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Building a Greener Future: Innovative Procurement Practices to Reduce Embodied Carbon in Australian Infrastructure

THOUGHT LEADERSHIP PIECE



The global population recently crossed the 8 billion mark and is estimated to reach approximately 9.7 billion by 2050¹. In Australia, the population is expected to increase to just over 40 million from its current level of just over 27 million across the same period.²

Our nationwide population growth will exert immense strain on existing infrastructure, necessitating the expansion of housing, workplaces, and infrastructure to accommodate burgeoning communities. The construction of new buildings and infrastructure will lead to heightened carbon emissions and significantly strain our ability to reach our net zero 2050 target unless we implement targeted and effective solutions immediately.

According to *Infrastructure Australia's Embodied Carbon Projections for Australian Infrastructure and Buildings Report*, buildings and infrastructure are directly responsible for almost one-third of Australia's total carbon emissions, and indirectly responsible for over half of all emissions. Embodied carbon from building activity contributed 10% of national carbon emissions in 2023, with upfront carbon contributing 7%.³

While the focus to date has largely been on the operational aspects of infrastructure, reducing embodied carbon within an infrastructure project will significantly contribute to our achievement of net zero by 2050.

Importantly, unlike operational emissions, which can be reduced by decarbonising the grid using efficient equipment and continuous commissioning, embodied carbon emissions are locked in once an asset is complete. Embodied carbon encompasses all stages from material extraction to end-of-life disposal.

Early consideration in the planning, design and procurement of our infrastructure assets can significantly reduce embodied carbon emissions.

The recent *Journey to Net Zero* report⁴, led by the Infrastructure Sustainability Council, includes 46 recommendations to accelerate decarbonisation in the infrastructure sector and five key areas of action to support the sectors' journey to net zero emissions by 2050. One of these areas of action is enabling collaboration and innovative approaches to procurement.

In this article, ConnellGriffin Board Director – **Richard Martin** – and ConnellGriffin NetZero Practice Lead – **Danielle Cox** – explores the opportunity for innovation, and how we can foster and, ultimately, commercialise emissions reduction using contemporary procurement and contracting models.

¹ United Nations News. (2022). Global perspective Human stories News Brief 11 July 2022. <https://news.un.org/en/audio/2022/07/1122292>

² Australian Bureau of Statistics. (2018). Population Projections, Australia 2017 (base)– 2066. <https://www.abs.gov.au/statistics/people/population/population-projections-australia/latest-release>

³ Embodied Carbon Projections for Australian Infrastructure and Buildings, <https://www.infrastructureaustralia.gov.au/reports/embodied-carbon-projections-australia-infrastructure-and-buildings>

⁴ Towards net zero for transport and infrastructure, <https://www.infrastructure.gov.au/infrastructure-transport-vehicles/towards-net-zero-transport-and-infrastructure>



Market Innovation

Encouraging innovation from the market is critical for reducing embodied carbon within the design and construction of infrastructure projects. Significant advancements in energy-efficient, low emissions technologies, practices and materials are underway and these innovations must be integrated into each project stage.

The use of passive design principles during construction; selecting low-carbon materials, optimising design to use fewer resources, applying circular economy principles to minimise waste, and considering emissions across the asset lifecycle are some of the many methods by which we can enable improved environmental outcomes.

To achieve this, and truly encourage and enable innovation, collaboration across the supply chain is critical.

Government, industry, asset owners, and the private and academic sectors must work collaboratively to drive the acceleration of research and energy-efficient solutions and importantly, support their application in the infrastructure sector. With time of the essence, opportunities to collaborate and incentivise innovation should be prioritised and built into active infrastructure projects to support the achievement of net zero by 2050.

Setting up for Success

Traditionally, infrastructure project delivery and post-delivery targets have focussed on time, cost and quality. While these targets remain vital to project success, we need to expand on these to include carbon management measures across the project design, construction and maintenance phases.

