ENGAGING SME SUBCONTRACTORS ON ALLIANCE DELIVERED INFRASTRUCTURE PROJECTS

Karl Wienke
Student Identification Number: 1293804

A Report for Industry Project CONS 7819
Submitted in partial fulfilment of the requirements for the Degree of Bachelor of Construction, Unitec New Zealand.

Department of Construction
October 2010
ABSTRACT

This research report is aimed at identifying the issues that are encountered by an Alliance when engaging SME subcontractors on a major infrastructure project. It also aims to investigate how these issues are compounded when additional SME subcontractors are engaged to work on an Alliance delivered infrastructure project in New Zealand. To investigate this topic, the research question was defined as;

What are the issues with engaging SME subcontractors in a conventional manner on an Alliance project?

The findings of this report were gathered from the analysis of documentation and opinions of interview participants from the Victoria Park Tunnel Project (VPT). This project is currently under construction and is being delivered through an Alliance procurement methodology.

The key issues identified from this report have indicated that the use of SME subcontractors leads to additional management and associated risks to an Alliance team. To optimise the use of SME subcontractors, additional support needs to be provided to them to aid their development and capability for use on future Alliance delivered projects in New Zealand.
### ABBREVIATIONS

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
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<tbody>
<tr>
<td>ACA</td>
<td>Australian Constructors Association</td>
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<tr>
<td>AMT</td>
<td>Alliance Management Team</td>
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<td>APM</td>
<td>Alliance Project Manager</td>
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<tr>
<td>CEO</td>
<td>Chief Executive Officer</td>
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<tr>
<td>DBC</td>
<td>Design, Build and Construct</td>
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<td>DCT</td>
<td>Direct Cost Target</td>
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<tr>
<td>H&amp;S</td>
<td>Health and Safety</td>
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<tr>
<td>iPAA</td>
<td>Interim Project Alliance Agreement</td>
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<tr>
<td>KPI</td>
<td>Key Performance Indicator</td>
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<tr>
<td>KRA</td>
<td>Key Result Area</td>
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<td>NOP</td>
<td>Non Owner Participant</td>
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<td>NZTA</td>
<td>New Zealand Transport Agency</td>
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<td>OPS</td>
<td>Overall Performance Score</td>
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<td>PAA</td>
<td>Project Alliance Agreement</td>
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<tr>
<td>PAB</td>
<td>Project Alliance Board</td>
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<tr>
<td>QA</td>
<td>Quality Assurance</td>
</tr>
<tr>
<td>SA</td>
<td>Subcontract Agreement</td>
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<tr>
<td>SME</td>
<td>Small and Medium Size Enterprise</td>
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<tr>
<td>TCE</td>
<td>Target Cost Estimate</td>
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<td>TOC</td>
<td>Target Outturn Cost</td>
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<tr>
<td>VFM</td>
<td>Value For Money</td>
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<tr>
<td>VPA</td>
<td>Victoria Park Alliance</td>
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<td>VPT</td>
<td>Victoria Park Tunnel</td>
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ACKNOWLEDGEMENTS

The author would like to acknowledge the contributions made by various organisations and their participating staff members, who were a combination of consultants, main contractors and subcontractors, for their contribution assisting with this project.
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CONFIDENTIALITY STATEMENT
The author has agreed that all personal and company names of participants in this research will be kept confidential.

- Interview responses cannot be linked to the individuals who participated in this research.
- Participants are referred to by labels, e.g. Participant 1, Participant A.
- The author and participants are bound by confidentiality agreements.
- Commercially sensitive information has not been reported on.

PUBLICATION AGREEMENT
I agree that the Unitec Library and Department of Construction may make a hard copy or digital copy of this thesis available for the purposes of research or private study, provided that due acknowledgement is made where appropriate and that the author’s permission is obtained before any material from the thesis is published.
1.0 INTRODUCTION

In New Zealand, major infrastructure projects have historically been delivered through a Design, Bid and Construct (DBC) procurement methodology. Due to the increasing complexity of infrastructure projects, the past ten years has seen an increase in the number of projects delivered through an Alliance. The Alliancing Association of Australia defines an Alliance team as;

An operational excellence relationship focusing on the design and delivery of an infrastructure project whose unique complexities require the development of a high level of participants’ synergy, innovation, of risk sharing and a collective approach to problem resolution in order to complete the project within agreed time and money targets. (AAA, undated)(p.1)

Under the DBC model it has been found that major complex projects tend to be delivered over time and budget and to a marginally acceptable standard. Litigation is often involved in the settlement of the Contractors final account. In recent years the New Zealand government has identified the need to improve the delivery of major infrastructure projects. To help achieve this, the New Zealand Transport Agency (NZTA) has chosen to deliver a significant number of major infrastructure projects through an Alliance procurement model. One of the key benefits of using an Alliance over a traditional procurement method is the ability for the owner to participate in the delivery of a complex construction project. (Powell, 2008)

Due to the economic recession, the construction industry has experienced a significant reduction in workload, particularly among small to medium size (SME) subcontractors. To stimulate growth in the supply chain, the NZTA has chosen to adopt a unique procurement strategy that has not been applied to previous Alliance delivered infrastructure projects. This procurement strategy involves actively engaging SME subcontractors that have not typically been involved in major infrastructure projects. This research is concerned with exploring the key issues associated with using additional SME subcontractors on an Alliance project. During the literature review process, the research question was defined as;
What are the issues with engaging SME subcontractors in a conventional manner on an Alliance project?

This research was carried out by first conducting a literature review and then guided by the findings of the literature review developing a case study which explores the research question.
2.0 LITERATURE ANALYSIS

2.1 Introduction

This literature section is based on the research question;

*What are the issues with engaging SME subcontractors in a conventional manner on an Alliance project?*

This section identifies the key features of an Alliance and the reasons that make Alliancing a preferred procurement option for Governments. Further to this, the reasons why Alliances are a successful project delivery method are also investigated. Limited information was found regarding the issues encountered by an Alliance when engaging SME subcontractors. This literature review section has been categorised into the following headings;

2.2 What is an Alliance?

2.3 Types of Alliances

2.4 Success Factors of Alliancing

2.5 When to use Alliances

2.6 Cost compensation model

2.7 Establishment of an Alliance

2.8 The Role of Subcontractors on Construction Projects

2.9 Subcontractors on Alliances

2.10 SMEs and Alliances

2.2 What is an Alliance?

A construction Alliance is a legal framework consisting of an owner and one more non owner participants (NOPs) to deliver capital works projects. These parties operate as a single entity, with a collective sharing of project risks. Alliancing originated in the UK and was first used in the early 1990s to improvement the delivery method of complex construction projects such as offshore oil and gas rigs.
(Ross, 2009). Between 1996 and 2008, more than 217 Alliances have been used in New Zealand and Australia, with an estimated value of $65 billion, with 95% of these projects in the public sector (Department of Treasury and Finance 2009). A project Alliance agreement can be described as follows;

The key participants collectively assume responsibility for agreed project performance. The profit (or loss) to each participant is determined by the team’s success in meeting project goals, not individual performance. The shared opportunities and responsibilities align the parties’ interests and provide an incentive for collaboration and blame-free performance. To further enhance the collaborative process, all decisions must be unanimous, disputes must be resolved without litigation and within the Alliance, and compensation is determined on an open-book basis. (Eckblad et al., 2007)(p.14)

The Alliance members are responsible for the successful delivery and completion of a project and to achieve this goal, an Alliance team needs to be established and formed. Ritchie (2008) suggests that in order to create an Alliance team, it must be represented with the following characteristics;

- A group of people with complementary skills who are committed to:
- A common purpose
- A set of performance goals
- A common approach
- A set of Alliance principles
- For which they hold themselves mutually accountable

As described by Newson (2008), one of the key principles of Alliances is the area of responsibility. An Alliance is collectively responsible for the performance and outcomes of their actions through a “No fault, no blame and no dispute” attitude, whereby no individual or party is blamed and separately held accountable for their actions. Powell (2008) suggests that collective ownership is one of three key Alliance
principles which will help to guide an Alliance project. The guiding principles of an Alliance team are illustrated below and explained in further detail.

**Figure 1: Alliance Team Principles (Powell, 2008)**

The Alliance principle of ‘Have an equal say’ ensures that all members of an Alliance team have equal opportunities to provide their input into matters and that decisions are a collective decision, not just from a single organisation. Due to the complex nature of the projects that are delivered through Alliances, it is this shared understanding and responsibility of all project risks and opportunities that defines the Alliance model.

### 2.3 Types of Alliances

In the construction industry there are many variations of project delivery methods, such as; Design and Construct, Partnering, Cost Reimbursable and Lump Sum. The procurement framework used to deliver projects is ultimately determined by the type of project to be constructed and the stakeholders involved in it.

Two common Alliance models used in infrastructure projects are; Strategic Alliances and Project Alliances with each one used to produce specific project outcomes and results. As suggested by Barlow and Jashapara (1998), “Construction industry Alliances (or partnering) can be differentiated depending on the longevity of project team interaction (based either on a one-off project or a continuous form of project to project).”

