

# INFRASTRUCTURE DEVELOPMENT USING ALLIANCES: LESSONS AND OBSERVATIONS

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This research provides a deeper insight into the performance of Alliances for the construction of road, rail and water projects. The results review 18 public infrastructure projects across Australia that utilized the Alliance form of procurement. The results were based on interviews which addressed the most important management issues impacting on the performance of Alliances. The respondents were selected from a sample of members of the Alliance Leadership Teams (ALT) and the Alliance Management Teams (AMT) that had recently completed a range of infrastructure projects. Results revealed that communication and trust between the ALT and AMT teams was a major issue that impacted on the effectiveness of the Alliance. Further, the research identified several factors that are necessary preconditions for the Alliance to be successful. The study reported on the perceived performance of Alliances to deliver in the key areas that was identified by the client organizations prior to commencement of the project. There are an increasing number of international organizations contemplating construction projects using “Alliancing”. The results of this paper will assist clients in making more informed decisions about the possibility that this form of procurement will be effective in meeting the needs of the project and its stakeholders.

Keywords: alliances, Australia, infrastructure, procurement.

## INTRODUCTION

Team work and collaboration have always been part of the construction process, however past research has often criticised the manner in which projects are package up and how design and construction teams are formed (Walker *et al.*, 2002). Infrastructure projects involve a high degree of integration between design, construction, and operations groups. Based on principles of collaboration and cooperation, the alliance relationship contracting strategy has been found to be more successful than the traditional transactional approach in effecting integration between the diverse groups involved in delivering projects. The development of the relationship is critical to alliance performance in terms of meeting project objectives and delivering project outcomes (Monczka *et al.*, 1998).

The field of relationship based procurement spans a range of types of procurement processes, from the very simple to the relatively complex. At one end of the spectrum lies early contractor involvement (ECI) to provide buildability advice (Alliance

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Association of Australasia, 2010; Griffiths and Sidwell, 1997) which then leads to a form of fee-based construction management or competitive tender project delivery.

In the middle of the spectrum lies procurement with collaboration through partnering arrangements where the client, contractor and consultants agree to collaborate and adhere to a mechanism of resolving potential disputes and conflicting priorities within a structured way that seeks a win-win situation (Naoum, 2003; Walker *et al.*, 2002). However, as Bresnden (2007) argues, this form still has its weakness in failing to align objectives on a best-for-project (BfP) basis as inevitably a firm's duty to its shareholders overrides partnering best intentions.

At the most integrated end of the spectrum in terms of aligned relationship-based behaviours lays project or program "alliances". In this form each partner in the arrangement pools risk and profit opportunity in an agreed way and these are realised through project rather than individual firm performance. 'Gain and pain' is collectively shared and is related to the project meeting its contracted performance.

In alliancing each member places their profit margin and reward structure "at risk", and consequently, the entire alliance entity either benefits together or lose all (Walker *et al.*, 2002). This creates a motivation to collaborate and cooperate within the alliance relationship. Alliances work on the principles of mutual trust, commitment and communication to reduce conflict and enhance productivity and overall performance (Lee & Cavusgil, 2006).

Project alliancing is formed expressly for the purpose of achieving mutual goals in the delivery of the project and is mainly used for major infrastructure and other large projects where there is high level of complexity as well as good opportunity for innovation. Therefore, more research is needed to explore how communication trust affects the AMT and ALT teams which are formed specifically for the purpose of project alliancing. This procurement form will be the focus of the paper and it is argued that the level of trust, commitment and collaboration is facilitated by the alliance agreement and the way that it is enacted.

## LITERATURE REVIEW

Alliance is an agreement between two or more entities that would work cooperatively and on the basis that risk and rewards are shared for achieving agreed outcomes. It is based on principles of good faith, trust and an explicitly open-book approach towards costs (Cullen *et al.*, 2005).

The relationship among alliance members is identified, established, maintained and governed so that objectives of all parties are met (Cullen *et al.* 2005). Trust building and its maintenance, project commitment over its whole and generation and evaluation of mutual goals are at the heart of this relationship. Unlike traditional types of procurement where the focus is on maximizing individual outcomes, alliances work on the principles of mutual trust, commitment, and communication (Lee and Cavusgil 2006) to reduce conflict and enhance productivity and overall performance.

