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BUILDING WHAT AUSTRALIA NEEDS: LIFTING PRODUCTIVITY IN MAJOR INFRASTRUCTURE PROJECTS

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IN PARTNERSHIP WITH wsp

BUILDING WHAT AUSTRALIA NEEDS: LIFTING PRODUCTIVITY IN MAJOR INFRASTRUCTURE PROJECTS

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CEDA Direction Papers highlight avenues for future research and areas that demand policy attention. These publications outline insights contributed by our extensive network in carefully curated roundtables and consultations, and are supported by independent CEDA research and analysis.

ABOUT THIS PUBLICATION

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ABOUT WSP

WSP is one of the world's leading engineering, science and infrastructure solutions firms, uniting its multidisciplinary expertise to shape communities to advance humanity. From local beginnings to a globe-spanning presence today, WSP operates in over 50 countries and employs approximately 83,000 professionals. Together they pioneer solutions and deliver innovative projects in the transportation, infrastructure, environment, building, energy, water, and mining and metals sectors.

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EXECUTIVE SUMMARY

Australia's current pipeline of major infrastructure projects is one of the largest in its recent history. The energy transition, expansion of road and public transport networks, the push to lift housing supply and investment in critical minerals and data centres have the potential to shape the strength and sustainability of our economy, both now and into the future.

But delivering on these projects is far from straightforward. Major projects are costing more, taking longer and too often delivering less than was promised. Construction productivity is now 7 per cent lower than it was in 1990.

When projects go undelivered, Australians miss out on the infrastructure necessary to support economic activity.

To understand what is holding back productivity in major infrastructure and where reform should be focused, CEDA, in partnership with WSP, convened a series of roundtables that brought together senior leaders from industry, government and investment across the water, energy, resources and public infrastructure sectors.

This paper summarises the key themes that emerged from our engagement and provides directions on where future policy and research efforts should be focused.

We heard that poor risk management practices, risk aversion, information asymmetries and opaque and contradictory procurement processes leave little room for developers and contractors to invest in productivity-enhancing tools and capabilities.

We also heard that these headwinds can be overcome. Early engagement between partners, programmatic procurement, and standardisation of contractual practices and some project elements can all facilitate greater efficiency in infrastructure projects.

Delivering on these priorities can help lift productivity in Australia's infrastructure projects and build more of what Australians need.

Priorities for reform:

1. **Allocate risk to the party best placed to manage it.** Government and contractors should map risks together early and contractors share in the upside as well as the downside.
2. **Invest in site investigation and understanding the project scope upfront.** Fund early site mapping and planning work before tender so bidders can rely on it.
3. **Simpler and more predictable contracts.** Involve contractors early and match contract complexity to project complexity.
4. **Invest in government capability.** Governments need enough in-house commercial and engineering capability to know what a project should cost.
5. **Adopt a programmatic approach to procurement.** Package similar projects to reduce bid costs and build long-term relationships.
6. **Appoint long-term delivery partners on target-cost models.** Reward outperformance.
7. **Simplify and harmonise procurement.** Align tendering processes and local content and staffing requirements across jurisdictions. Prioritise cost and quality in procurement outcomes.
8. **Provide long-term pipeline certainty.** Incentivise industry to invest in modern methods of construction, advanced manufacturing, automation and workforce capability.
9. **Deliver infrastructure as an industrialised system.** Adopt product-based thinking, standardisation and greater integration of digital and manufacturing capabilities.
10. **Harmonise standards nationally.** Allow approved products, components and modern methods of construction to scale across jurisdictions.

POOR RISK MANAGEMENT IS DRAGGING DOWN PRODUCTIVITY

PROJECTS ARE COMMITTED TO BEFORE RISKS ARE UNDERSTOOD

Project owners, be they governments or private proponents, frequently commit to projects before enough information is known.

