

RELATIONSHIP-BASED PROCUREMENT METHODS FOR PUBLIC INFRASTRUCTURE – THE WAY FORWARD

Jian Zuo¹, Xiao-Hua Jin² and Mark McDonald³

¹Lecturer, University of South Australia, Adelaide, South Australia, Australia

²Lecturer, Deakin University, Geelong, Victoria, Australia

³Site Engineer, Baulderstone Pty Ltd (SA), Adelaide, South Australia, Australia

Correspond to Jian.Zuo@unisa.edu.au

ABSTRACT: Public infrastructure is crucial to promote and sustain a sustainable economic growth and a health community. A large amount of capital investment is generally required in infrastructure projects that motivate the involvement of the private sector in the delivery process. Various relationship-based procurement methods have been attempted to maximize value-for-money. In this paper, the problems and challenges that relationship-based procurement methods have been facing are explored. A particular focus is placed on the challenges for the public-private partnership (PPP) model. Possible strategies for adapting the PPP models in the post-Global Financial Crisis era are proposed and discussed. In addition, the challenges facing alliancing, which is one of the other important relationship-based procurement methods, are also examined. Views on infrastructure procurement in the future were sought from industry professionals via interviews and are reported in this paper as well.

Keywords: Infrastructure Procurement, Relationship-Based Procurement, Public-Private Partnership, Australia

1. INTRODUCTION

The performance of the infrastructure is crucial in achieving economic, social and environmental sustainability in the future, particularly as the pace of urbanisation, resource depletion and pollution increases. Infrastructure plays a key role both in economic development and in social development. Infrastructure projects in general are large scale and create a large number of employment opportunities, which promote the economic growth. In addition, the delivery of (improved) goods or services contributes towards the social development. The level of infrastructure development to some extent reflects the level of economic and social development of a nation. According to the estimates of the Organization for Economic Co-operation and Development (OECD), around an average of 3.5% of world gross domestic product (GDP) needs to be invested on telecommunications, road, rail, electricity and water through to 2030 [1]. Chism's study revealed that less than 15% of business owners worldwide felt that the existing infrastructure is adequate to cope with the future demands of their business [2]. According to Barker et al., \$71 trillion investment is required by 2030 globally to ensure the increasing demands of energy, water, transport and public services associated with population growth [3]. The Global Financial Crisis placed enormous pressure on both the public and private sectors, as the ability to borrow money for an extended tenor was greatly reduced. This paper aims to explore the challenges existing to the current procurement systems for public infrastructures. A

particular focus is placed on the relationship-based procurement methods.

2. NEW CHALLENGES TO INFRASTRUCTURE DELIVERY

The Global Financial has had the effect of establishing new challenges to infrastructure delivery, while at the same time shining a light on the underlying problems which have long existed.

2.1 Financing gap

As discussed earlier, governments in Australia and elsewhere in the world are using infrastructure investment as a way of restimulating the economy while relieving levels of unemployment. A recent study by Citigroup revealed that nationally \$770 billion would need to be spent on infrastructure by 2018. Of this total, it is estimated the private sector would need to contribute around \$360 billion [4]. The underlying problem which exists here is that an increased emphasis on investment is coinciding with a downturn in lending by financial institutions. Due to liquidity strains, banks are only willing to contribute a fraction of what is required to finance a major PPP project. A leading example of this is the Melbourne Desalination Plant. The proposed \$3.1 billion Public Private Partnership project designed to drought proof Melbourne has been jeopardized due to the unavailability of both of the two short listed consortiums to secure the amount of funding required. It has been reported that in the \$3.1 billion, a funding gap of \$1 billion and \$2 billion exists. This has been brought about

by a reluctance of banks to lend in the wake of the crisis, with only between \$300 million and \$500 million being made available by most lending bodies [5].

