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AUSTRALIAN TRANSPORT INFRASTRUCTURE INSIGHTS REPORT

July 2021

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DEFINITIONS

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Term	Definition
Alliance Contract	A contracting mechanism that allocates collective responsibility for risk, performance and outcome between the contractor and client.
Australian owned	Ultimate owner of the majority of the Australian entity is based in Australia
AOC	Australian Owned Contractors
COAG	Council of Australian Governments
EPC	A contract under which a single entity bears responsibility for engineering, procurement and construction elements of the project.
Foreign owned	Ultimate owner of the majority of the Australian/ based entity is based overseas.
Infrastructure Investment Program	The program of funds allocated to projects for the Commonwealth's investment in land transport infrastructure under the NLT Act.
Industry Capability	A tender evaluation criteria that allocates a percentage of the assessment to upskilling and involvement of sub-tier 1 contractors and local supply chains.

Term	Definition
Local Industry Participation Plan (LIPP)	A written plan based on the National Framework which was agreed between the Commonwealth and the States in 2001 to promote, develop and maintain a sustainable Australian industry capability by encouraging competitive Australian industry participation in investment projects
Mega- Project	A (transport) infrastructure program valued at $A1bn+
Mega-mega Project	A (transport) infrastructure program valued at $A5bn+
Mid-tier	A collective term used for all Tier 2 & Tier 3 contractors
Mixed Contract	The packaging of projects into smaller programs of works, delivered by specialists in each field.
Multiplier	2.99 as per ABS 5209.055.001 table 5 for FY2018
Multiplier effect	The effect a change in one economic variable (i.e infrastructure spending) inducing a larger increase in another (GDP)
National Land Transport Network	National Land Transport Network as in force from time to time that is determined by the Commonwealth Minister under Part 2 of the NLT Act as amended from time to time.

DEFINITIONS

Term	Definition
NLT	National Land Transport Act 2014
NPA	National Partnership Agreement
PPP	A Public Private Partnership – a cooperative arrangement between two or more public and private entities.
Project Interface Risk	The risk associated with managing a projects interface with various stakeholders, including other projects, utility owners, local landowners etc. The interfaces may be physical or relational
Project or Projects	A project approved under the NLT Act.

Term	Definition
Program or Programs	Sum of Projects within a particular State agreed between the Commonwealth and a State at any given time, to be managed on a programmatic basis.
Tier 1	Contractors with the technical & financial capability of delivering mega-projects over $1 billion without partnering.
Tier 2	Medium-sized construction firms that have both the technical and financial capacity to deliver projects up to $500 million, before requiring support of a joint venture partner.
Tier 3	Smaller firms, with both the technical and financial capability to deliver projects < $100 million. They are usually less willing to take aggressive price or risk positions.

REPORT SCOPE

For the objective of providing AOC with insights regarding the transport infrastructure industry to further support their members, the scope of this report was to review and draw insights from:

- Jointly-funded transport infrastructure projects where funding is provided to the Australian States & Territories from the Commonwealth
- Funding to the States & Territories was through the Federation Funding Agreements (formerly, National Partnership Agreements)
- Attention was focussed on transport infrastructure projects valued at $A500m+

The specific areas of focus were:

- Are tax-payers getting maximum benefit from mega-projects?
- What are the implications of mega-projects and is there an alternative?
- Is there a need for Sovereign Capability regarding transport infrastructure projects?

Where new areas of focus were raised during the literature review or stakeholder consultation, these issues also informed the study.

1. BACKGROUND & EXECUTIVE SUMMARY

BACKGROUND

"Mega projects have become a default, however they are stretching industry and government …"

(Infrastructure Australia, 2019)

1.1 Background

In 2014 the Federal Government entered into a funding agreement with the Australian States & Territories to finance a portion of transport infrastructure programs through The National Land Transport Act (NLT) (Australian Government, 2014).

The NLT provides the primary mechanism for the Federal Government to provide this funding while also setting out the roles and responsibilities of each party. Each State & Territory has a separately agreed schedule to the NLT which sets out the projects and quantum of Federal investment.

On 1 July 2019, the Australian Government and state and territory governments (states) entered into a National Partnership Agreement (NPA).

The NPA supports the delivery of infrastructure projects and sets out how the Australian Government and states will work together to deliver infrastructure projects for the benefit and wellbeing of Australians (Australian Government, 2019).

The NPA covers projects administered by the NLT Act. Each state has a separately agreed schedule to the NPA which indicate the levels of funding the Australian Government intends to provide for land transport infrastructure investments. These schedules are updated following the Federal Budget each year.

On 28 August 2020, as a consequence of the formation of the National Cabinet (replacing the erstwhile COAG), the Council on Federal Financial Relations took responsibility for all Commonwealth-State funding agreements and conducted a review of the stock of existing agreements. The review set out to consolidate and rationalize agreements where possible. This included the existing NPAs that are now captured under Federation Funding Agreements .

The Federal Government has recently announced a A$110b, 10-year infrastructure investment pipeline commencing in 2020 primarily driven by the policy that investing in infrastructure is a critical tool to create jobs, drive economic recovery, and position our economies for sustainable growth (Australian Government, 2021).

While this commitment is welcomed by industry, the size of some projects is demonstrating a rise of "mega projects" & "mega mega projects". So much so Infrastructure Australia in its 2019 Infrastructure Audit noted that " Mega-projects have become a default, however they are stretching industry and government. The size, scale and complexity of new infrastructure projects is changing. Procurement and planning are correspondingly more complex. Underdone planning and rushed procurement can lead to lasting shortcomings in infrastructure performance. This is compounded by a much-needed increased focus on sustainability, security and resilience expectations".

Transport megaprojects are inherently complex, and it's unavoidable that some of the time things will go wrong. Shortcomings in dividing projects into bundles of work, in apportioning risk between the parties, and in selecting a suitable contract type for the job is exacerbating problems of an already complex program of works.

This report documents that the rise of mega project has seen an increase in risk, reduction in competition, decrease in project success and ultimately a sub-optimal outcome for asset owners, contractors and the Australian taxpayer. Procurement practices now require reform to overcome these outcomes and to maximise this opportunity.

AUSTRALIAN INFRASTRUCTURE INSIGHTS OVERVIEW

While Australia embarks on an almost unprecedented period of transport infrastructure project planning and delivery, we need to ensure we do not squander the opportunity

1.2 The Australian Infrastructure Market

With the Australian Federal Government planning to invest A$110bn over 10 years from 2021/22 in Transport Infrastructure across the nation, it's now more important than ever that this investment is maximised to bolster the Australian economy and its return to Australian taxpayers (Australian Government, 2021).

The evolution of major transport infrastructure project procurement has changed significantly in the past 10 years. The rise of mega projects, those of value A$1b+, and mega-mega projects , those with a value of A$5b+, while arguably easier for governments to manage, has seen a reduction in competition, increase in total costs and an overall decrease in project success (Grattan Institute, 2020).

The nation now has nine transport infrastructure projects that are each worth more than A$5bn, compared to just one – the Airport Link M7 – ten years ago. In 2001 there were just two projects worth A$1b, today 14 (Grattan Institute, 2020). These large-scale projects see private industry bear the majority of project related risk.

Australia has a proud history of delivering large transport infrastructure projects however the transition of procurement approach to put large programs of work to tender (often contracts in excess of A$2b) means only foreign owned tier 1 contractors can deliver them.

Currently, of all the tier 1 contractors who operate in the nation, none are Australian owned.

Australian contractors, predominately due to balance sheet size – not technical ability, are unable to tender to lead and deliver these projects as head contractor, leaving Australian owned mid-tier contractors to act as sub-contractors only, engaged outside of the head contract.

While the need for large tier 1 capability is recognised and supported, the current government procurement model for transport infrastructure projects requires review and adjustment.

While transport infrastructure spending may be used by the Federal and State governments to stimulate the economy as we look to transition into a post-COVID world, the structure of these mega-projects is ultimately leading to Australia, and Australian taxpayers, not maximising the benefit from this investment.

The sheer size of these mega-projects ensures that competition is excessively thin due to the limited number of contractors that can, and are willing, to price for sole delivery risk of what are larger and more complex programs of works. Reducing these contract sizes to something more manageable, $A500m or less, would enable increased tendering competition, diversification of risk – both delivery and financial, and ultimately better project outcomes (Ryan P.W, 2017)

There is acknowledgement that some projects will not be able to be reduced in size and the need for tier 1 capability to support these programs is required. There is however, an opportunity to build sovereign capability, both within Government and Australian mid-tier contractors to ensure future transport infrastructure programs can be delivered to support a future Australian owned tier 1 contractor.

A key message of this report is the growing need for industry capability requirements in procurement practices. The benefits of this approach are:

- Maximising taxpayer benefit (see Section 2.0)
- Decreased risk (see Section 3.0 'Procurement Models')
- Increased competition (see Section 3.0 'Procurement Models')
- Strengthen sovereign capability (see Section 4.0)

The existing procurement model transfers the majority of project interface risk, i.e managing various contracts within the project, from the government to the contractor, for a price.

In theory, this works well to protect the government however key risks always return to the asset owner regardless of the contract mechanisms in place.

MAXIMISING AUSTRALIAN TAXPAYER BENEFIT

Governments must ensure taxpayers are receiving maximum benefit through consideration of broader economic impacts of engaging foreign owned tier 1 contractors to deliver mega projects.

I. As tier 1 contractors sub-contract out work to mid-tier contractors, who in turn may further sub-contract out project delivery, we have a layering effect of profit margins across the tiers of contractors. For a A$1b mega-project, with a tendered profit margin of 9.1%, this margin-on-margin effect, if given 3 layers of contractors, **increases** the total program cost by **A$75m-A$90m**.

II. Tier 1 contractors who operate in Australia are the only businesses financially capable of delivering mega-projects. These contractors are repatriating profits to their foreign owned parent entities. For a A$1b mega-project this could equate to **A$45m** of taxpayer funds being repatriated overseas as project profits.

III. For any infrastructure mega-project undertaken by a foreign owned tier 1, 5-6% of the contract value is priced in to cover head office & white -collar activities undertaken overseas. For a A$1b program, this equates to **A$50m-A$60m** not invested back into the Australian economy.

IV. Australian infrastructure projects have a multiplier effect on the broader Australian economy. For every A$1 invested in Australian construction, the wider Australian economy benefits by A$2.99 (Australian Bureau of Statistics, 2019). For **a A$1b mega project**, given the taxpayer funds used to cover head office costs and repatriation of profits, would equate to the **Australian economy missing out on A$280-A$310m of further economic benefit.**

PROCUREMENT MODELS [*RISK AND COMPETITION*]

Breaking mega and mega-mega projects into smaller programs of works will decrease delivery risk and increase tender competition, ultimately driving positive project and taxpayer outcomes.

i. Both the number and size of mega ($A1b+) and mega mega ($A5b+) transport infrastructure projects are on the rise.

ii. Evidence indicates that the larger the project, the **higher the propensity** that the project will **incur budget and cost over-runs** and the quantum of the over-run will be higher.

iii. Current procurement practices suggest that Government procurement teams are looking to **transfer** as much **risk** to the contractor as possible. This is to give them **cost surety**, however tier 1 contractors **may not be the best to manage this risk,** resulting in project variations and potential litigation. Smaller contract sizes and best practice risk management can de-risk the overall project.

iv. Similar to above, Government procurement teams are looking to employ **EPC (Engineer, Procure & Construct) lump sum project contracts** where a single contractor holds responsibility for the entire project under a single contract. This is the most common contract type, being used for **53% of mega projects** however when this contract type is used, these contracts only obtain a **39% success rate** regarding desired outcomes.

v. When project sizes are announced **larger than $A500m** (the maximum amount most mid-tier contractors can bid for given financial balance sheet requirements), **competition significantly decreases** and thins out. This lack of competition reduces downward pressure on contract tenders, resulting in Australian taxpayers paying more for Australian infrastructure projects.

