
AUSTRALIA

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INTRODUCTION

Engineers Australia is the peak representative body for the engineering profession in Australia. With over 100,000 members across Australia, we represent all disciplines and branches of engineering. Engineers Australia is constituted by Royal Charter to advance the science and practice of engineering for the benefit of the community.

This submission addresses 'Phase 2' of the terms-of-reference: Commonwealth Infrastructure.

Variability in infrastructure project delivery remains a major concern for the engineering profession. With roughly 60,000 engineers employed – in varying capacities – on infrastructure projects in Australia, market fluctuations can have a clear effect on the overall engineering workforce.

'Boom/bust' cycles of infrastructure delivery can create acute demand spikes across specific locations or engineering specialisations. In the context of engineering skills shortages witnessed in Australia over recent years, these fluctuations can have significant economic consequences.

The quantum, quality and condition of economic infrastructure are key determinants of productivity growth and economic growth. These connections and the critical importance of productivity growth to Australia's future were articulated in the Australian Treasury's Intergenerational Report.¹

While effective infrastructure delivery is critical to Australia, we also need to be realistic in terms of our capability to deliver benefits from infrastructure. Political, business and community expectations about new or improved infrastructure are often raised to unrealistic levels, resulting in unnecessary public criticism and blame when projects do not achieve their expected outcomes. New projects are often described in transformative terms and claimed that they can be delivered in short time frames. However, in reality, the vast majority of these projects provide only incremental improvements and all have lengthy design, construct and commissioning phases.

Progress towards optimising Australia's economic infrastructure has been slow and uneven. This has been the message from Engineers Australia's Infrastructure Report Cards, first released in 1999, with updated national reports in 2001, 2005 and the latest in 2010. In 2010, Infrastructure Report Cards were also released for each state and territory.

ENGINEERS AUSTRALIA'S INFRASTRUCTURE REPORT CARDS

Engineers Australia's Infrastructure Report Cards are complex documents that synthesise qualitative and quantitative information about the nation's infrastructure into a form useful for policy analysis and policy deliberations.

Documents examined include regional development plans, infrastructure strategic plans, documents relating to specific infrastructure projects, government reports and government budgets and budget statements. Statistics examined included financial statistics made available by state and territory governments and the Commonwealth Government on funding for infrastructure, the progress of these commitments and funding of and progress of maintenance of existing infrastructure assets. Background statistics from a range of agencies on population and population growth, traffic volumes, freight volumes, water supplies and use, waste water collections and volumes recycled, energy supplies and demands and other statistics that influence the demand for, and supply of, infrastructure services are also examined.

The synthesis includes the considered views of engineers with expertise and experience in infrastructure matters in all states and territories. The final outcomes of the process are assessments

¹ Australian Treasury, Australia to 2050: Future Challenges, January 2010.

about the suitability of existing infrastructure for current and planned future uses. The scale used for the assessments is as follows:

- A** (Very Good); Infrastructure is fit for its current and anticipated future purposes.
- B** (Good); Minor changes are required to enable infrastructure to be fit for its current and anticipated future purposes.
- C** (Adequate); Major changes are required to enable infrastructure to be fit for its current and anticipated future purposes.
- D** (Poor); Critical changes are required to enable infrastructure to be fit for its current and anticipated future purposes.
- F** (Inadequate); Inadequate for current and anticipated future purposes.

The 1999 Infrastructure Report Card assessed Australian economic infrastructure as 'D', poor and critical changes were required to enable infrastructure to be fit for its current and anticipated future purposes². Subsequent reports saw sufficient improvement to lift assessments to 'C' in 2001 and 'C+' in 2005 and again in 2010³.

Only one jurisdiction, the ACT, was assessed higher but was qualified. Engineers Australia argues that these assessments are inconsistent with the productivity growth necessary to meet the future challenges outlined by the Treasury report and that Australia's economic infrastructure must be improved through coordinated planning, maintenance and development at all levels of government.

2010 INFRASTRUCTURE REPORT CARD – OVERVIEW

In our 2005 Infrastructure Report Card, Engineers Australia identified that meeting demands for new infrastructure and maintaining, upgrading or replacing ageing infrastructure was a major challenge facing Australia.

There had been significant under-investment in infrastructure across the nation, which was imposing constraints on all parts of the economy and the community. We called for coordinated planning frameworks, and cooperation between governments as being vital to providing Australia's future infrastructure needs. Most importantly, we believed that Australia would benefit from the establishment of a 'national infrastructure council' to provide independent advice about infrastructure priorities of national significance.

In the intervening five years, Australia experienced significant economic and population growth, and some improvements in infrastructure. It also weathered the global financial crisis (GFC). Spending on infrastructure increased and there was a much better understanding of the role that infrastructure plays in sustaining a viable economy. We saw the establishment of an independent infrastructure advisory body at a national level, Infrastructure Australia, and a priority setting process that applied more rigour to project funding decisions. Many jurisdictions developed infrastructure plans – though of variable type and quality.

This 2010 Infrastructure Report Card for Australia was distilled from individual state and territory outcomes, with appropriate weighting given to the relative size and economic importance of each. The ratings of each state and territory showed that there were limited effects resulting from the early work of Infrastructure Australia and the federal government's GFC stimulus package.

Given the long lead times for major infrastructure, it is not surprising that there was a mix of no change, slight improvement and slight deterioration in individual infrastructure types between 2005 and 2010. In

² See: www.engineersaustralia.org.au/infrastructure-report-card/previous-reports.

³ See: www.engineersaustralia.org.au/infrastructure-report-card.

2005, the result was a C+ overall and remained a C+ in 2010 (a 'C' rating reflects infrastructure that is only adequate and in need of major changes).

