Background

This is a synopsis of the 2013 Construction Leaders Forum hosted by the Faculty of the Built Environment at the University of New South Wales on November 29th 2013. The forum was supported by the Australian Constructors Association and The Australian Institute of Building.

The forum brought together thought-leaders from across the industry to discuss the common challenges of increasing construction productivity and efficiency.

The aim of the forum was to enable the industry to contribute positively to the government's Productivity Commission Inquiry into costs, competitiveness and productivity in the provision of nationally significant infrastructure. It was also to share ideas which could inform strategy and reform in this important area.

The following is a summary of the discussions. It presents a number of important recommendations to improve the efficiency of procuring nationally significant infrastructure in Australia.

PROPOSITIONS

Professor Martin Loosemore, UNSW, provided some background facts and figures to the productivity debate. Professor Roger Flanagan University of Reading, UK provided an outsider's perspective. John Flecker, Vice President ACA and CEO Brookfield Multiplex Australasia, provided an industry perspective. Glenn Palin, President ACA and Managing Director, John Holland Group Pty Ltd, summed-up the debate and the way forward.

Three broad propositions were put forward for discussion by the presenters:

1) Construction productivity can be improved but any strategy to improve productivity must be evidence-based. Measuring construction productivity and the causes of low productivity is an inexact science and highly contentious. The evidence available indicates that productivity increases evident in the industry have been eroded by cost increases and that our competitive advantage has declined over the last decade. Over this period, Australia has narrowly focused on industrial relations reform while other countries have moved ahead more aggressively on a broader range of fronts. Construction productivity is determined by a wide range of factors and Australian needs a multi-dimensional strategy to improve it. Costs need to be controlled in the 'short-term', but the smart way to build 'long-term' competitive advantage and remain at the top of the international value chain is not to seek a low-wage industry but to increase productivity and increase innovation. This will take leadership, collective vision and a strategy to get the industry to where it needs to be.

2) More of the same is not an option. Australia has to be innovative and think differently. New players will enter the market and bring new ideas. The future is not bleak - it is different. Innovation is the key. The question we should be addressing is - what innovation is required to make the industry more productive and efficient in changing times? Other countries have found that improving construction efficiency and performance is dependent on a whole range of innovations around: procurement; supply chain integration; technology; skills development; collaboration and; design.

3) The industry should avoid the temptation to focus on wages and industrial relations. While industrial relations is an important ingredient in the productivity debate, it is one of many. Meeting the future's challenges will require trust and genuine collaboration between employers and employees. Those who do not accept the challenge to innovate and collaborate will be left behind. There is no evidence to suggest that a strategy of cutting wages and working harder and longer is a sustainable solution to improving efficiency and performance. Low cost nations are often far less efficient and productive than higher-cost nations particularly when the overall wellbeing of society is considered. Good productivity is driven by an educated, skilled and engaged workforce, an efficient work environment, innovation, efficient procurement models and ultimately trust between industry stakeholders.

DISCUSSION SUMMARY

It should be noted that there are significant differences between building and civil construction and to draw generalisations across both sectors can be problematic. Nevertheless, there was consensus that there needs to be collective responsibility for improving productivity and cost efficiency in both sectors. Governments, regulators, clients, firms and unions all have a role to play in improving construction productivity and cost efficiency and the following sections summarise the main recommendations put forward to achieve this end.

WHAT SHOULD GOVERNMENTS, REGULATORS AND CLIENTS DO?

Increase transparency and reduce uncertainty around project pipelines

Industry needs greater political consensus, clearer commitment and more consistency around infrastructure project pipelines, priorities and approvals. Politics comes at a price. Stop-start project programs make it very hard to be efficient, reduce market confidence and increase risk. Prices inevitably reflect this. Certainty of project pipelines is critical for forward planning of resources, for investments in training, technologies and innovations and to enable project teams to refine and optimise efficiency and productivity over time. Sustained investment programs also encourage vertical integration which has been shown overseas to produce lower infrastructure costs by reducing transaction costs in the supply chain.

Australian infrastructure is seen as a sovereign risk overseas because of politicisation of infrastructure pipeline decisions. Infrastructure Australia should be independent of government.

Government, client and contractor associations should also meet more regularly to improve communications around future project pipelines to enable better forward planning for projects. Better joint planning and communication between government and industry will lead to more predictability and certainty of project outcomes.

Provide enough time to plan and innovate

Unrealistic time constraints are the cause of failure in many projects. The adverse consequences of late project commencement and unrealistic project timelines cascade through projects creating a reactive project environment and reducing the time to properly plan, innovate and collaborate. When time is squeezed, people are forced to revert to conservative and historical ways of doing things. Problems become magnified as contractors are forced to do the same down the supply chain.

