

Project Alliances in the Australian Construction Industry: A Case Study of a Water Treatment Project

M. Jefferies¹, G. Brewer¹, S. Rowlinson², F. Cheung³, and A. Satchell¹.

¹*School of Architecture and Built Environment, University of Newcastle, NSW 2308, Australia.*

²*Department of Real Estate and Construction, University of Hong Kong, Pokfulam, Hong Kong.*

³*Faculty of Built Environment and Engineering, Queensland University of Technology, QLD, Australia.*

Email: marcus.jefferies@newcastle.edu.au

Abstract: Project Alliancing is a relatively new and unproven method of procurement in the Australian Construction Industry. It has primarily developed in order to counteract the affects of globalisation and rising disputation and because of its ability to reduce risk and increase overall project success. Alliancing is a relationship-based procurement method, selecting alliance participants based on a soft dollar evaluation rather than traditional tender price evaluation. Performance is motivated by commercial incentives based on key performance indicators (KPI's) that aim to go beyond 'business as usual' targets. An important element of Alliancing is the team culture that focuses on an open book and no blame relationship. This paper presents a framework of project success factors and discusses a case study of a recent Australian Project Alliance. A semi-structured interview process involving senior project participants and a review of project documentation identified a number of project specific success factors: establishing an integrated alliance office; staging of project and stretch targets; setting project specific KPI's; facilitating ongoing workshops that include site personnel; and the use of a web-based management program.

Keywords: Australia, Case Study, Infrastructure, Project Alliances, Success Factors

1. Introduction

There has been growing use of relationship-based procurement approaches on construction projects world wide, with strategies such as Partnering, Joint Ventures, Enterprise Networks and Alliancing all used (Harmon, 2003; Walker and Hampson, 2003). Project Alliances are described as an agreement between two or more entities which undertake to work cooperatively, on the basis of a sharing of project risk and reward, for the purpose of achieving agreed outcomes based on principals of good faith and trust and an open-book approach towards costs (Kwok and Hampson, 1996; Abrahams and Cullen, 1998). The process of Alliancing involves the careful selection of best practice partners to form the alliance team. These partners then develop an alliance charter describing program and cost targets, performance requirements and risk and reward arrangements (Walker et al, 2000). The Alliance group then works as a unified team to meet the alliance charter based around a win-win attitude, trust, commitment and innovation for the projects delivery (Green and Lenard, 1999).

Recent research into relationship-based procurement methods has resulted in published work discussing the success of partnering, public-private-partnerships and joint ventures (Black et al, 2000; Jefferies et al, 2002; Jefferies, 2004; Wong and Cheung, 2004; and Li et al 2005), but little to date on Project Alliancing, particularly factors for its successful implementation in the Australian Construction industry. The paper presents a single case study approach that reviews project documentation and uses a semi-structured interview process with carefully selected project participants. This methodology has been deemed as most appropriate due to the limited implementation of Project Alliancing within the Australian Construction Industry and the small sample of organisations having been involved in such projects. Content Analysis was selected as the method for analysing the interview transcripts in order to produce the framework of Project Specific Success Factors.

2. Project Alliancing

Several authors have defined Project Alliancing over the last decade, each varying slightly but most incorporating the elements of cooperation, goals and objectives. Kwok and Hampson (1996) describe Project Alliancing as “...a cooperative arrangement between two or more organisations that forms part of their overall strategy, and contributes to achieving their major goals and objectives for a particular project.” Ross (2003) states that a Project Alliance is “where an owner (or owners) and one or more service providers (designer, constructor, supplier etc.) work as an integrated team to deliver a specific project under a contractual framework where their commercial interests are aligned with actual project outcomes.”

Project based alliances were first developed through the Portland Division of the US Army Corps of Engineers by Colonel Charles Cowan. Since then Project Alliancing has gained acceptance by many industries world wide particularly with the construction industry (Green and Lenard, 1999). Alliancing reduces the likelihood of litigation, risks associated with cost overruns and delays can be reduced through enhanced control, problems or changes can be efficiently resolved through the systems open communication approach, administrative costs associated with defence case building can be removed, the probability of project financial success is enhanced as an outcome of the non-adversarial and win-win culture of the procurement process (Kwok and Hampson, 1996; Armessen, 1999).