We can leverage the expertise of Designers and Quantity Surveyors to estimate and quantify whole-of-life carbon emissions at key stages of project development, and their potential cost impact. We need to be realistic across the industry that sustainable innovation doesn't always equate to a lower-cost solution.

This sustainability data – both the benefit and cost – can support project sponsors to incorporate carbon management into decision-making at the initial investment decision and project conception.

Articulating clear expectations on emissions targets across the project lifecycle and identifying opportunities for innovation can commence during the design phase. This can be further refined and discussed during early market engagement – providing an opportunity for open dialogue to test what is attractive to the market, what is financially achievable, foster opportunity for innovation, create healthy market competition and set the project up for long-term success.

The key to project success will be appropriately allocating and communicating the roles and responsibilities of each party in relation to carbon targets and achieving the balance between the traditional measures of time and cost, with environmental impact.

Procurement Practices and Documentation

It is imperative that we use the procurement process to ask the right questions and support innovative solutions and responses from the market.

Establishing a baseline carbon target for each project (based on a whole-of-life carbon cost model) and then asking the industry to demonstrate how they can improve on it will help ensure an equitable tendering process that can drive meaningful change.

Opportunities to test innovations put forward and continue the conversation with the market throughout interactive tendering processes should be established and encouraged.

As part of the tendering process, comprehensive evaluation frameworks that enable whole-of-life asset and environmental impact considerations to be fairly and appropriately assessed as part of the overall project value for money are required. The integration of methodologies such as the ISO20400 Sustainable Procurement Guidance Standard for the review of regulations at a project level can also support this. Appropriate weighting needs to be assigned to the evaluation criteria to demonstrate the importance of whole-of-life assets and environmental impact, but not scare the market off or drive tenderers into providing cost-prohibitive innovations in fear that they will be eliminated from consideration.

As low emissions materials, practices and technology rapidly evolve, we can learn from tried and tested solutions. Inviting tenderers to incorporate lessons learnt from other projects and the global market will support the formation of best practice for the infrastructure sector and the achievement of optimal project outcomes.

Collaborative Contracting Models

Choosing the right contract model that aligns with the project's objectives (including environmental objectives) and risk profile is a critical step in ensuring successful project delivery.

Several factors, such as project complexity, understanding of the risks, level of project development undertaken (including design), timelines, construction methodologies and funding arrangements, are just some of the considerations in the selection of a contract model.

There is a need for bespoke and contemporary contracts that reflect carbon measures and standards applicable to each infrastructure project. This includes collaborative contracts from both a risk share and behavioural perspective.

Collaborative contracting can be used to drive better environmental outcomes and incentivise innovation – through project-level targets and the allocation of responsibility and risk to each party. Creating a contractual environment that supports healthy market competition and enables innovation is critical.

While Australia's zero-emission target of 2050 is far into the future, the scale and complexity of the challenges and opportunities that face the infrastructure sector are monumental.

A balanced and measured approach is needed to ensure that we appropriately incorporate carbon management into the design, construction and maintenance of our infrastructure assets.

The use of innovative procurement and contracting models, not only encourages innovation from the market but drives best practice and ensures that investment in our infrastructure is maximised to benefit all stakeholders and creates a positive legacy for future generations.

About ConnellGriffin

Established in 2013, ConnellGriffin is a diverse team of over 150 advisors, all of whom are qualified professionals who have delivered complex infrastructure projects as technical specialists, advisors, contractors, lawyers and commercial managers.

This combination of technical knowledge and commercial expertise enables our advisors to provide best-practice advisory services and reliable commercial advice, which is founded on practical experience gained through our work directly delivering projects.

We are a leader in Australian infrastructure transaction and commercial advisory services – it is core to our business.

We bring a wealth of client-side transaction management support experience on major infrastructure projects in Australia. Our approach is to work collaboratively and strategically with clients to ensure every engagement achieves the optimum outcome, which is aligned with our clients' own corporate processes. We are flexible to our clients' needs with the depth of experience necessary to understand the unique challenges of major infrastructure and develop the best strategies and recommendations that respond to those challenges.

