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Date 25 July 2019

Mr Jeremy Conway
Chief Executive, Infrastructure SA
By direct web submission: infrastructure.sa.gov.au/get-involved

Dear Sir,

Submission on 20-Year State Infrastructure Strategy Discussion Paper

ARRB (Australian Road Research Board) is pleased to offer the following insights into and recommendations for South Australia's Infrastructure Strategy in response to the recently released discussion paper.

As Australia's National Transport Research Organisation (NTRIO), we take the view that there are many organisations and practitioners who can identify infrastructure projects which offer benefit to society, the environment and the economy. As such we will not comment on or make particular project proposals, but in line with your recommendation look towards the horizon on outcomes-focused suggestions for the Strategy.

We note a recent McKinsey report¹ that estimates that 20% of the saving opportunity in global infrastructure is from selection of the 'correct' projects to invest in from reasoned alternatives, such as those in the discussion paper. The remaining 80% comes – in equal parts - from making the most of the infrastructure and that already exists, and from streamlining procurement and embracing innovation. Our comments focus therefore on the two components representing about 80% of the cost saving potential of any infrastructure strategy.

Our observations are from a road infrastructure perspective primarily. The findings from the above-mentioned report on all forms of infrastructure tally with our experience in road infrastructure, so we are confident that our road-based observations have relevance to other infrastructure as well.

Reducing costs to boost return on investment (RoI)

It is our contention that the secret to locking in high infrastructure RoI is reducing the cost of constructing and maintaining it without reducing its durability and level of service offered. When we were established 60 years ago, our mission was to allow the various state and territory road agencies to build road infrastructure with a good RoI to link cities and towns across the vast country. We did this primarily by reducing the cost of the infrastructure without reducing the durability/ longevity of the infrastructure through research, development and implementation.

¹https://www.mckinsey.com/~/_media/McKinsey/Industries/Capital%20Projects%20and%20Infrastructure/Our%20Insights/Infrastructure%20productivity/MGI%20Infrastructure_Full%20report_Jan%202013.ashx

Reducing the cost of the infrastructure without affecting durability necessitates a greater degree of construction quality, however. It has been shown that the single biggest determinant of durability and performance of road infrastructure is the extent to which its construction met specification. Our first recommendation is therefore that the infrastructure strategy have one of its cornerstones a heightened construction quality regime than is currently evident. This ‘doing it right’ allows the benefits of ‘doing the right thing’ to be realised.

Embracing innovation to reduce construction and maintenance costs

It is also our observation that many opportunities for smarter practice exist without necessarily having to invest in R&D. Previously completed research and its recommendations have not been implemented although it is known to be technically sound and offer the opportunity of real savings.

Despite embracing innovation being one of COAG’s Transport Infrastructure Committee’s four reform pillars, we continue to see evidence that procurement of infrastructure is confounded by practitioners who see no upside in embracing innovations. We believe that this done simply from a risk aversion perspective and not through any in-principle objection to innovation. Our second recommendation therefore is that some form of incentive or KPI dealing with innovation uptake needs to be a second cornerstone of the project.

We also note and support your assessment that infrastructure needs to be maintained in order to retain its effectiveness and value. One way of ensuring this is embracing innovation in the way maintenance needs are assessed and prioritised. We have first-hand experience of jurisdictions including South Australia preferring aging methods for doing this rather than adopting world-class innovations developed right here in Australia incorporating the latest European technology. Other states embracing this technology report savings of the order of millions of dollars per annum through better allocation of maintenance resources. This supports our earlier recommendation relating to incentivising adopting new methods and technologies and not wasting taxpayers’ money through clinging to outdated methods.

Creating sustained capital saving streams

Exploiting available innovations offers an immediate means of ensuring that infrastructure RoI is increased from day one by reducing the cost of constructing it. In order to ensure that construction becomes increasingly cost effective, our third recommendation is to invest a fraction of the capital budget into a program of targeted applied research and development as a partnership between South Australia’s public sector and local and national research providers.

Other jurisdictions are investing in such programs, one of which has recently calculated that the unit cost of constructing road pavement infrastructure has dropped by 12%, while in an adjacent jurisdiction without such a program, the cost has risen by 30%. R&D programs for road infrastructure world-wide have been shown to deliver routinely benefit-cost ratios of between 5 and 10, sometimes higher, and we are seeing returns at the top end of that range on programs in other jurisdictions. In Belgium, 0.8% of the budget for construction and major maintenance works for road infrastructure is set aside for R&D which based on the above returns could allow a sustained reduction in construction costs of 4% per annum.

Enabling the future

Aside from the cost savings benefit, an R&D program of this type will also position South Australia to build next generation infrastructure better able to support a future transport system driven by connectivity and automation, safer for users and with a lower impact on the environment. A particular case in point is that of using recycled and reclaimed materials in construction. While most practitioners understand the importance of using these materials, they use standards developed before recycling became important to make design and acceptance decisions on road infrastructure. New standards – as outcomes from targeted R&D programs – will enable practitioners to take advantage of material developments which are available to reduce cost and environmental impact.

Embarking on a comprehensive infrastructure strategy such as this could also provide the base from which South Australia commits to next generation infrastructure which takes advantage of the unprecedented opportunity which the twin pillars of connectivity and automation offer. What, for example, other functions can the road infrastructure itself fulfil; e.g. self-reporting on structural condition, generation and/or storage of energy from vehicle passage or sunlight. Nowhere in Australia is there a commitment to true next-generation road infrastructure on a systematic scale. South Australia has, with this strategy, the opportunity to build that into its investment and lead the nation in this regard.

Recommendations

We support your efforts to provide high RoI infrastructure on a systematic basis through the strategic planning process you have embarked upon. To help you achieve that goal, we recommend the following:

- Underpin the strategy by investing in a heightened construction quality control and management regime in South Australia, to extract the greatest performance out of infrastructure you invest in.
- Energise public sector practitioners and decision-makers in South Australia through a regime of rewarding the embracing of credible innovations, in order to extract even greater savings
- Invest a fraction of the capital budget in a local applied research and development program to create a sustainable means of steadily reducing the cost of providing infrastructure
- When building new infrastructure, ensure that it is next-generation infrastructure to enable the future, not status quo infrastructure to perpetuate the past.

I would be happy to discuss the above with you at your convenience

Yours sincerely

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Michael Caltabiano

Chief Executive Officer

ARRB your National Transport Research Organisation