A clear distinction between Alliancing and traditional approach is that all alliance parties are involved from very start in the planning of the project. The early involvement of contractors in the design phase helps resolve constructability and buildability issues (Furneaux *et al.* (2009). Love *et al.* (2010) identified several success factors for price competitive Alliances. That has been reported in the Literature. These are; i) Management and Support, ii) Collaboration and Cooperation, and iii) Knowledge and Learning Factors

Management and support takes into account top management support, resources, workshops, alliance partners agreement and continuous improvement (Love *et al.*, 2010, Walker *et al.*, 2002). This is heavily influenced by the management and leadership of the alliance teams.

Collaboration and cooperation involves open communications, trust, effective coordination, alignment, team building, and creativity (Black *et al.*, 2000; Love *et al.*; 2010). Collaboration and cooperation is often described as the best for project (BfP) factors. Love *et al.* (2010) believes that it involves the establishment of personal relationships between team members was identified as being important in encouraging frank discussions without the fear of any lingering grudges. Good relationships were believed to enable decisions to be made readily with regard to issues that arose during the project's life cycle.

Knowledge and learning factors encompasses learning climate, commitment and joint problem solving According to Love *et al.* (2010) innovations were deemed to be most effective when they were identified during the formation and operation phases of an alliance. Such innovations, however, are typically identified from experiences and lessons learnt from project reviews undertaken in previous projects.

Infrastructure projects that involve a high degree of integration between design, construction, and operations groups commonly benefit from collaboration and cooperation. As a result the alliance relationship contracting strategy has been found to be more successful than the traditional transactional approach in effecting integration between the diverse groups involved in delivering projects (Love *et al.* 2010). Further, Purcell and Ross (2005) consider that project alliancing is generally suitable for the projects which are complex, high-risks, have strict time lines, myriad of stakeholder issues and external threats.

Alliances are perceived to deliver Value for Money (VfM) however in public sector in Australia it is being questioned and examined. The argument is that alliances do not have price competition and cannot be cost effective when compared with non-alliance projects. One reason for this debate is the Value in alliancing lacks the tension of price competition (Ross 2008), and can never be as cost effective as non-alliancing projects as they are established on a collaborative and negotiated basis. The argument stems from the fact that is very hard to conceptualise VfM for there are no generic measures to value (Wood and Duffield 2009).

## **METHOD**

As qualitative research, the authors were interested in the responses of the individual project participants and how they and their alliance team perceived the success of the project. The data collected utilised a structured interviews of 18 alliance projects or cases. The project used a structured telephone survey technique to gather data on each of the cases. All projects had recently been completed in the previous year, and respondents were asked to provide actual data from the project, or reflect on their experience.

Participants for the survey were drawn largely from the membership of Alliance Association of Australia (AAA) and contacts known to Chief Executive Officer. From a total target pool of 58 projects, responses were received from 14 persons representing 18 Alliances. All projects were large and complex public infrastructure projects, including motorways, water treatment plants, major bridge upgrades, and desalination facilities. Project values ranged from AU\$17 M to over AU\$600 M

Given that each project was unique, the research methodology adopts the comparative case-based approach, and as such can draw out issues and themes informed by the findings of cases included in the study. The participants were first identified by AAA and then invited to participate in the project. An email was sent to all potential participants, outlining the research approach, and attaching a Plain Language Statement (PLS), consent form and the list of questions. Participation in the survey was voluntary. All responses were confidential to the interviewer. No participant or project can be identified by their response.

The next section presents the results of the 18 cases, including the sentiments expressed by each of the respondents on the performance of the alliance project. In addition, the respondents were quizzed about their perceptions of the alliance procurement process compared with a Design and Construction approach to project.

## **RESULTS AND DISCUSSION**

The interview included a series of 25 structured questions, which were segmented into three broad areas; Alliance Performance, Commitment to Best for Project and Value Delivery (See Appendix). The first area included mainly quantitative responses and allowed for additional contextualising detail where required. The second area asked respondents to rate the performance of the AMT and ALT on a Likert scale from 1 low to 5 high. Additional contextualising detail for each question was encouraged, but not mandatory. The third area reviewed the Value Delivery proposition and in particular sought to identify the differences between Alliancing and Design & Construct (D&C) procurement methods.