STRENGTHENING THE AUSTRALIAN CONTRACTING INDUSTRY

There is a need to develop formal government procurement mechanisms that strengthen sovereign government PMO offices and foster a stronger Australian owned contracting industry. These mechanisms need to be employed when assessing and selecting head contractors for transport infrastructure projects.

i. Building sovereign capability will ensure that if/when the Australian transport infrastructure market cools and foreign owned tier 1 contractors allocate resources to other countries, Australia **still has the capability to deliver** large scale transport infrastructure projects as they arise.

ii. Ensuring "Industry capability" criteria is included in tender assessments has demonstrated that mid-tier Australian contractors are given the opportunity to operate at head contractor/project leadership level. This enables a transfer of knowledge and skills to support the **Australian mid-tier contractors,** supporting their **ongoing growth** and ability to successfully tender and deliver larger projects.

iii. One main advantage for Australian owned contractors to operate at head contractor/project leadership level is the ability to use and **introduce their local supply chains** to the foreign owned contractor/s. This allows local supply chains to grow not only for the current project but future projects delivered by the tier 1 contractors rather than leveraging what is likely a foreign supply chain.

iv. Having Australian owned mid-tier contractors involved **at head contractor/ project leadership level** through industry capability criteria or project packaging (breaking mega-projects to <$500m) has seen **Australian companies capture 70%** of the aggregate **contract value vs 1% when they don't**.

2. MAXIMISING TAXPAYER BENEFIT

2.1 MARGIN LAYERING

2.1 Project pricing layering effect of tendered profits (margin on margin)

It is a common industry practice for head contractors to sub-contract elements of mega-project programs into smaller work packages for various reasons, including; to mitigate delivery and financial risk, and to access capabilities & capacity of local talent (Institution of Civil Engineers, 2017). These work-packages are commonly subcontracted out to the mid-tier contractors.

Tier 2 contractors, similar to above may then choose to self deliver or break up the contract into smaller work-packages and sub-contract them out to tier 3 contractors. However it should be noted that typically, tier 2 contractors have more self delivery capability than their tier 1 counterpart.

At each stage of the disaggregation of the original contract, sub-contractors are including a tendered profit margin into their price. This has the effect of the tier 2 contractor putting their tendered profit margin on top of the tier 3 price, which also includes their profit margin. This continues up the contractor stack until the tier 1 head contractor applies their tendered profit margin.

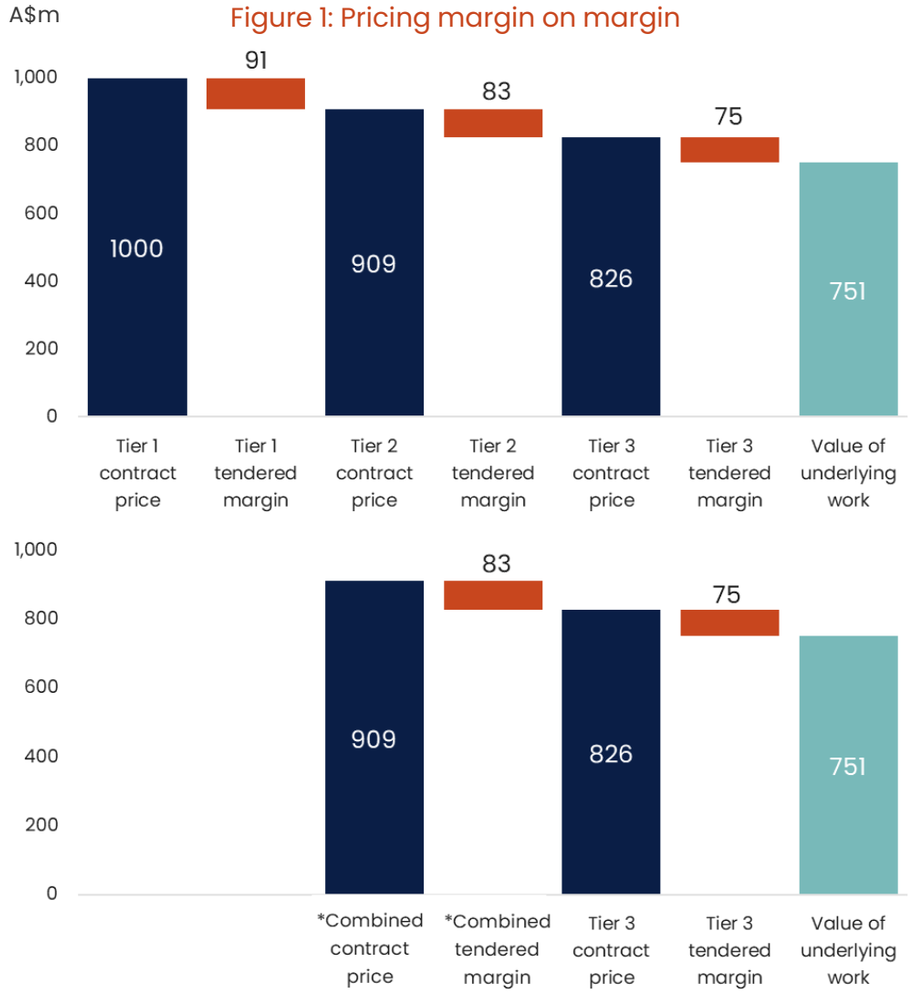
Figure 1 outlines how this applies in a practical sense and illustrates for a $1b mega-project, with a tendered profit margin of 9.1% (Ryan and Duffield, 2017), this is effectively margin on margin which, if given 3 layers of contractors, increases the total program cost by A$75m-A$90m.

Comparatively, if the tier 2 contractor/s could operate at head contractor level, with no tier-1 contractor above, this tendered profit margin would effectively be removed and lower the total project cost.

Depending on which "layer" was removed, the Australian taxpayer could save between A$75m-A$90m per A$1b Mega-project. Following this methodology would indicate that for a A$5b mega-mega project, the Australian taxpayer would save A$450m.

Our current tier 1 orientated program delivery approach may not be maximizing taxpayer returns.

Figure 1: Pricing margin on margin



*Combined contract is representative of a consortium comprising Tier 1 and Tier 2 contractors

2.2 PROFIT REPATRIATION

2.2 Repatriation of final project profits

Figure 2, developed by the Grattan Institute in their report "The rise of megaprojects: counting the costs", shows the growth in transport infrastructure is driven by projects costing more than $A1b, mega projects and A$5b+, mega-mega projects. These projects come with an increasing level of complexity and risk (Grattan Institute, 2020). Australian mid-tier firms, while they may posses the technical capability to deliver these projects, do not have the financial strength to tender for them. Table 1 outlines recent mega projects and who the successful head contractor is. It should be noted the majority of these are a range of international contractors including Bouygues, Samsung, Salini Impregilio (now Webuild), Dragados, Acciona, CPB and John Holland.

Figure 2: Growth in Mega and Mega-mega projects

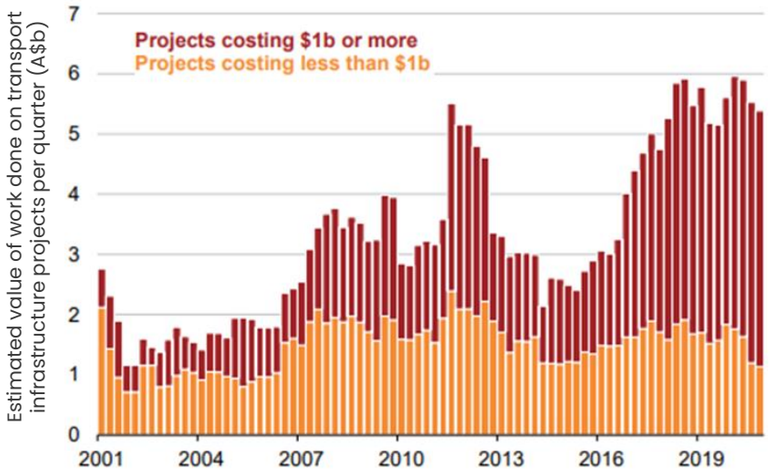


Table 1: Contracts awarded or commenced 2015-2020

Project Name	Value of Project	% Overseas	Overseas Value	Lead Contractor / Country
Melbourne Metro	$11,000,000,000	100%	$11,000,000,000	Lendlease (sold to Acciona) John Holland Bouygues
Pacific Highway - Woolgoolga to Ballina	$4,900,000,000	100%	$4,900,000,000	Laing O'Rourke
Snowy Hydro 2.0	$5,100,000,000	100%	$4,000,000,000	Salini Impregilo Clough
WestConnex Rozelle	$3,900,000,000	100%	$3,900,000,000	CPB Contractors John Holland
WestConnex 3A	$3,200,000,000	100%	$3,200,000,000	Lendlease (sold to Acciona) Bouygues Samsung
WestConnex 2	$3,000,000,000	100%	$3,000,000,000	CPB Contractors Samsung Dragados
NorthConnex	$3,000,000,000	100%	$3,000,000,000	Lendlease (sold to Acciona) Bouygues
WestConnex 1B	$2,700,000,000	100%	$2,700,000,000	CPB Contractors Samsung John Holland
Forrestfield-Airport Link	$1,860,000,000	80%	$1,488,000,000	Salini Impregilo NRW
Toowoomba Second Range Crossing	$1,600,000,000	100%	$1,600,000,000	Acciona Ferrovial Agroman
The Northern Road	$1,584,500,000	80%	$1,267,600,000	Georgiou Lendlease (Sold to Acciona) CPB Contractors
Sydney Metro - line-wide	$1,400,000,000	100%	$1,400,000,000	CPB Contractors UGL
Tullamarine freeway widening section 1	$1,280,000,000	100%	$1,280,000,000	Lendlease (sold to Acciona) CPB Contractors
Metronet Thornlie-Cockburn	$1,250,000,000	50%	$625,000,000	Downer CPB Contractors
Gateway Arterial Road (Gateway Motorway North) South of Nudgee Road - Deagon Deviation	$1,162,000,000	100%	$1,162,000,000	Lendlease (sold to Acciona)
Sydney Metro - Central Station	$950,000,000	100%	$950,000,000	Laing O'Rourke
Northern Connector	$885,000,000	100%	$885,000,000	Lendlease (sold to Acciona)
Pacific Highway - Warrell Creek to Nambucca Heads	$830,000,000	100%	$830,000,000	Acciona Ferrovial
Pacific Highway - Oxley Hwy to Kundabung	$820,000,000	100%	$820,000,000	Lendlease (sold to Acciona)
Bruce Highway Caloundra Road - Sunshine Motorway	$812,950,000	100%	$812,950,000	Fulton Hogan Seymour Whyte
Total Cost of Projects and percentage of overseas companies	$51,234,450,000	95%	$48,820,550,000	

While final project profits are extremely opaque, especially in foreign jurisdictions, recent analysis of 28 completed construction projects >A$500m between 2000-2017 indicate a net loss of 7.3% however more than 50% of this was driven by just 2 projects (Ryan and Duffield, 2017). Removing these 2 projects results in a net loss of 1.5% over 26 projects.