Australia's 4 biggest banks consist of National Australia Bank, ANZ, Commonwealth Bank and Westpac. It is believed that all four of these players are likely to remain strong throughout the crisis, and will continue to have a major role in infrastructure investment. The main problem which remains is that a big proportion of the competition in the lending market for infrastructure has disappeared with the presence of overseas banks. These foreign banks have retreated back to their home shores to focus more so on their own domestic markets [2]. The example of the Melbourne Desalination Plant is not at all isolated, but a reflection of what is happening widely in both Australia and the world. There have been some remedies suggested to tackle the problem discussed, such as following the trend of the British government and creating a special bank designed to both kick start and bail out struggling PPPs. In March this year, an announcement was made that the UK Government would establish an infrastructure bank of its own. With this, it has pledged £2 billion each year to boost PFI projects. This has however caused speculation as it is feared that removing the component of private finance may jeopardise the 'powerful behavioural incentives' of PPP and PFI deals [3].

2.2 Capacity of Australian market

The capacity of the Australian market for construction and engineering projects is another severe challenge at the present point in time. Out of the world's 225 largest multinational contractors, only 2 are based in Australia [6]. This overall lack of contractors capable of performing large infrastructure projects creates a reduction in competition, which has the effect of driving prices up. The effect of this narrow scope also means there are few organizations with the significant levels of funds needed to bid for major infrastructure projects. Taking these market conditions into account, governments will need to seriously assess the best options for infrastructure development to suit the scenario presently at hand. This will involve paying close attention to which sector, public or private is able to provide better value for money. This can also be categorised as 'internalisation of externalisation' [6].

2.3 Speed of delivery

Speed is another key challenge facing the delivery of large scale infrastructure projects in the wake of the Global Financial Crisis. While the government may be proposing the infrastructure roll out to take place in a timely manner, the ability to negotiate streamlined deals is at a minimum. With the lack of liquidity in financial markets, consortiums which may have preferred contractor status in PPP projects are still unable to execute the contract. An example of this, not unfamiliar to what is happening in Australia is the Singapore Sports Hub project, Singapore. The preferred bidder was announced in January 2008, however still remains in discussion with the government over an alternative

method of financing the development [3]. Although PPP projects are notorious for delivering projects ahead of time for the duration of a project, the actual start can be often delayed by drawn out procurement processes.

2.4 Resource shortages

Resource shortages have long been a challenge to infrastructure delivery, and this creates another hurdle at the present time. In a 2008 study by KPMG, it was revealed that 67% of major project owners around the world are concerned with the quantity and quality of people on offer from contractors [7]. In a similar study, it was also revealed that 50% of executives representing a wide range of industries from around the globe believe that the availability of relevant skills will prohibit the investment necessary to support the long term growth of their businesses [2]. Combine these existing shortages with the significant global 'ramp up' in infrastructure investment and the problem is multiplied as already scarce resources need to be distributed over even more projects. Countries using the infrastructure investment mechanism to restimulate their economies are attempting to do so in a speedy manner. This creates another challenge in relation to resource availability.

2.5 Statutory constraints

Another challenge which will undoubtedly cause great speculation in years to come is the proposed Carbon Pollution Reduction Scheme (CPRS). This scheme is designed to make corporations more responsible for their carbon emissions. This scheme will enforce industries to buy a 'pollution permit' for each tonne of carbon emissions they release in to the atmosphere [8]. This initiative will greatly impact both the energy and transport sectors. In a recent report by Infrastructure Partnerships Australia and German engineering giant Bilfinger Berger, it was revealed that it is likely to cost \$120 billion to bridge the infrastructure gap which would see conformance to the CPRS in transport and energy sectors [4].

3. PUBLIC PRIVATE PARTNERSHIPS

3.1 Concept of PPPs

Public-private partnership (PPP) is a method of procurement where private sector capital is used to fund an asset. Public Private Partnerships are a form of contract where the Private Sector is given responsibility for the delivery of infrastructure and related services which would otherwise be provided by the government [4]. They are used most frequently on major assets and infrastructure procurements [9]. Part of the arrangement will usually include a service arrangement, whereby the private sector will be responsible for part or all of the service requirements the asset or infrastructure may have. The private sector consortium will be reimbursed over a stipulated concession period for the performance of services. Generally they can be divided in to two different forms, i.e. economic infrastructure PPPs and social infrastructure PPPs. Economic infrastructure generally includes developments which improve productive

capacity such as toll roads, rail systems, power stations and water treatment plants. Social infrastructure provides improved services to the public, and generally includes correctional centres, hospitals and schools. Public Private Partnerships can provide the government with an opportunity to provide critical infrastructure services in a timely manner. This in turn has the effect of increasing productive capacity and improving facilities and services available to the public.