3. Globalisation

Globalisation, the creation of a single world market in one borderless world (Judy et al, 2004), has caused unpredictable social, economical, technical and political aspects in society. Subsequently, businesses have had to generate alternative management systems to counter act against globalisations so as to better manage risk and remain competitive in these uncertain times (Jefferies et al., 2000). Globalisation has created an expanded construction market which has generated huge demand for large scale construction and infrastructure projects thus presenting opportunities for the global construction industry. Project Alliancing is one procurement and management tool implemented by organisations within the construction industry and other industries to keep up with this ever developing business world (Jefferies et al., 2000).

4. Managing Disputes and Litigation

The construction industry has also identified Project Alliancing as a management strategy that can reduce risks and promote movement away from current construction practise to a more collaborative culture (Jefferies et al., 2000). The rising levels of disputes and litigation between parties on construction projects is described by Ross (2003) as an epidemic. Arousal of disputes and litigation is having a devastating effect upon the construction industry, being identified as a major cause of rising project costs, long project delays, profit declines, reduced trust of clients as well as low quality projects (Cheung et al, 2002; Harmon, 2003). This has created a movement towards developing more alternative methods of disputes resolution and dispute avoidance on construction projects. Project Alliancing is one method that has been identified as having a positive impact upon disputes between project stakeholders. Alliancing features a systematic problem resolution process, equality and rights between parties, no blame culture, open/regular communication, promotes win-win solutions and shares risk rather than risk transfer (Construction Industry Board, 1998; McGeorge and Palmer, 2002). These features all contribute to the minimisation of disputation.

5. Project Alliancing Within Australia

The first Project Alliance within Australia was the construction of the Wandoo B Development Offshore Oil Platform in Western Australia. The Wandoo B Development project was a \$480million contract that started in 1994 and was successful completed in 1997 (Jefferies et al., 2000). A number of other oil, gas and mining projects were successfully delivered in the mid 1990's through Project Alliancing including the East Spar Gas Field Alliance contract for Western Mining Corporation (\$250 Million), Port Headland Iron Ore Alliance contract for BHP (\$700 million) and the Roxby Downs Metal Ore Alliance contract for Western Mining Corp (\$400m) (Abrahams and Cullen, 1998).

The Australian National Museum was successfully completed and opened in March 2001 and is said to be the first construction project to be procured through a Project Alliance. Project Alliancing was chosen for this project because it offered a fast delivery for a complex project with high expectations due to its cultural significance, high construction quality requirements, unique and innovative design and a need of value for money (Walker and Hampson, 2003).

6. Success Factors

Nguyen et al, (2004) simply define success within the context of the construction industry as when a project is completed on or before program, at or below budget, built to the required specifications and fulfils the objectives and desires of the client/stakeholders. Rockart and the Sloan School of Management developed a concept for identifying Critical Success Factors (CSF's) which they defined as "those few key areas of activity in which favourable results are absolutely necessary for a particular manager to reach his or her own goals... those limited number of areas where things much go right (Rockart, 1982)."

A number of authors have assembled lists of factors that are considered to be influential upon the success of Alliancing Projects. The following table (Table 1) summarises key historical literature to develop a Success Factor framework for Project Alliancing.