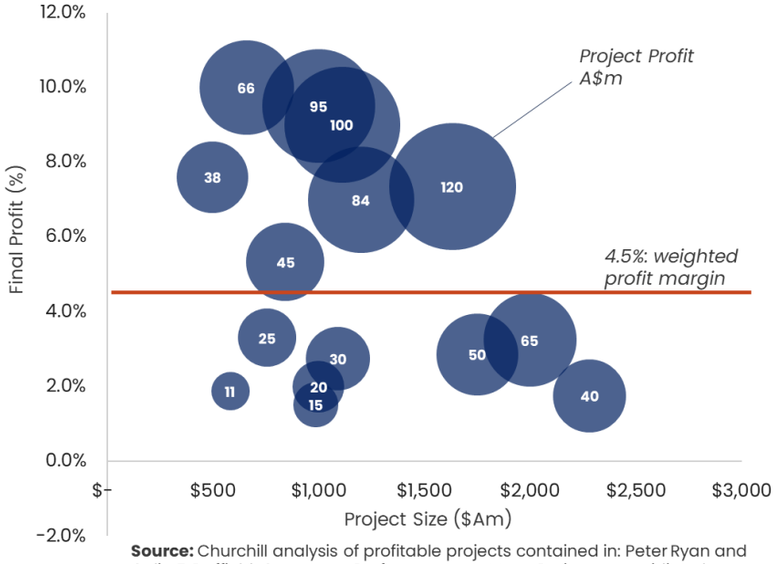
Figure 3 considers the 16 projects which were delivered profitably (57% of the projects) and shows that the average final realized profit margin was 4.5%. (Ryan and Duffield, 2017).

-actual average final profit for the 16 profitable completed projects was A$50.25m on an average contract value of A$1,129m.

Applying this average final profit margin to a standard A$1b mega project would indicate c.A$45m in project profits (Australian taxpayer funds) being repatriated back to the foreign owned tier 1 parent company. With the growth in mega projects, this figure is set to soar.

57% of recently completed projects over $500m had a profitable outcome. The average realized final profit of 4.5% was available for profit repatriation back to foreign tier 1 owners (Ryan and Duffield, 2017)

Figure 3: Realised profit for completed projects >$500m



Source: Churchill analysis of profitable projects contained in: Peter Ryan and Colin F. Duffield, Contractor Performance on Mega Projects – Avoiding the Pitfalls, University of Melbourne (Table 1 p12-13)

2.3 HEAD OFFICE COST COVERAGE & MULTIPLIER IMPACT

2.3 Head office cost coverage in projects

Contractors of any size require both a corporate head office to undertake not only administrative support but also white-collar roles; lawyers, human resource management, procurement etc. For tier 1 contractors, these head office functions are predominately domiciled in their country of origin. Table 2 outlines the company of origin of Australia's most prominent tier 1 contractors.

Table 2: Majority owner of dominant tier 1 contractors in Australia

Tier 1 contractor	Ultimate majority owner	Ultimate majority owner - head office location
John Holland	China Communications Construction Company Ltd (CCCC)	Beijing, China
CPB Contractors	Groupo ACS	Madrid, Spain
Acciona	Acciona	Madrid, Spain

A recent survey of Australian Owned Contractors indicates that the range of head office cost coverage included in contract prices is between 4% and 8% with an average of 5.8% (Australian Owned Contractors, 2021).

This money is retained on-shore when Australian owned contractors are awarded the head contract as their profits are distributed to a predominantly Australian shareholder base and their head office costs are spent onshore.

Using this range as a proxy for tier 1 contractors would indicate that for a A$1b mega project, between A$40m - A$80m (an average of A$58m) is being extracted from Australian taxpayers to fund foreign tier 1 head office costs and white-collar activities being undertaken overseas. These funds are effectively leaking out of the Australian economy, along with the profit elements discussed on the previous page.

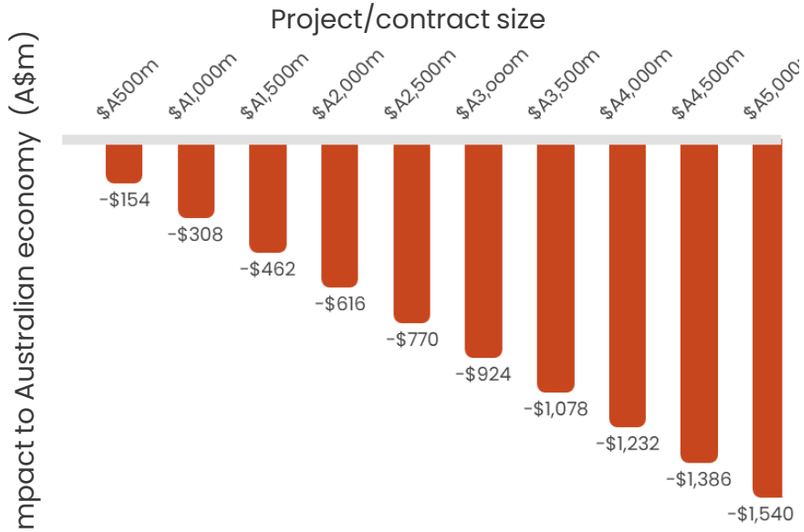
2.4 Multiplier effect of transport infrastructure investment

Australian infrastructure projects have a multiplier effect on the broader Australian economy. The multiplier effect is correlated with alleviating unemployment directly and by secondly improving the productive potential and efficiency of the economy. For every A$1 invested in Australian construction, the wider Australian economy benefits A$2.99 (Australian Bureau of Statistics, 2019).

For a mega project, delivered by a tier 1 contractor this multiplier is reduced by the amount of money which is extracted from this investment to cover costs associated with a foreign head office and the repatriation of profits. This would lower this multiplier by 10.3%* from 2.99 to 2.68. Figure 4 illustrates for a A$1bn megaproject, this equates to a reduction of A$310m of broader economic benefit, or alternatively, greater Australian economic benefit would increase by A$310m if the tier 1 contractor was Australian owned. For a A$5b mega-mega project, this difference is A$1.54b.

The larger the project, the larger the missed opportunity for not having an Australian owned contractor within the head contract. Impact on the Australian economy equates to roughly 30% of the contract value.

Figure 4: Economic impact of tier 1 project delivery A$m



* 4.5% average project profit + 5.8% average head office cost coverage = 10.3%

3. PROCUREMENT MODELS

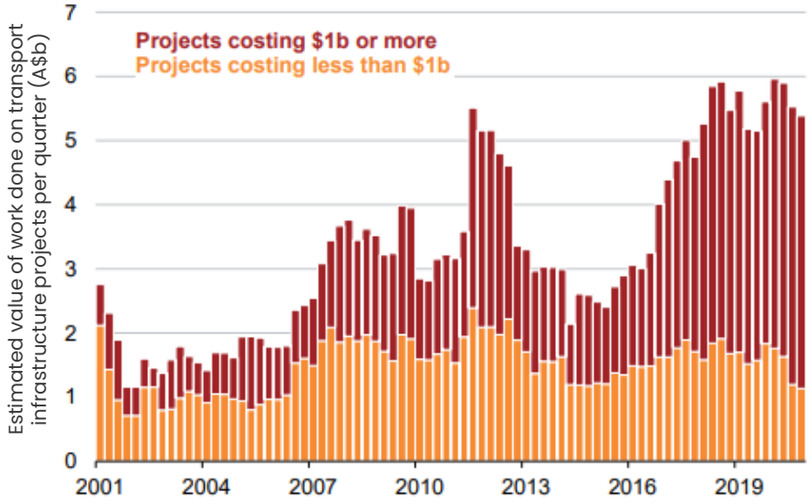
3.1 MEGA PROJECTS - AUSTRALIA

3.1 Australian Megaprojects

Not only has Australia seen a considerable increase in Infrastructure investment recently, but the procurement tendencies have shifted too.

Megaprojects are becoming increasingly prevalent. Figure 5 below, developed by the Grattan Institute in their report "Megabang for megabucks: Driving a hard bargain on megaprojects", illustrates the shift in procurement of government infrastructure projects. The data presents a positive correlation between time and project size (Grattan Institute, 2021).

Figure 5: Growth in Mega and Mega-mega projects



The Grattan Institute noted that the average contract size within a megaproject had risen 38 percent and its no longer a rarity for a single contract on a megaproject to be worth as much as A$4 billion or A$5 billion (Figure 8 – outlined in section 4.3). The growth in contract size calls into question how many firms can feasibly bid for such work (Grattan Institute, 2021).

Before the Covid pandemic, the value of Australian transport infrastructure under construction exceeded A$125b for the first time in the nation's history. Reflective of the rising popularity, over two thirds of this infrastructure under construction (by dollar value) was on projects of value A$5b or greater (Grattan Institute, 2021).

Not only are megaprojects becoming increasingly prevalent across the nation, but they are costing the taxpayer considerably more than originally promised.

Between 2001 and 2020, projects with an initial price tag of A$1b or more overran their costs by an average of 30% (Grattan Institute, 2020). The government has spent A$34b more than initially promised to the Australian taxpayer over the same time period. Figure 9 outlines project overruns by project size, showing less cost overruns with smaller projects.

With more interdependencies, megaprojects are increasingly complex, and contractors are asked to manage risk profiles magnitudes higher than they have been previously (Grattan Institute, 2021).

As projects increase in size, they increase the risk of cost overruns. Since 2001, more than a third of transport infrastructure cost overruns stemmed from just seven big projects.

This relationship between project size and cost overruns is not a new phenomenon. Danish economic geographer Bent Flyvbjerg coined the following phrase.

'the iron law of megaprojects: over budget, overtime, over and over again'. (Bent Flyvbjerg et al, 2002)

As a nation, we need to procure transport infrastructure that promotes the highest net benefit to taxpayers.

When looking at megaprojects, their typical procurement methodology and associated success outcomes, its apparent that the existing model is not sustainable.

It is important not to lose sight of the value megaprojects and public investment bring to Australia. A productivity gain assessment made in the 2018/19 Budget Paper #1 approximated that for every dollar invested in infrastructure, A$4 GDP is generated for the economy over an asset life of 25 years (Australian Government 2019).

The issue is not the megaprojects; it is the procurement of the major works packages within them.

3.2 MEGA PROJECT PROCUREMENT MECHANISMS

3.2 Megaproject Procurement Mechanisms

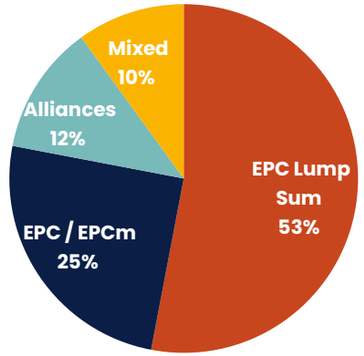
Major Infrastructure projects are typically procured through one of four models (Merrow, 2011):

- **EPC - Lump Sum:** A single contractor is responsible for engineering, procurement and construction for the whole project or a portion of the whole project, under a single contract.
- **EPC/ EPCm Reimbursable:** A single contractor is responsible for all (or greater majority) of the project under a contract that reimburses the contractor based on quantity of services and materials provided.
- **Alliances:** The grouping of all (or most of) the head contractors under a single compensation scheme to align goals of the contractor with those of the project sponsor and share risk in a collaborative "no blame" culture.
- **Mixed:** Separation of the construction, procurement, fabrication and engineering contracts. Each contract is awarded to the party best able to manage its associated risk.

The models most suitable for selection vary pending the type of project, complexity of the project, and the capacity and capability of both the contractor and client.