When a project is announced before site conditions, design requirements and risks are well understood, cost estimates and the underlying business case can understate project risks. In Infrastructure Australia's National Study of Infrastructure Risk, only 25 per cent of respondents felt critical risks were well understood during planning.[1]

While only a third of megaprojects are announced prematurely, they account for more than three-quarters of total cost overruns.[2] These blowouts are a combination of what may be original mispricing alongside costly changes to the project later in the construction process. Data from WSP found the number of change notices on two otherwise similar projects increased over the past two decades, from 66 in a 2004 project to 320 in a project completed in 2020.

Such changes are often avoidable when greater time and resources are dedicated to scoping and planning the project from the outset, with research highlighting that megaprojects with the highest level of front-end loading have historically been far more likely to stay on track.[3]

Project owners should resist pressure to proceed to commitment, funding allocation and procurement before a project is adequately defined. Depending on the owner, this may require greater resistance to political forces, or tighter governance and assurance gate points at the scoping and planning stage.

RISK GOES TO THE PARTY LEAST ABLE TO ABSORB IT

Despite often being best placed to carry the risk on projects, governments are risk averse and often use contracts to offload as much as possible. This doesn't remove the risk from a project; it just shifts it.

Risks are often poorly understood at the point governments ask contractors to price them in the tender process. Contractors often build the risks they are asked to carry into their bids, and head contractors in turn pass risk on to smaller subcontractors.

The further down the supply chain a risk travels, the less likely it is to be understood, managed or accounted for. When risks eventually materialise, smaller contractors are often unable to absorb them.

Insuring against these risks can add significantly to project costs, while risks that are not adequately covered can leave clients facing costly settlements, disputes or a failed project. Even where risk is factored into a tender, transferring it does not necessarily protect the project from its consequences if the party carrying it is not best placed to manage it.

The challenge is that fully pricing these risks in can make project bids uncompetitive. For project tendering, the lowest price typically wins, and that often reflects the least complete accounting of risk. Contractors who have lost costly bids learn to price to win, then recover the real cost later through variations, scope creep and disputes.

Early government and contractor collaboration allows for risks to be understood and mapped to the party best able to mitigate and manage them. In some instances, such as when public procurement processes specify certain materials or techniques be used, it may be appropriate for the government to assume some of the risk that can come from fluctuations in input prices that are outside the control of subcontractors.

Where risk is passed down, contractors should not only carry the downside case but also have scope to benefit from the upside in scenarios where outcomes improve. Models that encourage sharing project risks enable greater priority alignment between owners and contractors.

CONTRACT COMPLEXITY IS REPLACING CAPABILITY

Risk-averse contracting also drives complexity. As clients look to assign risk to contractors, contractual requirements multiply. Data from WSP across comparable mining infrastructure projects show the number of contract requirements has steadily risen over time, without a clear corresponding improvement in project outcomes.

Government is the largest buyer of major infrastructure. For effective procurement, it needs to be an informed purchaser. Yet engineering and project management capability in the public sector has thinned across jurisdictions. Only around 14 per cent of engineers work in the public sector.[4] As teams are stretched, procurement and approval decisions that require specialist advice take too long. Government officials respond to risk and uncertainty by writing more controls into contracts to manage risks they don't understand or have experience in dealing with.

Onerous and complex contracts are harder to administer. Like procurement processes, complex contracts require contractors to commit more time and resources to interpreting bespoke clauses and controls, leading to delays and higher costs. Contractors often need specialist lawyers simply to understand what they are signing.[5] While contracts may start as standard, excessive amendments mean many end up as bespoke documents.

Contracts that are simple, predictable and allocate risk fairly across parties reduce the time and cost required to administer them and expand the pool of potential bidders. These should be broadly consistent nationally where possible, so contractors working across jurisdictions do not need to relearn contract terms in each market. Where amendments are required, they should be made clearly and transparently, with any amendments documented and justified at the time of tender.