### **Alliance Performance**

The research sought data across two broad areas of performance in Alliances: namely cost, and time. The results (Figure 1) show that projects ranged from 11% under the Target Outturn Cost (TOC) to 128 % above. However, it should be stated that 12 of the 18 project were within 10% of the TOC. In instances where the final TOC came in under the initial TOC, represented by the negative percentages in figure 1, the primary reason for this was as a result of innovation (identified through the construction phase) or as a result of accelerated processes. Other reasons included favourable weather conditions and having good quality assurance processes in place.

In those instances where the project came in over the initial TOC, the primary reason cited was as a result of (client directed) scope change. Respondents noted that results associated with comparing initial TOC with final TOC did not necessarily tell the whole picture, and those projects with significant TOC overruns, also performed very well against the KRAs.

The results in Figure 2 show the time performance of the alliance projects. This data represents the percentage difference between the planned project duration and the final duration. Respondents noted that approximately one third of the Alliance projects came in under time, and one third came in over time. The remaining third were on time. In the instances where projects came in under time, innovation (including accelerated processes) and methodological change were cited as the contributing factors. Where projects came in over time, scope change was cited as the primary contributing factor. It also should be noted that in some instances where projects exceeded the estimated duration, this was not necessarily considered a failure, but rather a result of scope change which resulted in an improved final product. The

Alliance methodology was considered by respondents to be a process that has sufficient flexibility to address changes in scope in a positive manner.

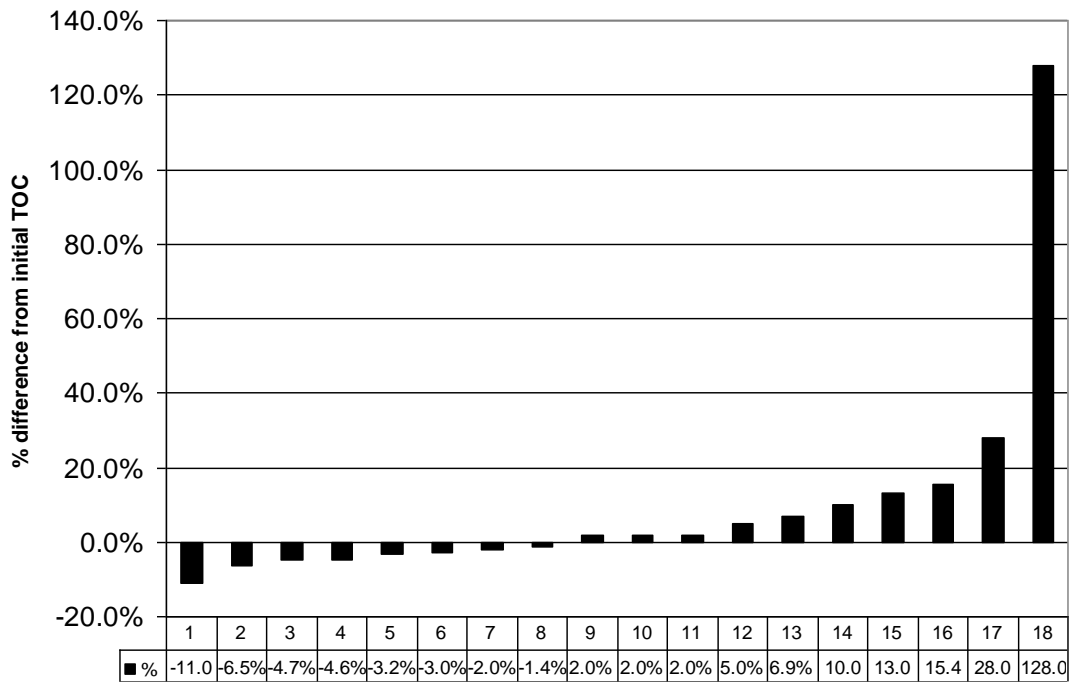


Figure 1: The difference between the initial Target Outturn Cost (TOC) and the final TOC