Causes of increasing time constraints include: increased up-front approval and consultation requirements; politicisation of project commencement decisions; inexperienced clients in terms of contract and procurement models; poor project planning; changes in scope by clients.

Reduce bidding costs

Large projects incur unrealistic and reiterative bidding costs which waste time and resources and which cannot be realistically born by the market without significant knock-on effects in financial loss and contractor/subcontractor failure. There is a significant doubling-up and waste of resources in procuring projects which society and clients ultimately pay for. A good example of this is the overuse of designers. On many large tenders for D&C civil projects there may be up to 16 designers involved. One advising the Client, 1-2 major designers with

each of 3 tenderers. Up to 3 minor designers with each tender consortium. The tender period is around 12 weeks with post tender questions requiring another 3-6 months at times. Each tender can cost about 1% for each consortia. So for a $1 billion infrastructure project $30 million (assuming 3 consortia) will be spent on the tender not including client costs. Some projects will cost even more.

Bundle projects

Bundling projects could deliver significant economies of scale. Overseas experience shows that savings of up to 20% can be achieved by extending contract terms and by bundling projects into one contract. Bundling projects not only allows economies of scale but can reduce bidding costs and enable firms to share resources, knowledge, learnings and logistics between projects leading to less waste, less re-work, increased safety and higher productivity.

Ensure realistic project planning and feasibility

Many projects are doomed from the start because of poor project planning and feasibility. Perverse incentives can often cause project promoters to underestimate costs and overestimate benefits in the business cases for projects. This builds-in the seeds of cost and time overruns and benefits shortfalls.

Review contract and procurement models

Better guidance on procurement and contract model selection is needed for project promoters. Productivity and efficiency is reduced by the use of inappropriate contract and procurement models. There is a need to better align procurement models with project goals, project complexity and client capabilities in managing risk. Many PPPs are 'partnerships' in name only. A risk-transfer culture often results in the inappropriate transfer of risk which results in higher costs and increased chance of project failure as risks are passed down the contract chain to subcontractors that cannot manage them.

Incentivise innovation

The debate should not be about lowering costs but about maximising 'value'. Project team selection should be based on a 'value proposition' rather than lowest price. A focus on lowest price is a disincentive to innovation and advantages firms that do the 'minimum' and rely on traditional methods that will not drive-up productivity and efficiency. Whole of life costing is rarely evident in contracts and many clients struggle to 'value' innovation in bids and tools are needed to help them do so. When low price is the selection criterion innovators are disadvantaged and discouraged. We need to look at alternative models. For example, in the UK the government's new cost-based procurement framework requires consortiums to bid to a cost ceiling by submitting a 'value proposition' for the entire project rather than a lump sum price bid. Price is part of the value proposition but since everyone is bidding to the same price, value is the deciding factor not price.

Early contractor involvement

Significant efficiencies and innovation could be driven by an early contractor involvement model. This could significantly reduce constructor risk and improve productivity and cost efficiency by allowing earlier input into design and up-front project planning.

Reduce indirect costs

Increasing regulation, increasing compliance requirements and growing societal expectations around approvals, consultation and corporate citizenship, are driving-up indirect costs on projects. This has resulted in a significant increase in up-front planning time and non-productive staff. These costs must be reduced. The playing field should also be levelled because major tier-one contractors are often disadvantaged by a greater exposure to these forces, as is any contractor that goes beyond minimum compliance requirements to invest in safety, social and environmental responsibility.

Reduce prescription

There has been enormous effort put into developing specifications and standards that meet client quality requirements, particularly government. While detailed specifications hold contractors to a standard and prevent them from innovating in an uncontrolled manner, over-specifying up-front reduces the scope for innovation. Governments and clients should consider the merits of traditional specification-based procurement versus outcomes-based KPIs around client service needs. This could provide more space for constructors to innovate in developing 'best value' solutions which deliver better long-term outcomes for governments, society and the industry.

More efficient regulation and reduced bureaucracy

Increasing regulation and bureaucracy has added considerable cost and time to projects and reduced the number of staff on productive tasks. There are multiple layers of complex and often overlapping regulations which result in equally layered and repetitive administration. Safety regulation is considered non-negotiable and good safety has been linked to higher project performance. However, regulation in areas such as project approvals processes, community consultation and green tape are possible areas of rationalisation.

While better regulation is important, it is not the answer. Ultimately reform must be market-led and regulation will not change the industry's culture. Clients and the industry have the biggest role to play in driving up productivity and efficiency.

Pre-build enabling technologies

Increasingly, information technologies are key to project integration and success. Governments and clients know what projects are coming. Competing firms will not invest in projects until confirmed as the winner in the bid process. Clients could set up enabling ICT technology infrastructure to the project boundary before a project is awarded. This would help reduce costly operational delays for the winning contractor in the early building stages. It would also facilitate the early adoption of productivity enabling tools and technologies from the project start date.