Priorities for reform:

1. **Allocate risk to the party best placed to manage it.** Government and contractors should map risks together early and contractors share in the upside as well as the downside.
2. **Invest in site investigation and understanding the project scope upfront.** Fund early site mapping and planning work before tender so bidders can rely on it.
3. **Simpler and more predictable contracts.** Involve contractors early and match contract complexity to project complexity.
4. **Invest in government capability.** Governments need enough in-house commercial and engineering capability to know what a project should cost.

FRAGMENTED PROCUREMENT IS DRIVING UP COSTS AND STIFLING INVESTMENT

COMPLEX PROCUREMENT PROCESSES CONSUME TIME AND MONEY

Procuring major infrastructure has become complex and resource-intensive. In Queensland, the government's construction procurement framework alone spans more than 15 documents and over 1,000 pages.[6]

Working through this framework requires both clients and bidders to commit significant time and specialist expertise to every tender. Bidders carry these costs whether they are successful or not and recover them through higher prices on the projects they win. The result is higher project costs and longer time frames. It can also reduce bidding competition by pricing smaller contractors out of the market altogether.

Complexity is further exacerbated by inconsistent procurement requirements across states and territories. Different tendering processes, local content and staffing requirements force firms to duplicate resources across jurisdictions, increasing costs and limiting their ability to maintain a stable workforce. Greater harmonisation of procurement processes would reduce this duplication and allow firms to operate more efficiently and at national scale.

Challenges can also arise from asking procurement to achieve too much. Tenders are often expected to deliver value for money while advancing a broad array of policy objectives. While these objectives may be worthwhile on their own, together they add to the documentation and evaluation burden on all parties.

Work by the Queensland Productivity Commission found that weighting tenders towards objectives unrelated to the project increases tender costs and generally leads to higher project costs.[7] To reduce complexity, governments should be clearer about the purpose of procurement, give priority to value for money and quality outcomes, and limit broader objectives.

PROGRAMMATIC PROCUREMENT CUTS COSTS AND ENCOURAGES LONG-TERM INVESTMENT

A programmatic approach to procurement can lead to savings and more effective processes. Instead of tendering projects separately, similar projects should be grouped together and tendered as a package.

This saves time and resources. Fewer tender rounds reduce bid costs for both sides, and lessons learned on one project can be carried directly into the next. This means less duplicated tender preparation and greater replicability across projects.

The UK Construction Playbook, first published in 2020, sets out how UK central government should procure and deliver public works. Departments are expected to apply it on a ‘comply or explain’ basis. It promotes long-term contracting and portfolio approaches to reduce bid costs and give industry the confidence to invest.[8]

LONG-TERM PARTNERSHIPS IMPROVE TRUST AND CAPABILITIES

Programmatic procurement processes align incentives and priorities for the project owner and contractor. Alliancing and collaborative contracting put public and private teams on the same work, with the same incentives and goals. Long-term programs, rather than one-off transactions, can build the trust and shared knowledge they depend on.

Under programmatic procurement approaches, delivery partners have time to understand what the client needs and the certainty to invest in the people, systems and innovation to make it happen. Owners gain confidence and trust in their partners' capability.

Repeat clients also become better buyers. Owners who rarely manage major projects struggle to navigate an opaque construction market, which feeds poor project management and underinvestment.[9] Conversely, governments that successfully run programs learn what things should cost and how to execute them.

Long-term partnerships can carry a risk of reduced competition. The absence of regular tendering can allow for relationships to become too comfortable and for costs to drift. Partners for long-term projects should be selected through a rigorous initial tender, then maintained by benchmarking costs and tying further work to performance. Packages should also be sized so smaller firms can compete for parts of the program.

Priorities for reform:

5. **Adopt a programmatic approach to procurement.** Package similar projects to reduce bid costs and build long-term relationships.
6. **Appoint long-term delivery partners on target-cost models.** Reward outperformance.
7. **Simplify and harmonise procurement.** Align tendering processes and local content and staffing requirements across jurisdictions. Prioritise cost and quality in procurement outcomes.