There are some proven advantages in the use of PPP procurement, as there are incentives for both sectors to provide optimum levels of service. It allows the party which is best equipped to handle risks to do so. In Australia, there are many instances of PPPs ranging from economic infrastructure projects such as toll roads, to social infrastructure projects such as schools and hospitals. Risk allocation at the start of a project is typically the factor which decides success or failure. Risks can relate to the anticipated user levels of a facility, or the ability of the assigned party to manage risks. There are instances of projects in Australia where risks have been poorly managed, and as a result the project has failed. An example of this is the New Southern Railway Project in Sydney, where demand risk was poorly managed, meaning that the project never became viable [10].

3.2 Traditional challenges facing PPPs

3.2.1 Approvals, legislation and other legal issues

Considering the different structures in place for approvals, legislation and legal issues, it is apparent that problems exist all over the world. Using China as an example, there can be up to 30 different government bodies which have authority and approval powers [11]. These government bodies may be arranged in a hierarchy similar to Australia's, ranging from federal level, all the way down to state. With so many authorities having a stake in a potential PPP project it is easy to see how conflicts of interest can occur. This opinion is supported strongly by Algarni et al. who revealed in a U.S study that 11% of respondents to a survey would not use a Build Operate Transfer (BOT) form of contract due to the unavailability of legislation which allows them to do so [12]. In most instances the process involved to pass legislation for a privately financed project is long and drawn out. This notion of extensive bidding times is supported by a study carried out by Carrillo et al. where the average duration between the expression of interest stage and selection of a preferred bidder for a transport project in the U.K is almost 13 months [13].

Political influence is another reason that bidding times are drawn out, as public support is generally a prerequisite for a project to go ahead. Algarni et al. argued that social support is one of the most critical success factors for a PPP project [12]. This creates a political hurdle as politicians are sensitive to the level of public support towards privately financed projects, and are likely to act accordingly. Obviously there are some distinct hurdles which are standing in the way of a simple framework for PPP projects. Carrillo et al. pointed out

that the most effective way of ironing out all of the inefficiencies which currently exist within legislative frameworks is to share knowledge between projects [13]. The concept behind this is that knowledge levels will increase as the use of PPPs progresses over time. It is believed that through the development of this knowledge, a more defined and clear framework will likely exist, making procurement a lot simpler than how it is currently perceived.

3.2.2 Risk sharing between public and private sectors

Risk sharing is a critical success factor to any PPP project and involves an optimal distribution of risks between both parties. One of the most common forms of risks facing a PPP project is 'demand risk'. The project may be unfeasible if the anticipated rate of usage does not eventuate [14]. Ideally, the party being assigned any form of risk should be the most capable of managing it. Important factors to be considered include: whether the party is fully aware of the risks it is taking on, does it have the appropriate resources to manage them and whether they have been given the opportunity to price for it accordingly? The ignorance of these factors likely results in inflated risk premiums, and a greater likelihood of occurrence of risks in PPP projects [10]. In short, it is essential to have a mutually acceptable risk allocation scheme to be agreed on before award of contract for a project to meet its value for money objectives [15].