A Strategic Alliance consists of a long term strategy, where collaborative relationships are developed beyond a specific project (Hauck et al., 2004). This type of Alliance is appropriate when the client is planning to undertake a series of projects.
over time and encourages parties to build an ongoing mutual relationship. (Hauck et al., 2004) also highlights one of the key differences between these two types of Alliances, “Project Alliancing differs from Strategic Alliances in the fact that parties are brought together for a specific project or outcome. Project Alliances have a defined end - typically the practical completion date of a constructed facility.”

Project Alliances are considered to be strategic in terms of the value they provide to the wider stakeholders of a project, that is why this framework is commonly used by governments for complex capital works projects. Through the forming of an Alliance that requires outstanding results, this helps to build momentum and motivation, while encouraging innovation throughout the project design and build phase (Abrahams and Cullen, 1998). Bringing together the strongest possible team and combining resources from all Alliance parties, truly helps to harness and develop the high performance culture required to deliver complex projects.

### 2.4 Success Factors of Using an Alliance

For an Alliance to perform beyond expectations, it is important to understand the key success factors to an Alliance team. In order to achieve success, an Alliance must possess characteristics within their team that will help them to gain the results expected of them. Ross (2005) believes there are key factors that lead to an Alliances’ success and considers them to be pre-requisites to forming an Alliance. These core Alliance facets include the following:

- **Genuine strategic intent:**
  
  An Alliance will require a significant investment of time and resources, therefore its intent should represent a genuinely strategic value for all partners in order to motivate them to make the necessary investment.

- **Selecting the right partners:**
  
  All Alliance participants are selected because they are the best-in-class for the specific role they have to play and/or for the assets they bring to the collective initiative. There are no long lasting Alliances between strong and weak
partners. All partners need to be the top guns in their own specialty, regardless of their company size.

- **Balanced value proposition for all partners:**
  A strong value proposition must exist for all Alliance partners. What looks great to the CEO may not be relevant to the engineer or sales person who delivers the end value. Value must be relevant and strongly communicated to all along the chain of jobs from strategy to delivery and that may mean changing the performance metrics and rewards if required.

- **Define a vision and higher purpose for the alliance:**
  To give the people the emotional strength to commit and work through the challenges of an Alliance, it must define a higher level goal that speaks to the ambitions and to the desire for accomplishment of all participants.

- **Sponsorship from the top on all sides with buy-in at all levels:**
  All Strategic Alliances must have a sponsor and champion at executive management level… or one must question the strategic value of the Alliance. The Alliance’s joint executive board provides overall strategic guidance and maintain execution focus towards the strategic intent. Buy-in should be secured from all stakeholders up and down the companies.

- **Genuine consideration of cultural differences:**
  Thorough assessment of the organizational and individuals cultural differences will allow building meaningful bridges to catalyse people and processes integration. Integration of a program of cross-company, cross-functional Alliancing induction sessions is a critical part of the initial Alliance execution plan.

- **Know what success means for all alliance participants:**
  Each Alliance partner must understand what their Alliance partners consider “alliance success” to mean for them, as it is the key for building a mutually
beneficial relationship based on well understood expectations. Alliances need to set up sets of success metrics that relates to the different participants and the various stakeholders in each organization.

- **Create a specific alliance culture:**
  No blame, no risk, no bad idea, “all win together or all lose together”
  Promote and tightly manage personal accountability and collective responsibility for results

Along with the above factors, there are many other characteristics which make Alliances’ successful. One of the key components to an Alliance is the culture and relationship between the Alliance members. The Alliance culture of “no fault, no blame” can present a risk of uncertain accountability amongst its members for the decisions that are made (Walker 2002). This idea is also shared by Ross (2000), (p.11) but suggests that “With appropriate focus during development of the Alliance, usually at one of the workshops, this risk can be eliminated.”

The literature review did not find any cases where Alliances had failed as a delivery method. But there are areas of concern in similar procurement methods that are applicable to Alliances. Ross (1999) outlines the reasons for failure of “lesser forms of cooperative open-book contracts”. Those being;

- **Establishment errors by the owner:** Lack of owner understanding
  Wrong partner(s)
  Lack of commitment

- **Strategic errors by the owner:** Used as a “recovery” strategy
  Gross budget under-estimate
  CRPI packages too many, too small
  Exclusion of key stakeholder

- **Relationship failure:** Lack of trust / openness
  No relationship management
Wrong people / B team

- **Management shortcomings:**
  - Poor organisation / leadership
  - Design poorly managed
  - Poor interface with operator

### 2.5 When to Use Alliances

The potential benefits of using an Alliance are widely known and when used correctly can deliver outstanding results for a project. The use of an Alliance procurement method is only suitable to certain projects as highlighted by The Project Alliancing Practitioners Guide (2006) which states;

Project Alliancing should generally be considered in the delivery of complex and high-risk infrastructure projects, where risks are unpredictable and best managed collectively. The decision to use project Alliancing must be based on a robust understanding of the project risk, including risks that cannot yet be determined or scoped. Organisations must also ensure they have the understanding and resources required to deliver projects through project Alliancing.

Civil infrastructure projects can be complex and one construction company cannot provide the resources and expertise to complete all aspects of a project. One of the key reasons for a government to use an Alliance is due to the resource input from more than one party. By leveraging the core expertise of other companies this requires a significantly lower resource investment into the Alliance. (Mignot, undated) Mignot also suggests other key reasons why companies choose to enter an Alliance;

- Mitigating the risk associated with strategic decisions and outcomes. Through lower investment from each Alliance party, this reduces their risk of pursuing opportunities that fail to succeed.
- Alliances provide a more robust business case for opportunity and challenges due to the combined expertise and knowledge from more than one party.
- Extend participants access to capabilities outside their own, improving the resources of each party and their access to a wider coverage of future networking opportunities.

One of the key benefits of using an Alliance over traditional procurement methodologies such as design and construct or measure and value, is the allocation of project risk. It is the collective sharing of the project risks that make Alliances a preferred option for delivering projects with high associated risks or scope uncertainty.

The allocation of project risks among Alliance members is represented below. (Powell, 2008)

**TRADITIONAL APPROACH**

*Risks allocated to individual parties*

Owner Risk  
Design Risk  
Construction Risk

**ALLIANCING APPROACH**

*Collective risks and rewards*

![Diagram showing allocation of Alliance Project Risks](image)

*Figure 2: Allocation of Alliance Project Risks (Powell, 2008)*

As stated earlier, Alliances are suited to complex infrastructure projects where there is a degree of uncertain risk involved. The benefits to the owner as highlighted by Ross (1999) are;
A greater likelihood of early completion due to: Aligned behaviour in challenging situations.

- Increased levels of innovation. Aligned understanding of risks and threats.
- Optimum life-cycle cost and performance
- Potentially lower capital costs due to early constructability input at design stage.
- Sharing of cost savings. Eliminates duplication of resources and facilities. Aligned understanding of risks and threats.
- Increase in owners skills in management of their resources
- Increased job satisfaction of owners staff improving organisational culture

The East Spar Alliance in Western Australia is an example of where the Alliance model was effective in dealing with adverse conditions on a high risk infrastructure project as stated by the ACA (1999) (p.32);

Unexpected latent soil conditions required a complete change in concept which was accommodated smoothly with innovative engineering. Under a conventional contract there would have been long delays and cost overruns. The stark difference between the constructive, cooperative atmosphere of an alliance with all parties having a common goal and the legalistic, adversarial atmosphere of a conventional contract was very apparent.

The ACA report also goes on explain the reasoning behind choosing an Alliance delivery method as;

This style was chosen primarily due to the inability to define the project’s scope at the outset, the very tight window of opportunity to meet the delivery date of gas to the Goldfields pipeline, and thus a necessity for flexibility in the contract to address expected significant changes – an expectation which was realised, with the open, risk sharing format ensuring a successful, minimum conflict result. (ACA, 1999) (p.31)
2.6 Cost Compensation Model

In an Alliance the risk/reward regime is the key mechanism for measuring the outstanding or poor performance of an Alliance. It is this mechanism that also aligns the project objectives with that of the NOPs by providing a fair and rewarding system by which all parties share most of the project risks. (DoT& Finance, 2009) In a project Alliance the owner and NOPs jointly agree the scope and performance objectives of the project. This aids in determining the Target Outturn Cost (TOC) which is an agreed final cost between the owner and NOPs. Once this TOC has been agreed, it is now a binding contract between the owner and the NOPs for them to deliver the project. Following this agreement is a commercial model known as a “3-limb model” this determines how the NOPs are paid for their work against their performance targets. The Project Alliancing Practitioners’ Guide (2006) (p.11) explains the 3-limb model as:

**Limb 1**

Expenditure on the work under the Alliance and project-specific overheads related to that work are reimbursed at actual cost, subject to audit.