Table 1: Project Alliance Success Factors

Success Factors	Cited by Authors				
Strong commitment by client & senior management	Elliot (1998)	Green & Lenard (1999)	Abrahams and Cullen (1998)	Haque, Green and Keogh (2004)	Jefferies, Gameson, Chen and Elliot (2000)
Trust between parties	Elliot (1998)	Green & Lenard (1999)		Haque, Green and Keogh (2004)	
Sound relationship	Elliot (1998)		Abrahams and Cullen (1998)		
Equity		Green & Lenard (1999)		Haque, Green and Keogh (2004)	
Mutual goals & objectives		Green & Lenard (1999)		Haque, Green and Keogh (2004)	Jefferies, Gameson, Chen and Elliot (2000)
Joint process evaluation		Green & Lenard (1999)	Abrahams and Cullen (1998)		
Dispute resolution process		Green & Lenard (1999)			
Cooperative spirit	Elliot (1998)		Abrahams and Cullen (1998)	Haque, Green and Keogh (2004)	
Flexibility & adaptability	Elliot (1998)				Jefferies, Gameson, Chen and Elliot (2000)
Tight alliance outline	Elliot (1998)		Abrahams and Cullen (1998)		
Alliance structure			Abrahams and Cullen (1998)	Haque, Green and Keogh (2004)	
Best people for project			Abrahams and Cullen (1998)	Haque, Green and Keogh (2004)	
Facilitation			Abrahams and Cullen (1998)	Haque, Green and Keogh (2004)	Jefferies, Gameson, Chen and Elliot (2000)
Commercial incentives			Abrahams and Cullen (1998)	Haque, Green and Keogh (2004)	Jefferies, Gameson, Chen and Elliot (2000)
Open communication				Haque, Green and Keogh (2004)	
Shared knowledge			Abrahams and Cullen (1998)	Haque, Green and Keogh (2004)	
Stretch targets		Green & Lenard (1999)		Haque, Green and Keogh (2004)	Jefferies, Gameson, Chen and Elliot (2000)

7. The Case Study Project Background

The project client is a large water services supplier and a statutory corporation. The client provides drinking water, wastewater and some storm-water services. The client services over 4 million customers and has A \$1.5 billion in revenue, while managing \$14 billion in assets, employing 3600 people and servicing 1.5 million properties. The authority governing environmental protection issued the client with 27 Sewage Treatment Systems (STS) Environmental Protection Licenses. The STS Licenses cover the operation and maintenance of the sewage system networks, and in addition, set out Pollution Reduction Programs (PRPs) specifying timeframes for detailed improvements to environmental performance. 272 sewer stations were specified as well as improvements to the operation of its catchments.

7.1 Selection of Project Alliancing and Alliance Partners

The client released a long-term strategic plan for sustainable water, wastewater and storm-water management up to the year 2021. 2 years into the upgrade project the use of traditional, lump-sum procurement methods for the works was averaging an upgrade of 16 stations per year. The required program of 250 station upgrades by the specified date was clearly not going to be achieved. The following requirements were identified by the Client:

- New performance standards for upgraded stations requiring component interchangeability.
- Careful consideration of heritage requirements, works within National Park and within close proximity to waterways.
- The works will cause impact local and state government authorities and all sectors of the community.
- Synchronization with current and future projects was required.
- Existing stations would need to remain operational during construction with no dry weather overflows.

After reviewing alternatives the Client decided that an Alliance approach would best achieve the targets as well as the cost, schedule, safety, quality, environmental and community challenges to deliver the project. An Alliance team with a single high performance culture based around a focused, single set of project objectives was then targeted. The Client sent out 'Requests for Proposals' and followed with an intense alliance evaluation process involving foundation workshops and a rigorous Target Cost Estimate (TCE) process leading to the selection of the alliance team comprising six organisations. The alliance contract to complete the project to upgrade 230 sewage infrastructure stations was then signed. The alliance partners, other than the client, are:

- Alliance Partner 1 is a contractor that has procured over 6,000 projects, exceeding \$40 billion in value and has a long history and a strong reputation in collaborative project delivery, working with both private and public clients.
- Alliance Partner 2 is a consulting firm of engineers, planners, and construction managers that has completed more than 2,000 water and wastewater projects.
- Alliance Partner 3 is a large and successful defence and technology contractor that provides outsourced maintenance and construction services.

- Alliance Partner 4 is a professional services consulting group closely involved in the development of water and wastewater services for the client.
- Alliance Partner 5 specialises in issue management, community consultation, stakeholder management, individual and group facilitation, public and media relations and Quality Assurance (QA) assessments.

7.2 Alliance Agreement/Project Charter

The Client developed the following six objectives for the Project Alliance:

- Schedule (meet relevant License specifications in terms of sites, timeframes and performance; optimize the program roll-out rate).
- Cost (minimise lifecycle costs; better the target program cost by 20% without adversely affecting quality and operational standards)
- Works (minimal environmental impact during the works delivery and operational phases; no overflows as a result of construction)
- People (provide a safe place of work evidenced by zero incidents and injuries; have minimal impact on Client customers; all program personnel proud to be involved)
- Systems (satisfy Client’s legislative and regulatory requirements; implement management systems specific to the program to meet quality processes and outcomes)
- Legacy (improve Clients capability for delivery of capital programs; implement operational improvements; enhance Client’s reputation with industry).