3.2.3 Level of knowledge within the public sector

The level of knowledge held by the Public Sector presents another major challenge to the use of PPPs. There is generally a lack of understanding and receptiveness from government organisations as they are normally more familiar with more standard forms of contracts. Exploring new financing and delivery methods such as those involved with a PPP is likely to subject them to uncharted risks. There is a general resistance to change within government organisations, and as a result there is a general lack of 'institutional infrastructure' in place to procure these projects [12]. Akintoye et al. further argued that this lack of knowledge and experience is also shared by the private sector [16]. The difference in levels of knowledge between public and private sectors was highlighted in a U.K survey by the National Audit Office which showed that on average, the years of experience working on Private Finance Initiative (PFI) projects was 7.3 years for those from the private sector and 5.4 years for public sector participants [13].

3.3 Alternative adaptations of PPP models

3.3.1 Adaptation 1: The use of PPPs will be vital, but with some concessions

There is some literature emerging which takes a contemporary view of the Global Financial Crisis and its likely effects on Public Private Partnerships. All sources firmly maintain that the use of PPPs for infrastructure delivery post Global Financial Crisis will be critical. This is supported by Vann, who claims 'the astute use of PPPs will be more vital than ever in the current economic

climate' [17]. McCallum echoed these sentiments by stating 'The demonstrated cost and time certainty advantages of PPPs are particularly valuable in the current environment' [18]. Both sources concede that the PPP model currently in operation is not flawless, but rather will need to be refined in some ways in order for it to operate effectively. This will involve some changes to the attitudes of governments, particularly in regards to current legislation. Some financial assistance may be required in order for projects delivered under this model to get up and running. This is also known as the 'public debt model' in which the public sector provides some initial capital to get the project started by attracting private finance. Due to the fact that the financial crisis has restricted the ability of the private sector to get sponsorship for projects, McCallum proposes that the government provide short-term liquidity until the market picks up [18]. This concept of using government assistance has proven to be successful in various parts of the world and can consist of different forms. Guarantees can be offered to the private sector such as a minimum traffic guarantee. This will ensure that guaranteed minimum revenue is generated by the operator for a proportion of the concession period. A different form of assistance exists in the form of an initial government grant, where the government may contribute a percentage of the project value. An instance of this occurring was The Linha Amarela Expressway in Rio de Janeiro 1994 where a government grant of US\$112 million was contributed towards a total project value of US\$174 million [19]. Both of the discussed forms of government assistance are an effective risk sharing tool. The benefit of this assistance is of particular importance at a time when market risk threatens the potential for private investment to infrastructure projects. Ferguson and Hewett argued that the likelihood of this type of government assistance is remote at the present because money available through the Building Australia Fund has been depleted [20]. It is stressed that further borrowings from the federal government will be unlikely as it is running at a deficit due to the need to finance the states borrowings. This will undoubtedly restrict the availability of public liquidity to kick start PPP projects. Alternative to this, another option would be to abandon funding competitions for contracts until after the award of a preferred bidder, as there are not enough banks in the market to support more than one bidder [18]. This government assistance is only viewed as a short term solution, as the current problems which exist are only expected to be around momentarily until the market picks up.

3.3.2 Adaptation 2: Suitable categories of investment for private investment

In terms of categories of investment, McCallum has the opinion that social infrastructure is presently the safest form of infrastructure investment [18]. By the term 'social infrastructure' it is meant assets such as schools, health services and prisons. The reason these are seen as a safer investment option is because they do not rely on user tolls, and instead depend on 'rent' paid by the

government for their operation and maintenance. With social infrastructure, there isn't the patronage risk that is present with toll roads. An example of a social infrastructure investment project that has been recently awarded is a \$1.1 billion contract to Leighton Contractors for the construction and maintenance of 7 state schools in Queensland. This project is one of the first instances of the 'supported debt model' in Australia, which was discussed earlier. The project will incorporate fully underwritten private sector funding from NAB Capital, alongside public sector funding from the Queensland Treasury [21]. This schools project is a viable option for the Queensland Government who is expecting budget deficits for the next 2 years after their resources boom has declined. Through the use of private capital, and some assistance from the public, it has been possible to raise the required capital for this project. Another positive of this specific PPP in the context of the current economic crisis is the generation of over 2150 jobs over the 4 ½ year construction period, and many more during its 30 year ongoing maintenance period [21].