Figure 6 illustrates the most commonly adopted procurement models for megaprojects.

Figure 6 Megaproject Contract Types (Merrow, 2011)



Megaprojects procured under a single contract infer that one party assumes all or the majority of the project delivery risk.

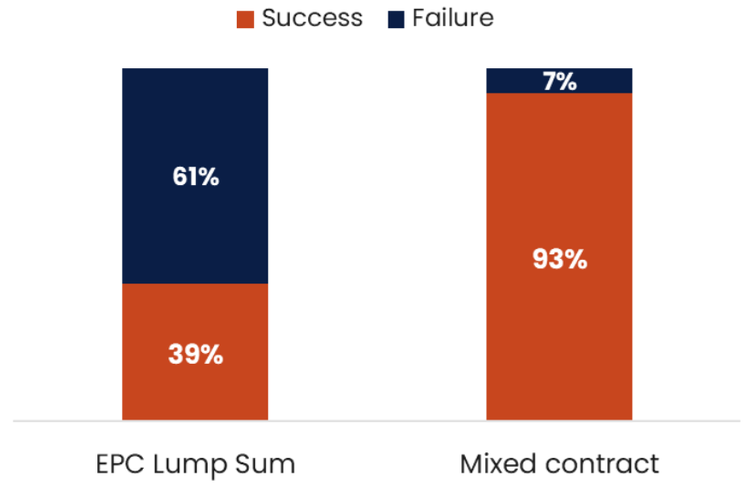
Best practice contracting and procurement ensures risk is apportioned to the party best placed to manage it (APM Group, 2020). This increases the likelihood of two beneficial outcomes:

1. Decreased cost
2. Increased chance of successful delivery

Mixed contracts break a project into components delivered by specialists in each respective area. The procurement model removes the need for a large tier 1 entity to absorb the risk of the whole project (Merrow, 2011). This aligns more closely with best practice risk management than EPC style contracts.

Figure 7 illustrates the success rate of megaprojects by contract type. It is clear when considering best practice risk management, mixed contract procurement models bolster considerably higher success rates than the other mechanisms.

Figure 7: Procurement model success – Megaprojects (Merrow, 2011).



The tendency of the Australian Government to procure lump sum megaprojects is proving very costly to the Australian Taxpayer.

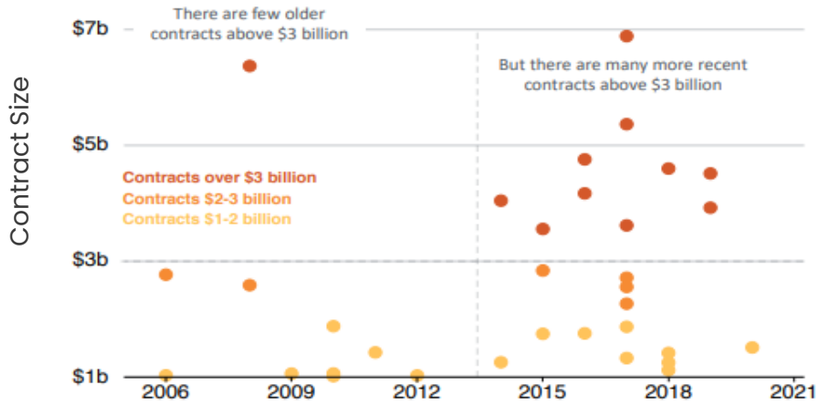
3.3 RISK MANAGEMENT AND IMPLICATIONS

3.3 Infrastructure Risk Management

As Australian governments look for cost surety, they are looking to engage contractors on fixed price EPC contracts or Alliance contracts. Australian infrastructure contracts are presenting with higher risk than ever seen before for contractors. EPC style contracts see private entities retain almost the entirety of project related risk, where Alliances introduce a risk sharing mechanism between the private and public sector.

Figure 8, developed by the Grattan Institute in their report "Megabang for megabucks: Driving a harder bargain on megaprojects" illustrates the sheer quantity of Australian mega contracts issued since 2006. It is evident that there is a developing trend to procure infrastructure under increasingly large contracts.

Figure 8: Procurement model success - Megaprojects



As these contracts continue to grow in size and broaden scope, they are becoming more difficult to manage. Transport Infrastructure projects are being developed in large cities and contractors need to balance environmental concerns, community interactions, and complex interfaces with existing utilities and other projects under construction (Grattan Institute, 2021).

The Grattan Institute found that large and complex projects are more likely to endure cost overruns. Not only is the propensity of cost overruns higher but so too is the quantum when they do overrun. The drivers behind these overruns extended from the large number of interdependent elements that can be disrupted if one or more components go wrong.

Figure 9: Prevalence and magnitude of cost over runs

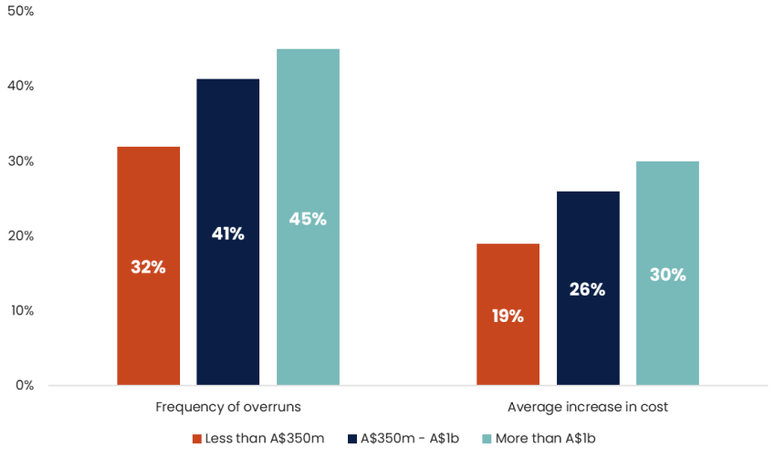


Figure 9, developed by the Grattan Institute in their report "The rise of megaprojects: counting the costs" illustrates that as projects increase in size and complexity, the likelihood and magnitude of cost overruns increases.

The underlying issue is that megaproject procurement in Australia does not align with best practice risk management. Best practice construction and procurement allocates risk to the party best able to manage it (APM Group, 2021).

Risk management as per best practice drives lowest possible costs for the project and greatest value for money for the client. Australian procurement practices are looking to push the majority of risks onto contractors under a fixed price arrangement.

Collectively, these attributes impose considerable uncertainties to contractors requested to tender and deliver the works. As we have previously outlined, realised profit margins, for those projects which are profitable, are typically low. Taking a significant loss on a single project can jeopardise a company's ongoing viability. Therefore, if the Australian government looks to shift the majority of these risks to construction companies, they will naturally seek opportunities to cover this risk through higher bid costs, risk premiums, costly insurance or an adversarial approach to variations. This may lead to disputes, delays and ultimately project failure.

3.3 RISK MANAGEMENT AND IMPLICATIONS (CONTINUED...)

There are two key issues in relation to risk in Australia's current transport construction industry:

1. Contractors are required to manage increasingly large and complex risks under the current contract models.

2. Government is transferring risk to the private sector that the government is more proficient in managing.

The first issue aligns with taxpayer value for money. Taxpayers are paying more for infrastructure due to the current procurement mechanisms adopted. Contractors are charging increased risk premiums in order to manage these program packages.

In researching and delivering the 2019 Infrastructure Audit, Infrastructure Australia rightly points out that industry is facing commercial challenges which are in part due to poor procurement practices – for instance, inefficient risk allocation and, in particular, excessive risk transfer from the public sector (Infrastructure Australia, 2019).

Best practice contracting and procurement allocates risk to the party best able to manage it (APM Group, 2021). Evidence suggests breaking megaprojects into smaller contracts around the A$500m mark will support this.

"...governments across Australia keep having successive project cost blowouts. We are in the midst of Australia's biggest infrastructure boom, but as an industry, we are teetering on the brink of collapse" (Joe Barr, 2020).

Megaprojects that are broken into smaller contracts and allocate risk to the most suitable party are less complex, comprise tighter and more developed scopes and pose less delivery risk to contractors.

This procurement contracting model is more closely aligned with mixed contracting, leveraging the expertise of specialist contractors to drive down costs and improve delivery outcomes. Figure 10 illustrates how the governance structure varies between an EPC contract and a Mixed Contract.

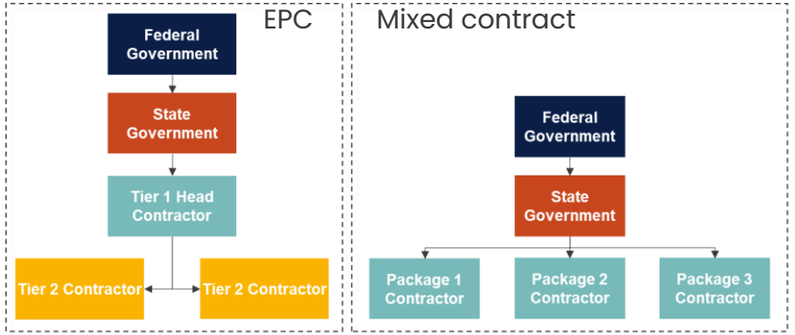
By not packaging up all the works into large contracts, there is increased interface risk that must be managed between the various contractors (DLA Piper, 2020). This contract model presents a challenge to Australian Governments, but not one they should shy away from. This challenge is an opportunity for government PMO offices to develop their capability as outlined in Section 4.3.

The Australian Defence Force has recently embraced this opportunity and is increasing their capability at managing major works packages thus building sovereign capability (detail in Section 4.1).

In addition to reducing contract size, the Australian Government needs to retain risk they are more capable of managing.

Infrastructure Australia noted one particular example of this, where governments were transferring regulatory risks and responsibility for negotiating with other government agencies such as utilities (Infrastructure Australia, 2019).

Figure 10: EPC vs. Mixed Contracting Structure



It is very likely that with this risk remaining with Australian Governments, leveraging inter-agency relationships and a shared vision for the nation, would drive a better outcome for the project.

By aligning procurement methodologies more closely with best practice risk management, a corresponding reduction in cost overruns will ensue.

In essence, the current procurement methodologies for megaprojects are not driving best possible project outcomes and hinder value for money for taxpayers.

Breaking megaprojects into smaller contracts is part of this solution. As contract size reduces, scopes tighten, and the risk profile is more easily quantifiable. Australian mid-tier contractors are afforded the opportunity to bid for these projects, immediately injecting greater competition and assisting government agencies to identify which contractor can best manage risk and deliver best project's outcomes.

3.4 COMPETITION IMPACTS

3.4 Transport Infrastructure Competition

Aspects of the market's traditional risk transfer model are leading to declining competition within public tenders for transport infrastructure projects, as the scale and risks associated with them become too great for mid-tier contractors, entrenching status quo.

As noted by Infrastructure Australia "In some instances the scale of works packages inhibit participation by tier 2 and 3 contractors, thereby limiting competition on a project that would otherwise be within the skill range and capability of these businesses" (Infrastructure Australia, 2019).

To maximise net benefit to the Australian taxpayer, it is imperative Australian transport projects are delivered at the lowest possible cost to the desired quality level.

The key driver of low-cost goods/ services is market competition. Competition bolsters productivity, promotes economic growth and drives innovation (Department of Justice, 2002).

In today's current market conditions where tier 1 capacity is at or quickly approaching maximum capacity, a challenge to government procurement offices is to consider adjustments to the risk allocation and scale of contracts issued to the market to ensure competition. For example, the New South Wales Government's Rozelle Interchange project exceeded the market's appetite and saw only a single bidder (Infrastructure Australia, 2019).