These objectives played an important part in creating a high level of commitment and understanding between the project stakeholders prior to the formation of the Alliance team.

7.3 Key Performance Indicators

The Alliance established at the project’s inception, a commercial framework of risk and rewards or commercial incentives based around the following set of Key Performance Indicators (KPIs): Community; Environment; Occupational Health and Safety; and Quality. Performance was assessed in each of these areas with possible results ranging from 1 to 5. (1) being Failure (2) Poor Performance, (3) Business as usual, (4) Best Practice and (5) Outstanding Performance. A Failure or Poor Performance resulted in a form of pain share where the Alliance paid money back to the client, Business as usual meant a neutral outcome and Best Practice or Outstanding Performance resulted in a financial gain for the alliance, distributed between the various individual organisations according to the commercial framework.

8. Success of the Alliance Project

At the end of the project, reflection upon the Key Performance Indicators revealed that over 90% of the assessment areas within the KPIs achieved “Outstanding” results, indicating that the project was an overall success for the Alliance team and the client. Table 2 forms the project specific framework of Success Factors for the case study Alliance project.

Table 2: Success Factors of the Case Study Project

Success Factors	Description
Best for project attitude	Alliance team members need to apply an attitude of “Best for Project” to all aspects of the project.
Formation of a single entity	Remove all attachments to the individual organisations eg. Company Logos, Titles and adopt a single alliance name and uniform.
Pre-project workshops & planning workshops	Early workshops between the alliance partners before client workshops to build good working relationships.
Continuous Facilitator involvement	Facilitator involvement early in the project to establish a strong alliance team and involvement at various times throughout the project to motivate the team.
Careful team selection & project specific team alignment	Alliance partner chosen carefully so to maximise the skills and performance required for achieving high standards in key performance areas.
Right personnel for Project	Personnel need to be team players, open minded and creative thinkers.
Integrated Alliance office	Central Alliance office combining all alliance partners.
Staging of project & stretch targets	Breaking the project into stages allowing reflection upon results to date and re-establishment of future stretch targets.
Project specific KPI's	Ensuring the KPI's drive the alliance in the right direction motivating success in areas critical to the project requirements.
Dedicated client & commitment by all stakeholders	Client and stakeholder to show commitment to the project through participation at a senior level.
Benchmarking & continuous performance monitoring	Implementation of benchmarking and performance monitoring to gauge success and areas for improvement.
Early commercial development	Develop commercial framework at an early stage in the project so that the team can be formed with skills necessary to achieve high performance in KPI areas.
On-going workshops including site personnel	Workshops to be conducted throughout the life of the project introducing site personnel to the project Alliancing concept and identifying the importance of their role.
Web-based management program	Single web-based program for management of the project allowing the individual partners to manage resources and share knowledge.
Participants with past working relationships	Selection of alliance partners with proven past working relationships.
Awareness of project aim, objectives & charter	Ensure all levels of management are aware of the project aim, objectives and charter.
Open book nature	Alliance participant to have an open and trusting relationship between one another.

Five ‘new’ success factors were identified during the interview process in the case study project. These are success factors that were not previously identified when reviewing current literature. They are discussed further below:

8.1 Establishing an Integrated Alliance Office

The group of alliance organisations where all co-located in a single office with up to 150 personnel from the various individual companies. The quotes below were extracted from the interview data:

“You need to take people out of their company environment and have an integrated office which the alliance team calls their own; with people sitting in groups according to expertise such as delivery team, designers, project managers and supervisors. The success is having all the key stakeholders working in the one room at the one time from the start, so the planner, the designer, the geotech, the communications rep and environmental rep, the safety and operations maintenance.”

Establishing an integrated vehicle to drive the project alliance is an element that was seen as essential for project success, specifically in relation to team building, communication and problem solving.