**Limb 2**

This involves a fee to cover ‘normal’ profit and a contribution towards recovery of non project-specific (i.e. corporate) overheads.

**Limb 3**

In this limb of the model, there is an equitable pre-agreed share of the ‘pain’ or ‘gain’, depending on how actual outcomes compare with pre-agreed targets (in both cost and non-cost performance areas). Normally, the NOPs’ downside risk is capped at the loss of the limb 2 fee.

The Limb 1 costs are risk free and 100% reimbursed to the Alliance members regardless of the final cost. It is the Limb 2 and Limb 3 values that are not guaranteed and will vary depending on the project’s performance.
At the initial phase of an Alliance project, the commercial model is slightly different in that only direct costs are paid to the NOPs’ until the TOC is agreed and Key Result Areas (KRAs’) are finalised. The 2\textsuperscript{nd} phase is when the 3-limb model is introduced; Newson (2008) explains this in further detail.

\textbf{1\textsuperscript{st} Phase}

\textbf{Interim Project Alliance Agreement (iPAA)}
- Preliminary design
- Target Cost Estimate (TCE) development derived from 1\textsuperscript{st} principles
- Establishment of margins and project performance framework
- Reconciliation to agree Target Outturn Cost (TOC)
- Reimbursement of direct cost only
- Profit and overhead reimbursed on conclusion of reconciliation

\textbf{2\textsuperscript{nd} Phase}

\textbf{Project Alliance Agreement (PAA)}
- Development and delivery of the detailed design
– Delivery and performance monitoring of KRA’s
– Payment of Non-owner Participants for their services under a “3-limb” compensation model

2.7 Establishment of an Alliance
Before reaching the iPAA and PAA phases of an Alliance agreement, the NOPs’ must first be selected and evaluated against criteria. There are two commonly used processes of selecting NOPs’ by either a “pure or direct cost target (DCT)” or alternatively a “competitive” approach. The pure approach is where NOPs’ are selected based their ‘non price’ attributes such as experience, capability and attitude, price is not considered at this stage Ross (2008). In a presentation at the NZ Alliancing Conference 2008, Frost illustrates the Pure Alliance selection process as:

Figure 4: Pure Alliance Establishment Process (Frost, 2008)
During this phase the design, construction methodology and procurement strategies are developed to a point where a Target Cost Estimate (TCE or TOC) can be agreed.
Agreement of this cost is reconciled and verified by an independent expert to determine a fair price for the works, while also ensuring the owner/client receives ‘Value for Money’ (VFM). (Ross, 2008)

The Project Alliancing Practitioners’ Guide (2006) (p.15) states that;

As the single TOC approach does not include direct price competition, it requires comprehensive strategies to ensure that the alliance delivers value for money and is able to demonstrate this. The alternative multiple TOC approach has arisen primarily in response to concerns that, in the absence of direct cost competition in the single TOC approach, the non-owner participants (either knowingly or subconsciously) may take an unreasonably conservative approach to the development of the TOC and performance targets, especially to risk provisions/contingencies that are highly subjective and difficult to benchmark.

The alternative to a ‘pure’ or ‘single TOC’ Alliance is a ‘competitive’ or ‘multiple TOC’ approach. Frost (2008) also illustrates this Alliance method as follows:

**Competitive Alliance Establishment Process**

![Diagram of Competitive Alliance Establishment Process](attachment:image.png)

**Figure 5: Competitive Alliance Establishment Process (Frost, 2008)**

(IPAA: Interim Project Alliance Agreement  
PAA: Project Alliance Agreement  
TCE: Target Cost Estimate)
In a competitive or multiple TOC approach, the owner/client initially conducts the same process as the pure alliance method except at the iPAA phase two Alliance groups are chosen. These two groups independently design and plan the construction methodology, procurement and tendering strategy and also agree performance targets and KRA’s with the owner/client. After a certain time frame the two Alliance teams present their proposal on how much they expect the project to cost (TOC) based on their design and methodology. The owner will decide on the best price or TOC and enter into an Alliance agreement (PAA) with the successful proponent. (Project Alliancing Practitioners’ Guide, 2006).

2.8 **The Role of Subcontractors on Construction Projects**

When an Alliance wishes to use the expert skills of a contractor outside of the Alliances capabilities, a subcontract agreement is arranged between the two parties. In infrastructure projects, a major proportion of work is completed by subcontractors; therefore great importance must be placed on their contractual agreement. As stated by Uher (1991) (p.495);

> The ability of general contractors and subcontractors to make a profit is very much related to the success or failure of forming fair and equitable contracts and executing them in the most effective and productive manner. As most construction activities are performed by subcontractors, it is clear that the smooth execution of subcontracts is the key to the successful production process.

The obligations of the subcontractor to complete the agreed work should be outlined in accordance with the New Zealand Subcontract Agreement (SA) 2009. This document consists of the following headings;

1. Contracts
2. Subcontractor’s Bonds and Guarantees
3. General Obligations
4. Design and Producer Statements
This extensive document defines the rights and obligations of subcontracts and main contractors and allocates their applicable risks. This document can be referred to for resolving the following matters:

- terms of payment;
- security deposits and retentions;
- times for commencement and completion;
- variations;
- delays and cost of delays; and
- Liquidated damages.

The SA 2009 details many conditions of subcontracts and if used can often confound subcontractors, Uher (1991) (p.498) indicates that “Inclusion of onerous conditions in a subcontract is perceived by subcontractors as a critical issue which leads to uncertainty”. It is advantageous for Alliances to adopt subcontract agreements that reduce clauses and special conditions as this can lead to costly contractual disputes, time delays and poor performance (Uher, 1991).

### 2.9 Subcontractors in Alliances

Infrastructure projects often require the specialist skills and resources available from subcontractors, consultants and suppliers. A construction Alliance is typically made
up of the owner and NOPs’, these being the main contractor(s) and designers(s). Subcontractors are 3rd party contracts that are outside of the Alliance contractual framework, therefore they are not exposed to the risk and reward system as the Alliance proponents are. (Dainty et al, 2001) Subcontractors are excluded from the gain/painshare arrangement but the risk of contracting them to a project is ultimately borne by the Alliance members. As described by Uher (1991) (p.496) particular attention must be made to ensure “that the formation and execution of subcontracts is carried out in the most efficient manner in order to minimize the possibility of the project risk escalation”. Uher goes on to suggest that clients are unaware or ignorant of “inequitable contractual arrangements between general contractors and subcontractors may have on the performance of their projects” (p.496).

Subcontractors are key contributors to infrastructure projects and are relied on for their expert skills that are outside of the Alliance capabilities. The objectives and goals of subcontractors are not necessarily aligned with that of an Alliance. In the case of the Acton Alliance project, actions were taken to strengthen the relationship between subcontractors and the Alliance as detailed by Hauck et al (2004) (p.149);

The use of common incentives and risk sharing was evident throughout the contractual relationships on this project. Many members of the Acton Peninsula Alliance created ‘‘sub alliances’’ with key subcontractors and suppliers to generate the same motivations in favour of the goals of the Alliance. It was assumed correctly that the establishment of adversarial relationships at the subcontractor level would not benefit the collaborative process being promoted at the top.

The Acton Alliance project is an example of the importance that was placed on establishing, developing and maintaining a positive relationship with their subcontractors. The Acton project also developed and incentive based agreement between the smaller subcontractors onsite to align the motivations of the onsite staff with the key performance indicators (KPI) of the Alliance (Hauck, 2004). It is important to note that the involvement of subcontractors on a project can be
influenced not only by the NOPs but also by the owner. As suggested by Iris (1997) (p.7):

Owners may structure contracts so as to promote subcontractor involvement. On large projects they may require that a certain percentage of the work be subcontracted out in order to give smaller companies an opportunity to participate. In the extreme, owners may not want the contractor to perform any work at all, in an effort to avoid conflict of interest and to obtain the best prices on competitively bid subcontracts.

The statement above provides an example of how subcontractors can be favoured on particular projects to complete a package of work. This procurement strategy does have consequences that may negatively impact on the contractual relationship between NOP’s and subcontractors. An area of concern highlighted by Hinze (1993) (p.13), is the reduced profit and self involvement from the main contractor and that may lead to a lack of incentive to plan, organise and supervise the work done. This is important as subcontractors rely on the coordination from the Alliance in order to perform their role (Birrell, 1985).

2.10 SMEs and Alliances
As defined by Statistics New Zealand, an SME is;

A business operating in New Zealand. It can be a company, partnership, trust, estate, incorporated society, producer board, local or central government organisation, voluntary organisation, or self-employed individual. With an employment threshold of fewer than 20 employees.