In 2017, the New South Wales government tendered a A$3.9b program of works for the Rozelle Interchange, the most technically complex component of West Connex.

The tender closed with only one bid, developed by a consortium of three foreign owned tier 1 contractors. With only one bid, the government could not validate the 'value for money' requirement of the tender evaluation criteria and in the interests of protecting taxpayers, had to reject the offer**.**

As noted by Croagh, "we must seek to involve more of the industry in the mega projects by dividing the projects into smaller packages which will make them more accessible to our high quality second and third tier contractors (Croagh, 2020).

One of the biggest issues with megaprojects is the reduction in tendering competition they induce. In order for contractors to tender for projects, they must meet at least two separate criteria required of them by State Governments.

- Technical competency
- Financial capacity

Most tier two contractors have the technical competency to deliver major projects of works, however, are held back by their financial capacity. Firms must have 8% of a contract value in net tangible assets to be considered financially capable of delivering a project.

There are no Australian and few international firms with a strong onshore presence and the balance sheet required to tender for the megaprojects currently being taken to market.

As these projects increase in size, and continue to be procured under EPC style contracts, there is a reducing number of firms capable of tendering.

"...national leadership demands greater interest in ensuring the tendering processes are efficient, cost-effective, and flexible; and promote something that we are very keen on, something that the Prime Minister Scott Morrison is absolutely committed to, and that is competition in the market." (Michael McCormack, 2018)

As noted by The Grattan Institute, "If very few firms are willing and able to take on the kind of work that is becoming increasingly common, there may be less competition for government transport projects. And less competition could call into question whether governments can get infrastructure at the lowest long-term cost to taxpayers" (Grattan Institute, 2021).

In fact, The Australian Competition and Consumer Commission would welcome more entrants; its Chairman has expressed concerns about the construction industry, saying "if we had more competition, particularly at the top end ... that would be a lot better for the Australian economy" (Sims, 2021).

3.4 COMPETITION IMPACTS (CONTINUED)

It is possible to have the benefits of a mega project along with a highly competitive tendering process. The adoption of mixed contract procurement will allow mid tier contractors to compete against tier 1's for a number of contracts that collectively make up a megaproject.

Tier 2 and tier 3 contractors are comfortable taking on head contractor roles on projects from A$50 - A$500m (Ryan P.W, 2017). Bridge and Bianchi (2014) explored this, indicating the splitting of megaprojects into multiple contracts would create an improved pipeline of contracts for local contractors and new Australian market entrants.

Bridge and Bianchi saw this as a necessary step to drive a competitive market environment and maximise value for Australian taxpayers.

A common industry comment is "why don't mid-tier Contractors form consortium's to deliver megaprojects as a collective?".

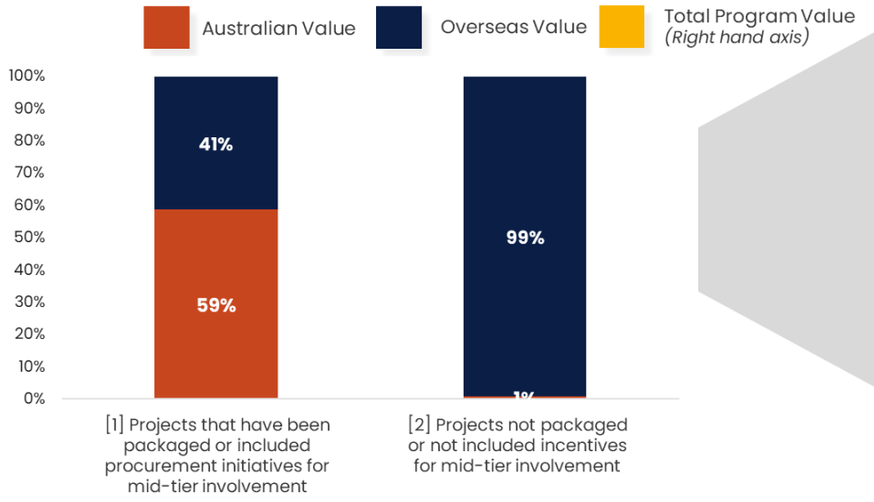
Alliance contracts are the only procurement mechanism that allows mid-tiers to band together in delivery or join the foreign tier 1's. Alliance mechanisms see the government absorb considerably more risk than in EPC style contracts alleviating the balance sheet requirements to bid on projects where they would wear the risks. When bidding for EPC lump sum contracts in a consortia, each firm must demonstrate joint & several liability.

This means each firm must have the 8% reserve, rather than it be shared collectively amongst the head contractors. This is the original barrier to tender in the first place. Hence if the mid-tier's couldn't bid for the contract by themselves, they still can't bid as part of mid-tier consortia.

If a megaproject needs to be delivered in a large works package, there is benefit for mid-tiers to join part of the head contract and increase competition.

Figure 11 outlines the variance in contract delivery between Australian and Foreign owned entities when reviewing Australian, publicly funded Infrastructure projects >A$500m. The projects considered have been awarded, construction commenced or completed since the FY2018-19 Federal Budget.

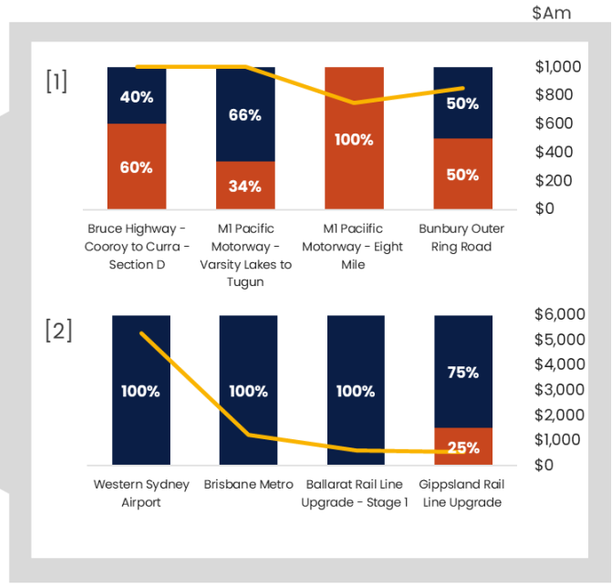
Figure 11: Industry capability maximizing Australian value



" In the last few years we've seen an absolute explosion in the number of mega-projects and mega-mega -projects ...As the size of projects has increased so too has the size of contracts within them, and once you get to that kind of the competition really thins out."

Marion Terrill, lead author and Transport and Cities Program Director at The Grattan Institute.

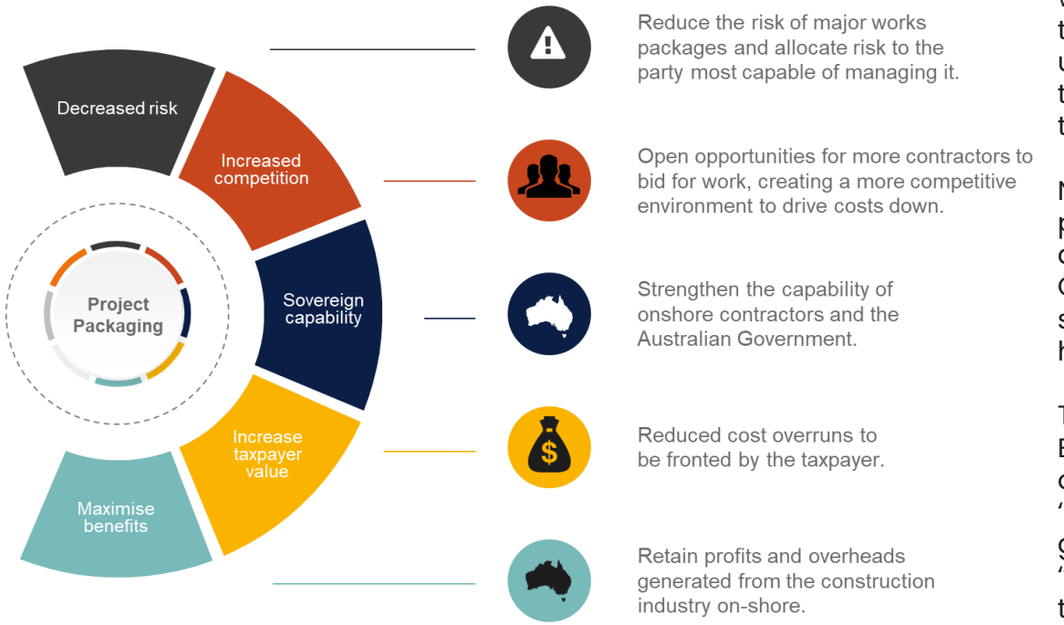
It is clear that where projects are packaged or mid-tier inclusion incentives exist in the tender evaluation criteria, Australian contractors are enabled to compete for the works, resulting in Australian owned entities extracting 60% of contract value, compared to 1% when these measures are not in place.



3.5 BENEFITS OF PROJECT PACKAGING

A suite of benefits are available for realisation by breaking projects up into smaller packages of works and allowing mid-tier Contractors to participate. These benefits are illustrated in Figure 12.

Figure 12: Benefits of project packaging



3.5 Benefits of Project Packaging

While we have noted that improved mega-project outcomes can be delivered by packaging contracts into smaller programs of works, and the best contract type to undertake this is a mixed contract arrangement, unfortunately for government procurement teams, there's little guidance on how to conduct this with best practice.

Neither the national PPP (public private partnership) guidelines nor the 2014 Austroads and Australasian Procurement and Construction Council's procurement guidelines specify the principles that should determine how packaging could be successfully done.

The Queensland Government (Department of Employment, Small Business and Training) outlines that there is an option to design 'smaller packages of work to be offered to a greater number of suppliers', and that 'feedback may also be received on the ways the project can be packaged and presented to the market'. Although in practice Victoria does have published guidelines underpinning the methodology, they only go so far as saying that project bundling should 'take into consideration specific project attributes and risks', and refer to a series of criteria that should be considered when packaging works so as to obtain the best overall value for money. NSW recently released a memorandum across its government offices, pushing a range of infrastructure procurement related initiatives, including project packaging, encouraging tier 1 and tier 2 joint ventures, and best practice risk management.

This capability to undertake adequate program packaging and manage a portfolio of projects instead of a single tier 1 head contract, is a sovereign capability which the Federal Government is best placed to strengthen. The ability to deliver the benefits of mega projects to asset owners, the Australian economy and ultimately better outcomes for Australian taxpayers depends on it.

Program packaging is a sovereign capability which needs to be strengthened. As the benefits to mega project outcomes, asset owners, the Australian economy and ultimately better outcomes for Australian taxpayers, is clear.

4. DEVELOPING SOVEREIGN CAPABILITY

4.1 NEED FOR SOVEREIGN CAPABILITY

4.1 The Need for Sovereign Capability

The lack of Australian owned tier 1 contractors means that bidding / delivery decisions for major infrastructure works packages are made with little to no local influence.

Section 4.2 will outline the amalgamation of major contracting entities over the preceding two decades, all of which now have offshore controlling interest.

Decisions about whether to bid into the Australian Infrastructure market, whether to involve local contractors and whether to engage local suppliers are now made in boardrooms across the globe.

There is genuine concern that as the Australian infrastructure market cools down, these resources will be shifted to other markets, leaving the nation without the sovereign capability or capacity to undertake required capital works projects.

In 2019, Infrastructure Australia warned 'while large scale projects are becoming common place, they are stretching the capacity of industry and government'.