Overall, our 2010 Infrastructure Report card showed that Australia's infrastructure was in need of some major improvements. It was clear that Australia faced significant challenges; economic growth depends on our addressing the backlog of nationally significant infrastructure works. We identified that this will require a greater focus on ongoing maintenance and renewals as well as new infrastructure to meet demand.

It was clear in 2010 that the investment in infrastructure had still not caught up with the estimated \$700 billion shortfall (then) caused by years of under-investment. Engineers Australia's engineering construction index charts for each state and territory provided some guidance. The overall index for Australia had increased at a modest rate to almost \$250 million per 100,000 population during the last 20 years. Only Queensland and Western Australia, the resources states, exceeded the national average; all other states and territories lagged behind to varying degrees.

The lack of long-term strategic planning, coordination, integration and cooperation between levels of government was a clear and severe constraint on Australia's infrastructure. Australia had, and still has, an extremely fragmented regulatory and planning framework. There are many federal bodies that are responsible for regulation, policy or investment in infrastructure, and there are dozens more at the state and territory level, each having different and often competing responsibilities and interests – add to this the 700 local governments. This remains a major weakness in the Australian system, which requires a willingness to cooperate between the various spheres of government to deliver efficient outcomes for the community.

In 2010 Engineers Australia strongly recommended that priority-setting for projects must be based on the advice of Infrastructure Australia at a national level following rigorous analysis and justification. States and territories would benefit from advisory bodies operating on similar principles to Infrastructure Australia and following the assessment guidelines that the national body has developed. Priority-setting should include all infrastructure sectors.

Engineers Australia believes that underlying principles in any infrastructure planning process needs to include productivity, liveability and sustainability. Sustainability is not only about the natural environment, but includes economic and social issues, equity, affordability and effectiveness. Planning regimes must remain flexible and open to change, given that forecasts often turn out to be inaccurate.

In 2010 we recommended that land use decisions must give priority to infrastructure that is nationally significant, sustainable, affordable, and is vital to state and territory interests. Land use decisions must be integrated with infrastructure priorities and urban encroachment on ports and airports must be curbed. Australia's economy is dependent on trade, which, in turn, is dependent on ports and airports. To operate efficiently, there must be good road and rail transport links from ports to metropolitan and regional centres.

One area identified in 2010 as needing particular attention was the sharing of financial and operational risk between public and private participation in projects, which needs to be equitable for both parties – this remains relevant today. All infrastructure owners must have adequate data on their infrastructure assets, and must utilise this to plan and fund maintenance and renewal programs. Maintenance may not be the most newsworthy activity, but it is the most essential in ensuring the longevity of any infrastructure asset. Full transparency of whole-of-life asset costs is critical.

Engineers Australia's 2010 Infrastructure Report Card recommended the following:

All governments must:

- Deliver more efficient infrastructure outcomes and develop innovative funding models to provide the required infrastructure.

- Harmonise infrastructure planning and regulation through improved cooperation and collaboration between all levels of government, business and the community.
- Address the imbalance between urban and rural and remote communities regarding access to high quality, reliable infrastructure.
- Develop plans and implement projects in all sectors in advance of need, and either build in capacity for growth or preserve land in all infrastructure sectors, particularly for ports, airports and transport corridors.
- Encourage private sector funding for infrastructure and where infrastructure delivery models include the private sector, have the appropriate allocation of risk to deliver the best project outcome.

State and territory governments must:

- Develop long-term infrastructure visions and plans that accommodate projected economic growth and population increases.
- Establish independent planning infrastructure advisory groups to provide advice on infrastructure priorities and provide infrastructure planning and funding advice.

Infrastructure owners and managers must:

- Improve the maintenance of existing assets, through adequate funding and asset management plans.
- Integrate climate change mitigation and adaptation into infrastructure plans.

ANALYSING AUSTRALIA'S INFRASTRUCTURE TRENDS – 2013

In order to assess any progress in the state of Australia's infrastructure following the 2010 Infrastructure Report Card, Engineers Australia published an interim review in 2013: *Analysing Australia's Infrastructure Trends 2013*.⁴

This report is a comprehensive work assessing the current state of Australia's key infrastructure, including roads, ports, railways, bridges, water, electricity and telecommunications assets. In this report, Engineers Australia revisits the findings of our Infrastructure Report Card series to assess progress in these areas since our last evaluation in 2010.

The quality of Australia's infrastructure is both a reflection of our economic prosperity and an indicator of our potential for future growth. Since we last published our Infrastructure Report Card series in 2010, there was significant investment in Australia's infrastructure, especially across the resources sector.

While overall engineering construction is at record levels, a large amount of this work is specific to the resources sector. This tends to obscure the wide variability in infrastructure investment across the various asset classes, states and territories. This variation is particularly noticeable in Western Australia and Queensland where spending on resource-related infrastructure, such as ports and railways, masks the lack of attention given to non-resource projects.

Hence, while investment in infrastructure may be at record levels, this analysis showed us that spending has not necessarily been spread evenly across public assets such as water and transport infrastructure.

This report also revealed a staggering amount of economic infrastructure and engineering construction work yet to be completed across the country. With the backlog of engineering construction estimated at over half a trillion dollars, it is clear that engineering remains a key driver of Australia's economy.

⁴ See:

[www.engineersaustralia.org.au/sites/default/files/shado/Representation/Research and Reports/analysing_australias_infrastructure_trends_2013_1.pdf](http://www.engineersaustralia.org.au/sites/default/files/shado/Representation/Research%20and%20Reports/analysing_australias_infrastructure_trends_2013_1.pdf)

NOTE ON REPORTS REFERENCED IN THIS SUBMISSION

Engineers Australia would happily furnish the Commission with hard copies of the Engineers Australia reports referenced in this submission.



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