As stated earlier, a large proportion of work on infrastructure projects is completed by subcontractors. Their input and skills are invaluable to an Alliance and essential to the success of a project. There is a hierarchy in the construction industry which stems from the traditional approach of vertically differentiating the construction process, such as the Design – Management – Construction process (Dainty et al,
As a result of this, subcontractors take a secondary position to main contractors; this often leads to strained and adversarial relationships between the two parties (Hinze and Tracey, 1994). Due to this fragmentation of the construction industry, Dainty et al (2001) (p.842) suggests that;

The role and influence of small and medium size (SME) subcontractors and suppliers within partnering and Strategic Alliancing has largely been ignored. This is a serious omission, given the large number of smaller firms that form the supply chain of most construction projects, and could inhibit the achievement of better supplier integration, process conformity and alignment.

This view is also supported by Matthews et al (1996), who agrees that SME subcontractors receive little recognition but goes on to suggest that working with smaller subcontractors will lead to improved working relationships. Alternatively, Good (2009) suggests that larger subcontractors are more likely to contribute to the overall management of the Alliance, whereas smaller subcontractors are likely to require more day to day management from an Alliance team.

A research study conducted by Dainty et al (2001) was used to examine subcontractor’s perspectives towards supply chain Alliances and investigate the potential for improvement in these supply chain relationships. The subcontractors interviewed in this study generally held a negative view towards Strategic Alliancing and believed that few main contractors understood the core principles of Alliancing (Dainty et al, 2001).

The key issues identified from the subcontractor interviews are summarised below;

2.10.1 Financial / Cost Related Issues:
SME’s viewed the open-book accounting practices of Alliances as a mechanism to reduce subcontractor profit margins. Further to this, SMEs criticised Alliances for accepting the lowest price knowing a subcontractor had made a pricing error.
2.10.2 Programming / Time Related Issues:
SME’s felt that programming timeframes are unrealistic, resulting in poor quality workmanship and on-site performance. It was also discovered that SMEs were required to be flexible without any acknowledgement from an Alliance of their prior business arrangements or workload.

2.10.3 Quality of Information and Related Issues:
It was highlight by SMEs that poor quality information was commonly received from the main contractor with little regard towards subcontractors requiring prompt and accurate design information.

2.10.4 Attitudinal Issues:
The main contractor’s quantity surveyors show disregard for timely payments. Along with applying unfair pressure to provide accurate and immediate quotes for complex work in unrealistic time frames.

The findings of this study show that the construction industry is a long way from improving project performance due a “symptomatic lack of trust between main contractor and subcontractor/supplier organizations” (p.846). It is suggested that this is due to the long history of adversarial practices between these parties, thus making it difficult to convince SMEs of the mutual benefits to improving this relationship. Dainty (2001) makes the following suggestions to enhance the integration of SMEs into the construction process.

1. Protocols that ensure the fair treatment and inclusion of SME’s into the construction process.
2. An organisation wide acceptance from main contractors and clients that subcontractors bring added value to the construction process.
3. A willingness to share knowledge and information at all stages of the construction process.
4. Increased subcontractor involvement at the early stages of a construction project.
5. Improved education of the construction workforce in relation to the types of organisations involved in the industry.

6. An integrated contractual system that disseminates the responsibility and obligations at each level of the supply chain.
3.0 METHODOLOGY

3.1 Introduction
Research is a process that involves the collecting, analysing and interpretation of data that aims to increase our understanding of a topic through a logical and systematic approach. (Leedy & Ormrod, 2005) Furthermore, Fellows & Liu (2008) state that “in research design, one has to decide the methodological approach in finding solutions/answers to the research problem or research questions” (p.83). This section of the report explains the research process and methodology used to address the research question;

“What are the issues with engaging SME subcontractors in a conventional manner on an Alliance project?”

This chapter is categorised into the following headings;

1. Research methodology
2. Research Strategy
3. Data collection and sources of information
4. Interview structure
5. Data analysis
6. Ethical issues

The methodology adopted by a researcher is dictated by the type of data that is needed to answer the research question. Based on the form of the research question, the nature of the information required to answer it is descriptive and contextual. Therefore, for this project an exploratory case study is most suitable for gathering data. The justification of this research methodology is explained in further detail below.
3.2 Research Method

The Qualitative Approach

Qualitative research is most suited to a descriptive research question that endeavours to answer a general research problem. Therefore this requires that the researcher starts with a question that can often be loosely defined. An alternative research method is the quantitative approach which focuses more on statistical analysis and interpretation to predict outcomes, measure relationships and prove theories. (Leedy & Ormrod, 2005)

As stated by Peshkin (1993), to conduct qualitative research studies, it must serve at least one of the following purposes;

**Description:**
They can reveal the nature of certain situations, settings, processes, relationships, systems or people.

**Interpretation:**
They enable a researcher to (a) gain new insights about a particular phenomenon, (b) develop new concepts or theoretical perspectives about the phenomenon, and/or (c) discover problems that exist within the phenomenon.

**Verification:**
They allow a researcher to test the validity of certain assumptions, claims, theories or generalisations within real-world contexts.

**Evaluation:**
They provide a means through which a researcher can judge the effectiveness of particular policies, practices or innovation.

The research question;

“What are the issues with engaging SME subcontractors in a conventional manner on an Alliance project?

This is a descriptive question that will analyse the relationship between SME subcontractors and an Alliance project in the context of a case study. It aims to highlight any issues with this relationship, from both the Alliance and SME
subcontractor’s perspective. Due to the limited scope of the research question, an exploratory case study is suitable for gaining further knowledge into this topic. Furthermore, Yin (2003) explains that the use of a case study is suitable for analytical generalisation (qualitative) and not statistical generalisation, which is more appropriate for quantitative research.

3.3 Research Strategy
As explained by Yin (2003), the most important step during the research process is defining the research question. This determines what research strategy is most appropriate to your topic based on the substance and form of the question. Yin (2003) (p.7) states that;

“In general, “what” questions may either be exploratory (in which case any of the strategies could be used) or about prevalence (in which surveys or the analysis of archival records would be favoured).”

This view is also shared by Burns (1997) but goes on to specifically link case studies with the qualitative approach stating, “Due to the constraints of a sample of one or a single unit being studied, with the restrictions that brings to statistical inference, most case studies lie within the realm of qualitative methodology.” (p.365) A case study helps contribute to our knowledge of an individual, group, event, organisation and political phenomena. Data for case studies can come from a variety of techniques such as; observation, interviews, document analysis, questionnaires, reports and archival records. (Fellows & Liu, 2008)

The main form of the research question is what, which is a descriptive type question. The nature of the information required to answer this can be found by utilising a case study as the primary research tool. For the purposes of this research, a single case study has been chosen as the primary focus and is adequate to provide sufficient data on the research topic. The reasons for choosing one case study include the following;

1. Provides multiple sources for data collection.
2. Limited time to conduct data collection and analysis.
3. Sufficient data can be gathered from a single case study to provide analytical
generalisation.
The case study will focus on an Alliance infrastructure project in New Zealand that is
currently in the construction phase. Interviews with Alliance members and SME
subcontractors will form the basis of the data collection, along with the analysis of
documentation gathered from the case study project.

3.4 The Case Study
The case study that will be used to investigate this research question is the Victoria
Park Tunnel Project. This is a major infrastructure project currently under
construction in Auckland, New Zealand and is delivered through a pure Project
Alliance comprising of four NOPs. One of the procurement objectives is to engage
SME subcontractors in the local supply chain. Therefore this project is the ideal case
study to provide a realistic and working example of how SME subcontractors are
currently used and engaged on an Alliance project. The case study has been selected
due to the large and complex nature of the project that requires the input of numerous
SME trade specialists. The SME subcontractors who have been engaged in a
conventional manner will be analysed. The conventional manner refers to any SME
subcontractor that has been engaged by the main contractor on a standard
Subcontract Agreement (SA).

3.5 Sources of Data
Documentation:
The following information is required from the case study;

- *The Alliance*
  - The procurement and project objectives
  - The structure, culture and management of the Alliance
  - The extent to which SMEs are being engaged
  - The contractual arrangements used to engage SMEs
  - The performance of SMEs on the case project
  - Lessons learnt from using additional SME subcontractor
3.6 Document Analysis

The primary data sources will be various project documents from the Alliance that relate to the research question. Public sources of information will be used to gather facts regarding the project, to ensure consistency with current publicised information. Documentation to be used for this report will require permission from the Alliance with references to be noted as such.

3.6.1 Supplier Satisfaction Survey

The entire supply chain that was subcontracted to work on the project was invited to complete an online survey that rated the performance of the Alliance. The questions asked in this survey will provide an indication of the level of service that the Alliance provides to its subcontractors regarding various aspects of the project. The responses from this supplier satisfaction survey will help to identify issues that can be further investigated with interviews from SME subcontractor companies. This will help to expand on information from the survey findings and provide a validity check of the survey responses.