Australia's continued reliance on these select foreign owned tier 1 contractors is further beginning to put a strain on the nations capacity to deliver the required infrastructure pipeline.

The current procurement strategy for major projects considerably narrows the field of potential contractors, almost entirely by way of balance sheet strength as a risk mitigation requirement. The ability to address capacity issues in the market are hindered by the existing procurement model due to only a select few contractors having the financial capacity to tender for the projects.

Echoing this concern, Prime Minister Scott Morrision stated "We are really starting to hit our head on the ceiling in terms of how much infrastructure work you can get under way at any one time. And that's actually putting some cost pressures into the system" (Coorey, 2019).

A survey of 12 Australian owned, mid-tier contractors, indicated that not one of the entities is at capacity. In addition, eleven of the twelve firms surveyed expressed interest in participating in major infrastructure projects (Australian Owned Contractors, 2020). Discussed at length in Section 3.0, to enable these contractors to participate in major infrastructure projects, works packages need to be broken into smaller contracts.

Australia's lack of diverse capability means the nation relies on a small competition pool of foreign owned contractors. The result of this anti-competitive market is higher costs and sub-optimal outcomes.

In Section 3.4, the case of the Rozelle interchange was investigated, where a tender went to market, receiving only one response, a joint submission by CPB, John Holland and Lendlease, the three most prominent tier 1 contractors in Australia. The lack of competition meant the Australian Government had to reject the offer due to an inability to ratify the value for money component of the tender evaluation criteria (O'Sullivan, 2018).

"Australia is in the top 25% of the world in terms of what its paying for infrastructure compared to similar countries. As a nation, we are 26% higher than Canada, 9% higher than Japan and more than three times as high as Spain" says Marion Terrill (Grattan Institute, 2021).

There are instances where projects can't be delivered in smaller works packages. In these situations, Australian mid-tier contractors should still be afforded the opportunities to play a leading role in their delivery through the use of an "industry capability" criteria, part of the procurement process for some major public infrastructure projects (A$500m+). Industry capability criteria will encourage head contract participation, skills development and growth of Australian contractors. This procurement mechanism is investigated in Section 4.5.

The Australian Department of Defence has established the Australian Industry Capability (AIC) contractual framework focused on developing a sovereign defence industry and ensuring small businesses remain a key part of Defence. While a different industry, the notion of a need to build sovereign capability is not unheard of.

Rationale for this framework was outlined by Hon. Melissa Price MP (Minister for Defence Industry) on 24 September 2020, where she announced that "We continue to develop a true sovereign defence industry– one that builds up our manufacturing base, creates thousands of Australian jobs and ensures Australian small and medium businesses play a fundamental role in our major works programs."

4.1 NEED FOR SOVEREIGN CAPABILITY

Minister Price further stated, “We not only want to do this– we need to do this, to ensure Australian businesses are stronger and more competitive– both at home and abroad” (Department of Defence, 2020).

A key pillar of this framework was an update to the Commonwealth Procurement Rules which applies to A$4m+ procurements. The new rules treat AIC and sovereign capability as an economic benefit to be assessed as part of the value for money considerations (Kuper, 2020). They are now issuing more effective guidelines to their tender evaluators regarding this.

While some may argue that Defence is very different to transport infrastructure, both industry’s spend billions and the themes of developing a self-reliance on Australian capabilities, with businesses that are stronger and more competitive still applies. The need to enhance sovereign capability in transport infrastructure delivery is not about opaque or overt support, simply opportunity to deliver and grow.

The Australian Government needs to firstly include industry capability criteria in procurement assessments and secondly, develop smaller programs of works that the balance sheet of mid-tiers can support. A procurement model of this nature will enable Australian mid-tier contractors to firstly tender as the head contractor, either with tier 1 partners or on their own, putting competitive pressure on price, diversifying the total value of project packages and de-risking the delivery. On top of this, it will enable mid-tier contractors to gain experience and develop the project management, delivery experience and project leadership skills required to deliver Australia’s extensive transport infrastructure plan- building sovereign capability further along the transport infrastructure supply chain.

Australian Offshore Patrol Vehicles in Construction
Source: Australian Defence Magazine

4.2 The loss of Australian owned tier 1 contractors

Tier 1 contractors have a long-standing relationship with Australia, playing a major role in building the cities within which we reside. In fact, a number of the foreign tier 1’s delivering major programs of works in Australia today, were built up by the Australian taxpayer.

Lendlease Engineering (now Acciona), John Holland, and Leighton Holdings (CPB Contracting) were all once Australian owned businesses. Today, they are all foreign owned entities, leaving Australia without any local tier 1 contractors (Grattan Institute, 2021). The journey to become a tier 1 contractor is a long and difficult one. Contracting is a high cash flow business and as such it takes a long time to build the balance sheet required to support major infrastructure works packages.

Figure 13, recreated from the Grattan Institute report – “Megabang for megabucks: driving a harder bargain on megaprojects” illustrates the journey of three major tier 1 contractors from Australian to foreign owned entities.

The common theme observed with these contractors is an increase in scale leading into the 2000’s, enabled through delivery of publicly funded infrastructure, before a series of mergers and acquisitions. As the companies amalgamated and grew, their ownership became increasingly foreign (Sarah, 2015). Now all three have a majority foreign ownership structure.

These once Australian owned tier 1 contractors were supported by governments across the nation to build scale and experience. Projects like the original Snowy Hydro Scheme, awarded to John Holland in 1968, the Sydney Opera House, awarded to Lendlease in 1959, and the Brisbane Airport, awarded to Leighton Contractors in the 1980’s, played a role in putting these firms on path to tier 1 status.

4.2 THE LOSS OF AUSTRALIAN OWNED TIER 1 CONTRACTORS

These infrastructure projects were Federally funded through taxpayers' dollars and the nation had pride in the infrastructure built, and those building it. The benefit was not simply world class infrastructure, but the upskilling, development and experience of tier 1 contractors on home soil.

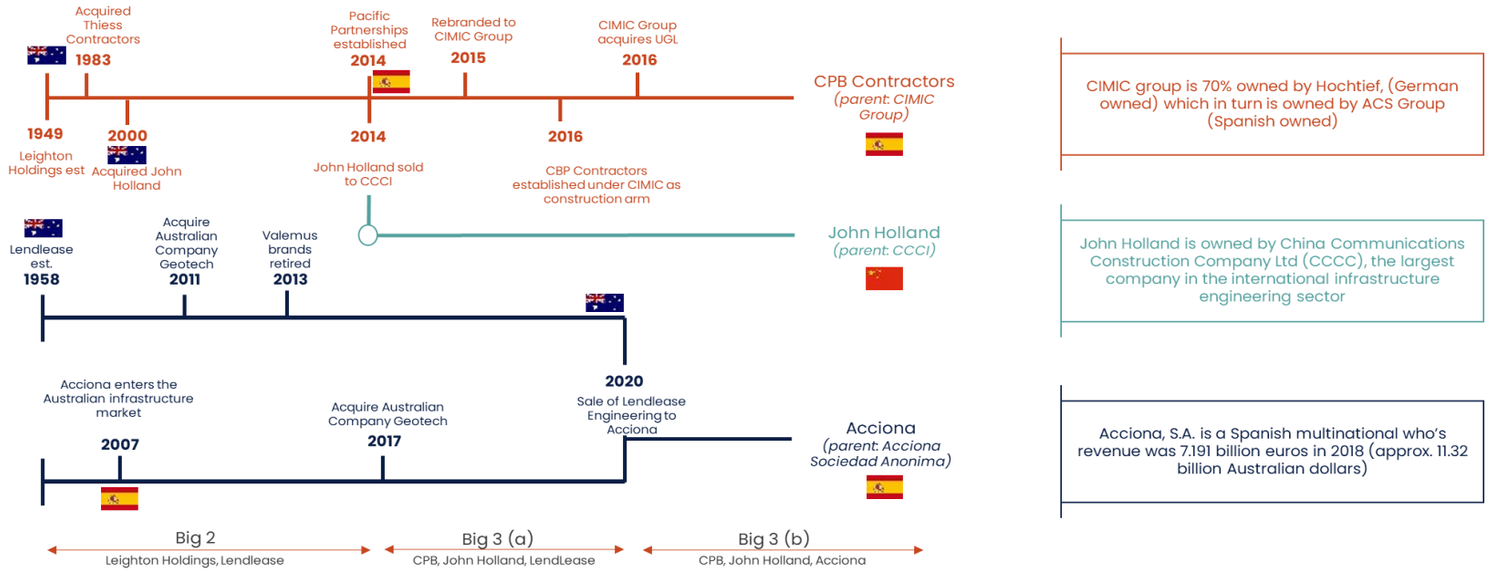
The landscape these Australian based contractors operated in while they grew has significantly changed. The procurement model for public infrastructure projects is no longer fit for purpose to enable sovereign capability development for Australian owned contractors or to enable them to develop tier 1 status. This model needs urgent reform.

The inability of mid-tier contractors to gain head contractor experience on complex major infrastructure projects is preventing them from growing into the next tier. The existing procurement model is a considerable barrier for development of Australian owned contractors.

Discussed in Section 3.1, megaprojects are now procured under contracts comprising significantly large programs of works (Grattan Institute, 2021). There are many prerequisites required to bid for these, the most prominent being financial capacity. A recent survey of Australian Owned Contractors highlighted that 65% of survey respondents advised that they had the technical capability to deliver a project of up to $A500m however had been restricted due to financial capacity considerations (Australian Owned Contractors, 2020).

In order to enable the development of new, Australian owned mid-tier contractors and sovereign capability, this procurement model needs to change.

Figure 13: History of tier 1 contractors in Australia



4.3 Government Procurement Capability

The skills of the public sector are as critical as the private sector. High-quality outcomes across project procurement and delivery require the achievement of commercial alignment between the asset owner (Government) and the delivery partner (Contractor) (Infrastructure Australia, 2019).

High quality procurement and project management skills within the public service support value for money outcomes for users and taxpayers, while minimising unforeseen risk to sector participants. The potential contribution of a skilled public sector procurement or project manager is therefore substantial (Infrastructure Australia, 2019). There is a strong case for the public sector to develop highly skilled candidates with these skillsets as they hold a disproportionate ability to drive value for money outcomes for the government and taxpayer, while also supporting a well-functioning and stable industry.

There is an opportunity for government to greater prioritise the development of commercial, financial and project skills amongst the public services in order to reduce total project costs, avoid cost overruns and disputes. This opportunity presents through increased involvement in major infrastructure delivery.

4.4 SOVEREIGN CAPABILITY DEVELOPMENT - GOVERNMENT

4.4 Suggestions for Federal, State & Territory Government procurement offices.

As the sheer number and size of transport infrastructure projects increases, government capability needs to ensure it is at a level that these projects can be adequately assessed, managed and delivered to maximise successful outcomes for the Australian taxpayer. The Government has a role to play, demonstrating best practice capabilities.

Best practice was identified by Infrastructure Australia in the Infrastructure Decision-making Principles, published in June 2018 (Infrastructure Australia, 2018).

This document lays out clear expectations for nationally significant, publicly funded projects across the project lifecycle – from problem identification to post-completion review. However, of the 39 projects that have been assessed by Infrastructure Australia over the past three and a half years, none has met all 11 principles (Infrastructure Australia, 2018).