Encourage collaboration

Clients should appoint 'proven' integrated teams. Consortiums should have to prequalify for projects based on demonstrating successful pre-collaboration. This will minimise problems and delays during the set-up phases of projects and generally minimise consortium-related risk in delivery. Overseas experience has shown that considerable benefits can be derived from stable consortiums which result in stronger internal supply chain relationships, learning efficiencies and stronger client relations.

Greater engagement with BIM

There is a need for greater engagement with BIM which is starting to drive significant improvements in other countries – albeit, more in the building/social infrastructure sector than the economic/civil infrastructure sector. Australian firms are reluctant to invest in BIM until there is more certainty around its adoption, standards and platforms. In the UK, where BIM is being mandated in building, firms have no choice but to invest in BIM and the common platform debate has been resolved.

Build in-house capacity

Governments need to build greater in-house capacity around the effective management of contract negotiations, project decision-making, contractor/client relations and the technical and commercial risks of delivery.

Attach greater value to good design

Good design is greatly undervalued. Good design which links through to productivity and manufacturing and a well-managed design process is critical to productivity. Overseas experience has shown that early contractor involvement in design and standardisation can produce significant productivity and cost benefits without reducing aesthetics and functionality.

Better use of data and analytics

Decision-making would be better informed by better use of performance data and analytics around productivity and efficiency. Governments, clients and industry should invest in more research to provide an evidence-base to inform better decision-making, benchmarking and monitoring of cost and productivity drivers and trends.

A more balanced reform agenda

In reforming its construction sector, Australia has too narrowly focused on industrial relations. This focus has consistently failed to produce any advance in international competitiveness in construction cost efficiency or productivity. The government should initiate a more innovative reform strategy which reflects all factors that affect costs and productivity, now and over-the-horizon.

WHAT SHOULD THE INDUSTRY DO?

Increase predictability of delivery

Clients want certainty and predictability of delivery. Major causes of lost productivity include: interruptions/poor coordination; poor site management/supervision; poor up-front planning; lack of integration in project teams; lack of commitment to productivity improvement; poor skills/competencies; poor design and design management; lack of productivity data and analytics.

Drive greater integration and collaboration

Siloed thinking and production systems are disappearing in other sectors but are still pervasive in construction. There are significant productivity benefits to be gained from a more integrated delivery model from design through construction to manufacturing and materials supply chain to facilities management. Many contractors, designers and facilities managers are capable of this but are often constrained by client procurement models. Organisations which can control and integrate the entire supply chain from design through to construction to facilities management are better able to manage risk and to deliver a whole-of-life solution which better responds to client's needs.

Move to a service-based rather than a product-based delivery model

Lump-sum contracting is being replaced with a game-changing paradigm of a fully integrated service-based delivery model. Clients have a business need and many are happy for the industry to provide a 'service' solution to satisfy that need. Many clients want an organisation that will take entire one-stop responsibility for delivering a high performance asset.

Technology

Increase industry engagement with new technologies which have driven productivity improvements in other sectors. Technologies that offer particular promise to increase productivity include: ICTs to allow people to work more flexibly; Onsite mechanisation; Off-site fabrication; Materials management systems; Automated tracking and GPS; cameras and bar coding technologies; Mobile technologies; BIM and; Augmented reality. Many of these are used in engineering but less so in the building sector.

Improve project management and supervisory skills

Under-investments in training and an aging workforce means we are losing project management skills from the workforce at senior and frontline management levels. Project management skills and frontline management skills need to be improved – particularly in communication, coordination, logistics and execution. There is also a need to address years of under-investment in construction blue-collar worker skills development, particularly in the subcontracted building sector where fragmentation has impacted significantly on investments on people. This could be assisted with greater integration and more stable investment programs.

Deeper supply chain collaboration

In the building sector, subcontractors are typically poorly integrated into projects. The term sub-contracting is derogatory and reflected imbedded mistrust, risk transfer cultures and power imbalances within the industry. A better term would be specialist subcontractors, co-contractors or contract partners. These organisations are key to improving productivity and

should be seen as co-creators and partners in the procurement process through more equitable distributions of risks and rewards. Risks should not be transferred to organisations which cannot manage them. There are many productivity and cost benefits of treating subcontractors as partners and involving them more in up-front decision-making.

Workplace culture is critical

Workplaces need to be set-up to perform highly. High performance workplaces have a clear vision of how to improve productivity and focus on markets which match internal resource capabilities. High performance workplaces combine: strong diagnostic use of performance data; high level of external connectedness to customers, communities and supply chains; strong internal connectedness between functions and levels; effective communication; good employee relations; strong connections between effort and reward; employee participation and empowerment and; fairness and dignity at work.

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