3.3.3 Adaptation 3: Private sector involvement is unlikely to continue

In review of the sources discussed above, a shared view is that the use of PPPs will be critical in order for Australia to rebuild its economy through infrastructure, albeit with a slightly different type of arrangement. This arrangement will potentially see assistance from the government with a proportion of funding in most instances. There is however, some literature circulating which is more suspicious of the practice of PPPs and preaches that the use of them will come to an end as a result of the financial crisis.

Those who question the future use of PPPs believe that the involvement of the private sector in key infrastructure projects will diminish as financially they will become uncompetitive. Governments are able to borrow at much lower rates of interest, and in some cases none. The possibility of the private sector being able to offer a cost competitive alternative is said to be completely out of the question. It is also feared that the risk premium for corporate equity will be high for many years to come, meaning that resorting to private finance instead of public will be prohibitively high [22]. Most sceptics do however feel that the private sector will continue to have a significant role in the delivery of infrastructure projects. It is proposed that an ideal model would be for the private sector to tender for contracts at a fixed price, and hand the asset back to the public sector upon completion. Private sector involvement after completion is seen as desirable, in the form of maintenance for a stipulated amount of time to ensure high levels of quality. The new model of infrastructure delivery which has been proposed stipulates that it will be necessary for the public sector to apply user charges for public assets such as roads, and that these charges should reflect the social costs of things such as road congestion, and the need for a continuing return on capital assets [22]. Another scenario potentially exists where the public sector could take over unviable assets, which were previously privately owned. In the new

financial climate, governments will need to increase revenue substantially to meet the obligations of their expanded role. The levying of user charges will be necessary in order for the public sector to service the debt associated with the large deficits and capital expenditures required to resolve the crisis [22]. This particular paper suggests a different integration between the two sectors, where they both have important roles to play to ensure infrastructure delivery continues to progress in a timely and efficient manner. Sutton took a different and more cynical approach.

By claiming that 'our leaders worshipped a false god in PPPs', Sutton seems to think that Public Private Partnerships have represented poor value for money for the public the whole time they have been in existence [23]. This has been brought about through a lack of competition as most deals have been dominated by a pair of financial engineers, (Macquarie and Babcock) and a pair of contractors (Bilfinger and Leighton). Quiggin proposes that the way forward is for the government to establish a national infrastructure financing corporation, which can facilitate better deals. The idea is for this public sector organization to attract private equity such as superannuation. McCallum shared this view. He quotes Paul Oppenheim in his paper stating that 'PPPs are an ideal investment for superannuation funds because they both have long term liabilities and projects tend to be low risk, an inflation hedge, and have a predictable yield' [18]. Research performed in the UK similarly supports this view with a report by Standard and Poors finding that out of 5000 global infrastructure projects performed between 2004 and 2007, less than 1 percent experienced a default [2]. In the case of PFI projects typical to the UK, risk is perceived as being even more minimal. The reason being is because UK PFI projects are generally governed by availability risk instead of demand risk. In this scenario, availability risk refers to whether the asset is fully operational and available for use. Demand risk refers to whether levels of usage eventuate to what has been budgeted for. Clearly availability risk is much more predictable than demand, which reinforces the perception of PFIs being a safe investment option.

4. ALLIANCING

Alliancing is a form of relationship contracting which has gained widespread popularity in Australia over recent years, with 9 out of 50 projects in 2001 being delivered under this method [24]. The concept of alliancing was introduced globally in the 1970's, but more dominantly in technology intensive industries such as computers and semiconductors. The competitive advantages of alliancing continued to grow in recognition over the years, and in the mid 1990's it was reported that globally the volume had increased by 25% [25]. Alliancing takes the form of a business strategy whereby the client and commercial partner's objectives are aligned [26]. The elements which an Alliance is comprised of are portrayed effectively in a model put forward by [27]. The term 'soft' and 'hard' elements refer to the nature of any Alliance, and attention to these will dictate the level of success. 'Hard elements'

include the formal contractual and legal responsibilities, and the notion of real sharing of pain and gain. 'Soft elements' refer to the more interpersonal level of alliancing, such as; building trust, alignment to common goals, win-win philosophies, team building workshops and agreed dispute resolution methods.