3.7 Interviews

Another method of data collection will be through the use of interviews with the case study Alliance members and SME subcontractors used on the project. Interviews can
provide useful information that cannot be found through analysing project documentation. This method can yield information through flexibility of the scope covered during an interview. (Leedy & Ormrod, 2005) For a qualitative study, semi-structured interviews comprising of open ended questions are the most suitable strategies to gather a range of information. This is confirmed by Leedy & Ormrod who state that;

“Interviews in a qualitative study are rarely as structured as the interviews conducted in a quantitative study. Instead they are either open-ended or semi-structured, in the latter case revolving around a few central questions”. (p.146)

Semi-structured interviews provide a forum in which the informants can respond in language that is natural to them. This helps to remove the bias from the interviewer directing questions to get a response of preconceived ideas. (Burns, 1997) One disadvantage to this method is it may lead to difficulties during the comparative analysis of the literature findings. Interview questions will be drafted once the analysis of documentation has been completed, to ensure this information is expanded upon during the interview.

Interviews will be conducted with three Alliance members, who regularly engage with SME subcontractors both on and off-site. Two interviews will be conducted with participants from SME subcontractor companies who have been randomly selected and engaged on the case project. This selection will help provide an impartial representation of the perspectives from various participants on an Alliance project. Multiple interviews are to be conducted to reduce the dependence on one respondent, as this may lead to confirmatory or contrary views and indicate the need for other sources of information to be used. (Burns, 1997)

The people to be interviewed from the Alliance will include;

- Senior Procurement Officer
- Senior Quantity Surveyor
- Project Engineer
It is important to structure the interviews in a logical order that follows a clear pattern to help identify common themes to respondent’s answers. (Leedy & Ormrod) The length of the interview is important, as too long may lead to wayward information and inefficient use of time. Commercially sensitive information from interviews and documentation will only be used with the consent of the participant’s organisation. Information of this nature will not be asked for but due to the semi structured interview method, this cannot be guaranteed. Interviews will be conducted in private and recorded via Dictaphone for further analysis once all of the participants have being interviewed. Interviews with Alliance members and SME subcontractors will require participant consent forms to be signed by each interviewee, with appropriate provisions for privacy and ethical issues.

At present the case study project is in the construction phase, therefore the findings from the documentation and interviews are limited to the experiences thus far of the participants on the project. It is difficult to make generalisations of the findings due to the time constraints and limited historical data relating to the use of SME subcontractors on past Alliance projects. The narrow range of data sources and participants used also limits the generalisation of findings.

3.8 Triangulation
To provide validity or verification of the findings from multiple data sources, triangulation is a common method of data analysis used for qualitative research. It uses multiple data collection methods to confirm common themes or a particular hypothesis. (Burns, 1995) Burns goes onto to say, “Exclusive reliance on one method may bias or distort the researcher’s picture of the particular slice of reality being investigated.” (p.325) Triangulation further contributes to the internal verification and authentication of findings by:

1. Investigating the consistency of findings from multiple data collection methods.
2. Investigating the consistency of data sources within the same data collection method.
Yin (2003) specifically links triangulation with case studies stating “a major strength of case study data collection is the opportunity to use many different sources of evidence.” (p.97) Use of these multiple sources can highlight historical, attitudinal and behavioural issues that would not typically be addressed in a single source method. The illustration below represents how multiple sources of data can highlight common themes to substantiate their credibility or internal verification. (Yin, 2003)

![Diagram of Triangulation](image)

**Figure 6: Example of Triangulation (Kyle, 2009)**

Data from three different sources such as Alliance documentation, interviews with SME subcontractors and Alliance personnel helps to provide validity of findings as suggested by Yin (2003). Data collected from documentation can be verified with the findings from interviews to check consistency of the data.

### 3.9 Data Analysis

According to Creswell (1998) & Stake (1995) the data analysis of a case study generally involves the following steps:

1. *Organisation of details about the case.* The specific “facts” about the case are arranged in a logical order. E.g. chronological
2. **Categorization of data.** Categories are identified that can help cluster the data into meaningful groups. E.g. Subcontractor contractual arrangements, commercial arrangements, experiences, relationships etc.

3. **Interpretation of single instances.** Specific documents, occurrences and other bits of data are examined for the specific meanings they might have in relation to the case.

4. **Identification of patterns.** The data and their interpretations are scrutinised for underlying themes and other patterns that characterise the case more broadly than a single piece of information can reveal.

5. **Synthesis and generalisations.** An overall portrait of the case is constructed. Conclusions are drawn that may have implications beyond the specific case that has been studied.

As the findings of this research question are based on a single case study, it is important to note any generalisations made are tentative. Further support from other case studies is required to substantiate these. (Leedy & Ormrod, 2005)

To gain further knowledge about the research question, documentation related to the case study may include the following:

- Subcontractor agreements and the special conditions that apply to various subcontract arrangements.
- The commercial process between the Alliance and SME subcontractors.
- The roles and responsibilities of the Alliance’s internal structure.
- KRAs and KPIs that relate to areas within the scope of the research question.
- The supplier satisfaction survey, conducted over the course of the project.
- The procurement process documentation.
The above categories will provide a useful template which the interview structure will be based on. This information will provide links to the research question and assist with making a comparative analysis of the findings from respondents.

3.10 Ethical Issues
Ethical issues can be problematic and not only relate to the subject matter but to the manner in which the research is conducted. Common ethical research mistakes relate to the lack of information provided to participants, e.g. the nature of the research topic and what the information is intended to be used for. (Burns, 1997) This issue needs to be recognised and necessary information made available to all participants as to their role, commercial sensitivities and purpose of the study. Leedy & Ormrod (2005) state there are four main categories to which ethical issues fall into;

1. *Protection from harm*: Researchers should not expose research participants to undue physical or psychological harm.

2. *Informed consent*: Research participants should be told the nature of the study to be conducted and given the choice of either participating or not participating.

3. *Right to privacy*: Under no circumstances should a research report, either oral or written, be presented in such a way that others become aware of how a particular participant has responded or behaved.

4. *Honesty with professional colleagues*: Researchers must report their findings in a complete and honest fashion, without misrepresenting what they have done or intentionally misleading others about the nature of their findings.

The participants of this research report will involve companies and industry professionals who rely on their professional reputation. The content of this report will investigate the Alliance-SME subcontractor relationships and provide perspectives from both parties. This information is sensitive to existing and future relationships and needs to be treated with due respect. Contractual arrangements will
also be researched which may lead to commercially sensitive information being discussed. There must be great importance placed on the above ethical issues and a level of assurance provided to these respondents in order to gain accurate findings.
4.0 THE CASE STUDY

4.1 Introduction

The Victoria Park Tunnel (VPT) is an important and significant project for the New Zealand Transport Agency (NZTA). It is the first of seven roads of national significance (RoNS) to be built and addresses the major bottleneck on the Auckland motorway network between Newmarket and the Auckland Harbour Bridge. The project seeks to balance the capacity of the Auckland Harbour Bridge traffic by managing the traffic flow through St Marys Bay and across the Victoria Park Viaduct to Wellington Street on the Southern Motorway. The construction of this project commenced in November 2009 and is expected to be completed by mid 2012. As of June 2010, 42 of 88 awarded work packages were to SME companies. The project aims to:

1. Make best use of the capacity of the Auckland Harbour Bridge
2. Improve safety and efficiency of access by road between the North Shore and Auckland, and between Central Auckland and surrounding areas.

The project benefits include:

1. Improved traffic capacity and priority for buses
2. Better pedestrian links
3. Preserving key heritage icons including the historic Rob Roy (Birdcage) Hotel
4. Mitigating noise effects through tunnelling and noise walls
5. Retaining public open space in Victoria Park.

VPT is being delivered through the Victoria Park Alliance (VPA) which consists of four NOP’s and the client. The VPA was procured as a Pure Project Alliance (discussed in section 2.7) and they were chosen as the preferred proponent after a series of presentations and workshops with the client. They adopted the traditional Alliance principles and structure to that described in section 2.2 of the literature chapter.

These principles were encouraged during the engagement of suppliers and subcontractors on the project. For example on VPT the main contractor actively
encouraged the input and advice from subcontractors to ensure best for project decisions were made. This input from subcontractors varied from design advice to innovative construction methodologies which resulted in gains on programme and productivity. This specialist expertise was valuable to achieving ongoing success through developing a high performance culture resulting in strong relationships with their subcontractors.

The supply chain on the VPT project were engaged through conventional supply or subcontract agreements with the main contractor which required them to meet the high levels of service expected from an Alliance project. There were no subcontractors and suppliers who were part of the Alliance agreement and therefore were outside of a the Alliance commercial framework (discussed in section 2.6).

In the context of the VPT project the term “supply chain” refers to the suppliers and subcontractors who were engaged on a conventional Subcontract Agreement (SA) with the VPA.

### 4.2 Alliance Organisational Structure

The VPT project used a hierarchical Alliance structure and this was lead by the Project Director with governance from the Project Alliance Board (PAB). The VPA consists of four NOPs who are jointly contracted to a head Alliance agreement. The VPA consists of the following parties:

1. The Owner (Client)
2. The Main Contractor
3. The Civil Contractor
4. The Structural and Civil Designer
5. The Mechanical Services Designer

The structure of the Alliance is built primarily around the Alliance Management Team (AMT). This team has the range of skills required to effectively manage all of the risks (threats and opportunities) that will determine the project outcomes. Their
role is to integrate the management of these threats and opportunities into every layer of the planning and execution of the project. They are also the leaders of the project and must ensure that objectives are set and achieved across the broader team. They are the key drivers of the Alliance’s identity, capabilities and culture.