8.2 Staging of project and stretch targets

An important element of Alliancing is the setting of stretch targets, which is establishing project aims extending past “Business As Usual”. The case study interviews found that the project not only implemented stretch targets but staged these stretch targets throughout the project. This meant that the project was broken up into stages called Tranches. At the beginning of each tranche new stretch targets were established and business as usual improved as the project stages were completed. One of the Interviewees outlines the tranche approach to the project and the re-establishment of stretch targets:

“...outcomes were carried forward into the next tranche... it gave people focus, and we would set stretch targets, we would never aim for business as usual, our aim was always stretch targets. If we met a goal, that became our ‘business as usual’ and we were always improving. That was half the reason why the project was completed early, it was a continuous improving process.”

By breaking the project up into tranches, knowledge was harnessed and lessons learnt were built upon for the next tranche. It was important to implement workshops at the beginning of each tranche to ensure the whole team were aware of the new targets and aims. This was also a time for the Facilitator to get involved and build-up the team motivation and enthusiasm.

8.3 Project specific Key Performance Indicators

A factor identified as influencing the success of the case study project was the careful linking of Key Performance Indicators (KPI’s) to the project requirements. A case study Interviewee describes this:

“You want to make sure that the KPI’s are written in a way that recognizes that the right performance drives the right behaviours within the team and must make sure that the KPI’s are proactive not reactive...”

The KPI’s should motivate the alliance team to work harder in areas which are critical to the project’s success. Some of KPI areas were safety, community and quality, with payments tied into performance within these areas, which is difficult to do with a traditional fixed price contract. The community KPI is an example of how important it is to establish KPI’s which motivate the alliance team to focus on areas of the project which require special attention. Attention must be made when developing the commercial framework to align the KPI’s with the projects/clients critical requirements. If this occurs then the alliance team has a better chance of achieving project success.

8.4 On-going workshops including site personnel

Alliancing focuses on forming a strong alliance team that is extremely important to the project’s success, but it is equally important to create strong working relationships with the sub-contractors. For the project to be successful, the alliance team must ensure that the sub-contractors are committed and dedicated to the project and the Alliance form of procurement, as they are ones carrying out the actual site work. The alliance team on the case study project identified the importance of building strong relationships with the sub-contractors and conducted workshops for this reason. An Interviewee describes the workshop approach:

“...the alliance set up workshops where the program manager and the delivery manager would talk to the sub-contractor and let them know what the expectations were and the opportunities available. The workshops with the project sub-contractors were a critical part of building a strong working team. They allowed the organisations that were not a commercial partner still feel part of the project team and identified the importance of their role to the project and the Alliance.”

The sub-contractors are an important part of an alliance project and involving them in ongoing workshops building trust, strong relationships and commitment will promote good workmanship and thus influence the overall success of the Alliancing project.

8.5 Web-based management program

The project implemented a web-based management system which was the central project management tool used by the alliance team. A number of the interviewees identified this as being a key factor that led to successful communication between the stakeholders:

“The program was a single web-based project management tool which was a big factor for success as it enabled the dissemination of information between the partners. The system held all the design documentation, correspondence, cash flows and budgets. Being a web-based system the information was available to the team anytime anywhere allowing better management and control over the project, thus assisting in the projects overall success.”

The program allowed for all sections of the management team to easily interact and communicate and solve problems in real time. In order for Alliancing to be successful much

interaction and communication is required between the various organisations forming the Alliance. Open communication, team building, problem solving, team-work, integration, information sharing and support are important requirements of an alliance. A program such as this enhances the likelihood of success in these key areas as it provides an important link between the individual alliance organisations and contributes to overall project success.

9. Conclusion

Relationship-based procurement approaches, such as Project Alliancing, establish and manage the relationships between all parties and remove barriers, encourage maximum contribution and allow all parties to achieve success. The use of Alliancing is due to globalisation factors and the need to successfully manage risk. Alliancing provides a project delivery method that promotes open communication, equality and a systematic problem resolution process that achieves win-win outcomes. Through a review of current literature and a single case study project a number of success factors were identified. Five factors were identified as specifically influencing the success of the case study project. These five 'project specific' success factors that extend the body of knowledge are: use of an integrated alliance office; the staging of project and stretch targets; establishing project specific KPI's; facilitating on-going workshops that include site personnel; and the integration of a web-based management program.

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