Clearly there are some key characteristics and elements which are the fabric of any successful Alliance. The question lies however, 'What role will alliancing and relationship contracting delivery methods have in the delivery of large scale infrastructure in the wake of the Global Financial Crisis?' And what features of alliancing are particularly attractive at this time?

Alliancing has continued to be a dominant means of delivering large scale infrastructure projects since the emergence of the Global Financial Crisis, particularly in the Eastern States of Australia such as Victoria and New South Wales, and this is because alliancing has proven merits. It is argued by infrastructure expert John Cooper that the benefits of alliancing lie in the fact that things keep moving. There is not the elongated bidding times which are typically encountered with PPPs. This is of particular significance at a time when infrastructure delivery in a timely manner is of high importance to the government. Another positive is that more value can be achieved through alliancing than other forms of contracts at the present due to the Financial Crisis. Presently the transfer of the majority of risk to the private sector is difficult to achieve, and also very costly in the form of risk premiums. Alliancing avoids this problem as both client and private sector organisations share the risk and rewards evenly. It is predicted that with the infrastructure roll out that will take place over the coming 2-4 years, resources are likely to become scarce. The collaborative approach which alliancing takes is more efficient at using scarce resources and maximising the potential of participants.

It is evident that there exist some strong characteristics of alliancing which are well suited to infrastructure delivery in the current environment. There is however some literature circulating which highlights some of the shortfalls and dangers that can be brought about. Alliances have a risk of failure when the allocation of incentives and sanctions to each party are not executed properly. Similarly, the nature of the relationship between the public and private parties is extremely close. Sometimes this can create problems as information sensitive to each party can be revealed [24].

Alliancing is often termed as a collaborative approach to infrastructure delivery. Other collaborative methods which are used in a South Australian context include Early Contractor Involvement (ECI) and Managing Contractor delivery. In South Australia there are very few examples of Alliances being used. The closest resemblance to an Alliance to date is the Gallipoli Underpass project where an ECI method of delivery was used. This is very similar to an Alliance, however slightly differs as it does not have all of the components of one. ECI is more of an advisory role by the contractor to the government at the early stages of a project. There is not the same type or risk sharing that an Alliance has,

however it is still very collaborative. Managing Contractor delivery has been quite popular in South Australia for the past few years, and continues to be used, however mainly with building projects.

5. INDUSTRY PRACTITIONERS' VIEWS ON CHALLENGES TO INFRASTRUCTURE PROCUREMENT

All respondents commented that collaborative forms of infrastructure delivery will prevail as the most used form in 5 years time. These interviewees were however not completely aligned on what specific form would be used. The different variations put forward included both Managing Contractor and alliancing. In two instances these forms of delivery were discussed in regards to the anticipated resources boom due to occur in 2014.

Interviewee A took more of an approach towards the delivery of road infrastructure projects and discussed the recently completed road project as an example. This particular project was delivered under an Early Contractor Involvement model to take advantage of innovations available to them early on in the process. According to interviewee A, in SA terms, alliancing does not yet have the same sort popularity as it holds in the eastern states. He pointed out that the spectrum effectively moves from Design and Construct on the left, through to Managing Contractor in the middle and alliancing on the far right. SA is currently in the middle of this spectrum and slowly moving to the right. Interviewee G has a similar opinion in that alliancing will emerge as the most dominant form of delivery. This belief is owed largely to the Olympic Dam expansion scheduled to take off in the next 5 years. It is believed that this will make resources scarce, resulting in inflated construction costs. The government will therefore find it difficult to find people to work on construction projects under a traditional Lump Sum basis. Interviewee G envisages that there will be swing towards alliancing due to the fact that the government will be looking to cut costs by reducing resources. They will instead become more reliant on the contractors expertise to deliver infrastructure projects.