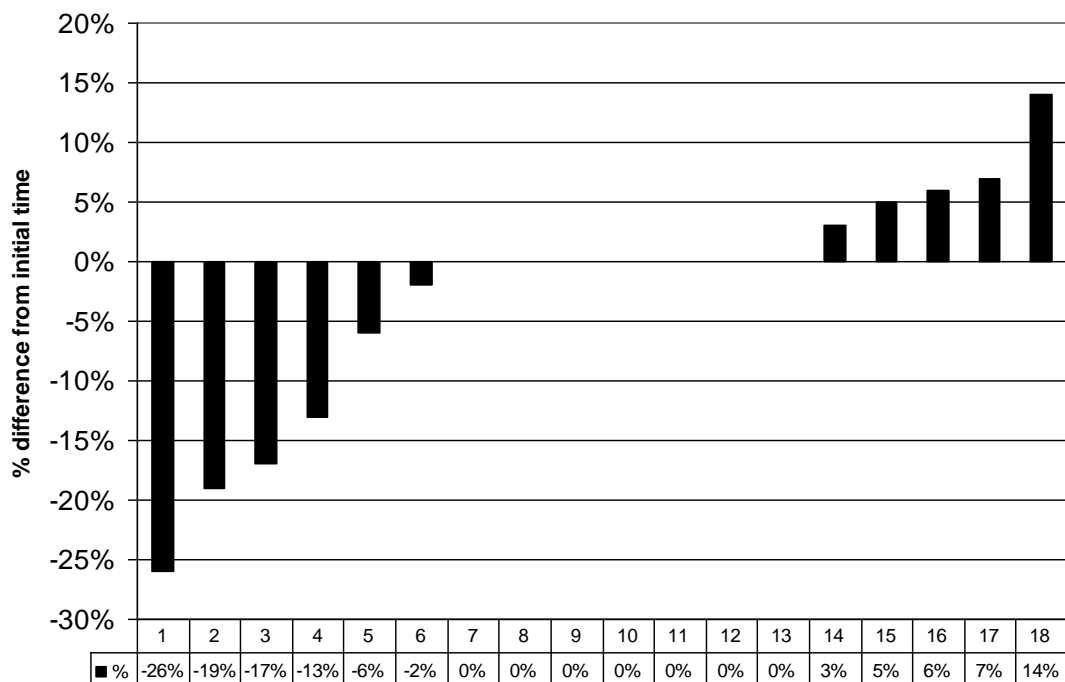


Figure 2: The difference between the planned time duration and the final time duration

### Commitment to Best for Project

Past research has shown that a critical factor for success in alliances is the ability to collaborate as teams. In particular, the ability of the Alliance Leadership Team (ALT) to work cooperatively with the Alliance Management Team (AMT). Research by Love, Mistry *et al.*, (2010) states that the development of a leadership enriched

culture "where people view the project as an extension of themselves and feel good about what they personally achieve through cooperation" was deemed necessary for the successful implementation of a price competitive alliance. One respondent commented:

“The AMT was extremely focussed as a group on the project ... and continually challenged each other on how to achieve extraordinary outcomes by use of synergy and innovation.”

Respondents were asked to think about the AMT and ALT and the instances where they performed above or below expectations (Table 1). There is strong agreement that the AMT performs above expectation (Question 17), yet there are also concessions that in many instances, the function of the AMT can be improved (Question 18).

*Table 1 Perception of the performance of the Alliance Leadership and Management Teams*

Question	Q17 AMT performed ABOVE expectation	Q18 AMT performed BELOW expectation	Q19 ALT performed ABOVE expectation	Q20 ALT performed BELOW expectation
Yes	14	12	5	8
No	4	6	11	8
No comment	0	0	2	2

*Table 2 Respondents perception of the performance of the Alliance Management Team (AMT)*

AMT performing ABOVE expectation	AMT performing BELOW expectation
Achieving innovations during D&C methodologies	Capacity to have appropriate Change control resources on board when needed
Managing environmental conditions	Community stakeholder management
Willingness to work with and accommodate needs of construction personnel	Setting safety standards in regard to protection of citizens on and around construction site
Achieving outstanding cost performance	Improvement required in the area of cost control
Consistent commitment to achieving game-breaking outcomes	Lack of in-house schedule programming skills
Response to ensuring appropriate project controls are in place	Too caught up in Alliance behaviour and not concentrating on the contract and its relationships
Value for money	Verification model for the D&C stages
Managing community and stakeholder issues	Improving information flow to the ALT

The responses to these sets of statements indicate a strong self critical element of the respondents, demonstrating that although the AMT is performing well, there is still room for improvement. The support for the ALT is not as strong as for the AMT.