BESPOKE INFRASTRUCTURE IS HOLDING BACK PRODUCTIVITY

STARTING FROM SCRATCH WASTES TIME AND MONEY

Infrastructure projects share many common elements, yet designs are rarely reused and each project tends to start afresh. When projects are scoped and procured separately, similar projects are designed many times over, with bespoke outcomes favoured over repeatability.

Starting from a blank page has a cost at every stage. Each new project design must be developed, assessed and approved, which lengthens planning and delays the point at which construction can begin. It also doesn't allow for learnings from similar projects to be carried forward, including into construction.

A bespoke approach also holds back investment in technologies that improve standardisation, such as modern methods of construction (MMC). Factories, digital design tools and component libraries require significant upfront investment that only pays off across many projects. Without a clear, sustained pipeline of similar work, firms will not commit that investment, and each project continues to be built predominantly onsite.

STANDARDISATION AND REPEATABILITY ALLOW EACH PROJECT TO LEARN FROM THE LAST

The solution is to treat infrastructure as an industrialised system, drawing on the manufacturing industry's closer integration of design, digital tools and production to turn innovation into practical improvements in delivery. This requires product-based thinking, greater standardisation and designing projects for manufacturing and assembly from the outset.

Data collection and utilisation are critical enablers of this approach. Information about assets, sites and past project performance is currently held in inconsistent formats across agencies and projects, making it difficult to learn from completed work, benchmark performance or automate routine decisions.

Artificial intelligence and other digital tools offer a significant opportunity, allowing large volumes of project and asset data to be analysed more quickly and efficiently. In the UK, parametric bridge design using a digital delivery process has seen the design process for bridges cut from 30 weeks to a matter of days.[10]

Beyond design, AI and digital tools can improve decisions across planning, approvals, construction and operations, while enabling lessons from past projects to inform future delivery. Realising these benefits depends on reliable data foundations, built on common standards across jurisdictions, so that these tools can be applied to consistent and authoritative information.

Standardisation and MMC have the potential to cut construction times in half.[11] Pharmaceutical company GSK's 'Factory in a Box' packaged a production facility as a series of standard, pre-manufactured components, cutting construction from 12 weeks to four at an estimated 30 per cent cost saving on conventional construction.[12] Because each component's physical, energy and labour requirements were defined upfront, the team could estimate the cost of a new facility within days and track actual cost and labour data through to site.

Australia already has evidence of what repeatability can achieve. Victoria's Level Crossing Removal Project packaged similar projects together and encouraged standardisation. The goal set in 2018 was to remove 85 crossings by 2025, at an average cost of $191.8 million per crossing. The goal was achieved earlier than anticipated and was expanded to remove 100 crossings by 2030 with an average cost of $180 million per crossing.[13]

INCONSISTENT STANDARDS PREVENT PRODUCTIVITY GAINS FROM SCALING

Consistency across jurisdictions is important to unlock these gains. Currently, a method or component accepted in one state may need to be reassessed in another. Each state and territory has developed its own approval, certification and inspection regime tailored to traditional onsite construction, and there is limited guidance on how certifiers should adapt their inspections to offsite manufacturing.[14]

Certification regimes built around onsite construction can also require factory-made modules to be inspected again onsite, taking away potential productivity gains. Mutual recognition of approved components and methods, together with certification at the factory, would allow standardised designs to be used wherever they are needed.

Priorities for reform:

8. **Provide long-term pipeline certainty.** Incentivise industry to invest in modern methods of construction, advanced manufacturing, automation and workforce capability.
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10. **Harmonise standards nationally.** Allow approved products, components and modern methods of construction to scale across jurisdictions.