The AMT is led by the Alliance Project Manager (APM). He is accountable for the total delivery of the project, and particularly for creating the environment and systems to sustain a high performance culture. He has a key leadership role in representing the Alliance both internally and externally. The Alliance Project Manager is supported at a senior level by the AMT.

The AMT is further supported by the Key Result Team who is responsible for promoting the values and principles of the Alliance culture in their specific results areas. They are expected to influence their peers and lead by example in demonstrating behaviours that uphold and strengthen the Alliance. They particularly operate through the delivery of the key results management process. The Key Result Area (KRA) is an area of the project operation in which the VPA’s performance is of significant interest to the NOPs, NZTA and the key stakeholders involved in the project.

The calculated score of each KRA is added to the Overall Performance Score (OPS) of the project which consists of multiple KRA scores that make up the overall project. The OPS is used calculate the allocation of the Limb 3 funds to the NOPs as discussed in section 2.6 of the literature chapter.

The following are the KRA’s for the VPT project;

- Safety – Deliver outstanding Health & Safety results
- Environmental – To protect and enhance the environment
- Stakeholder relationships – To enhance the relationship with all stakeholders
- Quality – To deliver outstanding quality and workmanship
- Time – Finish the project ahead of schedule
- Budget – Deliver the project under budget through innovation
- Supply chain engagement – Enhance the local SME supply chain
The following chart represents the VPT project management structure and shows the links between the PAB, APM and the AMT members.

![VPT Project Management Structure](image)

**Figure 7: VPT Project Management Structure**

The Project Alliance Board (PAB) is made up of six members who provide the governance and strategic direction of the Alliance. The PAB consists of one representative from each Alliance party with an additional member from the main contractor. They maintain the senior relationships between the participants and represent the Alliance within the participant organisations.

The PAB are accountable for the following key roles and responsibilities:

- Sets policy and gives philosophical and strategic direction for the Alliance
- Appoints the AMT, monitors their performance and implements measures to correct undesirable trends
- Sets, review and revise limits of authority
- Initiates and/or approves the commitment of resources to the project and provides corporate support as necessary
- Make key decisions in terms of the Project Alliance Agreement

The wider Alliance team contains a number of key leaders at Design Lead or Discipline Lead level and these groups have team structures within their disciplines which vary depending on the function of the team.
4.3 VPT Contract Structure

The VPT project is being delivered through the Alliance model that consists of the owner and four NOPs. Under this model, the Alliance participants share all the project risks. The cost and consequences of occurring risk events are borne by the Alliance participants, thereby impacting on the financial return to all of the participants.

All members of the Alliance have a contractual relationship that binds them to the Project Alliance Agreement. This is the key document that records the commitment of the participants to work together to achieve the Alliance objectives. It sets out a three limb cost compensation model for the non-owner participants. The first limb provides for reimbursement of actual costs for the project work. The second limb is a fixed fee to cover off-site overheads. The third limb comprises:

- A share of the difference between actual outturn costs and target outturn costs
- A payment incentive for non-cost performance based on the measure of key performance indicators

All SME subcontractors that were engaged on this project had a subcontract agreement in place with the main contractor. These SME subcontractors were outside of the Alliance agreement therefore the risk of using these subcontractors and suppliers falls on all of the Alliance members.

The diagram below illustrates this contractual relationship.
One of the key procurement objectives of the NZTA is to encourage and develop the use of Small and Medium Enterprises (SMEs) on the project. The VPT project is part of the government’s economic stimulus package and the client encourages the engagement of the local supply chain when possible. The objective is to inject money into SME companies to assist them through this period of slow economic growth. NZTA is also keen to see SMEs involved in Alliance projects to help up-skill and improve their specialist capabilities.

Figure 8: Alliance Contractual Relationship

4.4 The Project Procurement Strategy
4.4.1 Procurement Objectives
The following are procurement objectives for the VPA:

- Maximise the engagement of the supply chain to stimulate growth
- Achieve the cost effective and timely procurement of goods and services for the project
- Enhance the capability of New Zealand’s SME construction and construction supply industries
- Incorporate a focus on the development of SMEs
- Spread the local procurement of goods and services
- Create, collect and report meaningful metrics and Key Performance Indicators (KPIs) on supply chain engagement

The following steps were proposed to help develop the capability of SMEs on the case project:

- Providing training and leadership to SME subcontractors through an active programme that addresses the health and safety, quality and environmental processes.
- Ongoing mentoring from a PAB member to help develop their company and capabilities to address the needs of the NZTA in future projects.

4.4.2 Procurement Actions
The VPA implemented actions to provide SME subcontractors with numerous opportunities to bid for work on the VPT project. A supplier open day was held where SME subcontractors could meet with the Alliance staff and gain information about upcoming opportunities on the project. This was also a forum for subcontractors to showcase their businesses and make their services known to the Alliance. This also provided the VPA with an opportunity to meet with potential SME subcontractors that they had not previously worked with.

At the start of the project, the VPA developed a pre-qualification survey to identify the capabilities, business structure and skills of SME subcontractors that were bidding on work packages. The information gathered from this survey provided the
VPA with background information of each company that was evaluated and taken into consideration a part of the tender award.

When successful bidders commenced work on the VPT project, they were taken through a work package briefing whereby each member of a subcontractor company was inducted and informed about their role on the project. This allows each subcontractor the opportunity to provide their input into how best to complete the scope of works, thus encouraging innovation and maximum utilization of the supply chain. Further to these work package briefings, all subcontractors are required to complete Health and Safety site inductions to ensure that their practices and behaviour are aligned with the expectations of the Alliance. The site inductions are an important tool to make subcontractors aware of the wider project stakeholders such as the local community and utility companies.

Procurement strategies for previous NZTA Alliance projects have not required a focus on engaging SME subcontractor’s on their respective projects. As this procurement strategy is not typical for Alliance projects of this scope and complexity, it poses significant issues and risks to the project which are explored in greater detail later in this chapter.

4.5 Subcontract Agreements

The conventional manner in which SMEs were engaged on the VPT project was through a Subcontract Agreement (SA) with the main contractor. This agreement outlines details of the following standard terms and conditions that all subcontractors are subject to:

1. Subcontract Sum
2. Commencement and Completion
3. Payment Claims
4. Variations
5. Daywork
6. Legal and Statutory Requirements
7. Indemnity and Insurance
8. Delay
9. Contractors, Facilities, Scaffolding, Plant and Equipment
The commercial terms in which subcontractors were engaged by the VPA varied depending on the scope of work that each SME was delivering. Fixed lump sum value contracts were typically used where the scope of a work package was accurately defined at the time of the agreement. When the final scope of a work package was uncertain or fixed quantities could not accurately be measured, the commercial terms of the SA where based on a measure and value contract with agreed rates. Item 23 of the SA defines any additional terms and conditions that are specific to each work package and prevail over conditions set out in previous sections of the SA. The following Special Conditions can be expected in a SA to which an SME subcontractor must agree prior to their commencement of work on the VPT project:

1. Liquidated Damages – Monetary compensation to the Alliance for any loss incurred as a result of the SME subcontractor not meeting the terms of the SA.

2. Retentions – A specified value of the total claim made by a subcontractor is withheld by the Alliance and then released after the obligations of the subcontractor have been satisfied.

3. Insurance – The insurances required by the subcontractor such as Contract Works and vehicle insurance.
4. Warranties or guarantees – Additional warranties and guarantees of the materials or services provided by the subcontractor, e.g. structural steel or the supply of a passenger lift.

5. Safety Management and Quality Assurance (QA) plans that are to be submitted by the subcontractor for approval by VPA.

The Special Conditions which are unique to an Alliance project relate to the type of insurance required by an SME subcontractor such as Contract Works insurance. This is mandatory level of insurance which a subcontractor must possess in order to be engaged on the VPT project. This type of insurance is expensive for SME subcontractors as the minimum level of cover required is $2,000,000.

Monthly progress claims are required by the VPA from each subcontractor engaged through a SA, by the 25th of each month. This date differs from a typical NZS 3910 contract which is the 20th of each month.

4.6 Subcontractor Survey
The entire supply chain that was engaged by way of a Subcontract Agreement on the VPT project, were surveyed by the VPA to determine what obstacles they faced when working on the project. These survey results were used by the VPA to gain an insight into the level of service that the Alliance has been providing to its supply chain. The feedback received from this survey was used to improve internal processes within the Alliance and identify areas of concern regarding the performance of the Alliance.