The next set of questions asked respondents to explain the reasons why AMT performed above or below expectations. A range of comments were made the results (Table 2) show that the commitment of each team member to achieve the best outcomes for the projects marked the difference between good performing project and poor performing projects.

The findings indicate that respondents were more critical of the performance of the ALT, with more than two thirds of respondents believing that the ALT did not

perform above expectation (Question 19). However, the respondents were equal in their opinion as to whether the ALT performed below expectations. Where the ALT performed above expectation, it took a proactive leadership position, assisting the project as a whole and providing governance to the AMT. When these things did not occur, respondents considered that it performed below expectation. This suggests a strong desire for the ALT to perform not only at strategic levels, but to be actively across project issues and providing appropriate operational environments that support successful implementation of the project across the organisational structure.

*Table 2 Respondents perception of the performance of the Alliance Leadership Team (ALT)*

ALT performing ABOVE expectation	ALT performing BELOW expectation
Effective Safety and Corrective Actions	Bogged down in detail – not enough strategic thinking
Functioning with the assumption that an Alliance is a shared risk	Not necessarily wanting to get involved in the micro management issues that were impacting on the function of the AMT
Commitment to being the champion of ideas or specific KRAs	Areas of improvement include risk management, forecasting and earned value reporting, schedule recovery during construction, safety
Acting as sub-project sponsors, and allowing Subject Matter Experts (SMEs) to be part of the monthly ALT meetings	The ALT provided very little real/material leadership or onsite support to the AMT. The AMT had to consistently seek out members of the ALT for support and assistance, with little proactive response back from the ALT.
Gathering a team of committed individuals, and providing strong leadership, guidance and support	Governance

### Value Delivery

It was clear from the responses to other questions that in general, respondents had a positive experience using alliances. Question 24 asked them to identify the method that would provide greater value, by comparing the Alliance approach with a D&C methodology. In response the vast majority of respondents considered that the Alliance method as delivering “somewhat better value” to “far better value” when compared with the D&C methodology (Figure 3).

When asked to explain why Alliances worked better than D&C there were many suggestions, for instance; one respondent said that;

“The ability of all the Alliance Partners to work tirelessly together to achieve a “best for project” outcome can only come with the alliance delivery process. The weather extremes and “unknown” geotechnical issues at the formation of the contract would be somewhat of a blockage with the D&C process.”

Respondents indicated that the Alliance delivery method better addresses the complexities and risks associated with real projects, and it does so far better than the D&C process. There was a belief that the D&C methodology would not realise innovations, and may have a greater effect on the client’s revenue. There is also a perception that D&C methods would more commonly result in litigation than an Alliance. One respondent commented;

*“Hard work and commitment was shown at all times. Generally the team achieved close to ‘outstanding’ in all areas. This rating was a true reflection of the performance of the team in breaking new ground in performance in each category compared to traditional benchmarks of non-cost performance.”*

Overall Alliances were considered to be much better than D&C. The Alliance methodology allows for the construction methodology to be changed and adapted to cater for community considerations, resulting in an outcome that may take longer but has less impact on the community overall. This seemed to be an important factor for the success of public infrastructure projects like motorways, water treatment plants and desalination facilities.