McKinsey & Company, in its 2019 paper "Australia's infrastructure innovation imperative" outlined a range of capabilities that Government procurement agencies needed to strengthen in order to maximise the benefit of transport infrastructure projects to the Australian economy, including:

- Projects prioritisation and selection- develop the capability to perform rapid options analysis, while reorienting formal business-case analysis to avoid simplifying projects to single metrics and focus on scenarios that take future disruptions into account. The extended timeframes associated with business-case development conflict with shorter decision-making timeframes, limiting their usefulness.
- Portfolio management of the large portfolio of infrastructure megaprojects through their lifecycle. This is a risk that cannot be delegated as a set of capabilities driven by government's unique position as the integrator and ultimate owner of all risk (regardless of contractual mechanisms).
- Ability to rapidly develop, quantify, and assess customer and community benefits of alternative modal (for instance, autonomous busway versus heavy rail versus light rail versus motorway) and scope options for a new transport corridor, within a short period. Rapid options assessment would then be very likely used by the government prior to announcing a specific mega-project
- Ensure transparency—measures to increase transparency around costs and progress of public projects can be enhanced by digital technologies that provide real-time progress information

Further capabilities required by Federal Government include:

- Ensure broader economic implications are considered through industry sustainability and sovereign capability assessment criteria inclusion in Infrastructure tender expressions of interest.
- Address sovereign capability considerations when assessing tender responses or include these criteria upfront in tender requirements
- Adequate risk identification and ensuring management of those risks are borne by the party best able to manage them. This allocation of risk, or risk transfer, is a fundamental capability which best sits with governments. The tangible benefits outlined earlier are too great to not get this right.
- Ability to appropriately package smaller projects rather than defaulting to mega-projects is a capability which would unlock competition and improve project success. The interface risk associated with these contracts would also need to ensure adequate capability is in place.

Infrastructure Decision-making Principles, published in June 2018 laid out clear expectations for nationally significant, publicly funded projects across the project lifecycle …of the 39 projects that have been assessed by Infrastructure Australia over the past three and a half years, none has met all 11 principles (Infrastructure Australia, 2018).

- Develop and share a centralised data base on project related information to establish a national central data repository regarding transport infrastructure projects to learn from and inform decision making
- Post funding follow-up/review to ensure the conditions of funding are met by the State and Territory Government procurement teams

4.5 SOVEREIGN CAPABILITY DEVELOPMENT – MID TIER CONTRACTORS

4.5 The need for capability amongst mid-tier contractors

Mid-tier contractors must ensure they develop (strengthen) the requisite internal capabilities to plan and deliver a portfolio of (complex) infrastructure projects from conception and selection through to completion, incorporating the relevant processes, technology, and business partnering skills to drive enhanced performance and project outcomes (McKinsey and Company, 2019).

Partnering with tier 1 contractors at a head contractor level enables transfer of practices and procedures which would upskill the mid-tier contractors to get that vital practical, on project exposure managing complex projects.

Another clear benefit of ensuring mid-tier contractors have a partnership type arrangement with a tier 1 at the head contractor level would be the ability for the mid-tier contractor to use and introduce their local Australian supply chains and networks to the larger tier 1 contractors who may currently rely more so on their international networks and supply chains.

This would not only give local businesses the opportunity to supply these projects but would ensure a cascading effect of upskilling local suppliers and businesses along the supply chain, ensuring more Australian content in Australian infrastructure projects.

This successful approach was put in place when Main Roads WA stated its preference for tier 2 and tier 3 contractors inclusion in head contractor leadership when it issued its expression of interest document for the Bunbury Outer Ring Road project in September 2019 (Australian Owned Contractors, 2019).

Main Roads WA included an "industry sustainability" criteria in the tender assessment criteria, with a 10% weighting, asking respondents to outline how they would include these mid-tier contractors in the delivery consortium.

This industry sustainability criteria requested respondents to address :

- Alliance structure & composition,
- Building industry capability
- Sustainable procurement

With industry sustainability given the same weighting as project management capability, design capability and construction capability, on 12 October 2020, Main Roads awarded the project to the Southwest Connex Alliance which 2 Australian owned mid-tier contractors- NRW Holdings and MACA- together comprised 50% of the head contract (Jones, 2020).

Another clear example of how the inclusion of an "Industry capability" criteria has supported sovereign capability building was the involvement Georgiou (Australian owned tier 2 contractor), had in the successful delivery of the WA Gateway Project in WA.

The procurement model of including "Industry capability" had a 5% weighting which was a criteria at the EOI (non-priced) stage of the tender.

This resulted in each consortium containing an Australian mid-tier contractor in the $900m contract. Georgiou held an 18% share in the consortium for the design and construction of the project. As a leading mid-tier contractor, Georgiou was able to build its capacity as a business and civil contractor due to its participation in the successful project.

Partnering with tier 1 contractors at a head contractor level enables a transfer of practices and procedures which would upskill the mid-tier contractors

Gateway WA project
Source: Signfix Australia

4.5 SOVEREIGN CAPABILITY DEVELOPMENT – MID TIER CONTRACTORS

Outlined across Section 3.0, the other mechanism Government can employ to increase mid-tier participation in major infrastructure projects is a reduction in the size works packages.

There are two examples where this mechanism has been used. In 2017, the Victorian government intended to undertake a program of works labelled the Suburban Roads Upgrade, procured through three availability type Public Private Partnerships for the western, south-eastern and northern suburbs of Melbourne (ANZIP, 2021).

The first of these PPPs, named the 'Western Upgrades Package", was procured as planned. Taking stock of the unfavourable procurement model, the Victorian Government shifted its delivery of the remaining two packages, splitting up the proposed A$2.2b of works into 12 individual projects. These projects are being awarded progressively to a pre-qualified panel with significant mid-tier representation (ANZIP, 2021).

This is an excellent example of best practice major infrastructure procurement, increasing competition and affording mid-tier contractors the opportunity to tender.

The other example is a more recent development in NSW. Since 2018, the NSW government has been conscious of the importance of maximising the Australian benefits of its Infrastructure program. The government released a 10-point commitment to the Construction Industry.

The commitment covered areas including; procurement, risk, bidding costs, high performance, skills and training, diversity and transparency (NSW Government, 2018).

Recently, the Premier of NSW, Gladys Berejiklian, approved and published a memorandum to the State Government to support the procurement of large and complex projects. The memorandum builds on the 10-point commitment, establishing more explicit initiatives to increase participation, competition and efficiency in NSW infrastructure delivery, providing more value for money for NSW citizens (Berejiklian, 2021).

In place from 1 July 2021, the memorandum is applicable for projects of value more than A$500m. The memorandum addresses three key themes:

- De-risking pre-construction
- Procurement approach
- Reducing costs and improving timeframes

Within these themes, there are two key practices that speak directly to the suggestions of this report:

1. Project packaging

"Size contract packages across the NSW portfolio to facilitate competitive bids from a wide range of participants. To utilise the full capacity of the construction market, offer tender packages capable of being more readily priced and managed by either tier 2 contractors or join ventured between tier 1 and 2 contractors." (Berejiklan, 2021)

2. State role in stakeholder management and communications

"Increase the states role… with a view to ensuring that responsibilities are allocated to the parties most able to manage outcomes. The respective roles should reflect the party best able to manage the risk." (Berejiklan, 2021)

Project packaging and best practice risk management are key areas that must be addressed to improve project outcomes and increase the nations sovereign capability at both government and contractor level.

Western Roads Upgrade
Source: Infrastructure Magazine

4.5 SOVEREIGN CAPABILITY DEVELOPMENT – MID TIER CONTRACTORS

The aforementioned case studies highlight two key levers that can be capitalised upon to bolster sovereign capability:

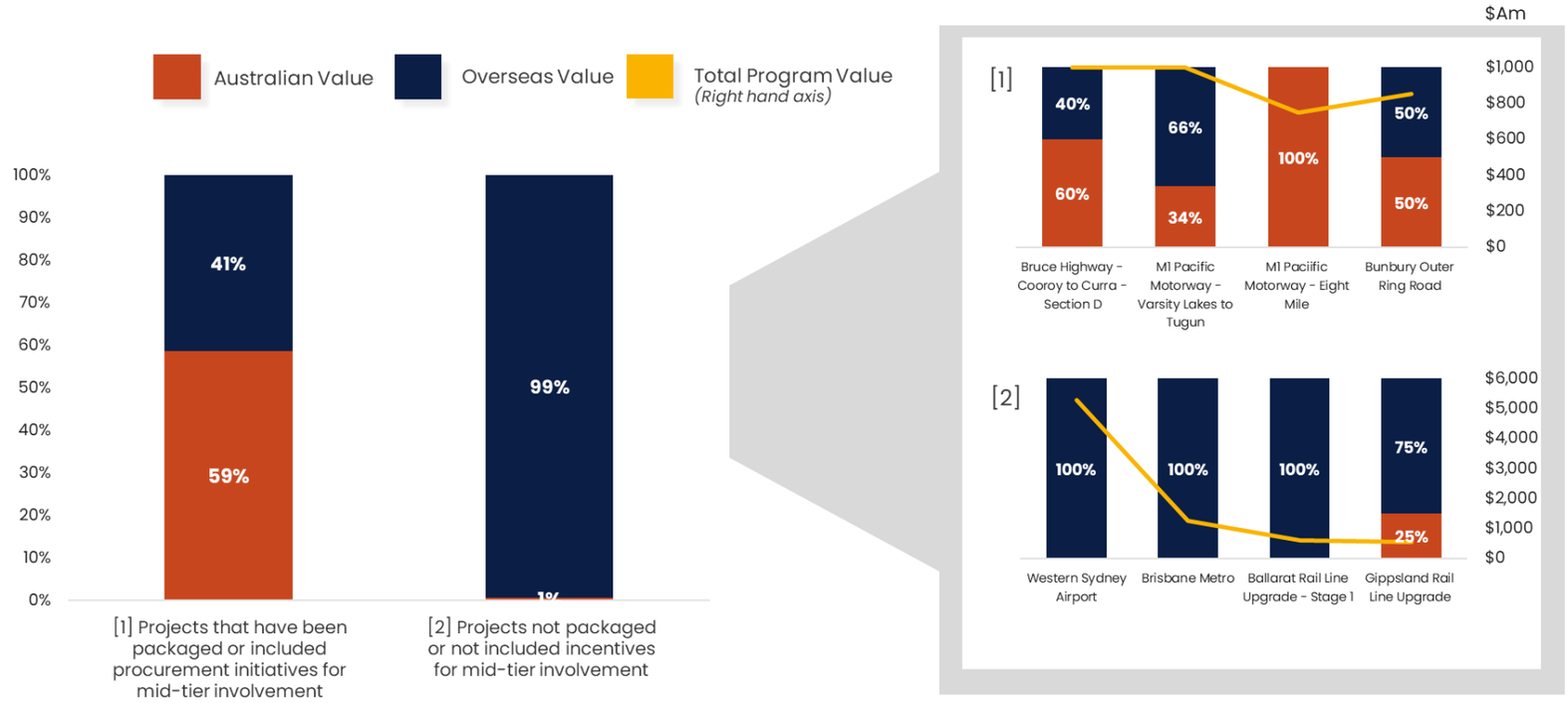
1. The inclusion of "Industry capability" requirements in tenders, promoting mid-tier participation in major works packages;
2. Projects broken into smaller packages of works, allowing mid-tier contractors to increase competition and drive costs down.

Both of these mechanisms have demonstratable positive outcomes for this nation.

As outlined in Figure 11 (and replicated below), when reviewing Infrastructure projects >A$500m where contract has been awarded, construction commenced or completed since the FY2018-19 Federal Budget, there are clear benefits to Australia when projects are packaged, or mid-tier contractor involvement is required.