Results obtained from this survey will be used to drive behaviours in the Alliance team through the suppliers reinforcing positive aspects of working with the Alliance and highlighting processes or behaviours that can be improved. The results of this survey are linked to the Key Result Area (KRA) of ‘Enhancing the local SME Supply Chain’. The calculated score from this survey is linked to the allocation of the Limb 3 funds, therefore the results of this survey are a significant driver for the VPA.
4.6.1 Programme Issues

The results from the supplier satisfaction survey suggest that the Victoria Park Alliance is providing a high standard of service to the suppliers and subcontractors engaged on the VPT project. With 94% of respondents either agreeing or strongly agreeing to the high standard of service provided to them. One area of concern that was identified from the supply chain related to programming issues and how these were communicated by the Alliance. Of the responses received, 19% disagree with the statement, “Our Company’s work took place as programmed and changes to programme were communicated appropriately”. The results of the supplier satisfaction survey are displayed below.

**VICTORIA PARK ALLIANCE**

**SUPPLIER SATISFACTION SURVEY RESULTS**

<table>
<thead>
<tr>
<th>Question</th>
<th>Question Detail</th>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
<th>Total Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Our company was satisfied with the tender process</td>
<td>5</td>
<td>15</td>
<td>1</td>
<td>0</td>
<td>21</td>
</tr>
<tr>
<td>2</td>
<td>There is a good level of communication from Alliance staff members</td>
<td>8</td>
<td>11</td>
<td>2</td>
<td>0</td>
<td>21</td>
</tr>
<tr>
<td>3</td>
<td>Design documentation on this project is of a high standard</td>
<td>5</td>
<td>13</td>
<td>2</td>
<td>1</td>
<td>21</td>
</tr>
<tr>
<td>4</td>
<td>Our company’s work took place as programmed, and changes to programme were communicated appropriately</td>
<td>5</td>
<td>12</td>
<td>4</td>
<td>0</td>
<td>21</td>
</tr>
<tr>
<td>5</td>
<td>Quality Management obligations have been made clear</td>
<td>5</td>
<td>16</td>
<td>0</td>
<td>0</td>
<td>21</td>
</tr>
<tr>
<td>6</td>
<td>Health &amp; Safety briefings and policing on this project is of a high standard</td>
<td>9</td>
<td>12</td>
<td>0</td>
<td>0</td>
<td>21</td>
</tr>
<tr>
<td>7</td>
<td>Environmental considerations on this project are dealt with appropriately</td>
<td>8</td>
<td>12</td>
<td>1</td>
<td>0</td>
<td>21</td>
</tr>
<tr>
<td>8</td>
<td>Payment schedules and associated electronic payments are completed on time</td>
<td>6</td>
<td>14</td>
<td>0</td>
<td>1</td>
<td>21</td>
</tr>
<tr>
<td>9</td>
<td>Site management on this project is of a high standard</td>
<td>11</td>
<td>10</td>
<td>0</td>
<td>0</td>
<td>21</td>
</tr>
<tr>
<td>10</td>
<td>Site cleanliness and site facilities on this project are of a high standard</td>
<td>7</td>
<td>14</td>
<td>0</td>
<td>0</td>
<td>21</td>
</tr>
</tbody>
</table>

| Totals   | 69   | 123  | 10   | 2     | 210              |

Figure 9: Supplier Satisfaction Survey (VPA, 2010)
4.6.2 Communication Issues
Changes to programme are a consequence of the variable nature of construction sequencing. The area of concern that the supplier satisfaction survey highlights is how this change is communicated by the Alliance to its supply chain. The results of the supplier satisfaction survey are displayed below.

The issue of poor communication is also evident in the responses received relating to Question 2, “There is a good level of communication from Alliance staff members”. Although only two of the respondents disagreed with this statement, it may suggest that communication between the VPA and its subcontractors is not up to the high standard of behaviour promoted within the VPA.

The following section explores these and other issues from this supplier survey in further detail with interviews from both the Alliance and SME subcontractor participants.

4.7 Interviews with Alliance Staff
Common issues were identified from the responses of the participants and this section categorises these findings into the following areas:

1. Contractual issues
2. Health and Safety issues
3. Commercial issues
4. Performance issues
5. Communication issues
6. Attitudinal issues
7. Documentation issues

4.8 Engaging SME Subcontractors from an Alliance Perspective
Interviews were conducted with three participants from the VPA. The interviews identified numerous issues with engaging SME subcontractor and these issues are analysed below.
4.8.1 Contractual Issues
The first issue that was identified was the concern of contractual issues with engaging SME subcontractors. As discussed earlier in section 4.5, all subcontractors are required to meet the terms and special conditions of an Alliance subcontract agreement. Participant 1 highlighted an issue with the queries and feedback that were received from SME subcontractors during the tender stage. It was noted during this phase that SME subcontractors commonly responded with no queries regarding the conditions of their subcontract agreement. Comparatively, larger subcontractors responded with numerous queries regarding the same document and often provided amendments to the agreement. Participant 1 was concerned that SME subcontractors did not take the necessary time to review the agreements they were signing or have the familiarity with Alliance subcontract agreements. This issue was consistent throughout the tender phase and provided a level of uncertainty to the Alliance as to whether these subcontractors were fully aware of the contractual conditions and expectations that they were agreeing to. Participant 1 highlighted four examples of contractual conditions that SME subcontractors were not always aware of:

1. Liquidated damages
2. Defects liability periods and guarantees
3. Retentions
4. Insurances

4.8.2 Health and Safety Issues
The second issue that arose was concerned with the Health and Safety (H&S) procedures of SME subcontractors. As discussed earlier in section 3.4.2, all subcontractors were required to go through mandatory site inductions before commencing work on site. Participants 1, 2 and 3 stated they had issues with SME subcontractors not complying with strict H&S standards and procedures on previous Alliance projects. Each participant stated that in their experience, smaller subcontractors were not fully aligned with the H&S standards of an Alliance project. This was thought to be from their poor H&S practices and lack of previous experience on large infrastructure projects. Consequently, to-date on the VPT project
the only subcontractor to be removed from site was an SME, their contract was terminated as a result of poor on-site H&S procedures and practices.

4.8.3 Commercial Issues
The third issue that was identified by participant 2 and 3 regarded the financial reporting and commercial capability of the SME subcontractors. Participant 3 experienced that 3 out of the 4 SME subcontractors they dealt with had poor knowledge and limited experience with submitting monthly progress claims. It was noted that these SME companies had issues with presenting an accurate and clear progress claim at the earlier stages of their involvement on the project. After ongoing training and assistance from the Alliance, these SME companies improved their financial reporting and knowledge to meet the Alliances standards. Participant 2 highlighted that SME subcontractors often were not familiar with their special conditions of the SA such as progress payment retentions held by the Alliance. This reinforces the Alliance’s concerns as discussed earlier, that SME subcontractors are less likely to be aware of their full contractual obligations.

4.8.4 Management Issues
The fourth issue that arose was regarding the internal capability and management of SME subcontractors. Participant 1 and 3 highlighted ongoing issues with SME subcontractors who had a lack of management resourcing to deal with queries from the Alliance. As discussed in section 2.4 of the literature chapter, Alliances are resource lean and built on high performance teams with effective lines of communication. It was found that these characteristics were less evident in SME companies due to their smaller size and organisational structures. When dealing with on and off site issues, larger companies were more capable of effectively dealing with unforeseen circumstances as they had more resources to utilise. Participant 1 and 2 noted that SME subcontractors were less likely to have specialist internal teams and capabilities that could effectively work with their equivalent AMT groups. For example the Alliance commercial and administration teams often did not have dedicated personnel from the SME companies to assist with day to day issues.
4.8.5 Performance Issues
Participant 2 and 3 raised concern over the risks associated with SMEs on-site performance in a high pressure environment and how this is aligned with the high performance culture expected by the VPA. Participant 3 did experience on-site issues relating to the attitude of SME subcontractor staff. They believed this contributed to their below average standard of workmanship that resulted in additional re-work costs and lost time. Participant 3 stated that 3 out of 4 SME subcontractors they dealt with provided the same high quality standard of on-site workmanship that was typically experienced from non SME subcontractors.

4.9 Working on an Alliance - An SME Subcontractor’s Perspective
The SME subcontractor companies that were interviewed had similarities in the type of issues they encountered when working the VPA project. Of the two participants interviewed, only one had previously worked on an Alliance project but both had similar issues as detailed below.