Interviewee E discussed the likelihood that the resources sector will rebound strongly, particularly in SA and WA. According to him, this is an area where PPPs generally do not have a place. Believing that SA does not have a strong interest in Alliances, he commented that a Managing Contractor form of delivery is likely to emerge as the most widely used form. The reason this interviewee doesn't think that alliancing will be explored in this state is because of the government's attitude. He stated that the public sector has a chronic unease where they have an attitude of 'we have to tender work'. This often results in them opting for the 'lowest price' and not the 'best price', disregarding potential savings over the life of the project. Because of this perceived scenario, interviewee E perceived that there is no way Alliances will stand up to public interrogation.

Interviewee B and C, both of public sector background focussed more on the delivery of social infrastructure projects such as schools and health care facilities. Both

feel that the Managing Contractor form is more integrative discuss it at lengths with reference to the GC-21 agreement. Interviewee C stated that this will become more popular as alliancing is too 'full on'. With alliancing, governments can feel vulnerable as they bring the private sector 'in to the loop' a bit too much. With Managing Contractor forms, a high degree of transparency between the parties is achieved without getting too personal.

Both interviewee B and G pointed out that a better relationship would be achieved if the government explored more collaborative methods of delivering infrastructure projects. Interviewee B referred two health projects currently underway where a Managing Contractor form of delivery is adopted. He praised this approach as there is one team working collaboratively and the whole process is a lot more transparent. All controversial decisions are aligned and signed off by all. Interviewee B stressed that this type of situation needs to be created whereby both parties will stand by all decisions regardless. Interviewee G took the angle that the government should become more receptive to Alliance type contracting for infrastructure delivery where applicable. This is a method which is currently in strong favour in the eastern states of Australia. He stated that the government needs to 'let their guard down' and get rid of their inbred fear of being 'ripped off'. It is felt that they don't often perceive Alliances to be good value for money as they are aware of the margins contractors are putting on. This is a short sighted approach as they fail to consider the long term value that can be achieved through this method. According to interviewees, the government needs to become more responsive to change and they need to think laterally.

Table 1. Interviewee profiles

Interviewee	Sector	Years Experience	Example of Project Values Worked on
A	Public	30	\$100m +
B	Public	44	\$20m +
C	Public	25	\$1bn +
D	Public	30	\$1bn +
E	Private	30	\$1bn +
F	Private	20	\$1bn +
G	Private	25	\$1bn +
H	Private	38	\$1bn +

6. CONCLUSIONS

The Global Financial Crisis has massive impacts on the construction industry. It has been established that the government is using a debt approach in an attempt to insulate Australia from its full effects, with a major focus being investment in infrastructure. This seems to be a well targeted approach, as infrastructure investment creates jobs and upgrades infrastructure stocks to a more acceptable level than what they currently are. Public Private Partnerships have emerged as a common method of infrastructure delivery over the past twenty years. The reason PPPs were scrutinized heavily lies in the fabric of their arrangement. Unlike public sector infrastructure spending, they are reliant on the private sector sourcing substantial levels of finance. Obviously with the Global Financial Crisis this has become far more difficult and expensive.

This research adopted a multi-facet qualitative approach, i.e. critical literature survey and semi-structured interviews to investigate the challenges to the delivery of infrastructure under the current economic environment. These challenges related to the approvals, legislations, risk sharing and knowledge within the public sector. Apart from these traditional challenges, a new set of challenges exist such as the finance gap, capacity of the Australian market, speed of delivery, resource shortages and statutory constraints. The results showed that the way forward through the crisis may be to utilize more collaborative types of infrastructure delivery such as Alliancing, Managing Contractor and Early Contractor Involvement. There was a strong consensus from interviewees that these would be the most used form of delivery because resources are likely to become scarcer in the near future. It is anticipated that both South Australia and Western Australia are likely to experience mining booms, meaning that there won't be the required numbers of people to work on government projects. This is likely to have the effect of increasing construction costs, meaning that the government will potentially try to cut costs by reducing resources. This could result in a swing towards collaborative delivery methods as the government becomes more reliant on private expertise.

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