When there have been requirements included in tender assessments for Australian mid-tier involvement or programs have been packaged into smaller projects, Australian contractors are not only able to participate, but extract significant value. Circa 60% of total contract aggregated value is delivered by majority Australian owned firms, compared to the alternative way of simply appointing a foreign owned tier 1 as head contractor, whereby only 1% of total aggregate value of contracts is delivered by Australian businesses.

Figure 11: Aggregate value of total value of contracts



Source: Churchill independent analysis of AOC data

CONCLUSION

A unique time, with a unique opportunity. The Federal Government needs to ensure it is not squandered.

When considering the unique position Australia currently finds itself as its economy and population transitions from dealing with the fall-out of the initial COVID virus shock in early 2020 to an ongoing rhythm of a "new normal", the Federal Government needs to operate in a manner which demonstrates clear leadership.

Through its large portfolio of budgeted transport infrastructure projects to be delivered over the next 10 years, the Australian Federal Government has the ability to shape the economic landscape for decades to come through ensuring benefits to taxpayers are maximised, competition is encouraged and sovereign capability is strengthened.

Several Australian State Government departments are now starting to understand that better outcomes are achieved through the need to enhance both competition and sovereign capability. They are addressing this by packaging large projects into sizes where mid-tier contractors can meaningfully submit a tender, either as sole head contractors or in partnership with a tier 1 contractor. Alternatively, they are including "industry capability" type criteria in their tender assessments. Some may argue that the States are taking a leading role and that the Federal Government has delegated maximising taxpayer benefit, enhancing competition and developing sovereign capability, to the various States to administer and employ at their discretion.

While this practice and recent change in approach from the various States is welcomed, inconsistencies exist. This approach is not uniform across the country, nor even for every (mega)-project within the same State.

The Federal Government through acting in its capacity as financier has the ability to change this. State based local industry participation policies should be made consistent at the Federal level to enhance local content in major projects.

The Federal Government has the responsibility to take a leading role to ensure best practice procurement of transport infrastructure projects is coordinated across the various States & Territories. This was somewhat acknowledged in the development of the Department of Finance- Commonwealth procurement rules.

While some may question the effectiveness of their implementation or adherence, the principle of ensuring best practice is consistently applied across States & Territories- especially when considering "Value for Money" and "Encouraging Competition" is still valid.

The Federal Government needs to ensure a consistent, best practice framework is developed which can be implemented across all Australian State and Territory procurement departments regarding transport infrastructure projects. This standardised framework needs to consider maximising taxpayer benefits, encourage competition by packaging projects away from mega-projects and developing sovereign capability both within Government as well as the contractor to ensure successful project delivery and enhanced domestic supply chain resilience.

A unique time, with a unique opportunity. The Federal Government needs to ensure it is not squandered.

5. APPENDIX

5.1 FEDERALLY FUNDED INFRASTRUCTURE PROJECTS

Requirement for Project consideration – contract value >$500m, awarded, construction commenced or completed since FY2018-19 Budget.

Project Name	State	Value of Project	Commonwealth Commitment	Lead Contractor	Ownership	Tier	% Overseas	Overseas Value $	Tier One %	Tier One Value $
Bruce Highway - Cooroy to Curra - Section D	QLD	$1,000,000,000	2018-2019 Budget	Contract One - BMD, Bielby Contract Two - CPB Contractors	Australian/ Foreign	Mid-Tier/ One	40%	$400,000,000	40%	$ 400,000.00
M1 Pacific Motorway - Varsity Lakes to Tugun	QLD	$1,000,000,000	2018-2019 Budget	Packages A&C - Seymour Whyte Package B - SGQ, McIlwain and Albem Operations.	Australian/ Foreign	Mid-Tier/ One	66%	$660,000,000	66%	$660,000,000
M1 Paciific Motorway - Eight Mile Plains to Daisy Hill - Package 1 – Sports Drive to Gateway Motorway. - Package 2 – Pacific Highway early works. - Package 3 – Watland Street to Sports Drive. - Package 4 – Rochedale bus station and park 'n' ride.	QLD	$750,000,000	2018-2019 Budget	Package One - Bielby Package Two - Georgiou Package Three - Bielby, JF Hull	Australian	Mid-Tier	0%	$0	0%	$0
Bunbury Outer Ring Road	WA	$852,000,000	2019-2020 Budget	Acciona, NRW, MACA, AECOM and Aurecon	Australian/ Foreign	One/ Mid Tier	50%	$426,000,000	50%	426,000,000
Western Sydney Airport	NSW	$5,300,000,000		Bechtel	Foreign	One	100%	$5,300,000,000	100%	$5,300,000,000
Brisbane Metro	QLD	$1,244,000,000	2018-2019 Budget	Acciona	Foreign	One	100%	$1,244,000,000	100%	$1,244,000,000
Ballarat Rail Line Upgrade - Stage 1	VIC	$601,200,000	Post 2016 Election	Acciona, Coleman Rail	Foreign	One	100%	$601,200,000	100%	$601,200,000
Gippsland Rail Line Upgrade	VIC	$532,800,000	Post 2016 Election	UGL Limited, Decmil	Australian/ Foreign	Mid-Tier/ One	75%	$399,600,000	75%	399,600,000

Source: Source – Answer to Question on Notice 201, Senate Estimates 19 October 2020

5.2 COMPLETED PROJECTS (RYAN & DUFFIELD, 2017)

Project ID	Contract Value (m)	Tendered Profit $	Tendered profit %	Final Profit $	Final Profit %
1	$670	67	10.0%	-110	-16%
2	$1,200	84	7.0%	84	7%
3	$1,000	70	7.0%	20	2%
4	$3,500	315	9.0%	-1200	-34%
5	$583	35	6.0%	11	2%
6	$471	33	7.0%	-120	-25%
7	$500	40	8.0%	38	8%
8	$2,282	251	11.0%	40	2%
9	$600	54	9.0%	-20	-3%
10	$1,550	124	8.0%	-25	-2%
11	$1,111	100	9.0%	100	9%
12	$1,000	90	9.0%	95	10%
13	$667	60	9.0%	0	0%
14	$667	40	6.0%	-240	-36%
15	$988	79	8.0%	15	2%
16	$756	68	9.0%	25	3%
17	$843	59	7.0%	45	5%
18	$1,750	140	8.0%	50	3%
19	$1,633	196	12.0%	120	7%
20	$850	85	10.0%	-230	-27%
21	$1,464	161	11.0%	-90	-6%
22	$4,830	483	10.0%	-1050	-22%
23	$2,000	200	10.0%	65	3%
24	$660	66	10.0%	66	10%
25	$1,957	137	7.0%	-200	-10%
26	$830	83	10.0%	-170	-20%
27	$1,092	131	12.0%	30	3%
28	$1,100	77	7.0%	-30	-3%

5.3 MEGAPROJECTS

Project Name	Value of Project	% Overseas	Overseas Value	Tier One	Tier One Value	State	Lead Contractor
Melbourne Metro	$11,000,000,000	100%	$11,000,000,000	100%	$11,000,000,000	VIC	Lendlease (now Acciona of Spain), John Holland (China), Bouygues (France)
Snowy Hydro 2.0	$5,100,000,000	100%	$4,000,000,000	100%	$4,000,000,000	FED	Salini (Italy), Clough (South Africa)
Pacific Highway - Woolgoolga to Ballina	$4,900,000,000	100%	$4,900,000,000	100%	$4,900,000,000	NSW	Laing O'Rouke (UK)
WestConnex Rozelle	$3,900,000,000	100%	$3,900,000,000	100%	$3,900,000,000	NSW	CPB Contractors (Spain), John Holland (China)
WestConnex 3A	$3,200,000,000	100%	$3,200,000,000	100%	$3,200,000,000	NSW	Lendlease (now Acciona of Spain), Bouygues (France), Samsung (Korea)
WestConnex 2	$3,000,000,000	100%	$3,000,000,000	100%	$3,000,000,000	NSW	CPB Contractors (Spain), Samsung (Korea), Dragados (Spain)
NorthConnex	$3,000,000,000	100%	$3,000,000,000	100%	$3,000,000,000	NSW	Lendlease (now Acciona of Spain), Bouygues (France)
WestConnex 1B	$2,700,000,000	100%	$2,700,000,000	100%	$2,700,000,000	NSW	CPB Contractors (Spain), Samsung (Korea), John Holland (China)
Forrestfield-Airport Link	$1,860,000,000	80%	$1,488,000,000	80%	$1,488,000,000	WA	Salini Impregilo (Italy), NRW (Australia)
Toowoomba Second Range Crossing	$1,600,000,000	100%	$1,600,000,000	100%	$1,600,000,000	QLD	Acciona (Spain), Ferrovial Agroman (Spain)
The Northern Road	$1,584,500,000	80%	$1,267,600,000	80%	$950,700,000	NSW	Georgiou (Australia), Lendlease (now Acciona of Spain), CPB Contractors (Spain)
Sydney Metro - line-wide	$1,400,000,000	100%	$1,400,000,000	100%	$1,400,000,000	NSW	CPB Contractors (Spain); UGL (Spain)
Tullamarine freeway widening section 1	$1,280,000,000	100%	$1,280,000,000	100%	$1,280,000,000	VIC	Lendlease (now Acciona of Spain), CPB Contractors (Spain)
Metrnonet Thornlie-Cockburn	$1,250,000,000	50%	$625,000,000	100%	$125,000,000	WA	Downer (Australia) and CPB Contractors (Spain)
Gateway Arterial Road (Gateway Motorway North) South of Nudgee Road - Deagon Deviation	$1,162,000,000	100%	$1,162,000,000	100%	$1,162,000,000	QLD	Lendlease (now Acciona of Spain)
Sydney Metro - Central Station	$950,000,000	100%	$950,000,000	100%	$950,000,000	NSW	Laing O'Rourke (UK)
Northern Connector	$885,000,000	100%	$885,000,000	100%	$885,000,000	SA	Lendlease (now Acciona of Spain)
Pacific Highway - Warrell Creek to Nambucca Heads	$830,000,000	100%	$830,000,000	100%	$830,000,000	NSW	Acciona (Spain), Ferrovial (Spain)
Pacific Highway - Oxley Hwy to Kundabung	$820,000,000	100%	$820,000,000	100%	$820,000,000	NSW	Lendlease (now Acciona of Spain)
Bruce Highway Caloundra Road - Sunshine Motorway	$812,950,000	100%	$812,950,000	100%	$812,950,000	QLD	Fulton Hogan (New Zealand), Seymour Whyte (France)

Source: Response to Question 201, Department of Infrastructure, Transport, Regional Development and Communications, 19 October 2020.

5.4 ASSUMPTIONS

Calculation	Assumption
Multiplier effect	In analysis of the multiplier effect, it has been assumed that a linear relationship exists between the multiplier constituents.
Decrease in Multiplier	The only decrease in the multiplier effect has been assumed to extend from repatriation of head office costs and profits. In reality this is a conservative assumption as it is likely that on top of this, foreign tier-1's would leverage partially foreign supply chains to procure the relevant goods for a project they are leading delivery of. Speaking relatively, a mid-tier contractor would likely leverage a more locally dominated supply chain.

Calculation	Assumption
Head office coverage costs	Head office costs are assumed constant irrespective of project size. A figure of 5-6% has been adopted for this report, sourced from survey outcomes administered by AOC.
Project profitability	When analysing repatriated profits, the projects considered were those that generated a net positive Final Profit.

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