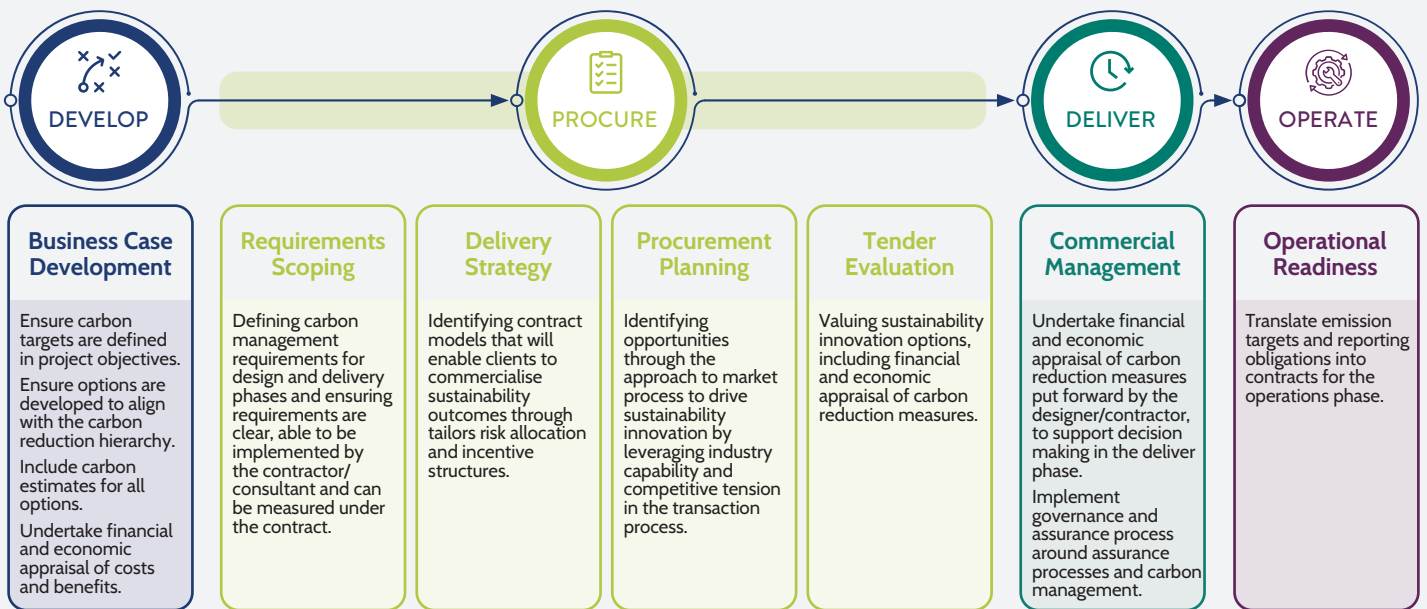
Built on the combined commercial expertise of our advisors, we have developed a well-rounded and proven quality of services. Our knowledge and performance in project transactions as well as commercial management is an important foundation of our approach to managing a transaction process.



ConnellGriffin are a Founding Platinum Sponsor for the Infrastructure Net Zero initiative.

How We Can Help

As a leading transaction and commercial advisor operating within the infrastructure sector, ConnellGriffin is well equipped to support asset owners to drive decarbonisation outcomes by incorporating carbon managing principles (aligned with PAS20:80:2024) at every phase of the project lifecycle.



ConnellGriffin is a specialist Australian-owned commercial advisory firm with extensive expertise and demonstrated experience in the infrastructure sector. From project development through to procurement, delivery, operate and dispute avoidance and resolution, ConnellGriffin provide advice across every sector and every stage of the project lifecycle.

If you would like to know more about our experience within the infrastructure industry and how it may benefit your project, reach out to one of our key team members or visit our website at www.connellgriffin.com.



Contact our NetZero Experts to find out more



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