REFERENCES

1. Infrastructure Australia (2021), *A National Study of Infrastructure Risk: Infrastructure Market Capacity.* https://www.infrastructureaustralia.gov.au/sites/default/files/2021-10/A%20National%20Study%20of%20Infrastructure%20Risk.pdf
2. Grattan Institute (2020), *The Rise of Megaprojects.* https://grattan.edu.au/wp-content/uploads/2020/11/The-Rise-of-Megaprojects-Grattan-Report.pdf
3. Merrow, E. W. (2011), *Industrial Megaprojects: Concepts, Strategies, and Practices for Success,* cited in McKinsey&Company (2017), Reinventing Construction: A route to higher productivity. https://www.mckinsey.com/~/media/mckinsey/business%20functions/operations/our%20insights/reinventing%20construction%20through%20a%20productivity%20revolution/mgi-reinventing-construction-a-route-to-higher-productivity-full-report.pdf
4. Engineers Australia (2023), *The Engineering Profession: A Statistical Overview*. https://www.engineersaustralia.org.au/sites/default/files/2023-11/engineering-profession-statistical-overview-fifteenth-edition.pdf
5. Productivity Commission (2025), *Investing in cheaper, cleaner energy and the net zero transformation.* https://www.pc.gov.au/inquiries-and-research/net-zero/report/
6. Queensland Productivity Commission (2025), *Opportunities to improve productivity of the construction industry – Final Report*. https://qpc.qld.gov.au/wp-content/uploads/QPC_Final-Report_24-Oct-2025.pdf
7. Queensland Productivity Commission (2025), *Opportunities to improve productivity of the construction industry – Final Report*. https://qpc.qld.gov.au/wp-content/uploads/QPC_Final-Report_24-Oct-2025.pdf
8. HM Government (2022), *The Construction Playbook*. https://assets.publishing.service.gov.uk/media/6312222de90e075880923330/14.116_CO_Construction_Playbook_Web.pdf
9. McKinsey&Company (2017), *Improving Construction Productivity.* https://www.mckinsey.com/industries/engineering-construction-and-building-materials/our-insights/improving-construction-productivity#/
10. DriveWorks (2024), *Laing O'Rourke – Award Winning Bridge Design with DriveWorks*. https://www.driveworks.co.uk/blog/laing-orourke-award-winning-bridge-design-with-driveworks/
11. CEDA (2026), *Built Different: Modern Methods of Construction.* https://cedakenticomedia.blob.core.windows.net/cedamediatest/kentico/media/research-team/ceda-mmc-report-final.pdf
12. Construction Leadership Council (2016), *The Farmer Review of the UK construction labour model.* https://www.constructionleadershipcouncil.co.uk/wp-content/uploads/2016/10/Farmer-Review.pdf
13. CEDA (2025), *Size Matters: Why Construction Productivity is so Weak.* https://cedakenticomedia.blob.core.windows.net/cedamediatest/kentico/media/research-team/ceda-construction-productivity-2025-final.pdf
14. CEDA (2026), *Built Different: Modern Methods of Construction*. https://cedakenticomedia.blob.core.windows.net/cedamediatest/kentico/media/research-team/ceda-mmc-report-final.pdf

About CEDA

CEDA – the Committee for Economic Development of Australia – is an independent, member-based public policy think tank. Our membership base spans all sectors and every state and territory.

Our purpose is to achieve sustainable, long-term prosperity for all Australians.

For more than 60 years, CEDA has influenced Australia's public policy debate and been a catalyst for change on economic and social issues.

Led by Chair Christine Bartlett and Chief Executive Melinda Cilento, CEDA carries on the legacy of renowned economist Sir Douglas Copland, who founded CEDA in 1960.

Our work is guided by our Progress 2050 vision, which supports our purpose.

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- We welcome members who want to engage in informed debate and explore innovative policy solutions.
- We host events that bring together thought leaders, experts and stakeholders to foster dialogue and develop solutions.
- We produce rigorous research by engaging with government, business, academia and the broader community to address long-term challenges and deliver better outcomes for Australia.

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