4.9.1 Communication Issues
The first issue that both SME subcontractors encountered is concerned with the communication of information from the Alliance. As described earlier in section 3.4.2, VPA developed a prequalification survey which was required to be submitted as part of each tender submission. Participant A and B thought this questionnaire did not reflect the true structure of their business. Both companies only had 2 to 3 full-time employees, but they typically subcontracted their work to other companies which they had established ongoing commercial relationships with. Therefore, the information as it was presented to VPA showed that each subcontractor had minimal internal resources and capabilities. Both participants viewed this as an issue for them when prequalifying for work as they were unsure as to what the information was to be used for and whether or not it would influence the success of their prequalification. Each subcontractor felt there was little communication regarding the purpose for which the information was to be used for.
4.9.2 Attitudinal Issues
The second issue that was experienced by both SME’s and in their opinion by numerous SME subcontractors in the construction industry was the difficulty small companies faced when trying to become a preferred subcontractor on Alliance projects. Both participants felt that large contractors had a pessimistic view towards using small subcontractors on major infrastructure projects. Both participants admitted that due to this bias they have intentionally not tendered for Alliance projects in the past. Unlike previous NZTA Alliance delivered projects, the VPT project has provided SMEs with more opportunities to become familiar to the NOPs and remove that negative perception amongst the SME subcontracting industry. Participant B also said that due to the large size of Alliance teams, it was difficult to market their services and to communicate this to the appropriate people. They explained that Alliances were perceived to be intimidating organisations for small companies to gain a fair chance of successfully tendering for work against large subcontractors. The steps that were taken by VPT to encourage the involvement of SMEs were discussed earlier in this chapter.

4.9.3 Documentation Issues
The third issue of concern relates to the documentation that is provided to each SME subcontractor. Participant A and B felt that during the tender phase, the subcontract agreement and head contract agreement provided to them was diluted with unnecessary sections that do not relate to the work they were tendering for. They said this resulted in a more time consuming process of understanding which sections of the agreements were applicable to their interests. They suggested this issue was compounded for small subcontractors who lack the resources to dedicate time to analysing the entire contract clause by clause. Also they felt there was no time allowance made for SME subcontractors who struggled to meet tender closing dates due to this issue of unnecessary documentation from the Alliance. Participant A agreed that these issues may result in SME subcontractors not completely reading the agreements they were signing due to these added time and resource constraints.
4.10 Lessons Learnt

The interview participants all had varying opinions of the lessons learnt of engaging SME subcontractors on an Alliance project. The opinions varied depending on each participant’s involvement with SMEs and the reflections of their experience working with them. Participant 1 gave the following examples of lessons learnt.

- That the VPA had underestimated the level of resourcing required to effectively manage the additional workload of engaging many SME subcontractors.
- More time should be allocated to briefing SME subcontractors on the Alliance objectives and how the Alliance’s expectations differ from smaller projects.
- A modified head contract should be tailor-made to suit SME subcontractor’s that provides a clearer presentation of the information applicable to their works.
- That Alliance members need to provide more support to SMEs at the early stages of involvement on the project, with particular emphasize on ensuring they understand the documentation provided to them.

Participant 3 also agreed with the last comment that more support should be provided to SMEs at the earliest possible time. This also includes providing the subcontractor with a clear indication of the level of documentation expected from them. Another lesson learnt is that the briefing provided to each SME subcontractor on the day they show up on site needs to be more thorough. Participant 3 also believed a strict policy needs to be adopted whereby no person can be on-site unless they have been fully briefed by the on-site Alliance members. They also stated that all SME subcontractors need to be made more aware of the Alliance objectives and how they relate to their on-site day to day activities. The reason being they felt SME subcontractors failed to grasp the wider objectives of the Alliance such as stakeholder involvement and awareness.

Participant 2 also had similar views and suggestions to the two previous participants. One of the key learning experiences they noticed was the need for more commercial
education and awareness provided to the smaller subcontractors. As the standard of payment claims received from SMEs was generally poor, more commercial team resources were required compared to previous Alliance projects of a similar scale. Participant 2 also felt the need to establish more points of communication from each SME subcontractor. As many SME companies had single tier organisational structures, it often became difficult to make contact with the necessary people from these companies. They suggested at least two points of contact need to be established from SME companies to provide the level of support that the Alliance expects from its subcontractors.

4.11 Conclusions
The NZTA procurement objectives of actively engaging SME subcontractors on an Alliance project have highlighted numerous issues that impact on various aspects of the Alliance’s performance. As this procurement strategy is unique to the VPT project, it has provided clear insight into the effects this approach has on an Alliance project.

From the VPA’s experience of implementing this procurement strategy there is a common concern that SMEs are not fully aware of the terms and conditions of the contractual agreements to which they are signing. The lack of contractual queries and understanding from SMEs during the tender phase increases the risk exposure to the Alliance of future contractual disputes. This concern is supported by Uher (1991) who states, “That the formation and execution of subcontracts is carried out in the most efficient manner in order to minimize the possibility of the project risk escalation”. (p.496)

The findings of this report suggest that actively encouraging the involvement of SMEs on a major Alliance infrastructure project can lead to inefficient use of Alliance resources resulting in the additional management of SME subcontractors. Good (2009) suggests that, “The use of large trade specialist organisations would more likely contribute to the overall management of the Alliance” (p.73) Good also suggests that smaller organisations would be less likely to have the management
structure to effectively support an Alliance team. This view was also supported by the Alliance participants who were interviewed.

The issues identified from the interviews and supplier satisfaction survey suggests that more support should be provided to SMEs by an Alliance team to help make this procurement strategy more successful. There is a need for improvement in the current level of support and training provided to SMEs in the following areas of:

- Contractual obligations
- Documentation provided to SME subcontractors
- Progress payment claims and commercial arrangements
- On-site Health and Safety expectations

Based on the experience of the Alliance members interviewed, the standard of workmanship from SME subcontractors is no different to that of larger organisations. Zuo & Zillante (2006) believe that by conducting additional workshops and training, this would help to ensure that the project objectives of outstanding quality were fully understood by all SMEs in the wider project team.

Although there are initiatives in place by the VPA to support SME subcontractors on the case project, additional support provided by Alliances would help to ensure the ongoing development of SME construction companies and enhance the capability of the wider construction industry. The findings of this report could help to enhance the Alliance model by delivering optimum outcomes for both the Alliance participants and SME subcontractors on future projects.

4.12 Limitations
The findings of this report are based on one case study of a specific Alliance project in Auckland therefore it is difficult to make generalisations regarding similar Alliance projects. The findings from this report are based on the opinions of the participants interviewed and the results of the supplier satisfaction survey. The survey data shown is from the opinions of subcontractors directly engaged by the Alliance on a subcontract agreement and only reflects the thoughts of the respondents. This survey does not distinguish between SME and non SME suppliers.
and the details of the respondents are unknown. Therefore it is difficult to make generalisations relating specifically to the views of SME subcontractors employed on the case project. For the purposes of this report the findings contained within are used to provide an indication of the Alliance’s performance in specific areas and to highlight issues encountered by the Alliance and the supply chain.

The interview process was conducted using a semi-structured approach and this method provided valid information but was not always relevant to the research topic. Therefore not all the information gathered from each interview was used in this report. The interview process was difficult to organise and SME participants were not always readily available during business hours due to working commitments that were generally not flexible.

During the period of this research report, the case project was in the construction phase; therefore it is difficult to ascertain how well SME subcontractors performed in the delivery of their work packages. It is also difficult to draw conclusions on how the NZTA procurement strategy impacted the overall project performance.
5.0 REFERENCES


New Zealand Subcontract Agreement 2009


6.0 APPENDICES

6.1 Interview Questions – Alliance Staff

1. What is your current role and responsibilities on this project?
2. What involvement do you currently have with SME subcontractors?
3. Were there any issues with using SME subcontractors in regard to the following:
   a. Health & Safety practices and procedures?
   b. Alignment with the Alliance objectives and performance?
   c. Ability to meet the programme of their works?
   d. Communication with project staff, on and off site?
   e. Competence in commercial & contractual arrangements?
   f. Quality of workmanship and innovation?
   g. Capability of management structure and systems?
4. What do you feel are the risks to the Alliance project of using SME subcontractors?
5. Do you feel these risks would be less or greater if the company was larger?
6. What are the benefits to the Alliance of using SME subcontractors?
7. In terms of managing SME subcontractors in your role, what are the issues you have encountered?
8. Would you encourage the use of SME subcontractors over larger subcontractors on an Alliance project?
9. What are the lessons learnt from using SME subcontractors on this project?
10. Would you recommend the use/involvement of SME subcontractors on a large infrastructure project?

6.2 Interview Questions – SME Subcontractor

1. What is your role at the company?
2. What was/is your involvement with this project?
3. Have you worked on Alliance projects in the past?
4. What have been the issues for you working on this project?
5. Are these issues different from working on conventional projects?
6. Were your QA, H&S and management systems aligned to working on an Alliance project?
7. Were changes/adjustments required within your company to cope with working on this project?
8. What are the issues associated with tendering for work on an Alliance project?
9. During the tender stage did you feel the size of your company was an advantage or disadvantage?
10. Were there any communication issues with the Alliance?
11. Do you feel your capability and expertise was utilised by the Alliance?
12. Were the time frames placed on your company fair and realistic for you to perform your job?
13. Do you feel the Alliance had a fair understanding of the work you tendered for?
14. Were there any attitudinal issues with working on the Alliance project?
15. For your company, what are the lessons learned from working on an Alliance project?
16. What changes/improvements would you wish to see from an Alliance?