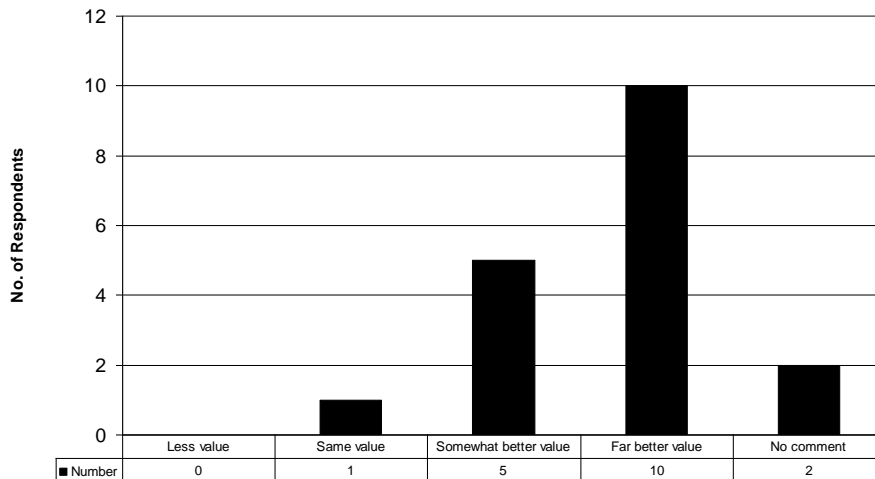


Figure 3: The value of alliances compared to Design & Construction procurement method

## CONCLUSIONS

There has been very little research that has examined the issues associated with the operation of alliances even though they have become an emerging method of procurement for the public sector. This research demonstrates that alliances can provide good value (VfM) and enable project risks to be effectively shared between the partners.

The factors identified were trust, resources, communication, coordination, integration management support, and creativity, which were all important in the formation, operation, and evaluation phases of an alliance. In particular, the development of a teamwork enriched culture was deemed necessary for the successful implementation of a successful alliance

Alliance models are considered to be an appropriate procurement method, as an alternative to public private partnerships, for delivering large complex infrastructure projects. The public sector client in particular will continue to learn from its experiences with using an alliance model to deliver its large complex infrastructure projects.

The intense integration of the alliance members requires excellent communication skills at a personal, business and operational level. This can only occur in an environment where the alliance leadership and management work effectively towards mutually agreed goals. These factors are often described as the best of the project (BfP).

This research on project alliancing in Australia has revealed that communication and trust between the Alliance Leadership Team (ALT) and Alliance Management Team (AMT) was a major issue that impacted on the effectiveness of the alliance. The precondition for project alliancing to be successful is to develop a trust framework that allows the ALT and AMT to deliver superior project management coordination



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## APPENDIX

### Structured interview questions

No.	Question
	Alliance performance
1	What was the initial TOC of the project?
2	What was the final TOC of the project?
3	Delta (% above or below initial TOC)
4	What were the reasons contributing to the change in TOC?
5	What was the proposed duration of the project?
6	What was the actual duration of the project?
7	Delta (% above or below proposed duration)
8	What were the reasons contributing to the change in duration?
9	What were the KRAs (and their weightings if applicable) for the project?
10	What was the actual Alliance performance against the KRAs listed?
11	What affected the high and/or low performance of KRA?
12	Did the team have any issues addressing each of the KRAs?
	Commitment to Best for Project / Best for Client
13	The AMT was committed to performing above Business as Usual
14	The AMT acted according to Best for Project
15	The ALT demonstrated commitment to the Alliance
16	The ALT provided an environment that supported the AMT to deliver against the KRAs
17	Thinking about the AMT, were there areas where it performed ABOVE expectation?
18	Thinking about the AMT, were there areas where it performed BELOW expectation?
19	Thinking about the ALT, were there areas where it performed ABOVE expectation?
20	Thinking about the ALT, were there areas where it performed BELOW expectation?
	Value Delivery
21	Was a Project Value Statement defined prior to the creation of the Alliance?
22	When, during the Bidding Process, was the Project Value Statement communicated to the bidders or alliance teams?
23	How would you rate the performance of the Alliance in meeting the client's Value Statement?
24	Thinking about using a D&C methodology to deliver the same project, how do you rate the Alliance method in delivering value?
25	If the project was the result of a Competitive Alliance / Competitive ECI procurement process, how did it rate in delivering value to the client against the following indicators: Speed of achieving team cohesion and integration Project team attitude and performance during work delivery Value for money