



ENGINEERS
AUSTRALIA

Infrastructure Position Statement

2016

Modern, effective infrastructure is an investment in Australia's future. It is a key enabler of productivity growth which in turn is a driver of improved living standards. The nation's prosperity depends on this relationship continuing.

Engineers design, build, operate, maintain and use infrastructure. Their specialised skills and engagement in almost every sector of the economy gives engineers a special insight to the capacity, adequacy and innovative potential of infrastructure. Engineers are committed to sustainability principles that drive change towards a sustainable world, and effective infrastructure is an important vehicle to achieve this.

Maximising the benefits of existing infrastructure

Infrastructure should be managed sustainably over its full expected life. This can be achieved through regular maintenance programs consistent with transparent infrastructure service standards. Infrastructure services

should be priced commercially so that replacements can occur when they are due. Where commercial prices cannot be charged, they should be used for planning purposes in a triple bottom line framework.

The effectiveness of most existing infrastructure can be improved by continuously applying operational lessons within well-defined service standards. Modern ICT can improve operational efficiency. The benefits of such improvements can be substantial and include better short term infrastructure performance, cost savings and extended asset lives.

Recommendation: Governments and infrastructure operators should prepare and publish infrastructure operational and improvement plans that report: against asset service standards; on implementation of maintenance plans in an asset life cycle framework; and, on approaches to improve the operations of existing infrastructure asset plans.





Infrastructure planning

Infrastructure planning and the institutional frameworks in which it occurs are especially important. Planning is too often short term, reactive, piecemeal and inconsistent.

Infrastructure institutions have been fragmented; planning has lagged behind urban and regional land use planning and has been conducted within organisational silos with poor or little community engagement.

Political involvement with technical aspects of infrastructure planning has led to sub-optimal outcomes and higher than necessary costs. There is also a persistent reluctance to consider all options to finance new infrastructure projects, including infrastructure bonds and value capture. Some progress has been made, but there remains persistent reluctance by most Governments to seriously and fully embrace many options.

Recommendations:

- Governments should prepare, fund and publish long term plans for infrastructure in cities and regions.
- Umbrella institutions with multi-disciplinary teams of engineers, architects and planners should coordinate infrastructure and land use planning.
- Governments should reform infrastructure planning institutions to focus on long term development and operations.
- Infrastructure planning institutions should determine priorities

through rigorous analyses, including cost-benefit analyses.

- Communities should be comprehensively engaged to ensure the provision of high quality infrastructure to support their needs.
- Governments should actively encourage private sector participation in infrastructure planning, delivery, financing and operations.
- Governments should consider all options for infrastructure financing, selecting the best on a project by project basis.

Delivery of new infrastructure

Government infrastructure procurement arrangements need reform to reduce overall project costs, reduce transaction costs imposed on tender bidders, enhance rather than impede the adoption of innovative design-and-build features, and to ensure value for money. Reforms depend on the skills base available to procurement agencies, particularly in engineering.

It also depends on learning from experience and avoiding unnecessary repetition. For thirty years there has been wholesale outsourcing of public sector engineering workforces. This has weakened public sector capacity to scope and design infrastructure projects, to specify and evaluate the engineering components of tenders, and to manage project delivery.

More post-construction evaluations of new infrastructure projects are

needed to ensure future projects build on earlier experience.

Australia's infrastructure development is stop-start in nature. Intermittency harms skills retention at all levels from professionals to tradespeople. It also means that when projects end, the workforce disperses instead of building on its experience in new projects. Subsequent efforts to reassemble teams for new developments face additional recruitment costs and often experience shortages of suitably experienced staff. Intermittency also reduces employer incentives to provide training beyond immediate requirements.

Recommendations:

- All governments should reform processes with particular regard to simplifying tenders, reducing tender costs, and greater involvement of tender respondents in detailed design.
- Procurement decisions should be based on rigorous analyses, international standards and contemporary management technologies such as BIM.
- Procurement decisions on engineering matters should be signed off by engineers.
- Post-construction evaluations of infrastructure assets against design specifications should be done to inform future works.
- All governments should reduce project intermittency to drive down infrastructure development costs and to build the capacities of their workforces.